

**Patient and professional perceptions of metabolic syndrome
and its management
A Qualitative study in the United Arab Emirates**

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Abstract

Metabolic syndrome (MetS) is defined as the clustering of medical conditions (that is impaired fasting glucose (IFG) or type 2 diabetes mellitus (T2DM), hypertension (HTN), obesity and dyslipidaemia) that increase an individual's risk of developing diabetes or cardiovascular diseases (CVD). In the United Arab Emirates (UAE), the prevalence of MetS and its features are among the highest in the world. However, research that explores the health needs of patients with MetS within the socio-cultural context of the UAE is lacking. This study aimed to explore patient and professional perceptions of MetS and its management in the UAE.

A qualitative approach that drew on the broad principles of grounded theory was undertaken to meet the aims of the study. Following ethical approval, semi-structured interviews were conducted with 29 patients with MetS and 27 health care professionals (HCP) involved in the management of patients with MetS (10 physicians, 11 pharmacists, 4 dietitians and 2 health educators). This was followed by one focus group discussion with nine pharmacists for further exploration of identified themes. Interviews were audio-recorded and transcribed verbatim. NVivo aided the organisation of data. Thematic analysis based on the principles of grounded theory was conducted.

This study was able to identify a number of factors that influenced patients' perceptions of their health and attitude towards their treatment plan. All patients interviewed were unfamiliar with the MetS concept and claimed to have never been informed by their physicians about their MetS diagnosis. Patients' awareness of the high prevalence of MetS features in the UAE, the asymptomatic nature of the cardiometabolic risk factors (CRFs) and the availability of treatment resulted in downplaying of MetS risk. Not all HCPs were familiar with the MetS concept or definition. Factors such as the complexity of the MetS name and the absence of the MetS diagnosis from the list of reimbursed medical conditions discouraged physicians from informing patients of their MetS diagnosis and limited the clinical utility of the MetS concept respectively. The study found that a number of socio-cultural factors hindered successful implementation of lifestyle interventions. Such factors included family restrictions of outdoor exercising by women, lack of culturally sensitive health clubs, food-centric activities and eating habits. Patients' beliefs about medicine and medicine brands affected their medicine-taking habits and altered their adherence.

HCPs believed that a population-focused health approach would result in behavioural change. They also emphasised the key role of the public health policy to prevent MetS and promote a healthy lifestyle. Patients acknowledged the importance of adhering to lifestyle interventions to control their clustering risk factors. However, they believed that their lack of motivation, willpower, and limited physical mobility, due to coexisting health condition, were detrimental to adherence to lifestyle interventions.

This study provides important new information for understanding the dynamics of patients' health behaviour and attitude towards MetS treatment in the UAE. It also demonstrates how aspects of the health policy and professionals' clinical practice limit the clinical utilisation of the MetS concept. Efforts to promote healthy behaviour and enhance the prevention and management of MetS in the UAE need to be stepped up and be tailored to patients' personal, social and cultural needs.

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Abbreviations

AACE	American Association of Clinical Endocrinologists
BMI	Body Mass Index
BP	Blood Pressure
CRF	Cardiometabolic Risk Factors or Cardiovascular Risk Factors
CVD	Cardiovascular Diseases
DAMAN	Medical insurance scheme in the UAE – DAMAN is Arabic for ‘insurance’
DC	Diabetes Centre
EGIR	European Group for Study of Insulin Resistance
FGD	Focus Group Discussion
FMC	Family Medicine Clinics
GP	General Practitioner
HAAD	Health Authority of Abu Dhabi
HCP	Health Care Professionals
HDL-C	High Density Lipoproteins-Cholesterol
HTN	Hypertension
ICD-9 CM	International Classification of Diseases, Ninth Revision, Clinical Modification
IDF	International Diabetes Federation
IDIs	In-Depth Interviews
IFG	Impaired Fasting Glucose
LDL-C	Low Density Lipoprotein- Cholesterol
MetS	Metabolic Syndrome
MOH	Ministry of Health
NCEP ATP II	National Cholesterol Education Program Adult Treatment Panel
NWBs	None-Western Brands of medicines
OPC	Outpatient Clinic
P	Participant
PHC	Primary Healthcare Clinics
R	Researcher
SEHA	Abu Dhabi Health Services named SEHA
SKMC	Sheikh Khalifa Medical City
T2DM	Type 2 Diabetes Mellitus
THIQA	Medical insurance scheme for UAE nationals – THIQA is Arabic for ‘trust’
UAE	United Arab Emirates
UK	United Kingdom
USA	United States of America
VLDL-TG	Very Low Density Lipoprotein-Triglycerides
WBs	Western Brands of medicines
WC	Waist Circumference
WHO	World Health Organisation

Chapter 1

Introduction

1.1 Introduction

This thesis contributes to a better understanding of factors influencing the management of patients with metabolic syndrome (MetS) within the socio-cultural context of the United Arab Emirates (UAE). Using a qualitative methodology, this thesis describes and characterises various aspects of patients' health behaviour, knowledge of their health condition, perception of MetS risk and their attitude towards their prescribed treatment plans. This thesis also describes contextual factors that influence the implementation of pharmaceutical and lifestyle interventions. This chapter deals with the preliminary considerations; it begins with a description of background information and the problem statement of the study, which is followed by the aims and objectives of the study and an outline of the ensuing chapters of the thesis.

1.2 The problem statement

MetS is defined as a constellation of a number of cardiometabolic risk factors (CRF) that include Type 2 diabetes mellitus (T2DM) or impaired fasting glucose (IFG), hypertension, obesity and dyslipidaemia (Alberti, Zimmet et al. 2006). This clustering of CRFs increases the risk of developing (T2DM) and cardiovascular diseases (CVDs) (Alberti 2005). MetS is also known as prediabetes syndrome and is believed to be the new driving force for a CVD epidemic. Patients with MetS are twice as likely to die from, and three times as likely to develop, CVDs compared with individuals without MetS. Patients with MetS are also at a fivefold higher risk of developing T2DM (Alberti 2005). The exact pathophysiology of MetS is still unclear; however, central obesity and insulin resistance are believed to be the main underlying causes (Byrne and Wild 2005). Other factors such as genetics, physical inactivity, ageing, a proinflammatory state and hormonal changes may also have a causal effect, but the role of these factors varies depending on the patient's ethnicity (Alberti 2005).

The associated cardiovascular risk of MetS attracted a number of expert groups to develop uniform MetS definitions to facilitate the identification of this group of patients within the clinical setting. The World Health Organization (WHO) introduced the first definition and diagnostic criteria for the syndrome in 1998 (World Health Organization 1999). This was closely followed by many other definitions, specifically those of the European Group on Insulin Resistance (EGIR) (Balkau and Charles 1999); the National Cholesterol Education Programme Expert Panel (NCEP) (Adult Treatment Panel III) (Cleeman, Grundy et al. 2001); the American Association of Clinical Endocrinologists (AACE) (Einhorn, Reaven et al. 2003); American Heart Association/National Heart, Lung, and Blood Institute (AHA/NHLBI) (Grundy, Cleeman et al. 2005) and the International Diabetes Federation (IDF) (Alberti, Zimmet et al. 2006). Although all groups agreed on the CRFs that constitute MetS, the existence of multiple definitions for MetS resulted in confusion and hindered direct comparisons of data between studies where different definitions were used to identify patients with MetS (Byrne and Wild 2005). Despite the controversy, MetS is believed to be important as a pre-morbid condition and its concept is useful in identifying patients whose clustering CRFs do not meet the conventional mandatory treatment levels but who will thus benefit from an early lifestyle intervention (Byrne and Wild 2005).

According to the IDF consensus worldwide definition of MetS (Alberti, Zimmet et al. 2006), it is estimated that around 20-25% of the world's adult population have MetS. In the UAE, the prevalence of MetS in adults of different ethnic backgrounds was found to be 40.5% and 39.6%, according to the IDF and NCEP definitions of MetS, respectively (Malik and Razig 2008). Similarly, the UAE has a high prevalence of the CRFs that constitute MetS. For example, in 2005, the WHO announced that the UAE had the second highest prevalence of T2DM (20.5%) in the world, and in 2009 the IDF reported that T2DM prevalence in the UAE was 18.7% (Hajat and Harrison 2010). According to the International Obesity Taskforce/International Association for the Study of Obesity, the prevalence of obesity in adult women living in the UAE was 31% compared with 17% of adult men, which makes the UAE 22nd in the prevalence of obesity worldwide (Global Prevalence of Adult Obesity 2010). According to the WHO, the UAE continues to show an increase in CVD risk amongst its adult population when compared with other neighbouring countries (Hajat and Harrison 2010). It is still unclear whether the high prevalence MetS in the UAE is due to a genetic predisposition, an unhealthy and sedentary lifestyle or a combination of both. Thus, early screening, lifestyle and pharmaceutical interventions are key factors in the prevention and management of MetS. Different strategies have been implemented to help arrest the prevalence of MetS in the UAE. The Ministry of

Health (MOH) in the UAE has already taken initiative to address the rising prevalence of T2DM by establishing an independent body of local specialists and scientists to formulate a local clinical guideline (CG) for the management of T2DM (Mathew, Ahmed et al. 2010). Abu Dhabi's health authority (HAAD) stated that preventing and managing MetS was the primary target in Abu Dhabi's public health challenges of 2007, which was followed by cancer and road deaths (HAAD 2007). HAAD is also working alongside the Abu Dhabi Tourism Authority and the Imperial College London Diabetes Centre (ICLDC) in sponsoring public health awareness campaigns that promote health education and encourage early screening for CRFs and MetS (ICLDC 2009).

The multifaceted nature of MetS suggests the need for both pharmaceutical and lifestyle interventions to ensure successful management. However, this indicates the presence of a strong behavioural element, which can render MetS management quite challenging (Kappagoda and Amsterdam 2007). A limited number of studies have been dedicated to exploring personal and contextual factors that may influence the prevention and management of MetS (Frisman and Bertero 2008; Lopes, Zanini et al. 2008; Vieira and Turato 2010). For example, psychosocial stressors from everyday life and heart disease were found to be important contributing factors in the development of MetS (Chandola, Brunner et al. 2006). Lack of time and motivation, social isolation and leading a stressful lifestyle discouraged patients from initiating or maintaining a lifestyle change and resulted in the recurrence of unhealthy behaviour despite patients' awareness of their MetS health risk (Frisman and Bertero 2008). Despite the high prevalence of MetS in the UAE and its constituting CRFs, literature that addressed personal and contextual factors that may influence MetS holistic management within the UAE was not available at the time of this study. For example, Ypinazar and Margolis (2006) focused their exploration on the impact of religion perception of health and illness of a small group of elderly Emiratis. Other available local qualitative health studies used focus group discussions rather than in-depth interviews, which might have prevented some participants from engaging and disclosing some of their personal concerns. They also focused exclusively on females' perception of their health issues and the health care system (Winslow and Honein 2007; Berger and Peerson 2009; Ali, Baynouna et al. 2010; Trainer 2010).

This study aimed to elucidate personal and contextual factors that influence MetS management in the UAE through the exploration of patient and professional perceptions of MetS and its management. Patients and health care professionals (HCPs) are in direct contact with MetS and the

health care system within the UAE and are thus capable of describing their health issues and other contextual factors that affect MetS management. This research is also important because it identifies barriers and facilitators to MetS management within the UAE that can be utilised to help build a more robust health care system capable of catering for different MetS patients' needs. Reporting these findings will also enable HCPs and health policy makers to become more cognizant of patients' cultural needs and personal beliefs in order to deliver a more culturally sensitive health care system and thus enhance MetS successful management.

1.3 Aims and objectives of the study

This study aimed to explore factors that affect the implementation and success of MetS management in the UAE with a focus on the influence of the socio-cultural context of the UAE on MetS treatment. The study objectives were:

1. To explore patient perceptions and beliefs about their health condition, their awareness of MetS diagnosis and associated risks
2. To examine patient attitudes towards their prescribed treatment plans and factors affecting their adherence to prescribed medicines
3. To examine HCP perceptions of MetS as a condition in its own right and factors that impact its management in the UAE
4. To elicit facilitators that can improve the management of MetS within the UAE

This research provides an in-depth understanding of patient and professional perceptions of MetS and its management in the UAE. It also explores contextual factors that influence the successful implementation of lifestyle and pharmaceutical interventions needed for MetS management. Such information can aid public health promotion programmes and help HCPs and policy makers to deliver a more culturally competent health care service.

1.4 The organisation of the thesis

This study is divided into eight chapters. The current chapter (**Chapter 1**) describes the background of the study and presents the aims and objectives of the study. **Chapter 2** reviews the literature of MetS including definitions and prevalence. It also presents information about the health care system in the UAE and its efforts in tackling MetS. This is followed by literature that reports factors that influence people's health behaviour and perceptions of health and illness.

Chapter 3 describes the methodological approach used in the research and the tools used to collect data. The data collection process and methods of analysis are given in detail. Data analysis and translation, study limitations, reliability and validity of data are discussed in detail.

Chapter 4 presents patient perceptions of their health conditions and factors affecting their attitude towards the risk of their presenting CRFs and coping strategies. It also illustrates factors influencing the clinical utility of MetS diagnostic criteria as perceived by HCPs, which impacts patients' perception of their health condition.

Chapter 5 illustrates personal as well as contextual factors influencing patients' attitudes towards lifestyle intervention as reported by both patients and HCPs.

Chapter 6 presents identified factors influencing patients' attitudes towards prescribed medicines and medicine-taking behaviour.

Chapter 7 presents themes describing facilitators to MetS management in the UAE. It will also link these facilitators to existing strategies and future plans of UAE health authorities in tackling the MetS problem in the country.

Chapter 8 discusses and concludes the study and takes a reflexive look at the study process. The strengths and limitations of the study are described and recommendations for future work are also included.

Chapter 2

Literature review

2.1 Introduction

This chapter starts by describing the literature search strategy, tools and inclusion criteria used to build the study's background and identify gaps in the literature. The following sections describe: (i) the UAE health care system strategies and health promotion campaigns implemented to tackle MetS; (ii) the impact of Emirati socio-cultural context on the health behaviour of patients living in the UAE; (iii) lay perceptions of MetS; and (iv) the controversy associated with MetS. A summary of key areas for further research are subsequently addressed.

2.2 Literature search strategy

The study literature review started in November 2007, and was repeated at regular intervals (most recently October 2011) to identify literature concerned with patients' perceptions of MetS and factors affecting its management. The search strategy involved using key words specific to the research topics. These key words increased as the study progressed and themes emerged during data analysis. Table 2.1 illustrates an example of the key words used combined into four groups.

Table 2.1 Example of key words used in the literature search

Specific key words used to describe each group			
Condition	Informer	Perception	Research environment
Metabolic Syndrome	Patient	Perception	United Arab Emirates
Syndrome X	Physician	Perspective	Arab
Insulin resistance	Pharmacist	Lay	Culture
Prediabetes	Professional	Attitude	Social norm
Diabetes		Health belief	Tradition
Obesity		Health issues	Religion
Hypertension		Qualitative research	Spirituality
Dyslipidaemia			Islam

Literature that described the health care system in the UAE, public health, health promotion, prevention strategies and UAE culture were also searched. At the beginning of the literature review process, searches were restricted to the English language. However, because of the extremely limited literature concerning lay perception of MetS, non-English literature concerning qualitative studies on MetS was included. During the literature search, Google translation service was used to translate the content of three main studies (Lupatini, da Silva et al. 2008; Vieira and Turato 2010; Vieira, Cordeiro et al. 2011). Google Translate uses statistical matching to translate rather than a dictionary/grammar rules approach, therefore it does not always deliver accurate translations and translated text can often include grammatical errors (Gomes 2010; Shen 2010). As such, Google Translate service was used to help understand the general content of the selected non-English literature when needed.

The database and search engines used for searching included MEDLINE, EMBASE, Scopus, International Pharmaceutical Abstracts, PsychINFO, Web of Knowledge, Global Health and PubMed. The search, throughout the study, included research reports, review articles of research studies, and articles that commented on research studies.

The initial literature search identified few studies and articles that described the UAE health care system, the impact of the UAE culture on patients' health behaviour and qualitative studies on MetS. This was overcome by modifying the search strategy to include more papers and studies of relevant importance. The following three sections describe these search modifications.

2.2.1 Literature on the UAE health care system

The initial electronic search found few papers that described the health care system in the UAE or its efforts in tackling MetS health issues. Thus, a more comprehensive literature search was conducted comprising an electronic as well as a manual approach. This was done to encompass all information relevant to the UAE health care system, public health and health promotion strategies used to manage MetS in the UAE. The following web sites were also used in the search:

- Health Authority – Abu Dhabi (HAAD) available at www.haad.ae
- Abu Dhabi Health Services (SEHA) available at www.seha.ae
- United Arab Emirates Ministry of Health (MOH) available at www.moh.gov.ae
- Imperial College London Diabetes Centre (ICLDC) available at www.icldc.ae
- Diabetes UAE available at www.diabetesuae.ae

Visits to and phone calls with officials working in the MOH and HAAD were arranged to enquire about their activities in combating MetS in the UAE.

2.2.2 Literature on UAE cultural impact

Literature that addressed the impact of the Emirati socio-cultural context on the health care system and patients' attitudes was scarce. Although some obstacles and barriers might be similar in all patients with MetS, regardless of their race or cultural background, it is likely that other barriers might emerge specifically in this particular area given its unique cultural and religious characteristics. Thus, the literature search was expanded to include papers that described MetS and CRFs management-related issues in other Middle Eastern countries (e.g., Qatar, Bahrain, Kuwaiti, Saudi Arabia, Oman and Jordan) as their socio-cultural context resembles that of the UAE. A hand-search was also carried out for the major clinical journals of the Middle East which were found online (using Google), at the UAE University library in Al-Ain and at the University of Nottingham library. Issues of journals were hand-searched for up to the past 20 years, depending on their availability. The following journals were included in the search:

- Journal of the Gulf and Arabian Peninsula Studies 2000 – 2011 (April)
- Middle East Journal of Family Medicine 2003 - 2011 (October)
- Middle East Health 1997 – 2011 (May)
- Middle East Pharmacy 1998 - 2006
- Eastern Mediterranean Health Journal 1995 - 2011 (October)
- Medical Principles and Practice 1998 - 2011 (October)
- Annals of Saudi Medicine 2000 – 2011 (September)
- Saudi Medical Journal 2000 – 2011
- Kuwait Medical Journal 2001-2011 (September)

2.2.3 Qualitative literature on MetS

The literature search identified few qualitative studies that were exclusively concerned with patients diagnosed with MetS. In addition, qualitative studies that explored perceptions of MetS in Middle Eastern or Muslim countries were unavailable at the time of this study. Thus, qualitative studies concerning patients diagnosed with T2DM, hypertension and obesity were included in the search process. Therapy requirements of individual CRFs can be similar to that of MetS (i.e., pharmaceutical and lifestyle interventions). In addition, some of these qualitative studies were concerned with patients of Asian ethnicities or similar religious and cultural backgrounds. Therefore, themes identified in such studies might be similar to those experienced by Middle Eastern patients with MetS. The literature search included literature that addressed the research questions and elucidated study findings as the research progressed.

The following section describes the literature found in four main areas: (i) the extent of the MetS problem in the UAE and the health care system's efforts in tackling it; (ii) the impact of the socio-cultural context of the UAE on patients' health attitudes; (iii) perceptions on MetS risk and management; and (iv) the controversy surrounding the MetS concept.

2.3 The extent of the MetS problem in the UAE

The UAE is a federation situated in the southeast of the Arabian Peninsula in Southwest Asia on the Persian Gulf (Figure 2.1). It borders Oman and Saudi Arabia and shares sea borders with Iraq, Kuwait, Bahrain, Qatar and Iran. The UAE is a relatively young country that was established between 1971 and 1972 through the alliance of seven Kingdoms (i.e., Abu Dhabi, Dubai, Sharja, Ajman, Fujairah, Ras al-Khaimah and Umm al-Quwain).

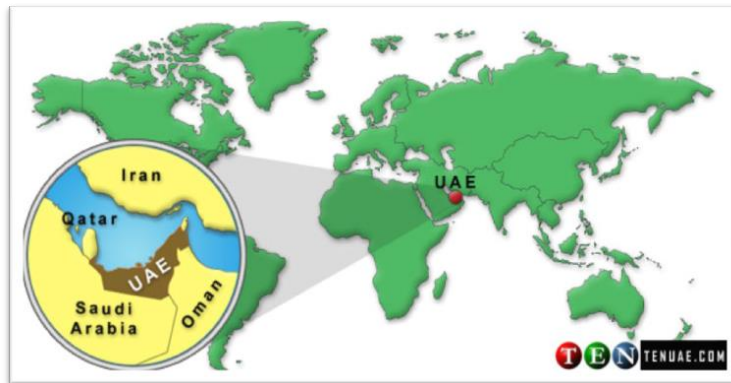


Figure 2.1 Map of the UAE

Before the discovery of oil, people in the UAE led very simple lives; they lived in mud houses and worked in fishing, pearling (i.e., fishing for pearls) and simple trades. Due to revenues from oil in the past four decades, the UAE witnessed rapid economic development resulting in tremendous urbanisation and modernisation of the UAE societies. This historic depth and rapid pace of development brought remarkable benefits to the UAE population. However, early data indicates a substantial increase in CVDs and cardiovascular risk amongst its adult population when compared to neighbouring Arab countries (Mathew, Ahmed et al. 2010). It is believed that this is due to the rapid transformation of the UAE that changed the population's lifestyle and dietary habits from a highly physical active lifestyle with less food and caloric intake to a sedentary lifestyle with more food availability and higher caloric intake. As a result, the UAE today has some of the highest proportions of obese/overweight people in the world, with respectively high rates of chronic disease (Reid 2010). In 2008, data from the Emirates National Diabetes study and screening for risks factors for Coronary Artery Disease in the year 2000 (ENDCAD) was used to determine the prevalence of MetS in the United Arab Emirates. Using the IDF definition, the prevalence of MetS was found to be 40.5%. The

survey also showed that women had a higher prevalence of MetS (45.9%) compared to men (32.9%) and that MetS was significantly associated with increasing age, female gender, family history of diabetes and, less intuitively, rural location (Malik and Razig 2008).

The prevalence of MetS features (e.g., T2DM and obesity) is also significantly high in the UAE. For example, according to the IDF Diabetes Atlas report (IDF 2010) the prevalence of T2DM in the adult population of the UAE (18.7%) is the second highest worldwide after Nauru (30.9%) and is expected to increase to 21.4% by the year 2030. It was also estimated that one in five people living in the UAE between the age of 20 to 79 have T2DM (ICLDC 2007). According to the WHO global database on body mass index, the prevalence of obesity amongst UAE adult nationals was 33.6% (WHO 2000). However, the International Obesity Taskforce/International Association for the Study of Obesity reported the prevalence of obesity in adult women living in the UAE to be 31% compared to 17% in adult men, which makes the UAE the 22nd in the world for obesity prevalence (Global Prevalence of Adult Obesity 2010). Unfortunately, obesity, T2DM and MetS are not restricted to the adult population of the UAE. In the year 2000, a survey conducted in 4,000 school children in the UAE between 6-16 years of age found that 25% were either overweight or obese (Al-Haddad, Al-Nuaimi et al. 2000). In a small study, 44% of young obese children (n=260) living in the UAE were found to have MetS and there was a significant association with a positive family history of obesity, T2DM or hypertension (Eapen, Mabrouk et al. 2010). Although my study did not intend to explore the MetS problem in children living in the UAE, such figures highlight the severity and extent of MetS health problems in the UAE.

In January 2010, the UAE government indicated that the population of the UAE has reached eight million; the vast majority of the population are foreign nationals, and the minority Emirati population was estimated to be one million (UAE Interact 2010). A more detailed examination of the prevalence of the MetS and its features in the UAE revealed such figures to be higher in the local Emirati population of the country, which is commonly attributed to very sedentary patterns of living, along with the widespread consumption of high-fat, high-calorie foods (Musaiger and Radwan 1995; Musaiger 2003; Malik, Bakir et al. 2005). The MetS and other CRFs were, therefore, health issues with a paramount concern to health authorities in the region.

2.4 Strategies of the UAE health care system

Over the last two decades the quality and scope of health care services in the UAE has developed significantly. In 2000, the UAE health care system was ranked 27th worldwide in the first analysis of the world's health care systems report (WHO 2000). The health care services of Abu Dhabi, the capital of the UAE and where this research took place, were regulated, operated and financed by the UAE government through the UAE ministry of health (MOH). However, in 2006, health reform began in Abu Dhabi to improve the health services outcomes within the city. This resulted in the breakdown of the MOH responsibilities and the formation of three independent bodies responsible for regulating, operating and financing the health care services of Abu Dhabi alone. Since then, Abu Dhabi Health Authority (HAAD) and Abu Dhabi health Service Company (SEHA¹) became Abu Dhabi's independent health service regulator and operator, respectively. Through the introduction of a mandatory requirement for health insurance, the National Health Insurance Company (DAMAN²) was established as a third independent body responsible for the financing of the health services of Abu Dhabi. Abu Dhabi health authorities work towards achieving three main goals: quality, accessibility and affordability of health services to all residents of the capital city. Currently, 12 hospitals, 2,644 licensed beds, and more than 40 Ambulatory and Primary Health Care Clinics operate under the health authorities of Abu Dhabi (HAAD 2009).

The following two sections: prevention strategies for MetS and public health awareness campaigns are two examples that describe the efforts made by the health care system to tackle the high prevalence of MetS and its features in the UAE.

2.4.1 Prevention strategies for MetS

Interest in health promotion and disease prevention has increased in the past two decades worldwide. This is due to many factors including the gradual shift from infectious to chronic diseases as the leading cause of deaths (WHO 2009). Evidence from intervention trials indicated the effectiveness of health promotion and intervention programmes in changing health behaviour leading to a reduction in morbidity and mortality (Tengland 2009). In addition, there is compelling

¹ SEHA is Arabic for health

² DAMAN is Arabic for insurance

evidence from randomised controlled trials that T2DM can be substantially reduced in people with MetS by increasing physical activity, diet control and appropriate pharmacological intervention (Norris, Zhang et al. 2005). Health authorities in the UAE are highly aware of the MetS risk in the UAE and preventative measures, as well as public awareness campaigns, have been implemented throughout the country. However, because of the study location, this literature review will describe the prevention strategies and public awareness campaigns organised by the health authorities of Abu Dhabi.

In 2007, MetS was ranked a top health priority in HAAD's list of health priorities for Abu Dhabi's public health strategy (HAAD 2007). In the following year, HAAD launched Abu Dhabi cardiovascular prevention programme WEQAYA³ which included a public screening service for cardiovascular risk using Framingham Risk Score⁴ (Hajat and Harrison 2010; WEQAYA 2010). This prevention programme was inspired by the recent WHO global health risk report which stated that eight easily modifiable risk factors (i.e., alcohol, smoking, elevated blood pressure, obesity, dyslipidaemia, elevated blood glucose, poor diet, and sedentary lifestyle) are responsible for 61% of all global cardiovascular deaths (WHO 2009).

The innovators of WEQAYA were also motivated by the remarkable reduction in cardiovascular risk achieved in Finland using prevention programmes built on Framingham Risk Score (Hajat and Harrison 2010; Vartiainen, Laatikainen et al. 2010). This 35-year long follow-up revealed that an 80% reduction in coronary mortality was due to three main factors: long comprehensive cardiovascular prevention, engagement of the community in the prevention programme and active health promotion campaigns. Thus, organisers of WEQAYA set a plan to identify Abu Dhabi's residents who had a 10% risk of developing CVD and then provided them with the recommended preventative measures. WEQAYA is set to achieve its target through three synchronized stages that include:

1. Determining the CVD burden in Abu Dhabi through screening all the city's residents for risks of developing CVDs (e.g., family history of CVD and MetS features)

³ WEQAYA is Arabic for prevention

⁴ Framingham score is a scoring system of risk factors to predict absolute 10% for coronary heart diseases (CHD) events in people who do not have evidence of vascular diseases.

2. Implementing different intervention strategies to reduce and prevent cardiovascular risk. Both health and non-health sectors, government and private authorities are involved. Strategies to empower patients and increase compliance are included.
3. Continuous review of the effectiveness and cost-effectiveness of the programme

To enable screening for cardiovascular risk factors, a population-level epidemiological database that included notification of deaths, births and diagnosed diseases was created. In addition, the database of the medical insurance e-claims was also integrated. A specialised website linked to WEQAYA was launched to invite more individuals to the screening programme. Visitors to the website can easily access information about WEQAYA and register in the screening programme using their health insurance number. In addition, a mobile text messaging and email service to allow participants easier and faster access to their screening results was launched on October 2010 (WEQAYA 2010).

WEQAYA calls for the collaboration of government, as well as private non-health sectors such as schools, food regulation, urban planning, environment, media, telecom and universities, to engage in facilitating and delivering holistic prevention strategies. Other efforts were also made by HAAD to equip the Abu Dhabi health sector with tools that will facilitate WEQAYA. For example, clinical guidelines for regular screening and prevention of cardiovascular risk were recently developed and made available online for health practitioners and public access (HAAD 2009). HAAD also mandated a continuous medical education (CME) programme for all health staff working in Abu Dhabi. HAAD acknowledges the importance of engaging the public in WEQAYA to create more responsible and empowered patients. Thus, HAAD and other collaborative entities in Abu Dhabi have been sponsoring health promotion campaigns delivered through media, outreach and social networks since 2008 (Hajat and Harrison 2010).

WEQAYA started in April 2008 using the Framingham Risk Score. However, because the Framingham Risk Score lacks family history and central obesity, those two factors were added to the prevention programme. Up to the end of April 2010, a total number of 173,501 adult Emiratis, with a mean age of 35.2 (SD 13.8) years, have been screened for CVDs in Abu Dhabi through WEQAYA. Early data showed high prevalence of central obesity (57%) and around 44% of the people screened were either diabetic or pre-diabetic. This prevention programme plans to continue running for the coming years

and to include non-national residents of Abu Dhabi. Data that reflect clinical outcomes or assess WEQAYA's effectiveness has not been published yet.

2.4.2 Public health awareness campaigns

Despite awareness of MetS being a prediabetes syndrome and a new driving force for a CVD epidemic, health promotion campaigns in the UAE still target individual components of the MetS rather than the whole of the syndrome with the great focus on T2DM and obesity. This section describes in detail two of the public awareness campaigns that are held annually to enhance public awareness of the risks of diabetes, obesity and MetS. It will then present a table that summarises some of the health campaigns that were or will be organised in different locations of the UAE.

2.4.2.1 'Diabetes-Knowledge-Action' campaign

The Imperial College London Diabetes Centre (ICLDC) is a health centre that was established in Abu Dhabi in 2005. It specialises in diabetes treatment, research, training and public health. The establishment of ICLDC came as a response to the high prevalence of diabetes in the UAE. Thus, ICLDC aims to identify factors responsible for the high prevalence of diabetes in the UAE, to provide world-leading diabetes treatment and to prevent the development of diabetes in the first place. The ICLDC together with HAAD, SEHA, MOH, Abu Dhabi tourism authority and the Emirates foundation collaborated in organising and conducting the 'Diabetes-Knowledge-Action' public awareness campaign.

The aim of the 'Diabetes-Knowledge-Action' campaign is to increase awareness of the risk of diabetes, encourage a healthy lifestyle and early screening for T2DM and MetS (ICLDC 2005; Diabetes UAE 2007). The 'Diabetes-Knowledge-action' campaign is composed of five health-advocating activities each of which delivers a health awareness goal and is held annually in Abu Dhabi. Table 2.2 is a photographic illustration of the 'Diabetes-Knowledge-Action' health awareness activities.

Table 2.2 Photographic illustration of the 'Diabetes-Knowledge-Action' campaign

Health awareness activity	Description of activity (Diabetes UAE 2007)
	<p>'I WONDER'</p> <p>These are diabetes information messages that are podcasted online and on television as health adverts or promoted in public outreach campaigns. It provides information about diabetes, diabetes risk, complications, management and the importance of early screening.</p>
	<p>'I COOK HEALTHILY'</p> <p>Is a cookery illustration designed to provide families with information on how to cook healthy. It is usually run inside malls and shopping centres every night during the month of Ramadan.</p>
	<p>'I EAT RIGHT'</p> <p>Are educational programmes that target children and school kids. Through the collaboration with School Health and the Abu Dhabi Education Counsel (ADEC), nutrition education is provided to school students. Targeting school children will help create more informed and health conscious generations in the UAE.</p>
	<p>'I PLAY SPORTS'</p> <p>Is a Ramadan football tournament that is annually held and run over five nights. Around 16 local and affiliated football teams compete in this sports event. It advocates for group sports and the importance of an active daily life.</p>
	<p>'WALK UAE'</p> <p>Is a walkathon that is held annually in the month of November in unison with the world diabetes day. It aims at drawing public attention to the importance of incorporating exercise into their daily lives. Family games, activities and musical concerts are included to create a carnival like atmosphere and to attract more public attendance.</p>

2.4.2.2 'Your Health Matters' campaign

'Your Health Matters' campaign is a Gulf Cooperation Council (GCC)⁵ wide public health awareness campaign against diabetes, abdominal obesity and MetS. It was launched in the UAE through the MOH on May 2007. The campaign is organised and sponsored by Sanofi-aventis pharmaceutical company, the WHO, the Gulf Heart Association, Emirates Cardiac Society and the MOH. It aims at enhancing both professional and public awareness of the risks of the MetS (Ministry of Health 2007).

Outreach campaigns and free medical screening for MetS features are provided during certain notified weekdays and weekends in malls and shopping centres throughout the UAE (Ministry of Health 2007). The 'Your Health Matters' campaign includes a Continuous Medical Education (CME) programme on the risk of MetS for physicians across the GCC region and is provided via a live transmission from Harvard University.

Table 2.3 presents a summary of all public awareness campaigns organised and sponsored by MOH and HAAD and launched at different locations in the UAE since 2000 (Ministry of Health 2011). Although these campaigns specifically target diabetes or obesity, they also screen for and educate about other MetS features.

⁵ The Gulf Cooperation Council (GCC) is a political and economic union created in 1981 involving the six Arab states of the Persian Gulf: Saudi Arabia, Bahrain, Oman, Qatar, Kuwait and the UAE.

Table 2.3 Summary of the public awareness campaigns in the UAE for MetS

Campaign title	Target	Activities	Location	Sponsors	Date
The Right Beginning	MetS in children and young adults	Free screening for MetS features Health education to children and parents	Dubai	MOH	2008
The Fat Truth	Obese children and adolescents	School children and parents Health education Screening for MetS features	UAE	MOH Unicef	2009
No to Obesity	Teenage obesity	Teenagers weighing ≥ 90 kg Health education Weight reduction programmes	UAE	MOH	2010
World Diabetes Bus	Diabetes	Free screening Health education	UAE	MOH	2010
Your Health Matters	MetS	CME programmes to physicians Health awareness programmes about the risk of MetS	Dubai	MOH	Quarterly
Family health festival	MetS	Free screening Health education	Dubai	MOH	Annually
Beat Diabetes Walkathon	Diabetes	Health education Walkathon	Dubai	MOH	Annually
The Diabetes Campaign	Diabetes	Free screening for diabetes Free condition assessment Health education	Dubai	MOH	Annually
Diabetes-Knowledge-Action	Diabetes	Free screening for diabetes Health education, cooking lessons Exercise and sports activities School education about health diet	Abu Dhabi	ICLDC HAAD SEHA MOH	Annually

2.4.3 Assessing needs for prevention management

To our knowledge, data that describes the impact of health awareness campaigns on the prevalence of diabetes, obesity or the MetS in the UAE have not been published yet. It was anticipated that clinical outcomes of WEQAYA would be available by December 2010. However, such data was not available at the time of preparing this thesis. Strategies used in prevention and public awareness campaigns in the UAE are based on interventions designed to cater for western communities such as Finland and the United States of America (see section 2.4.1). However, such programmes might not be directly transferable to countries of different cultural and religious backgrounds such as the UAE. Therefore, data that reflect the impact of such programmes on clinical outcomes will help assess

effectiveness or identify gaps and areas of improvement if similar programmes are to be launched in the future. Literature that describes public perceptions of health campaigns in the UAE were not available. Lay perception of how MetS can be prevented has important implications for the design, delivery and uptake of prevention and public awareness programmes (Petrie, Weinman et al. 1996; Narayan, Imperatore et al. 2002). It will also illustrate whether the health care system of the UAE is culturally situated and able to cater for the different needs of all residents in the region.

The WAKEUP toolkit was a toolkit of informational material for patients with prediabetes, which health care providers developed to improve the practice system for the management of MetS (Evans, Greaves et al. 2007). The information toolkit was designed through assessing both patient and health care professionals' needs for the management of prediabetes. An action research approach was best suited for the development of the educational toolkit, as it enabled the development process to be tailored to the views and needs of both health professionals and patients with prediabetes. In the needs assessment phase both patients and health professionals admitted they lacked knowledge about prediabetes syndrome, nature, causes, risk and management needs. Health professionals were highly concerned with the best means of communicating information to patients and triggering behaviour change. Although health professionals praised the idea of group sessions that included family members, patients were not as enthusiastic. Interestingly, patients felt that stronger words should be used to convey and emphasise the seriousness of the condition. They also felt that detailed information and follow-up appointments give patients an impression that health professionals consider MetS to be a serious condition. The final toolkit incorporated all feedback from patients and health professionals. Details about the availability of psychological support for patients were also included.

One of the limitations of the study was lack of involvement of patients of different ethnicities in the needs assessment phase. This might have elicited more information about educational needs specific to that group of patients. The impact of the WAKEUP toolkit on patients' health behaviour, prevention of diabetes or CVDs is yet to be assessed and identified. However, the main lesson learned from the WAKEUP toolkit, is the importance of involving users of health education services. The process through which the WAKEUP toolkit was developed enabled: (i) the identification of health professionals and patients attitudes towards prediabetes care, (ii) changing the practice system to optimally manage the condition, (iii) develop education material that addressed patient

and health professionals' information needs (Evans, Greaves et al. 2007). Similarly, to inform the development of effective health promotion strategies that encompass public awareness campaigns and educational interventions for MetS in the UAE, health authorities need to ascertain individual experiences with the current health care system, their appraisal of their health condition and the experience of the health professionals in the region.

The following section presents studies that explored the health needs of patients living in the UAE and the impact of the UAE contextual setting on patients' health attitudes.

2.5 The impact of the UAE culture on patients' health behaviour

To patients, illness is not merely a pathological feature. Illness is expressed through patients' social and cultural location and in the way they live and experience life. Thus, there are alternative ways in which patients understand and respond to their health condition (Helman 2007). Many social researchers in health have examined the health behaviour of patients from different cultural backgrounds. This is mainly due to the realisation of the impact of culture on patients' lay health beliefs (Helman 2007). Culture is defined as the day-to-day activities and practices of given community members as they develop their interpretation of different issues in their lives including health and illness (Dutta 2008). Culture, in that sense, influences how people think and understand their health. The UAE has a very rich culture that is composed of its history, traditions, religious beliefs, language and many other elements that are vital to the human condition. It is also composed of the cultures of expatriates that live and work in the UAE interacting and influencing one another. Therefore, culture provides the local context within which health meanings are constituted and negotiated in the UAE. In this study, it was important to explore how the UAE culture influences people's perceptions and interpretations of their health condition and how it influences the choices they make when it comes to living with or managing MetS.

Five qualitative studies that investigated the impact of the UAE context on patients' health behaviour were found during the literature search (Ypinazar and Margolis 2006; Winslow and Honein 2007; Ali, Bernsen et al. 2009; Berger and Peerson 2009; Ali, Baynouna et al. 2010). These studies identified two main paradigms influencing patients' perceptions of health and illness: the role of religion and

the role of social norms. The following sections describe the influence of these two paradigms on patients' health behaviour.

2.5.1 The role of religion

Religion seems to exert a powerful influence on patients' perceptions of health and illness and is therefore considered one of the main influencing factors in individuals' health beliefs (McAuley, Pecchioni et al. 2000). Religious beliefs were found to be common amongst patients seeking health care, even among those who identified themselves as spiritual, but not religious (Koenig, George et al. 2004). Religion was also found to influence health care and medical decision-making, such as blood transfusion and organ donation (McDonald and Wren 1967; Rady and Verheijde 2009).

The UAE is a developed Muslim country with Islam as its official religion. Although the UAE is perceived as one of the most liberal countries of the region, the influence of Islam is reflected in every sphere of the seven emirates of the UAE and dominates all aspects of life. In the year 2007, the number of mosques in the whole of the UAE reached 4,818 with 926 mosques in Abu Dhabi alone. Abu Dhabi also has the Grand Zayed Mosque, which is the fourth largest mosque in the world (Awqaf 2010). The call for the Muslim prayer is heard five times a day from all mosques' minarets all over the city. Shopping centres, banks, hospitals, schools, beaches and other public places have specially designed washing and praying areas open to the public for worship whenever prayer time commences. It is very common to see men arrange themselves into multiple rows of straight lines in public gardens when prayer time is announced moving simultaneously with the loudly recited prayer instructions. The dress code of employees and students is often designed to preserve modesty and to respect the Islamic identity of the country. All governmental establishments segregate men from women and ensure a female employee is always available to attend to female customers. In general, the Islamic identity of the UAE is strongly evident in all aspects of people's lives. Therefore, it stands to reason that Islamic teachings in the UAE influence patients' health behaviour and many of the choices they make when managing their health.

Muslims believe that God is the creator of the universe and all creatures. They believe that their bodies are gifts from God that they should protect and care for. Muslims show gratitude to God for

their good health through worship and protecting the self from harm. The Muslims' prophet Mohammed supported health promotion and disease prevention and stressed the importance of seeking health care when ill. In his sermons and lectures, he clearly stated to his followers that God instructs them to take care of their health. Thus, Muslims consider prevention measures and seeking medication when ill as a religious obligation that all Muslims should follow (Rahman 1998). In available literature, religion was sometimes reported as a barrier to changing health behaviour when describing patients' beliefs in the predetermined fate and fatalism (McAuley, Pecchioni et al. 2000; Ypinazar and Margolis 2006; Grace, Begum et al. 2008; Shuval, Weissblueth et al. 2008). Other studies described the positive role of religion in enhancing compliance, patients empowerment and acceptance of illness (Koenig 2004; Winslow and Honein 2007; Abdoli, Ashktorab et al. 2008). The following two sections present these two viewpoints.

2.5.1.1 Fatalism

Fatalism is defined as an individual's belief that events are predetermined and that negative outcomes might occur to one or others despite efforts for personal control and behavioural change (Keeley, Wright et al. 2009). The exact relation between fatalism and health behaviour is unclear and encompasses three main dimensions: (i) patients' lack of internal control over external events that might impact their health, (ii) belief in destiny, luck and predetermined fate (i.e., role of God in health and illness) and (iii) feelings of powerlessness, despair and meaninglessness (Keeley, Wright et al. 2009). Fatalism has generated great interest in health research because patients' fatalistic attitudes usually correlate with poor adherence to a treatment plan (Powe and Finnie 2003). Thus, there has been increasing interest in health promotions and intervention programmes to rectify patients' fatalistic attitudes towards their health (Davison, Frankel et al. 1992).

Ypinazar and Margolis (2006) examined health beliefs of 10 elderly Emirati patients aged between 65 to 76 years. They focused on the impact of Islam on the way elderly Emiratis viewed their health. Their aim was to elicit health needs of elderly Muslim Arabian Gulf Arabs and provide an insight on how such patients think and interpret their condition and react towards their treatment. Results showed that the role of Islam on patients' health beliefs was an overarching theme that shaped patients' perceptions of health and illness. Patients strongly believed that health and illness was in

God's hands. However, they also perceived seeking treatment and protecting self from harm as a religious obligation instructed in the Qur'an⁶. They also agreed that a physician's role was to provide treatment while God's role was to grant cure. When asked about the causes of illness participants' answers varied but most attributed illnesses to pathogens and an unhealthy lifestyle. The study authors admitted that participants found difficulty in understanding questions about causes of illness, which could explain their varied answers. However, study authors concluded that participant narratives illustrated a strong belief in God's control over illness and health (Ypinazar and Margolis 2006). The study reflected on the views of elderly Emiratis who were mostly illiterate. Thus, younger and more educated Emiratis might not share the perceptions identified in Ypinazar and Margolis' study. However, such views are yet to be explored in future qualitative studies that investigate the impact of religion on Emiratis' health behaviour.

Studies conducted in other countries but with participants of a similar religious background, also reported evidence of fatalism in participants' health attitudes. Through focus group interviews, one study aimed at exploring the role of culture, environment and religion on the promotion of physical activities in 45 young Arab Israelis. Participants perceived religion as a facilitator because Muslim scripts encouraged engaging in physical activity and sports. However, some religious participants expressed a fatalistic attitude towards health. In their perception, their inability to control death abolished the value of engaging in physical activity and a healthy lifestyle (Shuval, Weissbluth et al. 2008).

The impact of religion was also explored in participants of other faiths. For example, McAuley et al (2000) examined the role of religion in the perception of elderly white and black Christian Americans of health and illness. Participants gave God many attributes that defined his role in health and illness. Four of these attributes were: (i) the arbiter who punishes sinners with illness, (ii) the guardian who protects believers from illness, (iii) the healer and miracle maker who works with doctors to promote cure and (iv) the evaluator who tests individuals' faith or guides them back to faith through illness (McAuley, Pecchioni et al. 2000).

Much of the available literature has hypothesised that fatalism is a cultural belief that hinders behavioural change. This has sparked the interest of some researchers to examine the impact of

⁶ Qur'an is the holy book for all Muslims

fatalism on patients' health attitudes. For example, the impact of fatalism on screening for breast cancer was explored with 25 Dominican women through in-depth interviews. The aim of the study was to investigate whether fatalism among Latinas was deterrent to breast cancer screening. Results showed overarching positive attitudes towards screening for breast cancer as a preventative measure. Participants perceived multiple factors to be in control of breast cancer that ranged from internal factors (e.g., personal health behaviour) to external factors (e.g., the will of God). Despite participants' belief in predetermined fate, they actively participated in screening for breast cancer and believed that early diagnosis increases the chance of successful treatment (Florez, Aguirre et al. 2009).

Some aspects of fatalistic belief engendered a sense of responsibility towards one's health. One study explored, through focus groups, the perceptions of 51 Arab Israeli women of breast and cervical cancer (Azaiza and Cohen 2008). The results showed that participants viewed cancer in one of three ways: (i) a predetermined fate from God, (ii) a punishment from God for committing sins and (iii) a test from God to those he loves for patience. However, perceiving cancer as a test was associated with taking responsibility for managing their illnesses and taking care of their health (Azaiza and Cohen 2008).

The attitude of health professionals towards religious patients were also affected by the notion of fatalism. In their perception, patients who believed in fatalism and the predetermined fate were less willing to change their health behaviour. Grace et al (2008) explored the perceptions of British Bangladeshis on the prevention of diabetes. Seventeen focus groups were conducted with 80 British Bangladeshis at risk of developing diabetes, 20 health professionals and 29 Muslim religious leaders. The non-health professional participants perceived implementing a healthy lifestyle and seeking knowledge about diabetes as a religious obligation with which they should comply. On the other hand, physicians perceived religious patients to be fatalistic and thus neglectful towards their health and treatment plan. The preconceived notion about the impact of fatalism on patients' health attitudes discouraged physicians from discussing lifestyle interventions with British Bangladeshi patients. According to the study authors, physicians' poor cultural and religious competence was partially responsible for their misinterpretation of Bangladeshi's belief in the predetermined fate particularly 'the will of God' (Grace, Begum et al. 2008).

Keeley et al (2009) argued that fatalism is a socially situated phenomenon where lay individuals use fatalistic talk to serve a specific function and does not always clash with the efficacy of health behaviour. In their study, they examined how 96 participants from various social backgrounds, used fatalistic talk in discussing health and illness during in-depth interviews. They found that participants' statements endorsing positive health behaviour always accompanied their fatalistic talk. Upon analysis, they found that fatalistic talk was not merely a declaration of participants' inability to control their health, rather there were four reasons why fatalistic expressions were used:

1. **Face saving:** where fatalistic talk was used to avoid self-blame and to rebut responsibility for acquiring an illness through unhealthy behaviour.
2. **Stress relief:** where accepting illness liberated participants from overstressing and worrying about their illness and future outcomes. This group's strategy included praying and submitting to God's will in taking care of their health and illness. However, they still acknowledged their limited role in controlling their health through behavioural change.
3. **Uncertainty management:** Participants expressed uncertainty and inability in finding explanations or causes to illness despite changing behaviour or leading a healthy lifestyle. Fatalistic talk was a means of expressing realistic understanding that there are issues outside an individual's control that can result in illness, such as lung cancer in people who never smoked cigarettes.
4. **Sense making:** this was observed in participants whose previous health behaviour contributed to their current health state, such as ex-smokers. In their perception, their previous unhealthy attitude caused irreversible damage that could not have been prevented by rectified behaviour.

These findings suggest that fatalistic talk serves to negotiate power-differences, balance priorities, express the limited power to control one's health and highlight the complexity of illness prevention. The findings also stress the fact that fatalistic talk is highly context-specific, which suggests that changing health behaviour may require rectifying contexts that triggered fatalistic talk in the first place rather than focusing entirely on counteracting patients' fatalistic beliefs (Keeley, Wright et al. 2009).

Fatalistic talk was mostly used as an indication of patients fatalism in studies that explored the impact of religion on health behaviour (McAuley, Pecchioni et al. 2000; Ypinazar and Margolis 2006; Azaiza and Cohen 2008; Shuval, Weissbluth et al. 2008). However, factors that triggered participants' fatalistic talk were not traced or identified. In addition, participants were able to list biomedical, pathological and behavioural factors as causes of illnesses (Ypinazar and Margolis 2006; Azaiza and Cohen 2008). Thus, quotes illustrating participants' belief in the predetermined fate or the role of God in health and illness may have been used to attain stress relief, sense making or uncertainty management (Keeley, Wright et al. 2009).

These studies did not explore the impact of fatalism on patients' compliance and adherence to their treatment plans. In addition, study authors did not report evidence of patients having a neglectful attitude towards their health because of their religious beliefs or fatalism. Such investigations will enable identification of the actual impact of fatalism on patients' health behaviour. Florez et al (2009) demonstrated in their study that participants' fatalism and belief in destiny did not deter screening for breast cancer. Similarly, Azaiza and Cohen (2008) found that participants' belief that illness is a test from God triggered a sense of responsibility towards their health. This suggests that fatalistic beliefs might not always antagonise behavioural change. Keeley et al argues that if fatalism is a patient's only way to reach acceptance of illness and stress then discouraging fatalism might further complicate disease management.

2.5.1.2 The positive role of religion

The relationship between religion, spirituality and both mental and physical health is supported by growing scientific evidence. Around 1,200 studies examined the relationship between some aspects of religious belief and some indicators of health. Most of these studies found a positive association between religion and physical and mental health (Koenig, McCullough et al. 2001). Religious beliefs were also found to be useful in boosting social support, abstaining from self-harming behaviour (e.g., substance abuse and alcoholism) and enhancing patients' ability to cope with their illnesses (Koenig 2004).

In the UAE, the positive role of religion in health was elicited in a qualitative study that explored women's health needs. Winslow and Honein (2007) conducted six focus groups with 60 women between the ages of 16 and 54 years. The study did not report a fatalistic attitude towards health influenced by the participants' religious beliefs. Rather, Islam was perceived as a bridge through which participants gained psychological and physical comfort. Religion, according to the study participants, facilitated health and treatment through three routes: (i) abiding to Islamic teachings prevents Muslims from engaging in harmful practices such as drinking alcohol; (ii) reading the Qur'an and praying when distressed leads to psychological comfort; and (iii) Qur'an has healing abilities (some women talked about seeking religious healers to recite Qur'an scripts for them)

Despite reporting the positive role of Islam in health, participants did not substitute religious practices for conventional medicine. Women in the study described gaps in their health facilities and reported needs to improve health services such as the need for more health education and community centres. In conjunction with the health care system, religion and religious practices helped achieve three main needs: physiological relief, physical healing and prevention of future illness (Winslow and Honein 2007).

British Bangladeshis and religious leaders that participated in Grace et al's study (2008) viewed religion as a facilitator and promoter of health. In their perception Islamic teachings promoted health through: (i) instructing individuals to protect the body from harm and illness through leading a healthy lifestyle, (ii) encouraging healthy diet and physical activity, and (iii) encouraging knowledge seeking, which participants felt they could apply to health education and diabetes awareness (Grace, Begum et al. 2008).

A qualitative study conducted in Iran explored the process of empowerment in 16 diabetic Iranian patients aged between 21 and 73 years. Results showed that the empowerment process was enhanced by accepting diabetes as God's will. The study followed the process through which diabetic patients achieved empowerment and took responsibility for their own health. Data analysis revealed that participants' belief that illness is in God's hands enabled them to accept the condition and endure it. Participants also perceived their bodies as a divine gift from God, which generated a sense of responsibility towards their bodies and an obligation to protect it from harm and illness through

complying with the treatment plan. The study authors concluded that religion motivated patients to take control and to be in charge of their own health (Abdoli, Ashktorab et al. 2008).

Around 60 studies have examined the role of religion in helping patients cope with a number of chronic illnesses such as asthma, HIV/AIDS, kidney diseases, heart disease and diabetes. Participants in these studies reported that religion provided them with meaning, a sense of relief and optimism when dealing with their illnesses; thus, religion enables patients to cope with and accept their health conditions (Koenig, McCullough et al. 2001). Such perceptions were mainly popular in patients who consider themselves religious, women, elderly patients and patients of ethnic minorities (Koenig 2004).

Religion was also found to be linked to improved health behaviour (Harrigan 2009). Data from the International Health Interview Survey was analysed to determine the health habits of people who pray for their health. The results of the survey showed that participants who prayed for their health had higher rates of clinic visits, flu shots, participation in physical activity, support groups, relaxing techniques and meditation than those who did not pray for their health. Such results suggested a link between praying and health promotion behaviour (Harrigan 2009). However, whether there is a cause and effect relationship between prayer and health promotion behaviour is yet to be identified.

There is also growing evidence of the role of religion in the physical improvement of health. A review of 35 studies that examined the relationship between religious beliefs and health-related physiological processes found that both Judeo-Christian and Eastern religious practices were associated with reduced blood pressure and improved immune function (Seeman, Dubin et al. 2003). Religious beliefs were also associated with lower rates of cancer, better cardiac health and outcomes, improved blood pressure, lower cholesterol levels, better health behaviour (Koenig 2004), fewer risk factors to breast cancer (Gillum and Williams 2009) and even lower rates of death (Gillum, King et al. 2008).

The role of religion on blood pressure was explored in hypertensive Thai patients living in Southern California. In-depth interviews were conducted with 15 participants between the age of 46 and 93 years who belonged to two religious faiths: Christianity and Buddhism. Factors affecting blood pressure control, including the role of religion, were also examined to compare the views of patients

who were able to manage their blood pressure with those who did not. Participants with better blood pressure control claimed that religion facilitated stress management and a healthy lifestyle. According to participants, their religious beliefs helped to generate a sense of peace that enabled them to think clearly and deal with issues efficiently. Religion trained participants to attain calmness and tranquillity. Christian participants' dedication to healthy lifestyles was engendered by their belief that the body is a temple of God. On the other hand, Buddhist participants were driven by their belief in the Buddhist middle path and the importance of making virtues (Naewbood, Sorajjakool et al. 2010).

The studies presented in this section illustrate how religion is perceived as a facilitator to health care. Religious teachings motivated individuals to engage in health promotion activities, comply with the treatment plans and maintain healthy lifestyles. Participants also attained calmness, tranquillity, and acceptance of their illness through religion and spirituality that might have indirectly affected their clinical outcomes. The biological impact of religion and spirituality on health is yet to be examined in research. Meanwhile, health care professionals may use people's religion and spirituality in advocating healthy lifestyles and to encourage patients to comply with their treatment plan. They can also help patients identify stress factors in their lives and support their engagement in religious practices to reduce stress levels.

2.5.2 The role of social norms

Social norms are customary rules or cues of behaviour within a society that coordinate the interactions of that social group with others. Social norms are theoretically hypothesised to influence health-related attitudes such as physical activity and diet and are believed to be the most powerful forms of social control over human behaviour (Berkman and Glass 2000). The idea that social norms are important determinants of healthy behaviours is widely accepted and has been incorporated into a number of theories of health behaviour, such as the Theory of Planned Behaviour and Social Cognitive Theory (Conner and Norman 2008). Social norms can sometimes raise challenges to health care and behavioural change. Prevention strategies, lifestyle and to some extent pharmaceutical interventions might fail to achieve therapy goals if social norms are not considered or the appropriate adaptations are not made. Arabic traditions and social norms in countries of the Middle

East are derivatives of Islamic teachings. However, they are sometimes interchangeable and people find them hard to differentiate. Social norms might sometimes divert from what Islamic teachings instruct, however they are sometimes more popular and practiced in a community than the original Islamic teachings. Social norms might differ in nature and intensity of practice from one Muslim/Arabic country to the other depending on the country’s cultural context (Helman 2007; Dutta 2008). Despite the modernisation of the Emirati society and the cultural exchange with neighbouring non-Muslim countries, Arabic traditions and social norms are highly manifested and influential in people’s everyday life. Most of the UAE social norms revolve around reserving modesty both in the way people dress and interact with one another. For example, men wear the *dishdasha* or *kandura*, which is a white full-length shirt-dress together with a head cloth. Women, on the other hand, wear the black *abaya*, which is a long black robe that covers their normal clothes with a black headscarf in public (Table 2.4).

Table 2.4 Photographic illustration of Emirati traditional clothes

Dress	Description
	<ul style="list-style-type: none">▪ The traditional Emirati dress for both men and women.▪ Women wear black robes ‘<i>Abaya</i>’ to cover their casual clothes worn underneath. The head is also covered with a black scarf ‘<i>Shela</i>.’▪ Men dress in a white ankle-length shirt called <i>dishdasha</i> or <i>kandora</i>. The head is covered with a white and sometimes red cloth and tied with a black headband.▪ Many residents in the UAE including Emiratis and other Arab nationalities prefer to dress traditionally.
	<ul style="list-style-type: none">▪ Some women prefer to wear black veils ‘<i>niqab</i>’ to cover their faces.▪ The veil is not a traditional way of dressing, but in recent years it has become popular amongst Emirati women.▪ The veil is not enforced on women by the Emirati law, but some women wear it for religious reasons or as a way of obscuring identity when in public.

People in the UAE, like many other Middle Eastern countries, take great pride in displays of hospitality. When visited by guests they will serve lavish choice of expensive delicacies in abundance

and to refuse such hospitality when offered can sometimes cause offense to the host. Family and family values are paramount in the UAE cultural system. Extended families living within the same neighbourhood and sometimes within one large house are very common in the UAE. Hence, protecting family honour and name is a high priority. Family members strive to protect family names and reputation by living up to society's expectations and abiding by the rules of the Emirati community (Abu Dhabi Tourism Authority 2010).

Recently published studies have shown that some of the UAE's social norms were found to hinder behavioural change, especially when attempting to implement lifestyle interventions, mainly exercise (Al-Kaabi, Al-Maskari et al. 2009; Berger and Peerson 2009; Ali, Baynouna et al. 2010). For example Ali et al (2010) examined barriers and facilitators to weight management in Emirati women. Focus groups were conducted with 75 Emirati women between 20 and 60 years of age. All participants were at risk of developing T2DM. Data analysis revealed that a number of social, personal and environmental factors hindered physical activity and weight management. Women reported socio-cultural norms that restrict outdoor exercising like walking in public gardens. Some of the participants' husbands or fathers discouraged outdoor exercise and found it socially unacceptable. Participants' suggestions on means of enhancing engagement in exercise included the establishment of culturally sensitive exercise facilities. These facilities should be: (i) women only, (ii) allow the use of traditional attires during exercise, (iii) restrict the use of mobile phones that contain cameras, and (iv) free of security cameras. Some suggested creating women-only walking tracks to facilitate outdoor exercising while abiding by societal rule. Participants found maintaining a diet regimen challenging because of family and social gatherings that mandate joining others during meals. Findings from this research support the importance of designing interventions that encompass interpersonal, organisational, community and public policy dimensions. Thus creating a culturally sensitive environment that facilitates the implementation of lifestyle interventions (Ali, Baynouna et al. 2010).

Berger and Peerson (2009) investigated the relationship between physical activity and the social setting of young Muslim Emirati women in the UAE. This was a participatory action research that included in-depth interviews and focus groups with 15 female students in one of the UAE colleges between 18 and 27 years old. Participants' attitudes toward health promotion initiatives and swimming classes were documented and followed by interviews to further explore observations.

None of the participants ever joined an exercise facility or exercised regularly before the study. Participants were reluctant to join in swimming classes or any other exercise programme that was advocated. Participants stated that they preferred to swim fully clothed. The study authors concluded that compared with men, women in the UAE are faced with many religious and cultural barriers to engaging in exercise and physical activity (Berger and Peerson 2009).

A cross-sectional, self-reported survey was designed to assess physical activity practice in a group of T2DM patients living in the UAE (Al-Kaabi, Al-Maskari et al. 2009). The results showed that only 3% of the study sample (n=390) reported physical activity levels that meet the recommended guidelines. Cultural reasons were reported to be the third most limiting factor to physical activity (29.2%) after lack of time (29.7%) and coexisting diseases (32.1%). The study authors suggested that cultural factors specific to women rendered recommended physical activity difficult to achieve and maintain. Factors such as the limited number of women-only health clubs, traditional clothes that obscured weight and hindered movement were among the culturally related factors that influenced physical activity in the study sample (Al-Kaabi, Al-Maskari et al. 2009).

Acknowledging social norms, in the form of Islamic and/or old Arabic traditions, were perceived to be vital in the success of lifestyle intervention by Muslim patients living in western societies. Participants in Grace et al's study (2008) found walking more acceptable than other exercises because it retained modesty. Another study that explored the attitude of British Asian overweight women towards exercise, found that walking slowly was an appealing form of workout compared to running or vigorous activity. Participants believed that it was not acceptable for women to walk fast in public (Khanam and Costarelli 2008). In the study by Shuval et al (2008) study participants felt men were more active than women because of conservative social norms. Women participants could not exercise or power-walk outdoors without being accompanied by a male family member. Women were sometimes subject to verbal abuse from the community when attempting to exercise outdoors. In such cases, women were inclined to power-walk next to Jewish towns away from the their Arab communities (Shuval, Weissblueth et al. 2008).

Despite the limited number of studies that examined the impact of the socio-cultural context in the UAE, other studies conducted on participants of similar religious backgrounds confirmed the strong role social norms play in altering physical interventions and behavioural change. One would assume

that Muslims or Arabs living in western or non-Muslim countries would have a less socially imposed restriction to lifestyle interventions; however data presented in this section suggest otherwise (Khanam and Costarelli 2008; Ludwig, Cox et al. 2011). Data that describe the impact of the socio-cultural context of communities is useful when designing health promotion and prevention campaigns or lifestyle interventions. Most of the data available illustrated the influence of social norms on behavioural change of women with great focus on barriers to exercise and physical activity. Exploring the impact of social norms on men, as well as health professionals, and with a broader focus that includes other aspects of management is equally important. The literature identified portrayed negative impacts of social norms. Thus, it would be interesting to see if social norms that enhance management and behavioural change exist and whether such norms can be utilised to help improve patients' health behaviour and clinical outcomes.

2.6 Health beliefs and behaviour

Health beliefs are individuals' ways of understanding their bodies and making sense of what is going on within them. People's health beliefs affect the way in which they act towards their health, treatment plan, health services and even health education messages. Health behaviour is defined as an action that people take or do not take in order to prevent or identify diseases or improve their health condition (Conner and Norman 2008). Health behaviours have been widely studied and have been shown to vary among individuals according to a number of factors such as level of education, socioeconomic background, age, gender and ethnicity. A number of models were developed to analyse patients' beliefs, attitudes, and behaviours with regard to health and thus be able to predict the likelihood of change in any of these health behaviours (Conner and Norman 2008). This study was not built on any of the existing health behaviour models and did not use any of these existing theories to build a data analysis framework. However, it was important to be aware of these theories during the preparation process of this study. Therefore, this section describes in brief some these health behaviour models or theories.

2.6.1 The health belief model (HBM)

The HBM is a health specific social cognition model and was originally developed to explain why people fail to participate in disease prevention programmes or screening tests (Rosenstock 1974). The original model proposed that the likelihood of individuals engaging in a particular behaviour (e.g., taking medications) was a function of their beliefs about the *perceived threat* of the disease and an evaluation of the *risk/benefit* of the recommended course of action. In turn, perceived threats included two distinct dimensions: perceived *seriousness or severity* of the threat and the individual's perceived *susceptibility* to it. Becker and Maiman (1975) further modified the model by incorporating *cues to action*, which they argued was a necessary component to trigger the behaviour such as symptoms, social influence and health education campaigns. Furthermore, an individual's health motivation was incorporated in later versions of the model (Becker, Maiman et al. 1977; Horne and Weinman 1998).

Although several studies have demonstrated the value of the HBM in predicting adherence to medication, there have been several criticisms of the model (Horne and Weinman 1998; Abraham and Sheeran 2005). The HBM assumes that good health is always praised by individuals and is, therefore, the aim of a behavioural change. Conversely, some individuals perceive illness as way of escaping social responsibility and gaining sympathy from family, friends and society. In addition, HBM also assumes a variety of triggers to behaviour change; however, behaviour change might not respond to triggers or might be initiated without an existing or apparent factor. The HBM simplifies health-related cognitions into broad constructs such as 'barriers' and 'benefits' without specifying the beliefs underlying these constructs and implying that behaviour is a direct result of cognitions. The model also does not incorporate social factors and fails to include an intention stage, which has been found by many researchers to mediate between cognitions and behaviour. The HBM assumes that people are rational actors and driven by their conscious perceptions of the world. This may falsely suggest that health behaviours can always be understood as being under an individual's control, rather than being determined by a combination of incidental reality and an individual's habits, emotions, unconscious and irrational reactions to the external world. In addition, the definitions of the main constructs of the model were left open to debate, which led to large inconsistencies in the conceptualisation and operationalisation of the model across different studies.

2.6.2 Theory of reasoned action/Theory of planned behaviour (TRA/TPB)

The theory of reasoned action was first developed by Fishbein and Ajzen in 1975. According to this theory, behaviour is mainly dependent on the individual's intention to engage in that behaviour. Intention, in turn, is determined by *attitudes* towards the behaviour and *subjective norms* concerning the behaviour (Fishbein and Ajzen 1975). Attitude towards the behaviour is a function of the individual's beliefs about the likely outcome (e.g., 'taking my medication will control my blood pressure') and the perceived value of the outcome (e.g., 'keeping my blood pressure under control is important to me'). Subjective norms are a function of an individual's perceptions of others beliefs about the behaviour (e.g., 'my family want me to take my medications') and the motivation to comply with these beliefs (e.g., 'I wish to please my family by taking my medications'). The theory was later modified and re-named the theory of planned behaviour (TPB) after incorporating another predictor of behaviour, which is the *perceived behavioural control (PBC)* (Ajzen 1991). This refers to the extent to which one believes he/she has control over performing the behaviour, or the ease or difficulty of performing the behaviour. In the TPB, attitudes, subjective norms and perceived behavioural control all indirectly influence behaviour through their effect on intentions. However, PBC can also influence behaviour directly.

In summary, the theory of planned behaviour assumes that the more positive people's attitudes and subjective norms regarding the behaviour, and the greater their perceived behavioural control, the stronger their intentions to perform the behaviour. In addition, the stronger people's intentions are, and the greater their perceived behavioural control is, the more likely it is that they will perform that behaviour. Many studies have used the theory of reasoned action/planned behaviour to predict adherence to medication. Studies have proven that components of the theory were useful in predicting adherence to medication prescribed for urinary tract infections (Ried and Christensen 1988), malaria (Abraham, Clift et al. 1999), bipolar affective disorders (Cochran and Gitlin 1988) and hypertension (Miller, Wikoff et al. 1992). Although TRA/TPB has the advantage of incorporating an intention stage between behaviour and cognitions and accounting for societal influence in predicting behaviour, it has been faced with many criticisms. One of the major criticisms is that the theory can account only for rational behaviours and fails to explain non-cognitive irrational behaviours (Conner and Sparks 2005). In addition, the theory does not incorporate the influence of past behaviour on

future behaviour, a predictor that has been shown to largely impact the performance of behaviour (Conner and Armitage 1998).

2.6.3 Self-efficacy (SE)

In 1977, Albert Bandura introduced the concept of perceived 'self-efficacy' in his social cognitive theory denoting an individual's belief that he/she is able to perform a particular behaviour that will lead to a desired outcome (Bandura 1977). In this way, LC refers to one's beliefs about the degree of control one has over behaviour, whereas SE refers to one's confidence in the ability to perform that behaviour (Horne and Weinman 1998). Another principal component of the social cognitive theory of Bandura is 'outcome efficacy', which refers to one's belief that his/her action will lead to a particular consequence. Bandura's theory suggests that both self-efficacy and outcome-efficacy beliefs are important in modifying health behaviours, such that people with high self-efficacy and high outcome-efficacy are more likely to perform health-related behaviours. For example, patients are more likely to take their medications if they believe that they are capable of doing that and that this will lead to the desired outcome (e.g., good health).

Many studies have utilised the concepts of self-efficacy and/or outcome-efficacy to understand and predict patients' adherence to medication regimens. Studies found that greater self-efficacy predicted better adherence to medication in diabetes (Skelly, Marshall et al. 1995; Aljasem, Peyrot et al. 2001; Nelson, McFarland et al. 2007), hypertension (Roh 2005), asthma (van Es, Kaptein et al. 2002) and HIV (Molassiotis, Nahas-Lopez et al. 2002; Murphy, Greenwell et al. 2002), although some studies found no association between self-efficacy and adherence to medication (Chlebowy and Garvin 2006). Although self-efficacy was originally developed within Bandura's social cognitive theory, it became highly appealing to health psychologists and was incorporated into most theories of health behaviour like the health belief model, theory of reasoned action and protection motivation theory (Schwarzer and Fuchs 2005).

2.6.4 Locus of control (LC)

The LC theory was developed by Rotter (1966) to denote the extent to which the person feels that they have control over a situation or that the situation is being controlled by external factors such as fate, luck or chance. In this respect, Rotter suggested that people could have either an internal or an external locus of control. The theory assumes that internals will be more likely to engage in reinforcing behaviours because they believe that reinforcement is dependent on their own behaviour (Horne and Weinman 1998). For example, if patients believe that taking medications is within their control, they are more likely to adhere to their medications.

The concept of locus of control was later applied to health by Wallston et al (1976) adapting the health locus of control (HLC), which was unidimensional (i.e., external vs. internal), as the original LC (Wallston, Wallston et al. 1976). Later, it was further extended to adapt the multidimensional health locus of control scale (MHLC) (Wallston and Wallston 1978), which divided control beliefs into three separate scales: an internal scale and two external scales, i.e., *chance* and *powerful others* (Levenson 1973a; Levenson 1973b). As the general HLC was found to be a weak predictor of health behaviour, Wallston et al (1994) developed a condition-specific version of MHLC which further divides powerful others into two independent scales: *doctors* and *powerful others*. Similar to the LC, both the general and condition-specific HLC assume that internals are more likely to engage in health-promoting activities. Many studies have utilized the HLC theory to explain individual differences in the likelihood of engaging in treatment adherence behaviour. Some studies found that 49 individuals high in internal locus of control were more likely to adhere to HIV (Molassiotis, Nahas-Lopez et al. 2002), hypertension (Kirscht and Rosenstock 1977) and diabetes medication regimens (O'Hea, Grothe et al. 2005). Overall, it has been found that the HLC is relatively weak in predicting health behaviour (including adherence to medication), accounting for only small amounts of the variance in patients behaviours (Conner and Norman 2005). Therefore, there is currently little research interest in the HLC as a predictor of patients' adherence to their treatment plan.

2.6.5 Protection motivation theory (PMT)

Protection motivation theory was originally developed by Rogers in 1975 as a framework to understand the impact of fear appeals (messages that use fear to persuade) on behaviour (Rogers

1975). The theory can be seen as a hybrid theory in which three components originate from the health belief model (i.e., vulnerability, severity and response efficacy), while other components originate from the social learning theory (i.e., self-efficacy, outcome-efficacy). Further, as in the TPB, PMT also incorporates and stipulates that intentions, which are labelled “protection motivation”, are the main and most immediate predictor of behaviour. However, these intentions are influenced by constructs other than those proposed by the TPB. These are *threat* and *coping appraisal* (as in the HBM).

Threat appraisal involves the evaluation of a fear appeal to determine the perceived vulnerability, severity and fear of the threat. Therefore, one is more likely to have intentions to perform the behaviour if one believes one is vulnerable to the threat, the threat is severe and one is fearful of the threat (Bosworth and Voils 2006). Coping appraisal comprises three constructs: self-efficacy, response-efficacy and response costs. The first two constructs have been explained previously, and the latter refers to one’s beliefs about how costly the recommended response will be. According to the theory, one is more likely to perform the behaviour if one believes one is capable of performing the behaviour, the behaviour will effectively reduce the threat and the recommended response is not costly (Bosworth and Voils 2006). In summary, PMT postulates that threat and coping appraisal both influence intentions to perform the behaviour. However, they may also lead to maladaptive coping responses (e.g., avoidance, denial, fatalism, wishful thinking and hopelessness) which may influence behavioural intentions. These responses occur when following the recommended behaviour does not reduce fear, or when the individual receives a fear-arousing message but no recommended behaviour is suggested to reduce this fear (Norman, Boer et al. 2005). The PMT has been applied to a number of health-related behaviours, including exercise, condom use, breast self-exam, smoking, substance use and dietary fat consumption (Bosworth and Voils 2006). Applications of the theory to adherence to medications are limited; nevertheless, it has been utilized to predict adherence to medication in diabetes (Palardy, Greening et al. 1998) and asthma (Bennett, Rowe et al. 1998).

2.6.6 Social learning (cognition) models (SCMs)

Social cognitive models commonly assume that attitudes and beliefs are major determinants of adherence. According to these models, behaviour is a function of an individual's beliefs or the expectancy that the behaviour will lead to a particular reinforcement and the extent to which that reinforcement is valued (Rotter 1982). Therefore, patients are more likely to adhere to their medications if they believe that this will lead to a particular outcome (e.g., improved health, saving their life), and if that outcome was important to them (Horne and Weinman 1998). Social cognitive models were originally derived from the Social Learning Theory (Rotter 1954), which was later termed the Social Cognitive Theory (Bosworth and Voils 2006). The theory suggests that before people can engage in a particular behaviour, they must undergo processes of reasoning, decision-making and problem-solving. There are a number of social cognitive models that are based on the social learning theory. Some models were specifically designed to explain health-related behaviours such as the Health Belief Model (Rosenstock 1974), while others were designed to explain general behaviours such as the Theory of Planned Behaviour (Ajzen 1991). In addition, two competing views emerging from Social Learning Theory are Locus of Control and Self-Efficacy. These will be discussed in the following sections.

2.6.7 Transtheoretical model of change (TMC)

This model is one of the stage models of health behaviour, which assumes that the initiation and maintenance of health behaviours may involve different stages, and is not the result of a one-off decision (Conner and Norman 2005). Following that assumption, different cognitions may be more salient at different stages in promoting health behaviours. The transtheoretical model of change (TMC) was developed by Prochaska and DiClemente in 1984 and was widely used to understand the processes of change in alcoholism and smoking cessation. The most widely used version of the model identifies five distinct stages through which individuals are thought to progress in order to initiate and maintain a new behaviour (Conner and Sparks 2005). These stages are:

1. **Pre-contemplation:** where an individual is unaware that his/her current behaviour (e.g., smoking) constitutes a problem and has no intention to change it.

2. **Contemplation:** the individual is thinking about changing the risky behaviour but is not committed yet.
3. **Preparation:** the individual has an intention to change the behaviour and is starting to make plans about how to change it.
4. **Action:** the individual is actually attempting to change the behaviour.
5. **Maintenance:** the individual is six months abstinent from the risky behaviour and is attempting to prevent relapse.

Individuals are thought to move through these stages in order, although they may cycle through the stages several times before achieving long-term behaviour change (Conner and Sparks 2005). The model's strengths lie in its capacity to integrate a wide range of information and serve as an instrument for the design and management of both individual and community or population level health behaviour change intervention programmes. In some areas, such as dietary change, its application might have advantages over alternative approaches. Yet the TTM's critics believe that the use of stage change-based targets as substitutes for health gain can be counter-productive.

As mentioned earlier, this study was not built on any of these health behaviour theories and results and identified themes that describe factors influencing the behaviour of patients with MetS from this study will not be compared to these theories as this is beyond the scope of the current study. The following section represents identified studies that explored health issues in patients diagnosed with MetS.

2.7 Patient perceptions of MetS

The complex nature of MetS calls for the implementation of both pharmacological and lifestyle interventions to help control existing CRFs and prevent others from developing. This suggests a strong behavioural element that might influence patients' interpretation of their condition, the risk of developing CVDs and the importance of complying with the treatment plan (Byrne and Wild 2005). Understanding patients' perception of their health condition (i.e., MetS or multiple CRFs) and their attitude towards the treatment plan can help health professionals identify factors that deter behavioural change (Frisman and Bertero 2008). Thus, it was important to search for literature that

explored patients' perceptions and health concerns with regards to MetS. However, the study literature search identified only eight papers that explored perceptions and health issues of patients with MetS using qualitative approaches (Evans, Greaves et al. 2007; Machado, de Freitas et al. 2007; Oh, Bang et al. 2007; Frisman and Bertero 2008; Lupatini, da Silva et al. 2008; Troughton, Jarvis et al. 2008; Kirkendoll, Clark et al. 2010; Vieira and Turato 2010). Google translation was not available for two of these papers (Machado, de Freitas et al. 2007; Oh, Bang et al. 2007). However, English translated abstracts for these two papers were available. It is important to mention that none of the identified studies explored the perceptions of patients from the UAE or countries of similar cultural context. The identified studies explored three main aspects of living with MetS:

- Patients' perceptions of MetS as a prediabetes condition (Oh, Bang et al. 2007; Troughton, Jarvis et al. 2008)
- Patients' attitudes towards lifestyle adjustments (Frisman and Bertero 2008; Lupatini, da Silva et al. 2008; Kirkendoll, Clark et al. 2010; Vieira and Turato 2010; Vieira, Cordeiro et al. 2011)
- Educational needs of patients with MetS (Evans, Greaves et al. 2007)

The literature review did not identify studies that explored risk perceptions, coping strategies and factors influencing adherence to medicines in this group of patients. However, literature that explored such aspects of diseases within other chronic illnesses such as diabetes, hypertension, dyslipidaemia and asthma were included. The following three sections present different aspects of living with MetS as identified in the literature review.

2.7.1 Patient attitudes towards MetS

Understanding patients' attitudes towards the name and diagnosis of their illness attracted a lot of research attention because of its impact on subsequent course of treatment. Patients' perceptions of their diagnosis can be more than simply detection and naming of the disease. Patients' perceptions of the diagnosis of their diseases can facilitate their adaptation to the condition (Parry, Peel et al. 2004). A recently published survey showed that, upon diagnosis of diabetes, patients reported feeling anxious, frightened, angry or that the disease was unfair (Mosnier-Pudar, Hochberg et al.

2009). A group of diabetic patients reported feeling shocked and overwhelmed by their diagnosis. Patients also felt that having diabetes was unfair and unjustified because they believed they led a healthy lifestyle (Gazmararian, Ziemer et al. 2009). Many factors affect patients' attitude towards their diagnosis such as beliefs, socio-cultural factors, previous knowledge about the condition, and patient-physician communication.

During the development of the WAKEUP education toolkit for patients with prediabetes, participants admitted feeling frustration, confusion and shock towards the diagnosis because of the limited information they received about it. Other participants reported that they did not have previous knowledge about prediabetes and that being informed of the diagnosis was their first encounter with the condition (Evans, Greaves et al. 2007). This can explain why participants in that study stressed having detailed information about prediabetes in their feedback during the development of the WAKEUP toolkit. Another group of diabetic patients felt that attending educational sessions after they were diagnosed with T2DM facilitated their acceptance of the condition (Parry, Peel et al. 2004).

On the other hand, another group of patients with MetS expected to be diagnosed with the condition due to their previous knowledge about their uncontrolled CRFs. Lupatini et al (2008) explored the perceptions of living with MetS of 18 Brazilian patients between the ages of 45 and 69 years through in-depth interviews. Their main struggle was adjusting to the chronic nature of MetS and the need for a lifelong treatment. In their perception, more time and education was needed to fully comprehend the condition management needs of MetS.

Study participants in Parry et al (2002) reported refusal to accept their diagnosis of diabetes because they felt that the general practitioners that were delivering the news were not competent enough to confirm their diagnosis. Participants' accepted the diagnosis only when it was delivered by a consultant (Parry, Peel et al. 2004). This reflects the impact of patients' perception of their health professionals and the role that doctor-patient communication plays in patients' attitude towards their diagnosis (Parry, Peel et al. 2004; Wensing, van den Hombergh et al. 2006).

2.7.2 Patient perceptions of CVD risk in MetS

Lay perception of risk is subjective and relates to the probability of an adverse event and refers to the degree to which a situation poses a threat to an individual (Lawton 2003). Many physiological models of health-related behaviour, such as the Health Belief model, Theory of Reasoned and Action, and Protection Motivation Theory, have identified factors influencing people's perceptions of individual risk and their likelihood of adopting behaviour change. Such factors include perceived susceptibility to illness; perceived seriousness of the condition; the benefits and barriers to behavioural change; and cues that facilitate behavioural change. However, some of these psychological models did not take into account other factors, such as environmental, structural and economic factors, that may influence health behaviours. Others did not incorporate the influence of social norms, cultural and peer influences on people's decisions regarding their health behaviours (Conner and Norman 2008). As was illustrated in section 2.5, different aspects of the UAE socio-cultural context were found to substantially influence patients' perception of their health and illness.

A meta-analysis showed consistent relationships between risk perception and health behaviour, implying that perceived risk is instrumental in motivating behaviour change (Brewer, Chapman et al. 2007). However, empirical studies showed that this prediction might not always be the case (Adriaanse, Twisk et al. 2008). Health professionals tend to assume that patients perceive risk as they do, resulting in a false prediction of patients' health behaviour. Moreover, patients are sometimes inclined to underestimate their personal risk of developing diseases. Therefore, it is very important for health professionals to understand how patients interpret, think, and live with their illnesses (Conner and Norman 2008).

Lay perception of risk was explored with patients diagnosed with other features of the MetS such as diabetes and hypertension. Weaver et al (2006) explored how hypertensive patients perceived and coped with the risk of hypertension. In-depth interviews were conducted with 11 newly diagnosed hypertensive patients between the ages of 41 and 82 years. Data analysis showed that a group of participants were in denial towards the risk of developing CVDs. Denial was prompted by either perceiving risk as an out of reach event, thus unexpected, or because they have taken preventative measure against risk (e.g., lifestyle interventions). Another group of participants expressed feelings of

acceptance towards the risk of developing CVDs. This group of patients believed that risk was an inevitable event and an everyday phenomenon (Weaver, Murtagh et al. 2006).

Patients' denial of the risk of developing CVDs is referred to as 'optimistic bias' and it is proved to hinder behavioural change (Conner and Norman 2008). In the Weaver et al (2006) study, participants' denial reflected their poor health awareness or their confusion because of their inability to differentiate between the meaning of being hypertensive and being free of risk. Other participants who denied being subject to risk because of adapting a healthy lifestyle showed a higher level of health awareness. Acceptance, on the other hand, was mostly prevalent with older participants, which could suggest a link between the level of experience with the condition and the use of an acceptance narrative towards risk of developing CVDs.

Conversely, denial was found to be a key factor that prevented a group of diabetic patients from adhering to lifestyle intervention (Gazmararian, Ziemer et al. 2009). In this study, three focus groups were conducted with 35 mostly African American diabetic patients. The aim of the study was to investigate the educational and system barriers to achieving optimal diabetes self-management. Patients perceived implementing lifestyle changes as the most challenging in diabetes management. Optimistic bias and failure to expect the consequences of unhealthy behaviour demotivated study participants from complying with lifestyle interventions (Gazmararian, Ziemer et al. 2009).

2.7.3 Patient attitudes towards MetS treatment

Patients with MetS need to abide by MetS treatment requirements, which include both pharmacological and lifestyle interventions. However, patients' attempts to comply with the treatment plan can be beset by many challenges that may affect the outcomes of treatment. Addressing such barriers while designing a treatment plan can enhance the management of MetS.

Frisman and Bertero (2008) explored how patients with MetS interpret and live with their condition. They also investigated how patients' awareness of the risk of MetS affects health behaviour. In-depth interviews were conducted with 13 Swedish adults aged between 33 and 82 years that were recruited from an outpatient lipid clinic. All study participants fall into the National Cholesterol

Education Programme (NCEP) diagnostic criteria of MetS. However, none of the participants were diabetic or had a history of CVDs. Data analysis revealed that despite patients' knowledge of the risk of MetS, patients struggled to implement lifestyle changes and fell back to their everyday behaviour (also known as recurrence of behaviour). Participants' cognisance of the risk associated with having MetS subsided with time. Patients lacked the motivation to proceed with or maintain healthy lifestyle interventions. Maintaining a healthy lifestyle required patients to make certain modifications to their lives, which they were not always ready or motivated to make. Patients also perceived unhealthy behaviour, such as over eating and not exercising, as normal behaviours and thus strived to maintain it by resisting change. In their perception, being content with life meant accepting life's circumstances regardless of having MetS or being at risk of developing CVDs. In some other cases, patients' awareness of the genetic predisposing factor to acquiring MetS endorsed their fatalistic and neglectful attitude towards their condition thus triggering recurrence behaviour.

The study results highlighted the complexity of implementing and maintaining a healthy lifestyle. It also emphasised the importance of addressing contextual and personal factors to achieve successful MetS management. Although the study authors stress the role of health education in rectifying patients' health attitudes, study findings raise the question of whether health education solely can reduce recurrence of behaviour. Participants in the study were aware of the risk of MetS and the importance of lifestyle interventions. However, downplaying MetS risk was prompted by personal and contextual factors, such as life's competing demands, fatalism and striving to feel satisfied with life's circumstances (Frisman and Bertero 2008). One of the study limitations was the inability to recruit participants from different cultural and social backgrounds, which might have enabled the discovery of different experiences and perceptions of the MetS. In addition, the study did not describe patients' attitudes towards pharmaceutical interventions. This would have verified if patients' neglectful attitude was limited to lifestyle interventions or included different elements of the management of the MetS. In comparison to this study, participants in the Lupatini et al study admitted that their recurrence behaviour was mainly due to the asymptomatic nature of MetS and its invisible features (i.e., hypertension, diabetes and dyslipidaemia). In their case, more information and education about the seriousness of all CRFs of MetS would improve compliance to lifestyle interventions.

Kappagoda and Amsterdam (2007) argue that patients with MetS need motivational interviewing, which is a counselling approach based on the principle that all human behaviour is motivated. This approach recognises that all patients with MetS become indecisive about their behaviour towards their treatment plan periodically. Thus, the aim of motivational interviews is to encourage change without emphasising the change itself. During these interviews, health professionals are advised to emphasise the importance of dietary control and physical activity in a peaceful and non-condemnatory way. The approach was used in trials related to smoking cessation, weight loss, diabetes and hypertension. Although this approach was not used in patients with MetS, the counselling technique can be transferred into a MetS setting (Kappagoda and Amsterdam 2007). On the other hand, recurrence of behaviour due to lack of motivation, despite awareness of risk, was identified in a group of diabetic patients with and without a history of CVDs (Carroll, Naylor et al. 2003). In-depth interviews were conducted with 20 diabetic patients between 52 and 77 years of age. The results of the study showed that ongoing motivation to comply with lifestyle interventions relied on an intricate interplay of factors such as patients' belief, level of awareness, and attitude towards illness. Contrary to Kappagoda and Amsterdam's (2007) claim of the role of motivational interviews in reviving behaviour change, participants in this study admitted that knowledge and warning messages of the consequences of non-compliance were not strong motivating factors and did not always result in behaviour change (Carroll, Naylor et al. 2003).

The psychological impact of living with the MetS was explored in nine Portuguese patients between the age of 37 and 63 through in-depth interviews (Vieira and Turato 2010). Participants' narratives revealed profound dominance of feelings towards obesity compared to other features of the MetS. Obesity was perceived as a burden and a clear indication of an unhealthy body. Societal and cultural disapproval of obesity intensified participants' feelings of social rejection and stigma. Participants felt embarrassed and devitalised because of their obesity but did not transfer this feeling to other features of MetS (i.e., hypertension, diabetes and dyslipidaemia) because of their invisibility. They were, therefore, disposed to undergo surgical operation to remove excess fat, which they perceived as a quick solution to their agony and discomfort. Participants claimed their weight gain was not due to their eating habits. Despite their compliance with dietary recommendations, they continued their struggle to lose weight. This fuelled patients' sense of despair and anguish as people around them were not convinced that they were complying with recommendations.

There are a wide range of factors that impact patients' perceptions of their MetS diagnosis, its risk and the risk of developing CVDs and their attitude towards its treatment plan. These factors affect the success of MetS management and are thus important to be identified and modified when applicable.

The literature search failed to identify any literature that describes health professionals' perceptions of MetS or the factors that impact its management. However, many concerned and specialised authors have written about the concept of MetS and the controversy that surrounds it. The following section presents the history of the MetS concept followed by arguments surrounding the MetS concept drawn out of articles that investigate the clinical implications of MetS.

2.8 Controversy surrounding the MetS concept

The risk associated with the clustering of cardiometabolic anomalies is not a new concept but was first reported in the early 1920's (Alberti 2005). It was not until 1988 when this phenomenon started to receive increased attention as Reaven (1988) coined the term *Syndrome X* to describe a disorder consisting of insulin resistance, glucose intolerance, increased triglyceride, decreased high-density lipoprotein cholesterol levels and hypertension. Reaven proposed that the cluster of these atherogenic risk factors occurred in the presence of insulin resistance and that this clustering increased patients' risk of developing CVD and T2DM. He also noted that the more obese and sedentary an individual, the greater the degree of insulin resistance (Reaven 1988). The term 'metabolic syndrome' was first used by the WHO as a separate condition in 1998 when it introduced the first definition and diagnostic criteria for the syndrome (WHO 1999). This was closely followed by many other definitions, specifically those of the European Group on Insulin Resistance (EGIR) (Balkau and Charles 1999), the NCEP (Adult Treatment Panel III) (Cleeman, Grundy et al. 2001), the American Association of Clinical Endocrinologists (AACE) (Einhorn, Reaven et al. 2003), American Heart Association/National Heart, Lung, and Blood Institute (AHA/NHLBI) (Grundy, Cleeman et al. 2005) and the International Diabetes Federation (IDF) (Alberti, Zimmet et al. 2006). Table 2.5 illustrates the diagnostic criteria of each MetS definition. The aim of each speciality group's attempt in producing new diagnostic criteria for the MetS was to facilitate and enhance patient identification within clinical sittings.

Table 2.5 The diagnostic criteria of six MetS definitions

Clinical Measures	WHO (1998)	EGIR (1999)	ATPIII (2001)	AACE (2003)	AHA/NHLBI (2005)	IDF (2005)
Insulin resistance	IGT, IFG, T2DM, or ↓ Insulin sensitivity* Plus any 2 risk factors of the following	Plasma insulin >75 th percentile Plus any 2 risk factors	None But any 3 of the following 4 factors	IGT or IFG Plus any of the following based on clinical judgment	None	None
Body Weight	Men: waist-to-hip ratio ≥0.90; women: waist-to-hip ratio ≥0.85 and/or BMI ≥30 kg/m ²	WC ≥94 cm in men or ≥80 cm in women	WC ≥102 cm in men or ≥88 cm in women†	BMI ≥25 kg/m ²	WC ≥102 cm in men or ≥88 cm in women	Increased WC (population specific) plus any 2 of the below listed risk factors:
Lipid	TG ≥150 mg/dL and/or HDL-C <35 mg/dL in men or <39 mg/dL in women	TG ≥150 mg/dL and/or HDL-C <39 mg/dL in men or women	TG ≥150 mg/dL HDL-C <40 mg/dL in men or <50 mg/dL in women	TG ≥150 mg/dL and HDL-C <40 mg/dL in men or <50 mg/dL in women	TG: ≥150 mg/dL or Rx levels or HDL-C: <40 mg/dL in men and <50 mg/dL in women or Rx	TG ≥150 mg/dL or on TG Rx. HDL-C <40 mg/dL in men or <50 mg/dL in women or Rx
Blood Pressure	≥140/90 mm Hg	≥140/90 mm Hg or on hypertension treatment	≥130/85 mm Hg	≥130/85 mm Hg	≥130 mm Hg systolic or ≥85 mm Hg diastolic or Rx	≥130 mm Hg systolic or ≥85 mm Hg diastolic or Rx
Glucose	IGT, IFG, or T2DM	IGT or IFG (but not diabetes)	>110 mg/dL (includes diabetes)‡	IGT or IFG (but not diabetes)	≥100 mg/dL (includes diabetes)	≥100 mg/dL (includes diabetes)
Other	Microalbuminuria			Other features of insulin resistance§		
<p>T2DM indicates type 2 diabetes mellitus; WC, waist circumference; BMI, body mass index; TG, triglycerides; IGT, impaired glucose tolerance; IFG, impaired fasting glucose; HDL-C, high density lipoprotein cholesterol; Rx, receiving pharmaceutical treatment for impairment</p> <p>*Insulin sensitivity measured under hyperinsulinemic euglycemic conditions, glucose uptake below lowest quartile for background population under investigation.</p> <p>†Some male patients can develop multiple metabolic risk factors when the waist circumference is only marginally increased (eg, 94 to 102 cm [37 to 39 in]). Such patients may have a strong genetic contribution to insulin resistance. They should benefit from changes in lifestyle habits, similar to men with categorical increases in waist circumference.</p> <p>‡The 2001 definition identified fasting plasma glucose of ≥110 mg/dL (6.1 mmol/L) as elevated. This was modified in 2004 to be ≥100 mg/dL (5.6 mmol/L), in accordance with the American Diabetes Association's updated definition of IFG.</p> <p>§Includes family history of type 2 diabetes mellitus, polycystic ovary syndrome, sedentary lifestyle, advancing age and ethnic groups susceptible to type 2 diabetes mellitus</p>						

Despite slight variations amongst these six definitions, they all agreed on the underlying aetiology of MetS and the increased risk of developing T2DM or CVDs associated with the clustering of CRFs. Although the AHA/NHLBI and the IDF definitions were in common use and produced a significant amount of epidemiological data, the use of either of these two definitions by different groups rendered the comparison between some studies impossible due to differences in cut-off points of the syndrome's metabolic features used to identify study participants. Thus, in 2009, attempts were made to harmonise the AHA/NHLBI and the IDF definitions in order to unify the diagnostic criteria used to identify patients with MetS (Alberti, Eckel et al. 2009). As a result of this meeting, the IDF agreed with the AHA/NHLBI definition that a predetermined increased waist circumference is not a prerequisite for the diagnosis of MetS and that the existence of any three of the five cardiometabolic risk factors is enough to confirm MetS diagnosis⁷. At the same time, the IDF insisted on the importance of using ethnic and country specific criteria for the measurement of waist circumference. Despite the fact that it has been 13 years since the first MetS definition was introduced by the WHO, controversy continues over the validity of naming and treating the syndrome as a separate condition. This disagreement started when the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) issued a statement questioning the clinical value of MetS (Kahn, Buse et al. 2005).

The authors of the ADA/EASD joint statement argued that MetS diagnostic criteria are ambiguous and the rationale for thresholds was ill defined. They did not see the value of including T2DM in the definition of MetS and questioned the validity of using insulin resistance as the unifying aetiology. In addition, the benefit of excluding other non-cardiometabolic factors, such as smoking and family history, from MetS diagnostic criteria as risk factors and predictors for the development of CVD and T2DM was unconvincing. The authors also opposed the claim that the CVD risk associated with MetS was greater than the sum of its parts. Since the treatment guidelines of MetS did not vary from that of its individual components, the ADA/EASD statement authors did not see the additional benefit of labelling patients with MetS as a separate diagnosis (Kahn, Buse et al. 2005). ADA/EASD censure of MetS was followed by others (Brietzke 2007; Kahn 2007; Kahn 2008); however, most of these challenging statements were

⁷ The report regarding the harmonisation of the IDF and the AHA/NHLBI definitions of the MetS syndrome was published on the 7th of Oct 2009 after the whole current study was completed; therefore, the current study's inclusion criteria relied on the IDF definition of the MetS that was published in 2006. All study participants had BMI $\geq 30\text{kg/m}^2$ plus two other cardiometabolic risk factors.

repeatedly defended by supporters of MetS (Grundy 2006; Grundy 2007; Alberti, Eckel et al. 2009; Sadikot and Hermans 2010).

A number of cardiologists and endocrinologists who agreed to incorporate MetS diagnostic criteria into their clinical practice still stand firm against some of the reported benefits of the MetS concept (Hughes 2010). Such doubtful benefits include the superiority of the MetS definition over other cardiovascular risk determining tools in estimating absolute cardiovascular risk of individuals such as Framingham Risk Score and the Joint British Societies Risk Chart. Grundy (2006) who is a key supporter of the MetS concept stresses that MetS should not be used as a predictor of CVD risk, but rather as a means of identifying patients' who will benefit from an early lifestyle and pharmaceutical intervention to prevent cardiovascular risk. He states that acknowledging the MetS will generate a greater sense of the potential long-term risk of developing CVD or T2DM in such patient groups and will draw health care professionals' attention towards the importance of a holistic management of the clustering cardiometabolic features of MetS (Grundy 2006).

Sadikot and Hermans (2010) stated that while MetS fails to provide an absolute risk prediction, it is a simple and cost-effective tool that can be utilised by family medicine and primary care physicians to identify individuals at high, long-term risk for both CVD and T2DM. Moreover, using the MetS diagnostic criteria in clinical practice will encourage HCPs to look for other cardiometabolic anomalies once one or more risk factors have been identified. The elevated prevalence of CVDs and T2DM worldwide calls for joint efforts to take immediate and effective steps in halting this global health hazard, and one way of tackling this epidemic is through using the MetS concept within the primary and family medicine setting. Sadikot and Hermans also argue that the MetS concept might be perceived by some endocrinologists as an attempt by cardiologists to take over the diabetes field, hence the ADA/ESAD persistent criticism of the MetS (Sadikot and Hermans 2010).

In the UAE, the MetS was recognised as a paramount risk factor that contributed to the high prevalence of T2DM and CVDs in the country (HAAD 2007). Thus, MetS prevention was prioritised in Abu Dhabi's public health strategy (HAAD 2007). In addition, the Abu Dhabi CVD prevention campaign WEQAYA incorporates both MetS diagnostic criteria and Framingham Risk Score to identify individuals at risk of developing CVDs (WEQAYA 2010). This suggests a consensus among health authorities and professionals working in the UAE on the importance of

acknowledging the MetS concept in clinical practice. However, to our knowledge, HCPs' perception of the MetS concept, diagnostic criteria or management in the UAE was not explored. Given the fact that HCPs' perception of the syndrome might be swayed by existing and ongoing controversy surrounding the MetS clinical implications (Hughes 2010), it was important for this study to explore the perceptions of HCPs working in the UAE of the MetS concept. Identifying this group's perception of the MetS concept will help elucidate their attitude towards utilising the MetS diagnostic criteria in clinical settings and will aid in eliciting professional-related factors that might influence MetS management in the UAE.

2.9 Gaps in the literature

There has been a huge interest in exploring lay perceptions of a wide range of chronic diseases in recent years, which reflects the growing interest in the use of qualitative techniques in health service research more generally. However, the literature review has identified three main gaps in the literature concerning MetS: (i) health concerns of patients with MetS in the UAE; (ii) professional perceptions of MetS; and (iii) the role of the UAE health care system in the prevention and management of MetS

2.9.1 Health concerns of patients with MetS in the UAE

Little has been reported about perspectives of living with MetS. Although studies that explore health issues of this group of patients have emerged in the past ten years, the vast majority of these studies were conducted in European or North American countries. The UAE, with its unique Islamic and Arabic cultural identity and traditions, has different perspectives of disease, medicine and behavioural approaches to chronic disorders. Thus, there is a need to address MetS management issues within the UAE context. Although many health issues are similar amongst patients with MetS of different cultural and religious backgrounds, other identified health matters might reflect the impact of the unique context of the UAE.

The limited number of qualitative studies that explored health beliefs in the UAE have illustrated a strong religious and socio-cultural influence on lay perception of health and illness. Unfortunately, these studies explored health beliefs of elderly Emiratis (Ypinazar and Margolis 2006), as well as health issues and barriers to weight management in women living in the UAE (Winslow and Honein 2007; Berger and Peerson 2009; Ali, Baynouna et al. 2010). Themes

elicited from these studies are important and provide an understanding of the impact of the Emirati context on perceptions of health and illness. However, exploring lay perceptions of MetS and health concerns of individuals belonging to a variable range of demographics will provide a wider and clearer picture of barriers and facilitators to MetS management in the UAE.

2.9.2 Professional perspectives of MetS

During the time of this study, there was limited information on health care professionals' perceptions of the MetS. Literature concerning the clinical value as well as the controversy of the MetS definition reflects the views of elite scientists, endocrinologists and cardiologists in the medical field (Grundy 2006; Johnson and Weinstock 2006; Ferrannini 2007; Hughes 2010). Current understanding of the perceptions of MetS and barriers to its management comes primarily from studies on patients' views. However, health care professionals' perceptions of MetS as a condition in its own right and factors influencing its management have been inadequately reported. In additions, previous studies showed that patients and physicians' understanding of diseases and risk varies, which resulted in physicians making unrealistic assumptions about patients' attitudes towards their treatment plan (Heijmans, Foets et al. 2001; Saberi and Heisler 2008). Thus, one of the main aims of this study is to explore the perceptions of health care professionals of different specialities (i.e., physicians, pharmacists, dieticians, and health educators) of MetS and its management. Addressing factors that impact MetS clinical utility may help improve MetS management.

2.9.3 The role of the UAE health care system in MetS

The UAE has the second highest prevalence of T2DM and an equally alarming prevalence of MetS and obesity. The UAE reformed health care system is trying to provide substantial solution and prevention measures to tackle this epidemic. However, the efficacy of these strategies to reduce the prevalence of MetS or prevent CVDs is yet to be assessed and reported. Exploring the impact of such services on health behaviour will be highly important if future preventative strategies are to be launched. The UAE is home to almost 8 million residents; the majority of which come from different ethnicities and cultural backgrounds. It is, therefore, important to explore the health concerns of MetS patients of different nationalities. This may provide answers to whether the current health care system is able to cater for the health needs of all residents of the UAE. It may also help find out whether the needs of any community or society were

marginalised when the UAE health care system was structured. Although the scope of this study does not encompass the role of the UAE health care policy in the management of MetS, findings from this study may highlight areas that need improvement in order to improve the management and prevention of MetS.

Chapter 3

Methodology

3.1 Introduction

This chapter describes the methodological approach used in the research and the sources of data used to investigate the aims of the study. This qualitative research explored health care issues in patients with MetS through face-to-face in-depth interviews with patients and HCPs which were then followed by a focus group with pharmacists to further explore some of the themes identified in the semi-structured interviews. This qualitative approach allowed people to voice their concerns about living with MetS in the UAE. The study was structured using the following steps:

- The research paradigm
- Choosing the research methods and rationale
- Developing the study instruments
- Ethical issues
- Selecting the study site and setting
- Selection of the study participants (sampling and recruitment)
- Data collection and management
- Data analysis
- Reliability and validity of data and methods

3.2 The research paradigm

To ensure rigour in qualitative research, it is important that the researcher explicitly describes the decision-making trail within the report to enable audibility by readers (Creswell 2007). A paradigm refers to the basic belief systems or a worldview that guides the choices of methods as they relate to the underlying ontology (nature of reality) and epistemology (what can be known) of that view (Denzin and Lincoln 1994). There are multiple social research paradigms available to qualitative researchers, which can be tailored to fit a study according to the set of beliefs that researchers apply to their research (Creswell 2007). A clear consideration of the philosophical

basis of the research is essential to ensure conformity of the study design in terms of the ontological, epistemological and methodological premises of the research. The enquiry paradigms of positivism, post-positivism and constructivism were explored in relation to the ontological, epistemological and methodological stance of this thesis.

Positivism dominated the physical and social sciences for over four hundred years and is still considered by many scientists to be the gold standard within health research, particularly with the influence of medical research (Bryman 2008). It encompasses any research approaches that apply scientific methods to understanding human behaviour and affairs. A positivist stance in research assumes that there is an absolute approachable reality which researchers can identify (Guba and Lincoln 1994). Positivism is also reductionist and determinist in nature as it aims to identify cause and effect relationships and to make predictions (Cohen and Manion 1994). In the positivist paradigm the relationship between the researcher and participants must be objective as the researcher adopts a distant, non-interactive relationship with aims to exclude bias and personal values. Research methodology appropriate to the positivist paradigm is experimental and manipulative in nature. It involves the formulation of questions and/or hypotheses that are subjected to empirical testing, whilst exerting maximum control of variables.

The post-positivist paradigm has been developed in the past few decades in response to the criticism of positivism and is believed to be adopted by researchers with prior quantitative research training who are new to qualitative research (Denzin and Lincoln 1994; Phillips and Burbules 2000; Creswell 2007). However, post-positivism remains within the same set of essential beliefs about the nature of reality. It involves research in natural settings, incorporating situational information and accepting discovery as an element of enquiry. Post-positivism has an ontological basis where reality is assumed to exist but is imperfectly understood because of the complexity of human nature. The epistemology basis of the post-positivism paradigm assumes that the relationship between the researcher and the subject is that of a modified dualist/objectivist with objectivity as an ideal aim. Researchers who belong to this paradigm view enquiry as a series of logically related steps and believe in multiple perspectives from participants rather than a single reality. They also support rigorous methods of qualitative data collection and analysis and will use multiple levels of data analysis to establish validity and rigour. Computer programmes will often be employed to organise data and help in data analysis. Researchers adopting a post-positivist paradigm will tend to write in the form of scientific reports similar in structure to quantitative approaches (Creswell 2007).

Constructivism is an alternative paradigm with a major difference in assumption to positivism and post-positivism. Constructivism implies that social phenomena are produced through social interactions and are also in a constant state of revision. Researchers belonging to this paradigm believe that there are multiple realities and views of the world that are each constructed by individuals. Therefore, reality is relative and is derived from the mental constructs of individuals, which is then restructured through communication and interpretation (Strauss and Corbin 1994). The social context in which the individual lives and operates plays an influential role in what is important; therefore, knowledge is created as individuals interact with their environment. As such, the realities of a particular phenomenon or experience are not identical copies of each other as individuals are influenced and guided by a number of different factors including culture, prior learning, knowledge and experience (Crotty 1998). Researchers belonging to this paradigm also acknowledge their contribution in the construction of the social world. As such, they try to understand the world that they live and work in and try to make sense or interpret the meanings others have of the world. They acknowledge their stance and recognise how their own personal, cultural and historical experiences influence their interpretations of the findings and inform the research. They validate their data through trustworthiness and authenticity.

Neither the epistemological nor the ontological foundations of positivism or post-positivism are consistent with the focus of this thesis because of their focus on objectivity and on prediction and control. The study aims and objectives cannot be addressed through the experimental and manipulative approaches of the positivist paradigm. In addition, the post-positivist paradigm is not consistent with the requirements of the study. The constructivist paradigm, on the other hand, is directly relevant to the study enquiry which aims to explore the meanings and experiences in the respondent's own terms. It is consistent with both the findings of the literature reviewed in chapter 2 and the researcher's own belief that the context of this enquiry is subjectively perceived and socially constructed. This research is based on the constructivist epistemological perspective, whereby reality is created when an individual interacts with their environment. It must be noted here that the realities of particular phenomenon or experience are not carbon copies of each other as individuals are influenced and guided by a number of different factors including culture, prior learning, creative abilities, knowledge and experience (Crotty 1998). The constructivist paradigm recognises the subjective nature of the phenomenon under investigation and the relationship between the researcher and the participants. Thus, this perspective is consistent with the study aims and objectives and, therefore, underpins the study

approach. The participants in this study have their own constructed views of the world and the phenomenon explored and as a researcher, I carry the responsibility of allowing their worldviews to be presented and seek to minimise my re-interpretation of their views. I also acknowledge that I do not enter the research with a blank mind. Being a pharmacist and having worked with other HCPs and patients with MetS in the UAE exposed me to some of the health concerns and factors that impact the management of this group of patients. This means that I have my own experiences and have constructed a view of the world that might be different from that of the study participants. Therefore, the method chosen to conduct this study should facilitate accessing an individual's experiences and address the impact of the social context in which the study participants live and interact. As such, this research was approached from a constructivist viewpoint.

3.3 Choosing the research methods and rational

This section describes how the chosen methodologies were selected and why they were suitable to achieve the research aims. This section starts with the methodological perspective followed by a detailed explanation of the methodology used.

3.3.1 Methodological perspective

My project has been significantly inspired and shaped by my professional background, work experience and the feasibility study conducted during the first year of my PhD journey. My interest in factors influencing the therapeutic outcomes of patients with diabetes and other MetS features started in the early years of my work as a community pharmacist in the UAE. The nature of my job as a pharmacist responsible for dispensing medicines allowed for a great deal of interaction with this group of patients in particular. It was during the dispensing of prescriptions that patients usually talked to me about different aspects of their lives and circumstances that they believed were key influencing factors in the control of their CRFs. On many occasions patients expressed concerns about their treatment plan and often suggested alternatives that they believed were facilitators to their disease management. Working alongside other HCPs (i.e., other pharmacists, physicians and nurses) and attending multiple workshops on diabetes and other MetS features gave me an additional professional insight into the health needs of patients with MetS living in the UAE. This sparked my interest in exploring factors influencing this group of patients.

During the preparation for my PhD study, I started reading around the MetS topic in the available literature. I came across a study by Arcucci and colleagues (2007) that looked at the relationship between the degree of blood pressure (BP) control and the number of CRFs in patients with MetS. They found that among 4,551 hypertensive patients the probability of uncontrolled BP was 43% higher in patients with MetS than in those without (Arcucci, de Simone et al. 2007). This study and others that explored factors influencing BP control in patients with MetS inspired the preliminary design of the PhD project. In the feasibility study, I wanted to look at hypertensive patients with other CRFs as a subgroup of patients with MetS and to investigate factors that might result in suboptimal BP control. In addition to exploring the impact of the clustering of CRFs on BP control, I also wanted to examine the impact of other established factors in the literature such as physicians' adherence to clinical guidelines of the management of hypertension (Frijling, Spies et al. 2001; Burnier 2002; Oliveria, Lapuerta et al. 2002) and patients' related factors (Dean, Kerry et al. 2007). Therefore, the preliminary study design lent itself to a mixed method approach where the quantitative arm aimed to: (i) assess physicians' level of adherence to clinical guidelines of the prevention of CVDs in patients with MetS; (ii) identify whether or not physicians were intensifying hypertension therapy as needed by patients; and (iii) the impact of coexisting CRFs on BP control. The qualitative arm of the study aimed to explore factors that impacted the holistic management of patients with MetS and thus enable a better understanding of patient, professional and contextual factors that might be influential in MetS holistic management including BP control.

For the quantitative part of the study, I decided to use a medication assessment tool for the assessment of physicians' level of adherence to the clinical guidelines of the prevention of CVDs (MAT_{CVD}) in patients with MetS (Dreischulte, McAnaw et al. 2007; Kanis, Dreischulte et al. 2007). In addition, the intensification of hypertension therapy would be assessed by observing treatment options/decisions for elevated BP within three months before and three months after the high BP reading was first documented. Hypertension therapy intensification was indicated by documented changes made to the patient's hypertension management that were in the form of adding new drugs, increasing the dose of at least one of the ongoing drugs or the switching from one drug type to another.

The preliminary study design was piloted to test the accessibility and workability of the methods and study procedure within the study environment and to ensure data obtained could meet the

study objectives. The study quantitative tools were then tested on 100 patients with MetS that were identified as hypertensive. In addition, semi-structured interviews were conducted with three participants (i.e., one pharmacist and two patients). Unfortunately, the data collection phase during the quantitative part of the study had a number of limitations. These barriers were believed to affect the completeness, reliability and validity of data. For example, a robust electronic database system, through which study subjects can be identified and from which patients' data can be extracted, was lacking in the research setting. The reliance on alternative tools for identifying hypertensive patients with MetS (i.e., limiting sampling locations, using the clinic visits registration system, indicator drugs and manual access of patients' medical files) contributed towards manipulation of the overall sampling process and resulted in losing both potential subjects and valuable research time. Missing data and poor documentation of therapy justifications in patient medical files may have led to a flawed assessment of clinicians' compliance with clinical guidelines' recommendations.

Unlike the quantitative part of the pilot study, the data generated from the three semi-structured interviews revealed a number of factors that were not documented in patients' medical files but were believed by the study participants to be significant contributors to MetS holistic management. Such factors included patients' adherence to the treatment plan, the impact of the socio-cultural context and health policy of the UAE. The pilot study outcome indicated that, given the significant limitations within the study health care setting, the quantitative tools would fail to deliver most of the study aims and objectives. It also demonstrated that some clinical outcomes could be better explained by exploring patient and professional perceptions of the holistic management of the MetS. Therefore, a decision was made to omit the quantitative arm of the study and to expand the qualitative part.

Qualitative methods have become increasingly used in health care research, especially when a complex detailed explanation of a phenomenon is needed and can only be obtained through hearing people's voices. People are believed to be an important source of information about themselves and the issues that affect their lives and they can, therefore, articulate their concerns openly and freely (Creswell 2007). Qualitative research is effective in identifying subtle factors, such as social norms, gender roles, ethnicity and religion, whose role in the researched issues may not be apparent. It also enables HCPs and policy makers to understand patients' health needs and their perspectives and interpretations of the health care services. Published qualitative research on health care issues can be used to influence health policy at a local and

national level (Bowling 2009). Qualitative methods are also useful to follow-up, explain or validate findings from quantitative research (Silverman 2004; Creswell 2007).

In this study, qualitative methods were chosen on the basis of being better suited to exploring the range, depth and complexity of patients' perspectives than a quantitative approach. This involved the use of in-depth interviews as a research technique followed by focus group discussions to further explore identified themes. Patients with MetS are in direct contact with MetS health issues and with the health care services that cater for their needs. Therefore, these patients are in a better position to describe issues they encounter when managing their illnesses. By including HCPs in this exploration we can gain a professional insight into the MetS concept and its utility in the UAE. It will also enable the identification of obstacles and facilitators to MetS management from individuals involved in the treatment decision-making process and, therefore, identify issues within the clinical practice.

The following section presents description of four qualitative approaches that were considered when choosing the study's methodology.

3.3.2 Considered qualitative approaches

There was a range of distinct research approaches associated with qualitative research that were considered before a decision was finally made on the appropriate methodology to explore factors influencing MetS management in the UAE. Narrative research, ethnography, case studies and grounded theory are examples of qualitative research approaches that were considered when choosing the qualitative approach for this research. This section presents a brief description of each of these approaches and then concludes with the rationale behind selecting Grounded Theory as the methodological approach for this study.

Narrative research methods encompass a wide range of different research methodologies and methods that include autobiography, auto-ethnography, personal history, life history and narratives (Creswell 2007). Narrative can both be a method of enquiry which focuses on the stories told by the study subjects or the phenomenon investigated (Creswell 2007). As a method, narrative research is employed to clarify and investigate the intersection of biography, history and society. The narrative of personal experiences are elicited to inform us of the complexity of social, cultural and historical processes and to provide us with insights into the ways in which

social structures shape people's lives (Riessman 2001; Creswell 2007). Narrative studies are conducted through studying a small number of individuals, gathering their accounts of events and individual experiences and then arranging them into a story using a plot line. Contextualisation is paramount in narrative research as it provides meaning to the narrative account and better explains the subjects' experiences.

Reviewers have noted the power of narrative to enlighten the world of illness especially as experiences of illness influence a person's sense of self. The power of stories lies in their ability to expose how bodily suffering or stigma can shape a life. Through the language of disease and dysfunction, patients' narratives illuminate meanings associated with illness or disability, which are experienced when the body is medically treated. Thus, an interest in patients' stories has grown remarkably over the past ten years amongst health and social researchers, which has resulted in a 'narrative turn' in the social sciences (Burner 1990). Stories can also highlight the experiences of HCPs and their practical reasoning where narrative is examined as a way of thinking and decision-making (Burner 1990). However, a common critique of narrative research methods is that they emphasise the individual rather than the social context in which life is lived (Connelly and Clandinin 1990). It is also perceived as a very challenging approach in qualitative research as investigators need to collect detailed information about the study participants and have a clear understanding about the context in which these participants live their lives. Researchers also need to discuss participants' stories and reflect on their own stance and how it impacts the story line (Creswell 2007). The focus of narrative research is to explore the lives of a small number of individuals. Therefore, applying the narrative approach in this study would have demanded a reduction in the number of participants. This in turn would have compromised the main scope of the study which is to gain a deeper understanding of factors influencing MetS management from the perspective of a range of patients and HCPs of varying educational and social backgrounds. Therefore, the narrative approach was not suitable for the research problem and questions.

As explained earlier in section 3.3.1, this study started as a mixed method research with a defined set of research questions in its qualitative part. As the pilot study informed the need for the elimination of the quantitative part of the study, the qualitative arm retained its original scope, which was to explore factors influencing MetS management through exploring patient and professional perceptions. As such, a narrative approach would not have delivered the study aims and objectives. However, on reflection, using narrative research could be applied in the

future, as it would provide a deeper understanding of the lives of patients with chronic illnesses such as MetS

Another qualitative approach that was considered when designing this study was **Ethnography**, which emphasises the relationship between the participants and their natural environment. Ethnography focuses on an entire cultural group and enables researchers to examine individuals in the same place while interacting and developing a shared pattern of behaviour, beliefs and language (Creswell 2007). In an ethnographic study, the researcher is required to spend time immersed in the participants' world observing them as they interact with and within their environment. The researcher, therefore, becomes an instrument of the research enabling him/her to identify the beliefs and values of the participants and to contextualise the social action. Observation, in conjunction with in-depth interviews, leads to the development of frames of understanding which can be applied to a wide range of situations in order to develop complex systems of meaning based on the participants' world (Creswell 2007). Ethnography would have enabled me to immerse myself in the lived experience of both patients and HCPs and to observe their interaction. However, the priority of the current research was to explore patients' viewpoint of living with and managing MetS as well as that of HCPs when managing this group of patients. In addition, implementing an ethnographical approach to the current enquiry would have resulted in multiple observation sights, such as patients' homes and different patient-HCP encounters, which would have complicated the enquiry. The presence of the researcher in such locations would have impacted the nature of the relationship between patients and their HCPs in the clinical environment. Therefore, ethnography was not adopted as the research approach for this study.

Case study is another qualitative approach that is slightly similar to ethnography but differs in the fact that it focuses on examining an issue within a bounded system or through observing an entire cultural-group. A researcher can explore one cultural group or a number of cultural groups over a period of time using explicit in-depth data collection tools and numerous sources of information (Creswell 2007). Case studies are an appropriate approach for a qualitative investigation when the researcher is able to determine cases with clear boundaries to provide a deeper understanding of this bounded group or compare it to other cases. A case study could consist of one individual, a number of individuals, a programme, an incident or an activity where purposeful sampling is employed to show different perspectives of the investigated issue. Data collection should employ an extensive exploration and the gathering of information from

multiple resources such as observations, interviews and documents. In the early stages of this study design, a clear bounded system within the MetS and the Emirati context was difficult to identify. The lack of previous studies that explored health issues concerning patients with MetS within the UAE context added to the challenge of determining the boundaries of a case to explore how it might be constrained in terms of time, events and processes. There was also the difficulty of employing observation as an additional source of information and to gain a deeper understanding of the explored case. Therefore, case study was not selected as an approach for this study.

Grounded Theory (GT) is another qualitative approach that is described as an inductive approach to qualitative research. It was developed to study social phenomena from the perspective of symbolic interactionism. GT is concerned with human behaviour and how people manage problematic situations in their daily lives. It was first described by Barney Glaser and Anselm Strauss in 1967 in their book *The Discovery of Grounded Theory* (Glaser and Strauss 1967; Glaser 2002). Glaser and Strauss challenged the common belief of their time, that qualitative methods in research lacked rigour and failed to generate theories, by introducing a thorough and systematic analysis of data (Charmaz 2006). GT, therefore, encourages researchers to move beyond description into the generation and development of theories that are derived directly from the research data (Glaser and Strauss 1967; Cutcliffe 2005; Charmaz 2006). The components of GT include:

- Concurrent involvement in data collection where the data collection, coding and analysis occur simultaneously. This allows the researchers to move back and forth within the data and to focus and pursue new leads as they unravel during the ongoing data analysis.
- Generation of analytical codes and categories from data in order to identify emerging substantive theory.
- Using constant comparative analysis among and between groups of people or participants in the area of interest during each stage of the research.
- Writing memos, exploring relationships between categories and identifying gaps.
- Theoretical sampling where participants, situations or literature are included if they add to identified categories and advance the construction of the theory.
- Conducting a literature review after the completion of the data analysis phase.

Observational field notes and interviews are the main source of data collection. Other methods such as quantitative surveys, journals, books, videos, photographs and informal meetings with participants have also been integrated (Glaser and Strauss 1967; Glaser 1978; Schreiber and Stern 2001). The generation of theory in GT is an evolutionary process that occurs as the research is being conducted. The primary approach in GT is inductive and the researcher is continually guided by the data and its subsequent patterns, codes and categories. This approach aids the researcher to identify the emerging theory from the data; hence the name 'grounded theory' as the theory is grounded in the data. Therefore, novice grounded theorists are strongly advised to delay literature review to avoid forming preconceived ideas and seeing the world through the paradigms of existing theories (Charmaz 2006). Deduction is also allowed in GT but usually at advanced stages of the research in order to verify and elaborate on the codes and categories as they emerge during each incremental step of theory development. However, this is not to be confused with verification of an existing theory which is another methodological approach and is not linked to GT (Glaser 1978; Schreiber and Stern 2001). GT is also a flexible and adaptable methodology as it can be used to develop both substantive and formal theory. Substantive theory is developed from research conducted in one specific area or contextual situation. Formal theories, on the other hand, are more conceptual (Glaser and Strauss 1967). Most theories developed through GT are substantive theories because they address defined problems in a specific area (Bryman 2008). For example, the current study explores factors influencing therapeutic management within the MetS and the UAE contexts. However, the logic of GT reaches across multiple substantive areas by generating abstract concepts and identifying relationships between them in order to address specific problems within these multiple substantive areas. Each exploration within a new substantive area can be used as a basis upon which formal theory can be built (Charmaz 2006).

GT is particularly suited to research in areas which have had limited or no investigation. Stern (1980, p. 20) states that 'the strongest case for the use of GT is in investigations of relatively uncharted waters, or to gain a fresh perspective in a familiar situation'. She also believes that GT is helpful in studying complex areas of human behaviour where salient variables have not been identified (Stern 1980). As explained earlier in the literature review chapter, there is limited qualitative research regarding patients with MetS and their treatment needs within the UAE context. There is also limited data on factors influencing the clinical utilisation of the MetS concept and is, therefore, a relatively new area of enquiry. In addition, the use of GT allows the investigator to reveal covert reality and meanings underlying individuals' unique behaviours

when they deal with and resolve the basic social psychological problems. It also enables the researcher to identify individuals' shared reality, meanings, and behaviours, and to discover their shared social psychological process. Trajectory exists while individuals create and modify their reality, meanings and behaviours through their own actions and interactions with others and objects. Strategies or influencing factors during this process or trajectory are identified as categories and concepts during data analysis. The investigator, as such, attempts to discover and conceptualise the essence of complex process of social interactions (Crotty 1998; Schreiber and Stern 2001; Charmaz 2006). GT was, therefore, chosen for this study to understand covert reality and meanings toward factors affecting the management of patients with MetS in the UAE underlying their unique behaviours to deal with and resolve the basic social problems related to having CRFs.

This study was undertaken to discover the shared social process related to having MetS. An assumption of this study was that this shared social process also explained factors contributing to patient and professional perceptions of MetS and its management in the UAE. Accordingly, it was appropriate to choose GT for this study as the research method to achieve the purpose of this study and appropriately respond to the research questions.

The following section describes the development of GT and follows the modification it has undergone since it was first discovered. This will be followed by the critiques and criticisms of GT. At the end of the section an illustration of the GT principles used in this study will be provided in section 3.3.6.

3.3.3 The development of grounded theory

Before the development of GT and particularly before the 1960's, novice qualitative researchers were trained through mentoring and lengthy immersion in the research field. Early guidelines for conducting qualitative studies dealt primarily with data collection methods and the researcher's role in the field with less attention given to strategies of data analysis. Fortunately, Glaser and Strauss provided detailed written guidelines for conducting qualitative research and thus made data analysis guidelines accessible to novice qualitative researchers (Charmaz 2006).

Glaser worked at the University of Columbia and was a well-known researcher who engaged in quantitative methods of enquiry. Strauss, on the other hand, was from the School of Pragmatism

at the University of Chicago and specialised in qualitative methods of research. Both researchers were dissatisfied with the direction of their disciplines and the methodologies used in their respective areas of research. This dissatisfaction was engendered by the gap between theory and research at that time and the strong emphasis placed on theory verification rather than theory generation (Glaser and Strauss 1967).

During his doctoral programme at the University of Chicago, Anselm Strauss was influenced by the philosophies of symbolic interactionism and pragmatism. Symbolic interactionism is a social-psychological theory that attempts to explain human behaviour (Blumer 1969; de Laine 1997; Patton 2002). It states that human beings have concepts of self that enable them to be social beings that make sense of the world through social interactions. It also states that social interaction and life are experienced by symbols and the meanings that are attached to them. Therefore, self is defined by the social roles one is involved in and it is these roles that enable individuals to experience and understand their world (Blumer 1969; Bogdan and Biklen 2003). Symbolic interactionism perceives meaning as arising in the process of interaction between people. The meaning an individual attributes to any thing is derived from the way in which other individuals act towards him/her with regard to the situation or thing. Similarly, social life is formed, maintained and changed by the basic meaning attached to it by people who interact within the social system. Thus, symbolic interactionism sees meaning as a social product and as creations that are formed in and through the defined activities of people and their interactions. Strauss was also influenced by many scholars who contributed to the symbolic interactionism philosophy, such as Robert E. Parks, John Dewey and Herbert Bulmer (Charmaz 2006). The influence of these scholars and the academic education Strauss received was later evident in his contribution to GT, of which the philosophical underpinnings come from symbolic interactionism (Schreiber and Stern 2001).

In contrast, Glaser used the analytical skills that he acquired from his work in quantitative research and codified qualitative analysis. Although Glaser had previously participated in research using qualitative data, he believed that qualitative data analysis needed a more explicit and systematic way of coding and generating theoretical hypothesis in research. Glaser, therefore, constructed specific guidelines for qualitative data coding (Strauss and Corbin 1990; Charmaz 2006). As such, Glaser's educational background influenced his contribution to GT, whereby he integrated quantitative methods and established a detailed and systematic mechanism for coding and hypothesis generation.

Glaser and Strauss later met in the 1960's at the University of California – San Francisco in the School of Nursing. Glaser was among other sociologists that Strauss recruited to help study and build his own programme in medical sociology using symbolic interactions and pragmatism. It was during that time that both Strauss and Glaser received funding for their study into dying patients. Their joint work 'Awareness of Dying' in 1965 showed that there was considerable deception operating in hospitals with regard to the dying process. The study findings, at that time, had a significant impact on how death was dealt with by nursing and medical staff in the hospital setting. It was during this study that Glaser and Strauss realised that their methodology was original. As GT was developed, Strauss contributed the philosophy of symbolic interactionism component, while Glaser contributed the systematic approach to qualitative data analysis (Schreiber and Stern 2001). Therefore, GT represents a marriage between two divergent and competing traditions in sociology: Colombia university positivism represented in Barney Glaser and Chicago school pragmatism and field research as represented in Anselm Strauss (Charmaz 2006).

3.3.3.1 The modification of grounded theory

The successful scholarly relationship between Glaser and Strauss led to the publication of their influential work on GT *The Discovery of Grounded theory: Strategies for Qualitative Research* in 1967. They also went on to conduct many collaborative research projects including *Time for Dying* (1967), *Anguish: Case Study of a Dying Patient* (1970), *Status Passage* (1971) and *Chronic Illness and the Quality of Life* (1975). However, since that time both have taken GT in slightly deviating directions. While Glaser remained loyal to his earlier ideas of the method, Strauss moved the method towards verification (Charmaz 2006). In the early 1990, the relationship between Strauss and Glaser became strained when Anselm Strauss and Juliet M. Corbin published their book, *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, where they emphasised the comparative methods in GT. Since then, the work of Glaser has been described as the *traditional GT* and that of Strauss and Corbin as the *evolved GT* (Mills, Bonner et al. 2006). Strauss and Corbin's modification of GT included:

- Allowing investigators to engage with literature before and during the study to help in the development of categories and properties. They, however, warn investigators that

literature might repress and constrain the discovery and sensitivity to the emerging concepts (MacDonald 2001).

- Quantitative data is used for verification. This is in direct contrast to the traditional GT approach, which does not differentiate between different types of data as each has its place in theory generation and development.
- Defining the research questions before engaging in the research helps in setting the boundaries around what needs to be explored and investigated. Therefore, investigators are allowed to focus on the research questions and more purposefully examine the specified phenomenon of interest. This differs from the traditional GT approach where the researched problems are discovered or emerge as coding begins; therefore, research questions do not define the explored phenomenon.
- Verifying provisional hypotheses through alternating data collection and data analysis. Therefore, investigators are encouraged to examine preliminary theories through comparing concepts as they emerge during data analysis. This modification contrasts with Glaser's approach to GT, as he insists that verification of hypotheses are properties of different methodologies and that GT developed out of the need to move away from the verification model.

Despite Glaser's attempts to persuade Strauss and Corbin to remove their text from publication and correct the numerous discrepancies he believed were evident in their book, Strauss and Corbin's version of GT became very popular and instructed many novice grounded theorists throughout the world. Although Glaser and Strauss fought the supremacy of positivism in qualitative research through the discovery of GT in the 1960's, by the 1990's GT was famous not only for its rigour and usefulness, but also for its positivist assumptions. In addition, GT became a popular method amongst quantitative researchers who adopted it when conducting mixed method research.

Strauss and Corbin's modifications of GT were followed by a number of scholars that have worked in moving GT away from the positivism in both Glaser's and Strauss and Corbin's version of the methodology. One of these scholars was Kathy Charmaz who advocated for her take on GT in a number of her publications and her book: *Constructing Grounded Theory* published in 2006. Charmaz took a more constructivist view of GT and saw it as a set of principles and practices rather than a philosophy or a prescription. Although symbolic interactionism is the philosophy that underpins the GT presented by Glaser and Strauss in 1967, Charmaz accused

their version as well as that of Strauss and Corbin's of being far too realist. She states that both approaches to GT assumes an objective external reality that exists and can be identified and, therefore, take a positivist and objectivist stance. Therefore, Charmaz advocates a constructive approach that assumes multiple social realities.

Charmaz does not support the view that theories are discovered but believes that the studied world needs to be portrayed in an interpretive way (Charmaz 2000). She states that 'data do not provide a window on reality. Rather, the 'discovered' reality arises from the interactive process and its temporal, cultural, and structural context' (Charmaz, 2000, p. 524). Researchers are not separate from their theories but construct them through their interactions with people, places and research perspectives. For example, when study participants answer interview questions, their responses are 'a construction-reconstruction-of reality' (Charmaz, 2006, p. 27). Therefore, the act of theorising means constructing an abstract understanding of the world. Charmaz stresses the importance of researchers' acknowledgment of their role as well as the respondents' role in constructing the research data and theory. This is mainly because of her belief that theory neither emerges nor is discovered but is rather constructed (Charmaz 2006). As such, Charmaz recognises the importance of reflexivity in the research process. According to Mills and Authors (2006), constructivist GT brings to the fore the notion of the researcher as an author by reshaping the interaction between the researcher and participants during the research process. Charmaz developed a style of writing that is a delicate balancing act between the researcher and study participants. She calls for an analytical writing manner where the researchers' voices need to re-visualise their experience and at the same time enable the participants' accounts to maintain a level of visibility in the text. This enables the reader to make a connection between the analytical findings and the data from which these findings were extracted (Mills, Bonner et al. 2006). This, again, emphasises Charmaz's attempt to reveal the researcher as the author of a co-construction of experience and meaning, and not as a sole identifier of a theory that was imbedded in the data, as traditional GT proposes (Mills, Bonner et al. 2006).

GT has evolved since its inception in the 1960's in the USA. Although many scholars continue to work and add to GT, the writing of Glaser and Strauss (1967), Strauss and Corbin (1990) and Charmaz (2006) are seen as influential in the development of GT.

3.3.4 Grounded theory methods

GT offers researchers a methodology with philosophical direction for substantive and formal theory development. It also provides methods that facilitate all aspects of data collection, analysis and the writing of theory (Glaser 2002). The following sections describe the techniques of GT which were discussed by Glaser and Strauss in *The Discovery of Grounded Theory: Strategies for Qualitative Research* (1967) and further developed in Glaser's second book *Advances of the Methodology of Grounded Theory: Theoretical Sensitivity* (1978).

3.3.4.1 Constant comparative analysis

Constant comparative analysis is a fundamental technique in GT where data collection, coding and analysis occur simultaneously (Glaser and Strauss 1967). This allows the researchers to move back and forth within the data, change focus and pursue new leads as they emerge in the ongoing data analysis (Glaser and Strauss 1967). Glaser and Strauss (1967, p. 105) put forward the four stages of constant comparative method which are: (i) comparing incidents applicable to each category; (ii) integrating categories and their properties; (iii) defining the theory; and (iv) writing the theory. Each stage of this process is continually revisited in any sequence throughout the course of the research. Constant thematic analysis begins with the coding of incidents that in turn lead to the emergence of categories and their properties and finishes with the theoretical codes that connect the categories with each other. This allows the data to be compared and analysed throughout the course of the study, which results in the emergence of a theory that is a true reflection of both the data that has been collected and the study participants (Glaser 1978).

3.3.4.2 Substantive coding

Substantive coding consists of two distinct stages: open coding and selective coding. Open coding is the first stage of constant comparative analysis and begins with the raw data obtained from the fieldwork, observation or interviews that have been transcribed verbatim. Each segment of the data is coded, examined closely and then compared to each other for similarities and differences (Glaser and Strauss 1967). This enables the researcher to identify patterns that allow for the grouping of similar codes in order to form categories and subcategories. During this process a core category might be identified, which will be the main category that explains the

variations in the data and, therefore, the behaviour or action of the study participants. This core category then becomes the guide to ongoing data collection and theoretical sampling.

Selective coding is the second phase of analysis in GT and is similar in procedure to open coding. However, selective coding is more analytical and abstract than open coding, which leads to the generation of the conceptual names of the categories. This is because as codes and categories emerge and are compared, the researcher starts to look for the core category that explains the main concern or problem of the study participants. This results in more integration and refining of the abstract concepts covering the variations in behaviour patterns. Thus, during selective coding the researcher focuses on a limited number of categories that best represent the major aspects of the data. The criteria for core category selection as defined by Glaser (1978, p. 95-96) states that it should be central to as many other categories as possible and is, therefore, frequently seen in the data. The core category, as such, takes more time to be saturated or expanded than other categories identified. In addition, the core category should have meaningful links to other categories that are quickly and easily identified and should be able to explain participants' behaviour throughout the period of the data analysis (Glaser 1978).

3.3.4.3 Theoretical coding

During this coding phase, properties, connections and links between categories and core categories emerge from the data. It is also the stage during which the descriptive links between categories are changed into theoretical links (Glaser and Strauss 1967; Glaser 1978). Theoretical codes are viewed as the conceptual connectors that link categories to each other and to the core category enabling and guiding the process of theory generation, development and integration (Glaser 1978). Theoretical codes can be identified through diagrams or models that present the relationships between the categories and the core category.

3.3.4.4 Theoretical sampling

Theoretical sampling involves the inclusion of individuals, situations or literature that can add to the categories, properties or links identified during the data analysis process. After the process of open coding and the development of preliminary conceptual codes and categories, some questions may still remain unanswered. Such questions guide further data collection to facilitate theory development. Sampling and data collection continues up to the point of saturation. It is

at this stage of the research that the process of ongoing data collection is controlled by the emerging theory. Therefore, only relevant data that will add density to the emergent theory is collected. This process is referred to as theoretical sampling (Glaser 1978).

3.3.4.5 Category saturation

There are two situations that indicate the saturation of categories in GT: (i) when theoretical sampling does not add any new information to the categories in the study; and (ii) when there is no new information available to the researcher to assist his/her understanding of the properties, connections or links between the categories and the core category (Glaser and Strauss 1967). However, some researchers may choose to confirm findings with another group of participants. This can lead to the discovery of a new perspective or information that was not found in the original area of the study. This may put the researcher in a dilemma where he/she needs to choose between either pursuing the new lead or dismissing it as a negative case that is insignificant to change the theory (Glaser and Strauss 1967). Therefore, saturation of categories is important to mark the end of data collection in GT.

3.3.4.6 Memoing

Memos are the building blocks that are used to develop theoretical ideas that are grounded in the research data and, therefore, facilitate theory generation. Memos enable the researchers to document their ideas, thoughts, hunches, questions, emerging hypotheses and analytical schemes. This in turn enables the researchers to keep track of the emerging theory. Memoing is a mechanism for theorising ideas about codes, categories and the core category and their relationships, which are generated by the researcher during the period of the study. Memos can be as simple as a sentence or as complex as a diagram. Therefore, there should be no constraints placed on the researchers when documenting memos freely as they emerge. To accurately employ GT, researchers must be careful not to abandon or neglect memoing during theory development (Glaser 1978).

3.3.4.7 Theoretical sorting

Theoretical sorting begins towards the end of coding and when categories are close to saturation. As memos are developed they may consist of all the notes, pictures, diagrams, comments, hunches and hypotheses that were written down from the beginning of the data collection and coding until the completion of the final write-up of the thesis; thus, the purpose of theoretical sorting is to sort the memos that were documented by the researcher throughout the course of the research in order to identify the emerging theory. This process is crucial in GT as it enables the highlighting of the connections between the categories, core category and their properties and facilitates the outlining of a generalised, integrated and complex theory. The major focus of theoretical sorting is to put back together the fractured data collected during the research in an effort to provide a whole picture of the substantive area under investigation (Glaser 2002).

3.3.5 Problems and critiques of grounded theory

Like any other methodology, GT has limitations. Becker (1993) highlights a number of pitfalls and states that many researchers claim to have produced GT research but have in fact only delivered elaborate descriptive studies (Becker 1993). She identifies the common problems associated with descriptive studies that claim to be grounded in the theory. These include:

- Failure to identify the problematic situations in the research area
- Failure to use theoretical sampling to make sure the theory produced is adequate. In most studies, sampling is usually decided before the start of the empirical work.
- Failure to use correct theoretical lens for the proposed research questions
- Failure to concurrently engage in both data collection and analysis
- Failure to identify the correct core variable due to reliance on computer programmes, which manage data with the identification of the core variable based solely on the frequency of its occurrence in the programme.

Bryman (2008) lists a number of critiques to GT in his book *Social Research Methods* that include the following:

[1] The impracticality of a theory neutral observation. Bulmer (1979) questioned the difficulty of setting aside theory at the start of the research and argued that theory neutral observation is impossible. The traditional GT approach, as presented by Glaser and Strauss, stresses the importance of inducing the theory from the data and setting the theory construction apart from existing theories. However, social researchers are always aware of theories that are relevant to their discipline. It is, therefore, unlikely that this awareness can be suspended until advanced stages of data analysis. In addition, awareness of existing theories enable researchers to focus on defined research questions and build their explorations on previous work (Bulmer 1979; Bryman 2008).

[2] The need to specify theories for research bids. Many researchers need to specify theory when applying for research bids or when embarking on research within an academic setting. For example, researchers seeking sponsorships or bids for postgraduate studies need to submit study proposals that mandate a substantial degree of literature review and the identification of gaps within literature. They also need to illustrate how their prospective research will build upon existing literature and how it would contribute to knowledge. This extensive exposure to literature and existing theories is irrevocable and conflicts with the traditional GT approach that discourages researchers from engaging with available literature before the actual fieldwork.

[3] GT is lengthy and time consuming. Transcribing recorded data followed by analysis in the form of coding can be quite challenging especially when faced with tight deadlines. Genuine and thorough GT data analysis, which is concurrent with data collection and conceptualisation, may be problematic due to the time commitment involved (Bartlett and Payne 1997). As presented earlier in the pitfalls of GT, implementing theoretical sampling lengthens the data collection process. Thus, theoretical sampling is often the key component of GT that is usually left aside because of time constraints. Hence, many researchers decide on the study sample before the empirical work starts.

[4] Difficulty or failure to produce a theory. One of the main criticisms of GT is that it does not result in the production or generation of a formal theory but only provide a rigorous approach to the generation of concepts. Most GT theories are substantive in character because they cannot be transferable to other contexts apart from the social phenomenon that was explored.

[5] Coding breaks up narrative flow of data. Researchers in GT are encouraged to fragment data through the process of coding which results in data that is dissected into separate and distinct segments. Some writers believe that this coding process can alter narrative flow and result in a loss of the sense of context in data (Coffey and Atkinson 1996).

[6] Realist vs constructivist GT. One of the main criticisms of GT is the positivist and realist nature of the methodology, especially Glaser and Strauss's or Strauss and Corbin's GT approaches. As illustrated earlier in section 3.2.2.2, many modifications of the traditional GT approach aimed at moving GT away from positivism and realism, such as Charmaz's constructive approach in GT. For example, the original work of Glaser and Strauss from 1967 suggests that the researcher should start collecting data with a 'blank mind' and avoid reviewing the existing literature in order to carry out a truly inductive study. Therefore, theory emerges from the collected data where it was already embedded. Glaser and Strauss's approach assumes that every individual will see and understand the data from the same point of view and make the same observations and will, therefore, come to similar conclusions. In that situation, the researcher takes a passive stance and allows the data to emerge. This, in Charmaz's perspective, is a characteristic of an objectivist or positivist paradigm (Charmaz 2000; Bryant 2003).

[7] Variations amongst different GT approaches can confuse novice researchers. As presented earlier in section 3.2.2.2, scholars' attempts in modifying GT has resulted in competing accounts of the components of GT. Which makes it difficult to determine the correct method of implementing the theory (Bryman 2008). For example while Glaser (1992) believed that researchers should allow theory to emerge as they observe codes and analyse data, Strauss and Corbin (1990), on the other hand, believed that researchers should do more than wait for theory to emerge. Therefore, they developed a more structured approach to GT that included procedures and techniques to help theory generation. Glaser opposed Strauss and Corbin's approach because he believed that such procedures produced a preconceived theory that needs verification (also see section 3.3.2.2). Another example of variation, which is relevant to point [6] from the list of GT critiques mentioned above, is whether GT is positivist or constructivist.

[8] Variations in terminologies amongst different GT approaches. There is also still some confusion and uncertainty on some of the terms used in different approaches to GT. For example, while Strauss and Corbin (1998) emphasise 'concepts' when talking about the importance of undergoing theoretical sampling based on emerging concepts, Charmaz (2000),

on the other hand, uses the word 'categories'. Another terminology difference is evident in the use of 'axial coding' that Strauss and Corbin introduced in their version of GT. Glaser viewed this as another way for describing 'theoretical coding', which was proposed in the traditional GT approach (Glaser 1992). Strauss and Corbin (1990) also introduce new concepts in their GT approach, such as 'traditional system'; 'conditional matrix'; 'conditional path'; 'code notes' (another type of memo-writing); 'dimensions and dimensionalising'; and referring to the location of properties of categories along a continuum. Glaser, on the other hand, believed that such concepts and terms are unnecessary because they are complex, redundant and force theory rather than allow it to emerge from the data (Glaser 1992). This inconsistency in terms between different GT approaches might confuse novice researchers.

Despite all these critiques and limitations, GT remains the most influential strategy for the analysis of qualitative data (Charmaz 2006; Bryman 2008). GT is also popular amongst quantitative researchers when conducting mixed method research (Charmaz 2006). GT also significantly influenced the development of computer-assessed qualitative data analysis software (Lonkila 1995). Interestingly, such computer software also contributed to the wide use of the GT approach in qualitative data analysis (Bryman 2008).

3.3.6 Grounded theory and this study

This study draws on GT methods for guidance and principles rather than strict rules, as described by Charmaz (2006). In order to follow all of the requirements underpinning Glaser and Strauss's original method requires a separation between the researcher and the research environment, including both the research participants and the data collected. Charmaz (2006) argues that it is not possible to fully remove oneself from previous experiences in order to conduct purely objective analysis of the data and, further, that the researcher is an active participant in the environment they research whether by interview, observation or other method of enquiry. She also adds that prior experience can help in interpretation of the data and relation of findings to the research context. Knowledge of the research environment provided through literature or personal experience can also help to focus initial aims and objectives of the research. It is often the case that personal experience can spark interest in researching a particular topic and so has already influenced the data to be collected before the study begins. My thoughts on the place of prior knowledge align with those presented by Charmaz. I am a pharmacist by profession and my work with patients with MetS features in the UAE has exposed me to health and social issues

that impact patients' therapeutic outcomes. During the early stages of the PhD, I have also come across a substantial amount of literature concerning MetS and patients' lay health beliefs as a requirement for the study's proposal and first year reports. I, therefore, acknowledge that it is not possible to detach myself from past experiences or newly acquired knowledge about the research topic in order to analyse data with a blank page perspective. In addition, Charmaz's approach to GT acknowledges the role of the researcher in constructing meaning with the study participants. As such, I need to acknowledge my role in the construction of meaning as I listen to informants' accounts and analyse them. Before I define myself as a researcher, I am an individual with a set of opinions and worldviews. Thus, I do not step into the research as an empty vessel but rather with preconceived opinions that might affect the way I will interpret data and construct meaning and understanding of informants' accounts. In this study, I have to acknowledge my role as an author of this research and have, therefore, maintained an ongoing reflecting approach as recommended by Charmaz (2006). This study is conducted on the basis of the adapted constructivist GT principles as described by Charmaz (2006), which means that the techniques of constant comparison and deviant case analysis were used in order to ground the findings in the data

3.3.7 Interviews

Interviews are social interactions that take place between two or more individuals during which information is negotiated and exchanged. Interviews are considered the backbone of qualitative research and are the most commonly used qualitative approach in social health research. One of the main reasons for the popularity of interviews is their flexibility and ability to access people's experiences, their attitudes, perceptions, feelings and realities. They also help elicit participants' interpretations of their experiences with the explored phenomenon and give the researcher the opportunity of capturing rich data (Britten 1996; Creswell 2007). Interviews are believed to be a rewarding experience for the researcher and the study participants alike. They provide study participants the freedom to talk about their experience with the research phenomenon and express their feelings and viewpoints in their own words. Participants may see interviews as an opportunity to have someone listening attentively to their accounts. Through engaging with participants in in-depth interviews, researchers are able to collect rich descriptive data that explain and give meaning to people's lives. They also have the privilege of having strangers entrust them with their personal lives and intimate issues.

The success of interviews in qualitative research rests on the skills of the interviewer. For example, during interviews, the interviewee is considered the expert and the interviewer is considered the student. Researchers or interviewers are motivated by the desire to learn everything the participant decides to disclose about the research topic. Interviewers need to avoid leading questions that might imply ideas or influence participants' views. They should also be able to pick up cues that uncover new areas and ideas in the research and to give participants enough time to express their views and perceptions. At the same time, interviewers need to maintain their control of the interview process (Britten 1996). It is recommended that interviewers develop an initial interview guide that defines the areas to be explored, but is flexible enough to allow for the addition of questions as new relevant themes emerge from each interview. Open-ended, non-judgmental questions are best suited for qualitative research investigation as they invite and encourage participants to give a detailed description of the topic explored allowing unforeseen declarations and stories to emerge (Britten 1996; Smith 2005). The flexibility of qualitative interviews helps to correct the researcher's tendency to follow any preconceived notions about the phenomenon by encouraging openness to new ideas that emerge during interviews and continuous visits to the data collection field to collect more focused data (Charmaz 2006; Creswell 2007). Qualitative interviews were best suited for this study as they allowed participants to express their views and perceptions about MetS and gave the researcher the flexibility to amend and change the interview guide to allow further exploration of emerging themes.

Semi-structured Interviews were chosen as a data collection tool for this study because they permit participants to express their views about MetS and its management in their own words while interviewers listen and observe with care and sensitivity. The following sections discuss different types of interviews in qualitative research and limitations to this data collection tool.

3.3.7.1 Types of interviews

All qualitative interviews contain the same basic elements of discussion, detail and description. However, they vary according to the degree of control the interviewer imposes on the responses of the informants. Therefore, based on the degree of structuring, interviews can be divided into three categories: structured interviews, semi-structured interviews and unstructured interviews (Fontana and Fray 2008). **Structured interviews** are composed of a set of predefined questions that are carefully and fully worded. These questions get to be asked to each informant in the

same way, order and with the same probes. This standardisation is intended to minimize the effects of the instrument and the interviewer on the research results. Thus, structured interviews allow a cross-comparison of responses over time. They are also suitable for studying the views of a large sample of participants on well known or previously explored topics through open questions interviews. However, the weakness of this approach lies in its standardisation which prevents the interviewer from pursuing topics that might suddenly emerge during the interview. They also limit the extent to which contextual factors as well as informants circumstances can be considered and explored. Most of the interviews in qualitative research tend to be less structured and controlled; therefore, structured interviews are the approach of choice in some quantitative studies in order to maximise reliability and validity of the measurement of variables.

Semi-structured interviews, on the other hand, are less controlled than structured interviews and thus more flexible. An interview guide, usually including both closed and open questions, is prepared. However, in the course of the interview, the interviewer has a certain amount of room to adjust the sequence of the questions to be asked and to add questions based on the context of the participants' responses. The interviewer prepares a list of topics that need to be covered during the interview, which is referred to as the interview guide. However, the interview guide should not constrain interviewers and they should not feel the need to abide to the order of the topics or the phrasing of the questions. Rather, interviewers have the flexibility to enquire about the topics of interest as they see appropriate and to add new questions as they pick up on things said by the informants. The interviewer needs to skilfully move between the proscribed and unstructured questions in order to clarify answers or ask for elaborations (Barbour 2008).

Unstructured interviews are useful for the exploration of new topics or areas that are not well known or understood. Because of their high degree of flexibility, study informants have the ability to express their views freely with minimum control from the interviewer. Although the interviewer needs to be aware of the areas to be covered during the interview and may be equipped with a checklist, he or she is advised to initiate the interview with a single question and then allow the informant to respond freely and in the way they decide. Interviewers should only probe or respond to points raised in order to encourage and stimulate the informants to talk and express their views. One type of unstructured interview is known as **narrative interviewing**, which is an approach that encourages study participants to tell a story about significant events in their lives (Flick 1998; Barbour 2008). Although narrative interviewing or storytelling has been

mainly employed in biographical studies and oral history, it has recently been embraced in other disciplines including social health and health service research (Barbour 2008). This technique in qualitative interviewing came as a response to the critique to question-response-scheme of most interviews and the structure imposed by defining the theme of the topics, ordering and wording of questions (Bruner 1990).

The underlying concept of narrative interviews is that informants' perspectives are best revealed in stories using their own spontaneous language in the narration process. However, it would be unrealistic to assume that storytelling is an unstructured act as it follows a self-generated rule and even the narrator abides by the basic rules of storytelling (Flick 1998). Another critique of narrative interviews is that the interviewer should pose as someone who knows nothing or very little and is, therefore, looking forward to learning all about what the informants have to say. This pretence is difficult to maintain as the researcher's knowledge about the topic increases with every interview and will eventually affect the informants' responses. Every informant will unintentionally develop a hypothesis about what the interviewer is seeking in an interview. Knowing that they are not the first to be interviewed, informants will tend to speculate about the amount of knowledge the interviewer has developed about the research topic from previous interviews. This results in strategic storytelling where purposeful accounts are communicated during interviews in order to please the interviewer or make a particular point (Flick 1998; Barbour 2008).

Another weakness of narrative interviews lies in the fact that an interview may go through a series of narration and subsequent questioning, which may blur the boundaries between narrative interviews (or unstructured interviews) and semi-structured interviews. This occurrence results in narrative interviews that resemble narrative-saturated, semi-structured interviews rather than a new form of unstructured interview (Flick 1998). Hence, there is a growing tendency to refer to both semi-structured and unstructured interviews as in-depth interviews (IDIs) or as qualitative interviewing. Despite the variation between the two interview approaches, most interviews conducted in qualitative research are close to one or the other. However, if the researcher is embarking on a research topic with a clear focus then the ideal interview approach would be semi-structured interviewing.

In this study, the literature review highlighted areas worthy of exploration in patients with MetS and within the UAE socio-cultural context. It also started as a mixed method research with

defined areas of exploration in the qualitative part of the study. Thus, upon the elimination of the quantitative arm of the study, the qualitative part retained its original scope and aims, which was to explore the health concerns of patients with MetS living in the UAE. These health concerns mainly revolve around the management of MetS and factors influencing the implementation of a MetS treatment plan. As such, a narrative interview approach would not have been ideal for the scope of the study and thus a semi-structured interview approach was used. Semi-structured interviews allow informants to respond with as much detail as they want to share their viewpoints regarding their experiences of living with and managing MetS. Whilst using the semi-structured approach, it was ensured that the interview covered all the study's questions, while allowing for the flexibility to address areas of specific interest and relevance to each respondent. The primary aim of the IDIs in this study was to fully engage with the participants in order to explore detailed information on MetS. The in-depth interviews focused on how individuals live with and manage their health condition, the contexts and the meaning they describe as emerging from their health behaviour, and factors influencing the implementation of MetS treatment plan as well as the clinical utilisation of MetS concept.

The following section illustrates some of the limitations of in-depth interviews followed by the implication of this data collection tool with regard to the study scope and setting.

3.3.7.2 Limitations to in-depth interviews

As with any data collection technique, in-depth interviews have limitations that may affect the quality of the data and eventually analysis. For example, interviews are social interactions that aim to assess participants' views and perceptions of a specific event or phenomenon; therefore, interview accounts are not objective but rather subjective representations of informants' realities, thoughts and actions. Blumer (1969) believed that humans are not passive conforming objects of socialisation but rather active and creative participants that have a role in constructing society (Blumer 1969; Silverman 1993; Charmaz 2006). In this respect, informants do not respond mechanically to the interviewer's questions, but rather they dynamically interact with the interview setting, are affected by the interviewer's past and immediate identities and, thus, think about their actions and responses. Therefore, it is imperative for the interviewer to keep attuned to how participants view them, to assess the situation and to act on their present assumption and past knowledge (Charmaz 2006).

Informants tend to speculate about interviewers' intentions and what they seek in an interview. Thus, informants may provide answers that meet with their expectations or that they think will satisfy the interviewer. They may also have their own agendas to take part in an interview and share information with the interviewer. For example, informants may present themselves as competent and responsible members of their community and seek to provide answers which portray socially acceptable thoughts or behaviours to reduce the extent to which their actions can be negatively judged by the researcher (Murphy and Dingwall 2003). They may defend themselves if they sense a conflict in viewpoints may arise during the interview by putting themselves in a positive light with regard to the explored issue. They may also show interest in the research topic and enthusiasm to take part in the interview, which may not have existed prior to the interview, in an attempt to 'please' the researcher. However, this does not mean that participants' responses during the research interview are false or not valid but that consideration must be given to the purpose of the explanations given and the influence of the context on participants' accounts (Murphy and Dingwall 2003).

Interviews can also be used to access a wide range of information, such as participants' reports of a particular event or their opinions and thoughts. When researchers request participants to talk about their experience of a particular event, participants need to recall that event and interpret it, before formulating their description and then providing it during the interview. This may result in the generation of multiple valid accounts (Murphy and Dingwall 2003). Informants' responses may be influenced by what they have noticed during the event, what they remember during the interview, how they interpret what they observed or experienced and what they consider worthy of reporting or of importance to them or to the researcher. All these factors may impact responses during an interview. Therefore, each interviewee may provide a different report of events, but they could all be valid representations of the event and can be treated as such (Murphy and Dingwall 2003). Researchers should also acknowledge and be aware of the impact of differences between the interviewer and the informer with regard to race, age, gender and class as these differences might influence what happens during the interview process (Charmaz 2006).

It is important to remember that people's opinions change depending on the context in which the interview was conducted and that ambivalence is common. This can result in varying responses according to the situation and the people present. It is important to consider how the interview context may influence the participant's responses during analysis of interview data to

ensure that bias is identified where possible. During interviews, especially when asking about participants' thoughts or opinions, researchers need to 'put themselves in the participants shoes' and to try to understand how the participant interprets the world around them. Interviews can provide access to otherwise unknown rationales and assumptions about the interview topic, but cannot be used to ascertain why people behave the way they do (Murphy and Dingwall 2003).

3.3.7.3 In-depth interviews in this study

The different IDIs conducted in this study sought to access the participant's perceptions of the clustering of CRFs or MetS, and their thoughts about a range of factors that might influence MetS management in the UAE. A number of influences may have affected the participants' responses during the interviews conducted (Murphy and Dingwall 2003). I will first consider influences on the patients' interviews. For example, gender segregation is common in health care facilities in the UAE female women health care providers usually attend to female patients; thus, the impact of the gender difference between me (a woman) and the participant is inevitable. A man and women of no marital or immediate family relation should not be alone in a closed room. As such, the interviewer (a woman) might not be able to conduct an interview in a closed room if the interviewee was a man. Minor technical adjustments might be helpful in such cases, such as conducting a telephone interview or keeping the door of the interview room slightly open. Concerns about socio-cultural rules are alleviated when interviewing HCPs, as they are used to gender mix in work places. Therefore, interviews with HCPs can take place within the realm of the health care facility they work at.

The interview process could have also influenced patient accounts in a range of ways. As will be presented in more detail in Chapter 4, although the patient information sheet clearly stated that the study was interested in recruiting patients with MetS, most patients interviewed were not familiar with the MetS diagnosis. As presented earlier, patients may sometimes be keen to present themselves as supportive of the researcher or research topic due to an awareness of the researcher's interests. Thus, patients' motivation to take part in the research despite their lack of awareness of the MetS concept might have been engendered by curiosity, genuine or displayed interest in the MetS topic or their desire to show support to the researcher by participating in the interviews. During interviews, patients may have also strived to portray themselves as knowledgeable patients who adhere to their prescribed treatment plan, which

might impact their accounts when describing the challenges of MetS management. Patients who had good relationships with their HCPs may have also been influenced by a desire to praise or show loyalty to their HCPs. The fact that I am a pharmacist might have made patients reluctant to report negative views about their HCPs or the health care facility. In addition, some patients were interviewed in private rooms inside the clinic. This interview arrangement might have made it difficult for them to give negative accounts of their consultations or negative views of their HCPs due to the proximity of the HCPs offices. Patients may have felt more or less 'useful' to the study depending on their perceived seriousness of their condition or the number of medications they take and may have aimed to be as helpful to the study as possible during the interview.

All of the HCPs participating in the study were aware of my background as a pharmacist. This may have influenced HCPs in a number of ways. Firstly, they may have felt that being researched by a fellow professional would allow a level of understanding of the participant's own environment. It would be expected that another HCP would understand the workplace pressures, difficulties, requirements, benefits and relationships without need for detailed explanation. This may have facilitated HCPs' responses and provided some encouragement that their views would be understood. However, my status as a pharmacist may also have hindered responses. The nature of the awareness and understanding outlined above could also enable me to judge their responses or actions in the interview based on my own knowledge. HCPs could have attempted to offer explanations to reduce any negative judgements of their performance, especially when enquiring about factors that render optimal control of cardiometabolic diseases. For example, talking about patients' related factors (i.e., poor adherence to prescribed treatment or of patients' low attendance rate at clinical appointments) or describing difficult working conditions would serve to limit the responsibility of HCPs for any poor performance. In addition, HCPs were aware that the study was exploring a wide range of factors influencing MetS management (e.g., patient-related and contextual factors). This may have led some HCPs such as pharmacists, dieticians and health educators to give greater emphasis to cultural related factors that hinder the management of MetS than they would outside of the study, in order to present helpful accounts for the research and to give a favourable view of themselves as HCPs concerned with MetS. All HCPs, except for one, were interviewed at their own place of work. This may have served to relax HCPs as they were in a familiar and comfortable environment. The fact that all HCPs were recruited from the same health care facility may have influenced their responses especially if they were seeking to portray a particular image to their co-workers. A significant

influence to these interviews was the pressure of work commitments, shortage in time and other available medical staff. Although interviews were conducted at a time of the participant's choosing, the pressures of a busy working environment can pervade the interview space.

In this study IDIs were used as a data collection method to gain an understanding of participants' views, opinions or accounts. It is important, however, to acknowledge that these offerings are valid representations of the notion described only when considered in the context in which they were given and with an awareness of the influences of each context upon those accounts. The context of each interview could have exerted a large number of effects on the accounts of the participants and these must be kept in mind when considering the data and analysis presented during this thesis. More detail about the topics discussed in the interviews conducted will be given in the data collection section of this chapter.

3.3.8 Focus groups

Focus group discussions (FGDs) allow a small group of participants with similar interests to converse and discuss a research topic with the guidance of a facilitator or moderator. FGDs were chosen as a data collection method to further explore themes identified during the interview process. FGDs allow social interaction between the participants and the facilitator which stimulates thoughts and provokes discussions. In the setting of a FGD, participants have the opportunity to listen to each other and help each other in clarifying thoughts and assumptions. The FGD facilitator, on the other hand, has the opportunity to observe the dynamics of participants' interaction and their exchange of ideas and thoughts and to explore reasons behind disagreements or conflicts that might arise. FGDs can be used to generate constructs, develop models, guide product development and evaluate a given service or programme. FGDs are characterised by their flexibility and high validity. They are also cost effective and the results can be gathered within a limited period of time. FGDs allow researchers to increase the study sample size through groups rather than individual interviewing (Barbour 1995).

FGDs as a qualitative data collection tool were previously used in a number of studies that explored women's health care issues in the UAE (Winslow, Honein et al. 2002; Ali, Bernsen et al. 2009; Berger and Pearson 2009; Ali, Baynouna et al. 2010). FGDs were chosen because of their similarity to the native Bedouin patterns of socialisation where tribal members, although divided by gender, will occasionally gather to discuss issues in their homes or tents. FGDs were believed

to be ideal as a data collection tool because they resembled the Emirati traditional gathering of society members in a formal reception or large sitting rooms referred to as the 'majlis' in Arabic (Borkan, Morad et al. 2000). In this respect, FGDs were a feasible and successful data collection method that elicited women's concerns about their health and factors that impact the management of health conditions within the cultural context of the UAE. Nevertheless, these interviews were conducted in women-only FGDs. This arrangement can be explained by the researcher's desire to achieve homogeneity within the FGDs and to capitalise on women's shared experiences with health care in the UAE. A single gender FGD emphasises the constraints imposed by the UAE socio-cultural norms on mixed gender FGDs. Culturally, it is neither usual nor favourable in the UAE for patients to discuss their issues with strangers in groups of mixed gender. As such, there was a concern by the researcher that patients with MetS will not appreciate a mixed gender FGD, which will result in conducting two FGDs for each gender. Therefore, it was the perception of the researcher that this would require a significant amount of time in order to select, invite and conduct these separate MetS FGDs. HCPs working in the UAE, on the other hand, are familiar with mixed gender gatherings experienced in work settings, meetings and other official assemblies. It is, however, important to be aware of the impact of hierarchy within the HCPs' FGD which might affect the quality of data generated. Therefore, it was advisable to have separate FGDs for HCPs (e.g., physicians-only FGDs and pharmacists-only FGDs) so that one group of specialists did not feel inhibited by the presence of another specialist if they were grouped within the same FGD.

3.4 Developing the research tools

The qualitative tools chosen for this research were initially IDIs followed by FGDs to further explore identified themes from the IDIs. Two separate interview routes were developed to guide the interviewing process of the research.

3.4.1 IDIs and FGD guide

As participants were classified as patients and HCPs, there were two interview guides developed to lead the interview process (Appendices 6 and 7). The interview guide for patients was constructed to explore the meaning and consequences of living with the cardiometabolic anomalies of MetS. The guiding questions were designed to cover the following areas: (i) perceptions of MetS as a condition in its own right; (ii) the impact of MetS on patients' lives; (iii)

perceptions of MetS treatment plan; (iv) attitudes towards the health care system and HCPs, (v) barriers that affect the implementations of the treatment plan; and (v) existing facilitators or needs to enhance the management of MetS.

The HCPs' interview guide was constructed to explore issues surrounding the management of MetS in the UAE. The interview guide covered the following areas: (i) perceptions of the MetS concept; (ii) factors influencing management of MetS; and (iii) facilitators or needs to improve MetS management. The FGD guide was developed in accordance with the identified themes from the individual IDIs conducted with patients and HCPs and was designed after all of the interviews took place. One FGD was conducted with a group of pharmacists to explore the following themes: i) the attitude of patients with MetS towards a pharmaceutical treatment plan, ii) pharmacists role in the MetS management plan, iii) barriers and facilitators to pharmacists contribution to the MetS management plan. Before the start of the FGD with pharmacists, a short PowerPoint presentation was given to brief the group about MetS and the aim of the FGD. The aim of this presentation was to prepare the group for the topic of discussion, stimulate discussion and generate ideas. It was also useful in helping the facilitator to control the discussion process and minimise topic diversion.

3.4.2 Review of the interview guide

The two PhD supervisors based at the division of social research in Medicines and Health in the University of Nottingham reviewed the research instruments. The interview guides were circulated to the supervisors for review and comments. All suggestions were considered and a subsequent draft of the interview guides was later re-circulated. During the data collection phase, monthly webcam meetings with the PhD supervisors during the data collection phase were conducted to discuss the research progress and themes identified. These regular discussion helped highlight new areas that were worthy of further exploration such as the impact of patients religious beliefs and social norms on the management of MetS. This also helped in the modification and expansion of the interview guide to include these new topics and investigate such factors with subsequent participants.

However, after the data collection phase was completed, supervision recommenced in the UK where interviews were transcribed coded and analysed. Codes and themes were reviewed with

the two supervisors. Suggestions on areas to explore in following FGDs were highlighted and discussed during supervision meetings in the UK before going back to the UAE.

Prior to conducting the fieldwork, the ethics committee of Sheikh Khalifa Medical City (SKMC) reviewed the study proposal and the interview guides. All interview guides were translated into Arabic and then back validated to cater for the Arabic-speaking patients and HCPs. Piloting of the IDIs interview guide enabled adjustment and paraphrasing of questions to simplify enquiry and remove ambiguity. SKMC also assigned a co-supervisor (a member of the ethics committee and a cardiologist) to help the researcher: (i) gain access to the research setting; (ii) identify patients and HCPs for interviewing and (iii) to follow research progress and give advice on issues arising during the data collection phase. The name and contact details of the research co-supervisor were provided in the participant research information sheet in case they needed to report a complaint or an issue with regards to the researcher or the interview process. The assigned co-supervisor reviewed the interview guides and provided advice on areas that could also be covered and explored with relation to MetS. She also gave advice on some of the researcher's observations and early findings, especially with regard to interviews with patients. For example, after the first two interviews that took place in the pilot study, it was evident that patients were not familiar with the term 'metabolic syndrome'. To avoid the dilemma of having to inform patients of a concept they were not familiar with, the co-investigator and the two research supervisors were informed of this finding. A decision was reached to continue the exploration process which was also approved by the study co-investigator. This decision was made based on the following points:

1. The MetS is a term used to indicate the clustering of CRFs (Grundy 2006). All patients interviewed were aware of their presenting CRFs. Therefore, informing patients that the clustering of their CRFs is called MetS will not be considered as new information or a new diagnosis. Grundy (2006) argues that the concern about informing patients that they have a clustering of CRFs (Metabolic Syndrome) is difficult to understand since they are already assigned a diagnosis of diabetes, hypertension, dyslipidaemia and obesity. My opinion on informing patients of the MetS diagnosis agrees with that of Grundy's.
2. Patients were informed by their HCPs (i.e., physicians or health educators) that CRFs pose cardiovascular risk that increases when coexisting with other factors, such as a family history of CVDs, the congregation of CRFs, obesity and other behavioural factors (i.e., smoking, sedentary lifestyle, unhealthy diet). As such, informing patients of the

cardiovascular risk associated with having MetS (clustering of CRFs) will not be considered as new information.

3. Patients' responses with regard to perceptions of MetS might revolve around the diagnosed CRFs either individually or collectively depending on how patients choose to perceive their condition. However, patients are informed in the patient information sheet that the aim of the interview is not to explore an individual CRF but the 'clustered' CRFs they are presented with.
4. Talking about MetS in an interview requires those involved in the discussion to address its individual components (i.e., the clustering CRFs). Thus, patients' accounts regarding their overall 'health condition' might inevitably reflect their views of their 'presenting CRFs' which is parallel to the essence of any discussion regarding MetS. For example, patients aware of their MetS diagnosis will also be aware of the individual CRFs that constitute MetS (i.e., diabetes, hypertension, dyslipidaemia and obesity). Therefore, when patients describe living with MetS they might eventually talk about the impact of these individual CRFs on their lives.
5. The explanation provided in the patient information sheet will ensure patients are aware of the MetS definition and that the clustering of CRFs is also referred to as MetS. This arrangement will ensure that patients take part in the research knowing that they were invited because they fit the MetS definition.
6. The researcher should not expose participants to harm or distress during the interview and maintain their safety and wellbeing. Informing patients that the clustering of their condition is also called MetS did not appear to cause harm or distress to any of the informants during interviews.
7. The interview was conducted by an Emirati licensed pharmacist and is authorised by profession and by the research committee at SKMC to provide such information to patients. As a precautionary measure, if distress did occur, patients would be reassured by the researcher that MetS is another term for the clustering of their presenting CRFs and would then be referred to their physicians.
8. The patient information sheet provided participants with the contact details of SKMC co-supervisor to report any of their complaints against the study or the interviewer. Throughout the data collection phase, cases of patients' distressed by the interview, interviewer, or information about MetS did not appear to occur and the co-supervisor did not receive any complaints from any of the informants (patients or HCPs) regarding this particular information or any other concerning the interview or the interviewer.

9. Physicians interviewed did not express objections or concern in regard to informing patients about MetS. For example, when they were asked about reasons behind patients' lack of awareness about MetS their encounters did not imply that such information should not be provided to patients by the researcher. Some physicians also stressed on the fact that the term 'metabolic syndrome' was another medical name for the clustering of CRFs. More information on this area will be provided in chapter 4.
10. In their qualitative study, Kirkendoll and colleagues (2010) reported patients' lack of awareness of the MetS concept and the MetS diagnosis when they explored patients' views on lifestyle changes (Kirkendoll, Clark et al. 2010). During their focus group interviews, patients were informed that the clustering of their CRFs was also known as 'metabolic syndrome'. Patients' accounts indicated that they were not informed by their physicians about the MetS diagnosis or concept. However, the study authors did not report that patients' safety was jeopardized because of providing the study participants with such information. Kirkendoll et al's (2010) findings and approach validate the safety of such information and confirms that informing patients about MetS is not considered as a new diagnosis as long as patients are aware of their CRFs that constitute MetS.

Overall, exploring patients' awareness of MetS provides knowledge about the public penetration of the 'metabolic syndrome' name and concept and an understanding of factors that limit such health awareness. The interview questions changed over time and were influenced by codes and categories developed from previous interviews.

3.4.3 Conducting the IDIs and FGDs

An interview guide with well-planned, open-ended questions and ready probes increases the confidence of the novice researcher. Therefore, an interview guide was used in each interview, including the FGD. The interview guides mapped out the areas that needed to be covered during the interview. Each area contained a number of subsidiary questions. The informants did not necessarily talk about the topics in the order in which they were printed on the interview guide sheet and, therefore, use of interview guide had to be flexible. This meant that the researcher had to be alert to those issues which had already been discussed and those which had yet to be mentioned. Familiarity was rapidly gained with the topic areas and reference to the prompt sheet was reduced as the interviews progressed. There were no interpreters used during the

interviews. Interviews were conducted in the language chosen by the informants (Arabic or English).

3.5 Ethical issues

Anonymity, confidentiality and informed consent are three pillars of research ethics that concern qualitative researchers. Researchers, therefore, need to assure the study participants that these three elements are attained despite the challenge in achieving anonymity and confidentiality (Goodwin 2006). However, it was very important to ensure this study was conducted in an ethical manner and that participant' identities and wellbeing were protected and preserved.

3.5.1 Anonymity

Qualitative research requires a certain degree of detail to support research claims. In addition, the use of single or a limited number of research settings and the small number of participants rendered achieving anonymity problematic. Although the identity of all participants was anonymised and different names were assigned to each, the setting from which these participants were recruited was affirmed. HCPs were all recruited from one health care institute, and, thus, it is inevitable that an association of any of these HCPs with the researcher might indicate their participation in the study. However, the identities of the patients who participated in this study were not revealed to the study setting co-supervisor, their physicians or the PhD supervisors. Furthermore, quotes from interview transcripts were assigned pseudonyms.

3.5.2 Confidentiality

Participating in this study was voluntary and all participants signed a consent form prior to taking part in the IDIs or the pharmacists FDG. Participants' contact details were never requested and were not obtained during the data collection phase. All interviews either were conducted in an empty nurse preparation room that was provided to the researcher by the hospital management, patients' homes, HCPs offices or in private areas. The audio-recorded material was saved to a CD-ROM and locked in a filing cabinet. Transcripts were all stored in password protected Microsoft word documents. All data that might indicate and reveal participants' identity (i.e., pictures, names, passport photocopies, phone numbers and email accounts) were

erased, removed or shredded before the data analysis and, thus, were not and will not be included in reports or publications.

3.5.3 Informed consent

Informed consent (verbal and written) was obtained from participants before the initiation of the IDIs or the FGD. Details of the information provided to patients and the consent form are available in appendices 4 and 5, respectively. All participants were provided with the study's information sheet that included the aims and objectives of the study and all ramifications of taking part in the interviews. In a few cases, where participants requested immediate participation after invitation, the researcher read the information sheet aloud. Before the interviews commenced the researcher carefully described the nature of the interview and gave details of the content of the consent form. The researcher then gave participants time to contemplate and ask questions regarding the consent or information sheet, which were all answered and clarified before the interview began. As explained earlier, patients' unfamiliarity with the MetS diagnosis did not indicate their unfamiliarity with the clustering of their presenting CRFs, which complies with the MetS definition (see section 3.4.2). Patient information sheet included the MetS definition. The information provided, stated that MetS is defined as the clustering of CRFs that all patients in the study were aware of. Patients were aware of all the MetS features that they were diagnosed with and were willing to take part in the study to address issues related to their health condition. As such, patients apparently were aware of what they were consenting to, which is to take part in a research that explored the clustering of their CRFs, which agrees with the MetS MetS concept.

3.5.4 Ethical approval

The study protocol was reviewed and approved by the Institutional Review Board Medical Research Committee in SKMC where the study took place, which ensured that the methodology and procedures were in accordance with acceptable ethical standards. The committee also reviewed the study information sheet (Arabic and English versions), informed consent (Arabic and English versions) and the interview guide. According to the University of Nottingham policy and regulations on overseas research for the degree of a PhD, an ethical review for research conducted outside the UK is not required. Therefore, an ethical review for this study that took place in the UAE was not needed.

3.6 Selecting the study site and setting

The study described in this thesis took place in Abu Dhabi, the capital city of the UAE and the second largest city of the 7 Emirates that constitute the UAE. Although MetS is a national problem that affects all of the UAE, Abu Dhabi was selected as the location of the research because it was the hometown of the researcher, which allowed easy access to health care facilities that the researcher was familiar with. The study proposal was posted with a covering letter to SKMC, which was approved in May 2008 (Appendix 1). SKMC was established in 2005 because of the merger of all publicly held health care organisations in Abu Dhabi. SKMC has been managed by Cleveland Clinic since 2007 and serves as the flagship institution for Abu Dhabi health service company SEHA (Sheikh Khalifa Medical City). Participants were recruited from three outpatient clinics (i.e., cardiovascular clinic, internal medicine clinic and the diabetes and endocrinology clinic) and four family medicine clinics (i.e., Al Bateen, Al Khaleej, Al Mushrif and Al Rowda clinics). These clinics were chosen because of the higher chance of finding patients who fit the inclusion criteria and HCPs who deal with MetS patients.

3.7 Selection of the study participants

Patients were allocated from SKMC's OPCs (i.e., cardiology, internal medicine and diabetes and endocrinology clinics) and four family medicine clinics, also known as primary health care clinics that serve communities within different areas of Abu Dhabi. HCPs were also allocated from the same OPCs and FMCs. All participants met the study inclusion criteria (Table 3.1).

Table 3.1 Participants' inclusion/exclusion criteria

Participants' inclusion /exclusion criteria	
Patients' inclusion criteria	Patients' exclusion criteria
<ul style="list-style-type: none"> ▪ Fit into the IDF metabolic syndrome diagnostic criteria⁸ of MetS ▪ age ≥ 19 years old ▪ living in the UAE ▪ therapeutically managed and followed by the study clinical setting 	<ul style="list-style-type: none"> ▪ Patients with established CVD ▪ Patients refusing or unable to consent to take part in the study
HCPs' inclusion criteria	
<ul style="list-style-type: none"> ▪ Physicians, pharmacists, health educators or nurses ▪ Dealing with patients with MetS ▪ Have been working in the UAE and with MetS patients for ≥ 3 months before the start of the study 	

Theoretical sampling is the sampling technique employed in GT. It is described as an iterative process because it involves redefining the ongoing sampling of participants in order to test and refine the characteristics of emerging themes after each interview (Glaser and Strauss 1967). However, researchers may find themselves using elements of different types of sampling procedures in one study, which may complicate defining the sampling procedure used (Smith 2005). Participants' selection in this study adapted a purposeful sampling strategy to inform an understanding of MetS. The aim was to select participants who shared characteristics that were believed to be most informative in achieving the objective of the study.

Sampling techniques in this study included snowballing, especially in identifying physicians and pharmacists. To invite HCPs to take part, the researcher needed participants' contact details, which were not always available and, therefore, had to rely on other HCPs for help. The sampling process can also be described as convenient, as those who participated were those who were enthusiastic and willing to take part and were the only ones available to interview (e.g., only two health educators were available at the time of the study). Sampling was guided by emerging data and continued until no new themes emerged. Saturation was reached with 25 patients and 23 HCP interviews as no new themes emerged. An additional 4 patients and 4 HCPs were interviewed to confirm and ensure saturation of the themes.

⁸ IDF diagnostic criteria: Increased WC (or BMI > 30 kg/m²) plus any 2 of the following: TG ≥ 150 mg/dL or on treatment, HDL-C < 40 mg/dL in men (or < 50 mg/dL in women) or on treatment; SBP ≥ 130 mm Hg or DBP ≥ 85 mm Hg or on treatment for hypertension; BG ≥ 100 mg/dL (includes diabetes)

The available literature suggests that offering a monetary incentive or any sort of payment for taking part in the interview is not a common practice in studies conducted in the UAE (Winslow, Honein et al. 2002; Ypinazar and Margolis 2006). Therefore, no payment was offered to this study's participants. Nevertheless, pharmacists taking part in the FGD were offered refreshments (i.e., hot and cold drinks, sandwiches and snacks). The researcher introduced herself as a PhD student as this was in agreement with the information sheet participants were provided with that mentioned the researcher's vocation and the University of Nottingham name and logo. The researcher also added that the researcher was not an affiliate of or an employee in SKMC to ensure obtaining honest and accurate views from the participants.

3.7.1 Recruiting patients

To find patients with MetS I moved between seven clinic settings within SKMC. One week was assigned to each clinic where I had the ability to manually access the medical files of patients visiting the clinic any day during that assigned week. The recruitment process of patients started by first of all identifying suitable candidates for the interviews based on the study inclusion criteria. For example, I would visit a clinic early in the morning and sit in the administrator/nurse room where the medical files of patients who had appointments on that day would be arranged. I would then look through the medical files and apply the inclusion criteria. The names of suitable study candidates would then be documented in a separate sheet. When these patients came for their appointments, the nurse on the reception desk helped me identify them. I made sure I dressed appropriately and was carrying a visible identification card that had my picture, name and vocation and was similar to those carried by HCPs working in SKMC. This arrangement facilitated approaching patients and enabled patients to perceive me as an individual that belonged to SKMC and not as a stranger or an intruder.

Inviting patients to interviews was arranged in a way to avoid putting patients under pressure or feeling obliged to take part in the study. This strategy took into account the importance of respecting people's values and autonomy. The plan was to provide all patients with adequate information about their involvement in the research and assure them that there was no deadline for reply to the invitation or taking part in the study. However, if a patient showed interest after sufficient patients had been recruited, they would be thanked for showing interest and informed that I was no longer recruiting.

Patients were approached either while they were waiting for their appointment or after they came out of the physicians' office. I would sit next to a patient while they were waiting, greet them, introduce myself and then talk to them in brief about the idea of the research. I would then hand them the information sheet and ask them to read it and reply any time by contacting me if they wished to take part. Not all patients who were scheduled for an appointment on the day of my clinic visit attended their clinic appointments and thus were not approached or invited. Other patients who attended their clinic appointment refused to take the information sheet or take part in the study. Patients who were invited to take part in the study after they left the physician's office were approached after they had all the time needed to talk to the nurse, collect their prescription medicines or attend their other scheduled clinic visits. A total of 61 patients were invited to take part in the interviews. Each patient was provided with a study information sheet that contained the contact details of the investigator (Appendix 3).

Patients were informed that there was no time deadlines set for making a decision about taking part in the study. It was made clear to the patients that they had the right to take as much time needed to think about taking part in the study and read the study information sheet in order to reflect on the study aims and objectives. This arrangement was to ensure patients were properly informed before consenting to taking part in the study. Patients were also given the freedom to choose between conducting a telephone interview or a face-to-face interview at their homes or in the clinic at any time of their preference. Male patients, who chose to conduct a face-to-face interview, were met in the clinic ($n=3$) or their work places ($n=2$) as this arrangement was ideal with respect to the socio-cultural norms of the UAE (further elaboration in the researcher's reflections).

Out of 61 patients approached and invited, only 12 patients declined to be interviewed. Some of the patients who declined the invitation showed lack of interest in the study aims and others claimed to be 'in a rush' and had no time to listen to the researcher give a brief introduction to the study when approached. Six patients who scheduled for their interviews to take place during their following clinic visit did not attend their clinic appointment and, thus, were not interviewed. Another four patients were out of the UAE at the time of the research and did not take part in the study.

Nine of the invited patients preferred to take part in the IDIs immediately after invitation and verbal briefing of the study aims and objectives by the researcher. This group of patients were then verbally informed of the study's aims and objectives and the implications of agreeing to take part (e.g., patients' confidentiality, audio recording of the interview, the right to withdraw from the study at any point during the interview, the right to refuse answering any question when asked). Eight patients selected to be interviewed by telephone. Nine patients were interviewed in an empty preparation room which was provided to the researcher by SKMC administration. All patients interviewed signed the study consent form (Appendix 2) before taking part in the IDIs. Figure 3.1 illustrates the process of approaching and recruiting patients in the study these patients.

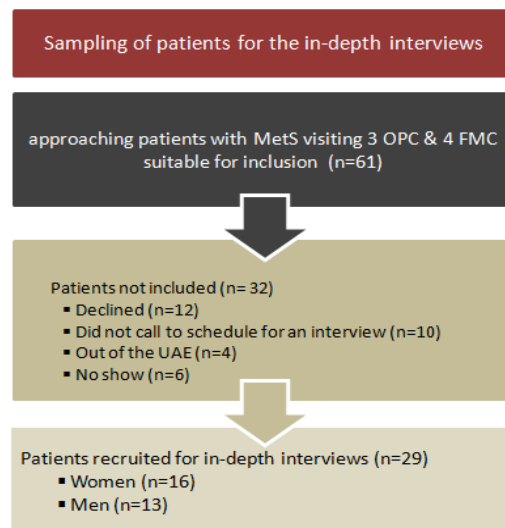


Figure 3.1 Patients' sampling scheme

The medical files of patients visiting three outpatient clinics (OPC) and four family medicine clinics (FMC) were assessed manually. Sixty-one patients met the study inclusion criteria and were invited to participate in the study. Thirty-one patients did not participate due to the reasons presented in the diagram. A total number of 29 patients were interviewed.

The IDIs were held with 29 respondents purposefully selected during visits to outpatient and family medicine clinics. Patients were of different nationalities and educational backgrounds as can be seen in Appendix 11.

Since the introduction of the new health insurance scheme in 2007 and the privatisation of all health care facilities in Abu Dhabi, non-Emirati residents of the UAE started accessing hospitals and primary care centres that were previously limited to citizens of the country. This health care system reform explains the use of SKMC services by non-Emirati patients living in Abu Dhabi.

during the data collection phase of the study. According to Malik and Razig (2008), the prevalence of MetS in the multiethnic population of the UAE was 40.5% applying the IDF diagnostic criteria of MetS. However, UAE nationals had the highest rate of MetS (41.8%) followed by South Asians (40.5%). MetS rates amongst other Arabic nationalities such as Shwams (35.9%) (i.e., Jordanians, Palestinians, Syrians and Lebanese), Egyptians (39.1%) and Sudanese (39.4%) were also reported (Malik and Razig 2008). These MetS prevalence rates illustrate the importance of including a variety of nationalities into the study to facilitate the understanding of factors influencing MetS management from the perspective of a wider range of patients of different ethnicities. In addition, non-Emirati residents of the UAE are users of the health care facilities in the country. Therefore, exploring their health needs within the context of MetS, allows for the understanding of how the UAE health care system caters for patients of different backgrounds.

One drawback encountered during the data collection phase was the lack of information about patients' demographics in medical files (e.g., ethnicity, social class, employment, marital status and accommodation or location). Other behavioural risk factors were also absent from patients' medical files such as smoking status and alcohol consumption. Malik and Razig (2008) indicated that MetS prevalence was higher in the rural areas (44.3%) than in the urban parts of the UAE (39.6%) (Malik and Razig 2008). In addition, available literature indicates that cigarette smoking, excessive alcohol consumption, social background and stress are factors that influence MetS prevalence and should be considered when managing this group of patients (Chandola, Brunner et al. 2006; Kyung-Won, Ki-Hong et al. 2006). However, in this study patients' demographics were not available to inform the sampling strategy so as to invite patients of variable backgrounds to take part in the interviews. Interviews, therefore, were the researcher's only access to patients' demographic data and information about patients' education, work, marital and family status was collected during each interview.

Four of the patients interviewed had one family member join them during the interview process at their request (one patient with his wife and three female patients with their daughters). One Persian patient wanted her daughter to act as a translator although she spoke and understood Arabic. It is very common in the UAE to see sons, daughters and spouses join patients during their clinic visits and attend clinic examinations; thus it was inappropriate to ask the family members to leave the interview room and it might have drawn suspicion from the patients. It was decided, therefore, to allow these family members to attend. Family members were

informed of the aims and objectives of the study and were requested to allow the questions to be answered by the patients and intervene only when requested by the patient or the researcher. All the family members who joined the interviews signed a consent form before the interview started in case they did participate by joining the discussion.

3.7.2 Recruiting HCPs

HCPs who were in direct contact with MetS patients through their work were considered to be suitable subjects for the study as they would be able to articulate issues surrounding MetS management through their experience in dealing with this group of patients. As such, physicians, pharmacists, dieticians and health educators were sampled and invited to take part in the interviews. The aim of including this variety of HCPs is to provide a rich and diverse professional insight on MetS management needs based on their experience and professional speciality. For example, physicians are responsible for diagnosing, initiating treatment and then following the treatment progress of patients with MetS. Therefore, their accounts would provide an insight into issues influencing: (i) the identification and diagnosis of this group of patients; (ii) therapeutic management; (iii) clinical outcome and control of CRFs; and (iv) the clinical utilisation of the MetS concept. Pharmacists, on the other hand, are responsible for supplying medicine and providing drug counselling to patients. Thus, by reflecting on their own experience in dealing with this group of patients, pharmacists can talk about issues related to medicine use and factors influencing adherence. Dieticians working in FMCs and OPCs are involved in tailoring lifestyle interventions to fit patients' daily lives. They might, therefore, be able to provide information on contextual as well as personal factors that impact patients' implementation of lifestyle interventions. Ideally, health educators have the role of assessing patients' health awareness and investigating issues surrounding their understanding of their condition and treatment plan. They were, thus, valuable informants in this research.

3.7.2.1 Recruiting physicians

At the beginning of the study an email list of 15 physicians was provided by the study co-supervisor at SKMC. All 15 physicians were emailed and invited to take part in the study. A copy of the study information sheet and consent form was attached to all emails. Four physicians responded and agreed to take part and gave the researcher an appointment to conduct the IDIs. Four physicians were recruited during the clinic visits and two were referred to by the previously

interviewed physicians. The researcher made sure that physicians knew of their option to take their time in reading the research information sheet before agreeing to take part, nevertheless, two of the physicians asked to be interviewed immediately after being physically approached and invited by the researcher. These two physicians insisted that they were “highly interested” in study aims and objectives and that “now” was a convenient time for them to take part in the interviews. All IDIs were conducted inside physicians’ offices.

3.7.2.2 Recruiting pharmacists

Pharmacists took part in the IDIs (11 pharmacists) and one FGD (nine pharmacists). The first pharmacist interviewed (clinical pharmacist at the endocrinology and diabetes clinic) gave a list of 12 pharmacists who worked at different pharmacies within SKMC’s outpatient and family medicine clinics. All referred pharmacists were invited via emails and six replied and agreed to take part in the IDIs. Another four pharmacists were recruited during the researcher’s clinic visits. All pharmacists were provided with the study information sheet and signed the consent form before commencing the interviews.

Recruiting pharmacists for the FGD took place five months after the IDIs were completed. This was to allow the researcher time for sufficient data analysis that would enable the identification of themes in need of further exploration through FGDs. Pharmacists were invited through the head of the SKMC pharmacy department who emailed all the pharmacists working within different family medicine and outpatient clinics. These emails included a brief introduction to the study and an attached information sheet. Nine pharmacists who did not take part in the interviews agreed to take part in the FGD.

3.7.2.3 Recruiting dieticians and Health educators

Dieticians (n=4) and health educators (n=2) were recruited during the researcher’s visits to the clinics. All dieticians and health educators approached agreed to take part in the study. At the time of the study, there were only two health educators present. The researcher met all the recruited dieticians and health educators during her visits to the clinics and invited them to take part in the study. The IDIs took place in the dieticians and health educators’ offices at different intervals during the data collection phase.

Sampling of HCPs resulted in the recruitment of 27 HCPs. Interviews were conducted with 10 physicians, 11 pharmacists, 4 dietitians and 2 health care educators. Recruiting HCPs followed a mixed sampling strategy that started as purposeful sampling but incorporated snowballing and convenience sampling as the research progressed (Figure 3.2).

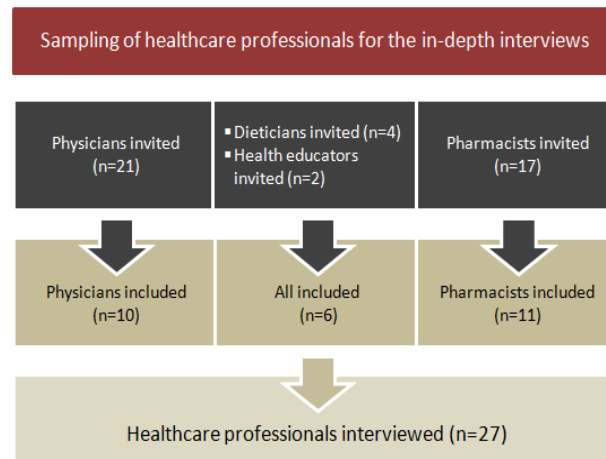


Figure 3.2 HCP sampling scheme

A total number of 44 health care professionals were invited for in-depth interviews. They were either approached during visits to SKMC, emailed or identified through snowballing. Only 2 health educators were available at the time of the study and both were invited.

All HCPs interviewed were provided with the study information sheet and signed a consent form before interviews commenced. Appendix 9 and 10 illustrates the demographic data of the HCPs that participated in the IDIs and the FGD, respectively.

By the end of the data collection phase, it was evident that a total number of 56 participants (29 patients and 27 HCPs) were interviewed and one FGD was conducted with 9 pharmacists who did not take part in the interviews.

3.8 Data collection and data management

Data collection occurred in two phases. The first data collection phase involved collecting the IDIs data which was conducted between January and May of 2009 and the second data collection phase was in November and December of 2009 and involved recruiting participants to take part in the FGD. All IDIs and the FGD were conducted by the researcher. Appendices 9, 10 and 11 present the details of the study participants.

3.8.1 The IDIs and FGD data

Interviews were audio-recorded using a digital interview recorder provided by the research institution. This generated a total of 29 hours and 27 minutes of recorded material. The shortest interview was with a patient and it lasted for 6 minutes and the longest interview was conducted with a clinical pharmacist and it lasted for one hour and 41 minutes. All recorded material was saved into a USB device as a windows media player or MP3 format which made the process of transcribing on the computer more convenient. All recorded material was transcribed verbatim by the researcher who conducted the interviews.

IDIs conducted with HCPs and patients elicited information on participants' health behaviour and perceptions of the risk factors that constitute MetS. It also provided information on patients' attitudes towards their medicines and lifestyle interventions and the contextual factors that affect the implementation of the treatment plans. It is worth mentioning that HCPs were better at articulating themes drawn out by both patients and HCPs, and they were able to conceptualise some of the patients' health behaviour. This could be due to their educational background and experience in the health care field. Patients who had a university degree were also able to express their feelings about their condition and the impact that MetS has on their lives. They were also more aware of their role as patients and their expectations of the health care services in the management of their condition. This was evident from the IDIs conducted with this group of patients that seemed to be longer than IDIs conducted with less educated patients.

The pharmacists' FGD was conducted five months after all IDIs were completed. This allowed the researcher to analyse enough data generated from interviews and to identify themes that required further exploration. Conducting and controlling the FGD appeared to be more challenging than IDIs. In the FGD more participants (n=9) engaged in the discussion resulting in incidents where participants' voices overlapped or discussion diverted from the research focus. The PowerPoint presentation during the FGD helped the facilitator intervene at the right time and in a professional manner in order to bring the discussion back to MetS related issues. It also enabled the facilitators to have more control over the dynamics of the discussion and engage all the pharmacists in the discussion. The facilitator used the PowerPoint slides to point at titles or move between slides to bring the participants' attention back to MetS. The facilitator allowed

participants' 'rambling' as this helped unravel more themes and stimulated the interaction between participants.

3.8.2 Managing unrecorded data

Audio-recording facilitates accurate and verbatim transcribing of interviews. However, there was one case in this study when audio-recording was not possible. This resulted in manual documentation of this interview with a female dietician and in a few cases when the participants started talking about the research topic after the interview ended and the recorder was switched off. Manual transcription of interviews can result in incomplete data as the interviewer might lose focus and be distracted by writing down responses rather than listening carefully to participants to capture ideas and themes emerging during the interview. There is also the risk of paraphrasing responses with the researcher's interpretation of what was said which can result in subjective analysis of the data (Smith 2005). In this study one female dietician strongly refused having her voice audio-recorded during the interview. To minimise paraphrasing and personal interpretation, the researcher took short notes during the interview of the topics covered and issues raised by the dietician. She then reviewed all hand written notes with the dietician to make sure all disclosed information was documented in the researcher's notes and to allow a second opportunity to listen to how things were actually described by the dietician. Once the researcher left the dietician's office, the whole interview scenario was written explicitly to retain all verbal and non-verbal gestures, body language and some of the exact words that were used by the dietician to describe her perceptions and views. On other occasions participants started talking after the audio-recorder was switched off. In such cases, the researcher wrote down a summary of all relevant issues shared immediately after the participant left the interview room.

3.8.3 Researcher's field notes

The researcher kept a diary in which all observations and perceptions about the data collection process were documented using a word processor. Field notes were documented on a daily basis promptly after each clinic visit or interview to ensure that the researcher's observations and notes were captured and reserved while they were fresh in her mind. These notes aided in paraphrasing some of the interview questions or adding a new question to explore new ideas and themes that were identified in the preceding interview. These notes were also useful during the data analysis phase as they helped the researcher retrieve some of her feelings and

perceptions about the interview process, its dynamics, and why things were said and what provoked them.

It is recommended that researchers keep a chart to check patterns of ideas and behaviours of participants which are then compared to the researcher's notes (Bernard 1988). This helps identify if participants behaviour during interviews is spontaneous (reflect collective culture) or influenced by the researcher (reflect researcher provoked statement). Patients' behaviour during IDIs and the FGD was taken note of and was used during the analysis. Photographs of interview settings, clinics visited, health clubs, public places and other locations that participants mentioned in interviews were taken using the researcher's mobile phone or digital camera. These photos were saved into the researcher's study diary alongside related notes. Such photographs helped the researcher to recall the context of the interview. This photographic diary proved helpful during the analysis process as it enabled the visualisation of some of the events and activities that participants talked about in their interviews.

3.8.4 Transcription

All IDIs and the FGD were transcribed verbatim by the researcher who conducted the interviews. This enabled the researcher to re-live the interview events during transcription and recall how things were said and what provoked them. It also enabled the researcher to add comments that reflected her observations and perceptions during the actual interview and compare the recorded material with the field notes to remove ambiguity, especially when participants' words were unintelligible or were obscured by background noises. The researcher's notes also aided in adding preliminary codes that describe the participants' non-verbal communications, hand gestures, body language, emphases on phrases and words, all of which helped in capturing the essence of the interview and the intensity of participants' expressions and disclosure. Preliminary codes helped the researcher understand some of the health concerns in MetS management, especially in the early stages where analysis was needed to identify emerging themes and categories that were within the researcher's interest. To ensure consistency of the transcription process some of the transcripts were read by the PhD supervisors to certify that the general rule of transcribing was adhered to.

3.8.5 Translation

There were 36 IDIs conducted in Arabic; 26 of which were with patients, whilst the remaining 20 interviews were conducted in English. Although three patients and four HCPs were non-Arabic speaking participants, another 13 participants (8 physicians and 5 pharmacists) chose to conduct their IDIs in English despite Arabic being their first language. The FGD was conducted with Arabic-speaking pharmacists and the discussion was in Arabic. The researcher did not impose a language on the participants and participants were given the freedom to respond in the language they preferred. All IDIs and the FGD were transcribed verbatim and in the language they were conducted in. This resulted in 37 Arabic transcripts (36 IDIs and the FGD). There was a need to translate all the Arabic transcripts into English as the two research supervisors were non-Arabic speakers. The bilingual researcher/interviewer translated all Arabic transcripts into English. To ensure the quality and accuracy of the translation process, 16 transcripts (43%) were back-translated and checked for consistency by bilingual individuals who spoke both Arabic and English fluently. It is worth mentioning that the Arabic intonations used in the interviews varied between participants, thus, some of the back translation was not identical to the original Arabic transcript but maintained a similar meaning. To further ensure that the meaning of the actual Arabic text was preserved in the English language, the researcher performed coding and analysis of the English translated scripts, whilst listening to the original Arabic audio-recordings of the interviews. This helped the researcher re-live the interview and retrieve the nuances of what was said. More information on translation dilemmas will be presented in the reflective section in Chapter 8 (section 8.5.2).

3.9 Data analysis

Qualitative data analysis in GT is not a separate activity that commences once data collection ends, but rather an integral ongoing component of the whole research process. Detailed information on qualitative data analysis in GT was provided earlier in this chapter (see section 3.3.3). Qualitative data analysis is described as an iterative and inductive activity that requires extensive reflection on the data and identified themes. In GT, data analysis occurs simultaneously with data collection in a “zigzag” fashion. The researcher’s visits to the data collection fields are interrupted by concurrent phases of data analysis (see section 3.3.3.1). This process is referred to as constant comparative data analysis where identified themes from subsequent interviews are compared to themes identified in previous interviews (Glaser and

Strauss 1967; Creswell 2007). The advantage of having a concurrent data collection and data analysis in GT is that it enables a clear understanding of the social and cultural factors that impact the phenomenon being investigated (Ulin, Robinson et al. 2005). This understanding provides the researchers with a cultural lens with which they can view and analyse the study participants (Ulin, Robinson et al. 2005).

3.9.1 Organising the data

All interviews were transcribed, and then uploaded into a computer programme called QRS NVivo® version 8.0. NVivo®, which enabled the categorisation and arrangement of the interview data. Texts were highlighted where examples of emerging themes were evident and then cross-referenced to other themes with similar meaning that were highlighted in another text. This scheme of coding and cross-referencing aided in developing the overall structure of themes. This programme was easy to use and flexible and facilitated the production of neat, colourful and easy to follow codes.

The researcher's field notes and diary included diagrams of possible relationships between emerging themes. These diagrams were useful in retaining researcher's thoughts and ideas about themes and relationships between categories that were recorded at an early stage of the study. Despite using software to arrange themes and categories, tables of categories and subcategories were drawn on A4 papers and word documents. These tables displayed relationship between categories. Diagrams were also sketched manually or using word SmartArt to illustrate the coding paradigm of the analysis. The constant comparison method of data analysis is considered to have high internal and external validity (Creswell 2007). This method involved systematic analysis of interviews, comparing similarities and differences and generating concepts from a reasonable number of participants. Verbatim quotations were occasionally used to demonstrate a range of responses within and across the study. The study findings are represented in the subsequent chapters of this thesis.

3.9.2 Coding of data

Qualitative data collection generates a large amount of textual information in the form of interview transcripts, field notes and other written material. This calls for a systematic process of data analysis to transform these few hundred pages of text into meaningful data (Charmaz

2006). Following the GT guidance on interview coding (see section 3.3.3), data analysis in this study started with an open coding process where textual data were carefully read. Interviews conducted in Arabic were read in their original language to retain and reserve the meanings that informants conveyed during the interviews. The purpose of repeated and thorough reading was to identify similarities in the content between different interviewees. This resulted in segmenting the texts into units of meanings. Each group of units or segments of identical meaning were then labelled to form codes or categories to identify the property or characteristics of each theme. This process followed the techniques of constant comparison as explained in section 3.3.3.1. Further interview transcripts were compared with the themes identified to examine the similarities and differences in detail. This process enabled the modification of each category making them clear and more defined. Categories were later compared to each other and relationships between these categories were identified and examined in order to develop the overall structure. Deviant case analysis was also applied, where examples that did not fit emerging themes were examined to help redefine themes properties (Pope 2000; Charmaz 2006).

Memos were written throughout the process of coding to keep track of ideas regarding data analysis. This process of creating codes, combined with reflections, was maintained while coding all interviews. They were also useful in keeping a note of thoughts without the pressures of having to immediately determine how ideas fit within the overall research findings and analysis. Memoing allowed the freedom to jot down ideas so that these could be sorted, categorised or discarded at a later point in time. A matrix of codes, properties and dimensions was devised as well as some comments and questions. This list of codes was revised continuously as more interviews were coded. The NVivo software aided in the coding process and allowed for searching of the interviews, re-sorting of material and consistent redefining of codes in order to support the analysis process.

3.9.3 Data saturation

During the phase of analysis, sampling and interviewing proceeded until it was felt that no new themes were emerging and further interviews appeared not to lead to new information being obtained. This provided an indication that saturation may have been achieved. Theoretical saturation of concepts marks the ending point of data gathering and analysis. Although this concept might sound logical, judging saturation remains unclear (Charmaz 2000). The elasticity

of this concept is evident in practice where it is obvious that the researcher has to make some pragmatic and rational choices as to when a category is saturated. Flick (1998) suggests a pragmatic approach to theoretical saturation. He states that researchers need to stop and reflect on categories identified, list results and balance them within a priority list and then decide which codes need further development in the light of the original research questions (Flick 1998). Both Charmaz (2006) and Flick (1998) point out that theoretical saturation is difficult to achieve since researchers will always be left with questions regarding their data. Therefore, theoretical sampling could result in never-ending/ ongoing integration of more interviews. In the end, the depth and extent of data collection and analysis must be sufficient to enable the researcher to tell a plausible story (Flick 1998; Charmaz 2006).

In this study, data analysis and data collection were undertaken concurrently. The data were constantly revisited to seek evidence for the factors that I felt were underpinning barriers to the management of MetS in the UAE. Themes that were identified were regularly discussed with my supervisors through webcam meetings to identify areas in need of further exploration in subsequent interviews. As the data collection phase continued, accounts from consequent participants did not appear to provide new information on factors influencing the management of MetS. For example, accounts describing the impact of patients' religious practices on their therapeutic outcomes started to confirmed previously identified themes and did not seem to highlight new information as more interviews were conducted. I felt that theme saturation was reached with 25 patients and 23 HCPs interviews as no new themes had emerged. To confirm theme saturation, an additional four patients and four HCPs were then interviewed. These additional eight interviews were not found to produce any new themes to what was previously identified. Thus, I felt that I had reached saturation and that coherent, substantive ideas were evident within the data. While data collection ceased at this point, analysis continued, particularly engagement with extant theoretical concepts.

It is important to mention that some of the themes identified during the focus group did not emerge in the previous interviews. These new themes were concerned with the pharmacy profession and pharmaceutical care in the UAE and were not specific to MetS management. All participants in the focus group were pharmacists, which could explain why, at some point during the meeting, discussion diverted to include topics of shared interest, such as strategies to improve pharmacy practice in the UAE. Pharmacy profession-related themes were not discussed or included in this thesis but highlighted in areas for future research. Discussing emerging

themes with the research supervisors during meetings (webcam meetings whilst in the UAE and at the UK University of Nottingham campus) provided new perspectives and interpretations of the data which added credibility and reliability to constructed concepts.

The process of data analysis, which also encompassed interview transcribing, translation, arranging, coding, memoing, and creating diagrams started in January 2009 and continued until the early stages of writing the results chapters of this thesis in May 2010.

3.10 Reliability and validity of data and methods

Researchers' concern with validity and reliability is a common feature of quantitative research; however, they are now increasingly being reconsidered in the qualitative research paradigm to achieve trustworthiness and transferability of data (Golafshani 2003). Qualitative data is constructed from participants' experience, views and interpretations of their experience with the researched phenomenon. Therefore, qualitative research is not easy to validate as the enquiry carries an element of subjectivity and personal bias. It has, therefore, been suggested that reliability and validity be achieved through the improvement of credibility of the research methods and data (Golafshani 2003; Silverman 2004). From this perspective, it is important to ensure the consistency of the study procedures, their comparability to other research methods and the ability to verify and elaborate findings (Silverman 2004).

3.10.1 Reliability of the data

In qualitative research, reliability relates to the reproducibility and stability of the collected data. As such, examination of trustworthiness is crucial to ensure reliability in a qualitative study (Silverman 1993; Golafshani 2003; Creswell 2007). Reliability in qualitative research is linked to aspects of conducting interviews, data processing and analysis. Thus, reliability can be enhanced by using a good-quality recording device, verbatim transcribing of the recorded data and by maintaining consistency with regard to data processing and analysis (Smith 2005; Creswell 2007). Developing a code book and using external checking on the highly interpretive coding process is another means of obtaining reliability in qualitative data (Silverman 1993; Smith 2005; Creswell 2007). The use of electronic software that facilitates the coding process and data organisation such as Nvivo software is also encouraged (Creswell 2007).

3.10.2 Validity of the data

Validity in qualitative research refers to how accurate the data gathered is representing participants' realities of the researched social phenomenon. There is general agreement that qualitative researchers need to determine if their data is plausible. As such, nine procedures were recommended to establish validity in qualitative research. These methods are triangulation, disconfirming evidence, researcher reflexivity, member checking, prolonged engagement in the field, collaboration, external audits and thick, detailed description (Maxwell 1992; Creswell 2007). However, two dimensional frameworks help provide researchers with the rationale for choosing the best tool to validate their data. These two framework dimensions are the lens (viewpoint) researchers use to assess the credibility of their data and their own philosophical position (Creswell and Miller 2000).

Unlike quantitative research where investigators are concerned with certain test scores that reflect the validity of the designs and tools, qualitative researchers rely on the lens established from the views of individuals who conducted, participated or read the study findings (Creswell and Miller 2000). If the researchers chose to use their own lens, they carry the responsibility of determining data saturation and data analysis progression through repetitive visits to the identified data codes and categories (Patton 1980). Alternatively, looking at data through the lens of the participants can assess data validity by comparing the accuracy of the data and themes against the participants' perception of the reality of the investigated phenomenon (Creswell and Miller 2000). The lens of external individuals who are not associated with the research can also help in establishing validity (Creswell and Miller 2000). Qualitative studies rely on those who conduct it; therefore, researchers should also acknowledge what they bring into the research as it influences what they see and how they analyse their data (Charmaz 2006). The philosophical assumptions regarding the qualitative study and the researcher's stance need to be addressed and established in order to assess validity (Guba and Lincoln 1994).

The interview process, data processing and data analysis are three activities that need to be taken into account when enhancing the credibility of the qualitative data (Creswell 2007). Table 3.2 illustrates measures considered during these three phases. However, this does not imply that findings from this study provide a fully accurate picture of all the issues surrounding MetS management in the UAE.

Table 3.2 Measures taken to enhance the credibility of the study

The interview process	Data collection and processing	Data analysis
IDIs and FGDs question guide were designed carefully to address the research questions	The principle researcher is a pharmacist and Emirati in nationality, who previously lived and worked in one of the health care facilities in Abu Dhabi and dealt with MetS patients in counselling sessions	Constant comparative analysis, where data collection and analysis occurred simultaneously. This method shows high internal and external validity of the data as it involves systematic analysis of interviews, comparing similarities and differences and generating concepts from a reasonable number of participants
The interview guides were reviewed by the qualitative research experts in the University of Nottingham and the Ethics committee in SKMC where the data collection process took place	Because the principle investigator is an Emirati and with many years of experience as a community and hospital pharmacist, creating effective communication and rapport with the participants was relatively easier in order to yield quality data during IDIs and the FGD (this is elaborated further in the reflection section in chapter 8)	Identified themes were regularly discussed with the PhD supervisors during meetings, which provided new perspectives and interpretations of the data and added credibility and reliability to the constructed concepts
The interview guide was tested during the feasibility study which allowed the validation and clarification of the contents and the sequence of the question routes	The principle researcher conducted and facilitated the IDIs and FGDs based on the responses of the participants rather than a pre-structured interview guide	Comparing results from IDIs with those from the FGD (i.e., triangulation) enhanced the degree of plausibility of the findings.
The pilot study allowed the researcher to get familiar with the research environment and the communication patterns of the study population	Patients were selected from three out-patients clinics and a number of primary care clinics (family medicine clinics) located within different parts of Abu Dhabi in order to ensure variety of views on issues under investigation	Deviant cases (i.e., disconfirming evidence) were identified, examined and considered in the analysis process, which prevents researcher's bias from interfering with the study findings and, thus, provides further support credibility
The interview guide was flexible and continued to modify and improve to accommodate for new ideas and themes identified during the data collection phase	The data collection setting (SKMC) assigned a co-investigator who facilitated accessing patients' information to arrange for phone contacts when needed	Researcher reflexivity was achieved through a research diary that documented the researcher's assumptions beliefs and bias that might have shaped the investigations and consequently data analysis
Questions were paraphrased and clarified when needed to remove ambiguity.	Codes, categories and themes identified were reviewed by the two PhD supervisors constantly	

3.11 Dissemination of findings

Although the research was undertaken with the intention of producing a PhD thesis, various aspects of the study findings were reported to a wider audience in the form of peer review posters, oral presentation at conferences and peer reviewed publications. Appendix 12 illustrates abstracts and oral / poster presentations of some of the study findings. I will attempt to publish a few papers in the future as this will help disseminate the research findings to interested audience of academics, health care communities' and fellow researchers who might benefit from the research findings.

3.12 Summary

This chapter highlights the importance of choosing a research methodology based on the research questions that best deliver and achieve the study aims and objectives. On this basis, qualitative methods were ideal to explore patient and professional perceptions of MetS and its management within the socio-cultural context of the UAE. IDIs were chosen because it enabled in-depth exploration of participants' views and perceptions of the phenomenon in their own words. The FGD was also an ideal tool to help stimulate thoughts and discussion to further explore emerging themes and to achieve triangulation of data. The study draws on the broader principles of GT as it was best suited to explore participants' views and perceptions on MetS. This chapter outlines some of the limitations that were encountered during the participants' recruitment, interviewing, and data collection all of which emphasize the strong socio-cultural influence of the study setting on the research process. Constant comparative analysis of the data showed high internal and external validity of the data as it involved systematic analysis of interviews, comparing similarities and differences and generating concepts from a reasonable number of participants. Although little consensus is available on how to achieve quality in qualitative research, it has been argued that reliability and validity in qualitative research can be achieved through consistency of the study procedures, their comparability to other research methods and the ability to verify and elaborate findings. Detailed information was provided in this chapter regarding recruitment of the study participants, how IDIs and the FGD were conducted and how data was documented, managed and analysed.

The following five chapters present the findings from the study and conclusion. The following four chapters describe the main themes identified in this study which were: (i) perceptions of MetS; (ii) factors influencing patients' attitudes towards lifestyle intervention; (iii) factors influencing patients' medicine use; and (iv) facilitators to MetS management in the UAE.

Chapter 4

Participants' perceptions of MetS

4.1 Introduction

This chapter presents themes that describe patient and professional perceptions of MetS. The first part of this chapter (section 4.2) presents themes about patients' awareness of their condition, their perception of risk and mechanisms of coping. The study interview guide for patients included topics that explored the impact of having MetS features on patients' lives and the lives of their families, their understanding of causes of their condition or poor control of their clustering CRFs and their awareness of the risk associated with having multiple cardiometabolic diseases. The second part of this chapter (section 4.3) presents professional views on MetS. The interview guide for the HCPs included topics that explored their perceptions of the MetS concept and definition and factors influencing the clinical utility of the MetS diagnostic criteria. Themes identified from patients' accounts that reflected the role of patients' awareness of their MetS diagnosis were also explored. These interviews helped elicit professional thoughts in the controversy surrounding the MetS definition and the usefulness limitations of the MetS concept in the identification and management of this group of patients.

Semi-structured interviews were conducted with 29 patients (16 women and 13 men) the demographic data of which is summarised in appendix 11. Ten patients were Emiratis and 14 were of other Arabic nationalities. The other five patients were of non-Arabic nationalities, such as, British, Indian, Bangladeshi, and Iranian.

A total number of 27 HCPs (11 pharmacists, 10 physicians, 4 dieticians and 2 health educators) were interviewed (see appendix 9) followed by interviewing 9 pharmacists during one focus group (see appendix 10). All HCPs were in direct contact with patients who met the MetS diagnostic criteria through their clinic work and were able to provide information about the health needs of this group of patients from the perspective of their respective professions. HCPs came from different backgrounds and where of different nationalities, such as, Canadian, British, Egyptian and Sudanese, which also provided an outsider's perspective of the barriers to the management of MetS in the UAE.

By and large, the study participants displayed great interest in discussing health concerns surrounding MetS. This was reflected by the lively discussion during all interviews. There were topics that were talked about but were not included in this thesis as they were beyond the scope of this study, such as barriers to communication, limitations to pharmacists' role in the UAE and means of improving the pharmacy profession. What is presented in this thesis are issues that directly address the management of MetS that were identified through patients and professionals' accounts as they expressed their views surrounding the condition and factors affecting lifestyle and therapeutic intervention. Table 4.1 illustrates the key themes that will be presented in this chapter.

Table 4.1 Summary of the key themes describing participants' perceptions of MetS

Summary of the key themes and findings describing patient and professional perceptions of MetS	
Patient perceptions of MetS	
<ul style="list-style-type: none"> ▪ Patients were unfamiliar with their MetS diagnosis or the MetS concept but they were aware of their CRFs ▪ Not all patients were aware of the cardiovascular risk associated with MetS. They were, however, conscious of the augmented risk resulting from the clustering of their presenting CRFs ▪ Many patients were also aware of the non-cardiac complications of CRFs such as renal failure, blindness and amputations ▪ The high prevalence of diabetes, obesity and other CRFs in the UAE gave patients a sense of commonness of MetS, which resulted in patients' understating of the MetS risk and in some cases grading the risk of CRFs ▪ Patients' fatalistic statements about their condition were influenced by their awareness of the genetic predisposition and stress as two causes of CRFs. ▪ There were many factors that facilitated patients' acceptance and coping with their condition including the asymptomatic nature of MetS and some of the patients' religious practices and beliefs. 	
Professional perception of MetS	
<ul style="list-style-type: none"> ▪ HCPs of different specialties did not have an equal level of awareness of the MetS concept or definition ▪ Most physicians believed in the legitimacy of the MetS concept and as a condition on its own right. ▪ Some physicians were concerned about the multiple definitions of MetS but agreed that the clustering of CRFs represented an augmented risk that required a holistic approach regardless of the condition's name and definition. ▪ The complexity of the MetS term and the unavailability of a simple Arabic alternative discouraged physicians from informing patients of their MetS diagnosis. ▪ HCPs were also used to the dichotomising of risk factors and documenting of individual rather than the use of the MetS term. HCPs did not see the added therapeutic value of informing patients of the MetS or its impact on their health behaviour. Thus, they rarely informed patients about the MetS concept. ▪ Although some HCPs agreed that the MetS definition provided an easy to use tool to identify patients at potential risk of developing cardiac complications or diabetes, they felt that it was better suited for CRF screening during outreach campaigns 	

The following section presents the main themes that emerged during patients' interviews and from questions that explored their perception of their health condition and how they felt it affected their lives. It starts with a preface to patients' accounts of their awareness of their CRFs

followed by the four main factors that were found to shape their perception of their health condition: (i) awareness of the MetS concept; (ii) perception of MetS risk; (iii) coping with having CRFs; and (iv) patients' fatalistic attitude towards MetS causes. Case illustrations of five patients are presented in Boxes 1-5 in the first section of this chapter. These case illustrations are provided to help contextualise patients' accounts and to present their stories as they talked about their health concerns during their interviews.

4.2 Patient perceptions of MetS

Patients have their own perceptions as to what their cardiometabolic disease means and how it should be treated. Eliciting patients' interpretations of their illnesses provides a basis for understanding the way in which patients conceptualise the cause, course and appropriate management of an illness. Patients' attitudes towards their health conditions could be a result of numerous social and cultural experiences that may, in part, influence health outcomes, health-seeking behaviour and adherence to prescribed treatment plans (Leventhal, Benyamini et al. 1997; Helman 2007). Therefore, it was important in this study to identify patients' perceptions of their clustering CRFs, causes and seriousness.

Interviews with patients started by asking general questions about their health problems. Such questions included asking them to list all their diagnosed diseases and health problems, duration of illness and how they felt when they were first diagnosed with any of the CRFs. The aim of these initial questions was to familiarise patients with the interviewer and to gradually build up the discussion to the focus of the research which was identifying factors that influence the holistic management of MetS.

Patients' accounts indicated that they were able to list their diagnosed CRFs that were documented in their medicinal files in addition to other non-cardiac health conditions, such as, back or knee pain, rheumatoid arthritis, asthma, peptic ulcer, skin problems and injuries from accidents. However, not all patients gave the accurate or exact medical terms of their health conditions and many used their own descriptions of such diseases such as 'sugar' for diabetes and 'pressure' or 'blood pressure' for hypertension. Most patients gave detailed descriptions of the events that proceeded or led to their diagnosis with one or all of the CRFs, how they became aware of their diagnosis and how they felt when they were informed by their doctors about

having any of the CRFs. For example, patient 10 talked about her annual visits to Egypt where she regularly had a clinical check-up and was first diagnosed with diabetes:

P: I was diagnosed [with diabetes] five years ago. I was in Egypt at that time. I go there every year and see a doctor while I'm there. You know, the treatment there is very cheap compared to here [...] so the doctor told me I might have developed diabetes because he found that my sugar was high. He didn't give me any tablets but told me to watch my diet and said that if that didn't work then he'll prescribe medicines for me.

R: And how did you feel when he told you that you might have diabetes and you need to watch your diet?

P: It made me scared. I didn't want to be diabetic. It does make you sad of course. You know, we all have difficulties in our lives, so to have diabetes on top of all these things this'll make you sad of course. But thank God for everything. You eventually cope, and I am ok now and I'm taking my medicines and everything is controlled.

R: Yes

P: When I came back [to the UAE] I went to the clinic and they gave me Glucophage®. They said these tablets will help me reduce my weight as well. So I took them and so on.

Patient 10, woman, 50 yrs, Palestinian

The example demonstrates how patients were able to narrate the history of the first time they were informed of one or some of their presenting CRFs. They were also able to describe their immediate feelings towards that information. Another group of patients indicated that they experienced signs and symptoms that clued them to their diagnosis before their physicians informed them. Some patients described headaches and tremors that they believed indicated uncontrolled blood pressure. Others described excessive urination, sweating, feeling breathless, general body weakness and tooth loss, which they believed were early signs of diabetes or elevated blood sugar. Such symptoms prompted this group of patients to screen for CRFs in their family medicine clinics, which eventually led to their diagnosis. For example, when I asked patient 6 about the time of his diagnosis with diabetes and blood pressure, he talked about losing most of his teeth and how that was interpreted by one of his friends as a sign of having diabetes.

R: When where you diagnosed with diabetes?

P: About twelve years ago

R: Yes

P: When I was having my dinner, my tooth fell off without blood. I thought to myself: 'that's strange!' Then another time, another tooth fell off without any blood. so I asked someone, he said: 'see these are the early signs of diabetes' so then every month or two I would lose another tooth, so diabetes started through my tooth loss problem, and that is how I knew that I had diabetes.

R: And did you see a doctor when you felt that you have diabetes?

P: Yes. I then went to the clinic and told them [the medical staff] 'I feel I have diabetes'. They made the blood tests and my blood sugars were high [...] then one year later my blood pressure was also going up and the doctor said I should take medicine for that too.

Patient 6, man, 65 yrs, Yemeni

Box 1 contains a case illustration of patient 6. Some of the health concerns and disease interpretations of this patient are addressed in following sections and chapters.

Box 1: Patient 6

Patient 6 was a 65-year old man who came to Abu Dhabi from Yemen to work for an oil company in 1977. I met him in a family medicine clinic when he came for his three-monthly routine visit. His medical file indicated that he was diagnosed with high blood pressure, diabetes and elevated lipid profile. He appeared enthusiastic to take part in the study and the interview. However, when I asked him to talk about his health problems and list his diseases he stated that he did not have any but that he only had diabetes. When I further enquired to clarify what he meant by not having an illness although he was in the clinic to collect his regular medication, he explained that there were many people in the UAE with conditions like his; therefore, he felt that it was normal to have diabetes. He further explained that in his understanding, a disease was something that hindered and prevented people from living their normal lives and because diabetes did not prevent him from living his normal life, he did not consider it as an illness. However, later in the interview he talked about his eagerness to adhere to his prescribed medicines and lifestyle adjustments to help control his 'blood pressure, diabetes and cholesterol level in the blood'.

Patient 6 also talked about how he liked to learn about his health condition through his physicians, friends, television and reading materials provided by his family clinic. However, towards the end of the interview he admitted his fear of starting insulin therapy because he did not want to 'get dependent on an injection' for the rest of his life. He reported that he had a good relationship with all his physicians, which enabled him to talk to them about his habit of chewing *khat*⁹ during his trips to Yemen. He claimed that chewing *khat* helped lower his blood sugars and that his physician did not mind that as long as it did help his condition. His inability to exercise and walk like he used to, because of the pain in his knees, made him feel sad and sometimes depressed. He also indicated that he never missed a dose of any of his prescribed medicine although he was not happy with taking them because they were 'harmful chemicals anyway'. However, he was keen on getting the original brands, as they were 'more efficient than the locally manufactured ones'.

Other patients in the study believed that having a family history of diabetes or 'heart problems' was a strong indicator of their susceptibility to developing some of MetS features. For example, while patient 13 was talking about the events that led to changing his blood pressure medication, he remembered how his doctor warned him of his susceptibility of developing diabetes because of his family history:

⁹ Khat is a flowering plant that is grown in East Africa known for its stimulating and euphoric effect. It is popular plant in Yemen, and people chew its fresh leaves to achieve this effect. Chewing khat in this part of the world and other African cities is considered legal.

P: I started with Tenormin. No not Tenormin. [Patient coughing] well at that time I happened to be in India for my vacation, so there I went to the doctor. He also checked me and he told me two things, two things that is: 'your BP is on the higher side and you have borderline diabetes'. Yeah, then warned me: 'because your mother had it this is a gift that you will get from your mother, be careful' he said.

R: So he told you that you'll get diabetes because of the family history?

P: Yes. She had diabetes also but only at a later age. She's had it for a long time, you know, for almost 10 years and then she passed away. So it's hereditary also. So I had to be careful because I knew I will also get it

Patient 13, man, 49 yrs, Bangladeshi

Box 2 presents a case illustration of patient 13. Some of the issues identified are presented in this chapter in following sections and in chapters 5 and 6.

Box 2: Patient 13

Patient 13 was a 49-year old Bangladeshi man who came to the UAE in 1991 to work as an administrator for a private company. I met him in the diabetic centre when he came for his appointment with the dietician. He was first diagnosed with elevated blood pressure eight years ago and was later diagnosed with diabetes in 2005. He also had a foot injury that prevented him from exercising. When I asked about the causes of his condition he said that he believed that he 'inherited' most of his health problems from his mother who was also diabetic and died a few years ago of a heart attack. However, during the interview he indicated that work pressure and being overloaded with domestic chores were the cause of his health problems and the difficulty to control his blood pressure. He believed that his strong faith and knowing that he was under God's care helped him withstand his health problems and other family issues. He also felt lucky that he was working in the Emirates because he was always surrounded by Muslim colleagues that greeted him and smiled whenever they saw him. In his opinion, working in an Islamic environment helped him to withstand stress and cope better with his health condition.

Although patient 13 admitted that his doctor did not inform him about the MetS concept or MetS diagnosis, he was happy about their relationship and indicated that he receives all the information he needs about his health from his doctor. He was also convinced that doctors' instructions should always be followed because they were 'the experts' and knew what he needed. Because of that, he took his medicines as directed and kept them all in a box to remember taking them on time. Although he expressed keenness to adhere to treatment, he also admitted that he was not satisfied with the high number of medicines he was taking. It was later apparent that his previous experience with one of his medicine's adverse effect made him doubtful of drugs' safety and admitted stopping medicine-taking 'every two months or so' to minimise drugs harmful effects and combat their addictive nature therefore, enabling his body to regain its strength and natural defence mechanisms. He was also looking for alternative therapies such as herbs and traditional remedies that he believed would help him reduce the number of his prescribed medicines.

One thing that was also noted during patients' interviews when they talked about their health condition was their tendency either to address each CRF individually (i.e., talking about each separate CRFs) or collectively (i.e., talking about their health condition as a whole). This way of describing their CRFs could have been related to the nature of the MetS and the fact that it is composed of three or more CRFs. This might have inclined patients to talk about each CRF as they saw relevant or more important to their overall health. The examples illustrated previously in this chapter illustrate this point clearly, as the extract shows how patients sometimes talked about one or two CRFs and not all their CRFs. Further analysis of patients' accounts of their health condition identified four key themes: (i) patients' awareness of MetS diagnosis, (ii) patients' perceptions of MetS risk, (iii) fatalistic attitude towards condition, and (iv) patients' coping strategies with MetS. The following four sections describe these four themes in more details and demonstrate the questions that helped elicit these themes.

4.2.1 Patients' awareness of the MetS concept

As mentioned earlier in this chapter, all patients were able to list all their diagnosed CRFs. However, when patients were asked if they knew that the clustering of these CRFs was also called the metabolic syndrome, patients' responses indicated that they were not informed of this prior to the interview. The following extract from the interview with patient 23 illustrates how patients' lack of awareness of the MetS concept was identified.

R: Can you please tell me what health problems you have?

P: Ah [laughing] the list is long. You probably saw what I have in my [medical] file.

R: Yes, that's true I did see your file, but I want to make sure I have the right information, so I prefer to hear it from you.

P: Well, I have diabetes of course. That's why I come here [the diabetes centre]. I also have high blood pressure; I have cholesterol which is ok now thank God. I had that six months ago, I think, but now it's under control. I am a little bit overweight [laughing] just a bit, don't look at my belly it's always been that big [laughing]. That's about it thank God. Did I forget something? You tell me [laughing].

R: No. you remember very well [laughing]. Do you know that the grouping of these diseases is called metabolic syndrome or in Arabic [the name in Arabic]?

P: No. I did not know that before.

R: Did your doctor talk to you about metabolic syndrome? Or that having diabetes with blood pressure with cholesterol with obesity, you know, all these conditions is also called metabolic syndrome?

P: My doctor never told me that I have this [MetS], this is the first time I've heard about it really. I don't know. Maybe he did and I wasn't paying attention? Because he did talk to me about having many diseases. He said I needed to follow all the instructions carefully. Exactly follow them you know? Otherwise I'll have many other problems.

Patient 23, man, 55 yrs, Emirati

Although MetS was documented as a diagnosis in the patient's medical files, the account of patient 23 indicated that he was not aware of the MetS concept prior to the interview and was not certain if his physicians informed him about the MetS concept. The patient information sheet, which was provided to each patient as they were invited to take part in the study, included information about MetS and the aims of the study. However, on the day of the interview, patients claimed that they were not familiar with the term 'metabolic syndrome' and were not informed by their doctors that the clustering of their CRFs was called 'metabolic syndrome'. As the above extract illustrated, providing patients with this information during the interviews did not appear to cause anxiety or shock to any of the patients in the study. Another example that illustrates this point further is an extract from an interview with patient 5 who showed an interest in reading about MetS to learn more about it:

R: Did you know that having all of these diseases diabetes, blood pressure, cholesterol and obesity, is also called metabolic syndrome? You know, that the grouping of these conditions all together make up the metabolic syndrome?

P: No. not really. I read that in the information sheet you gave me, remember?

R: Yes. And did your physician talk to you about it?

P: No. He did not. I googled it, you know. And I plan to talk to him about it when I see him. But very interesting stuff. I am really interested in these things. I like to read everything about my condition, so I am interested to know more.

R: It is basically the group of health problems that you have. You know. Having diabetes and [patient interrupts]

P: Yes. yes I read that in the paper [information sheet] you gave me

R: So I'll be asking you about this today. About you know managing all these problems.. you know? Not just diabetes or hypertension

P: That is good. You know because I don't have just one problem I have many problems [laughing]

Patient 5, man, 50 yrs, Indian

The above extract is one example of many others that illustrates how patients reacted to the information about the MetS diagnosis. It also demonstrates my attempts to remind patients that the aim of the interview is to investigate their perception of the aggregated CRFs and not a single CRF.

Section 3.4.2 illustrated the steps taken to resolve the dilemmas regarding the potential risks of informing patients about MetS. It also stated the rationale of proceeding with this enquiry with all patients who participated in the study. As all study participants had the information sheet in

advance of the interview and signed the consent form, it was anticipated that they read and comprehended the information provided about the MetS concept and were, therefore, giving their informed consent. Therefore, it was inevitable for the researcher to assume that patients had read the information sheet before agreeing to take part in the study. Patients' medical files had MetS documented as a diagnosis; thus, it was difficult for the researcher to assume physicians did not inform these patients of their MetS diagnosis. However, because the responses of patients indicated lack of awareness about the MetS concept, they were all reminded of the MetS definition during the interview by restating the information already provided to them in the patient information sheet. Patients were also reminded that the aim of the interview was to gain an understanding of health issues relevant to all their CRFs (i.e., the components of MetS) rather than individual diseases.

As illustrated in the quotes above, all patients' interviewed were able to list their documented health problems. They also gave responses that indicated their perceptions of the collective diseases (see sections 4.2.2, 4.2.3 and 4.2.4). However, in many parts of the interview some participants tended to refer to the most prominent CRF presented to them at their diagnosis. For example, participants with diabetes, in addition to other features of MetS, referred mostly to their 'sugar' (i.e., diabetes) as they conveyed their feelings about their health and treatment plan. On the other hand, participants that were not diagnosed with diabetes referred in their accounts mostly to 'obesity' or 'pressure' (i.e., elevated blood pressure), if they were diagnosed with hypertension.

As some patient talked about their diagnosed CRFs, their accounts reflected their sense of the grouping of their diseases by using words that indicated their feeling of the CRFs aggregation. For example, patient 3, who was diagnosed with all MetS features, used the word 'cocktail' when I asked her to list all her health problems during the interview:

R: Can you please talk to me about the health problems that you have?

P: You mean everything?

R: Yes. Yes everything you have.. and ..

P: I have everything, a cocktail of diseases. [Laughing] I have diabetes, pressure, I have cholesterol. Thanks to God I have everything [laughing].

Patient 3, woman, 69 yrs, Yemeni

It was not merely the words patients used to describe the aggregation of their CRFs but also the way in which they described the impact this aggregation had on their health that actually

indicated their sense of the augmented effect this clustering caused. For example, patient 4 felt that having more than one cardiometabolic disease made his body weaker than it should be at his age.

R: How do you feel about having all these health problems?

P: I am ok thanks to God. I don't think about that all the time you see. But I know that it's very dangerous when you have more than one thing [CRF]. Just like fighting more than one enemy at the same time. Your health and energy are consumed faster and you're left with little energy to carry on living. I know that very well.

Patient 4, man, 60 yrs, Palestinian

For patient 4, fighting could have also meant adhering to the management of all these diseases, coping with them and living with all the implications of having these CRFs. In another part of the interview patient 4 indicated that he was getting ready for his retirement and felt that he looked older than his actual age because of having all the illnesses that he was diagnosed with in addition to all the stressful events and domestic responsibilities he needed to deal with. The following quote was taken from his interview as he was talking about the impact of having CRFs on his life:

You look at me and you think I must be 70 [laughing]. It is all these diseases that affect you, you know? And on top of all of that you also have other responsibilities that you need to take care of, you know, the family, do this do that, go here go there, bring this bring that [laughing], that's life anyway and you live and cope so.. And as they say in English: 'life goes on' [laughing].

Patient 4, man, 60 yrs, Palestinian

As some patients listed the names of their health conditions or CRFs they also conveyed a sense of an augmented hazard caused by having all CRFs as the above examples illustrate. Further investigation of patients' perceptions of their condition and the associated cardiovascular risk was carried out. The following theme illustrates patients' perceptions of cardiovascular risk associated with having multiple CRFs and factors that influenced their views.

This section presented data from patients' accounts that demonstrated their unfamiliarity with the MetS diagnosis or concept but awareness of the individual cardiometabolic diseases that they were informed about. Some patients also used words to describe the aggregation of these CRFs conveying at the same time their sense of the augmented effect that clustering had on their health. More data on patients' perceptions of the risk of MetS features is presented in the following section.

4.2.2 Perceptions of the risk of MetS features

As presented earlier in section 4.2.1, some patients described the clustering of CRFs using words such as 'cocktail', 'more than one enemy', 'mixture of this and that' and 'I have everything'. This description may have reflected patients' sense of the CRFs' aggregation and the associated amplified risk. None of the study participants had a history of cardiac complications, such as angina, myocardial infarction or stroke and 17 patients (59%) were diagnosed with diabetes. During the interviews, patients were asked to describe their feelings about having multiple CRFs in order to gain an understanding of their sense of the seriousness of their health conditions. However, patients' attitudes towards the CRFs risk was also elicited as they talked about the impact of their health conditions on their lives and reasons for adhering or not to their prescribed treatment plans. Data analysis of patients' accounts revealed that they had a range of attitudes towards the seriousness of CRFs. These views included: (i) awareness of cardiac and non-cardiac risk; (ii) downplaying the seriousness of MetS features; and (iii) grading the seriousness of CRFs. This section presents this range of patients' views accordingly.

A few patients specifically mentioned cardiovascular risk, such as, the development of cardiac complication as a consequential health hazard of having a number of CRFs. This awareness could be attributed to the higher educational background of this group of patients or their exposure to multiple sources of health information that highlighted the cardiovascular risk of having multiple CRFs. For example, patient 5 who was a university graduate and worked in an oil company, indicated that he was informed about the risk of developing heart disease by his physician. He also stated that he gained a lot of his information from the internet and through exchanging emails about the topic with his work colleagues. The following quote illustrates this point.

R: Did your physician talk to you about the risk of having diabetes and high blood pressure?

P: You mean heart problems, kidney problems?

R: Yes.. can you talk to me about this please?

P: Yes. Yes of course. Normally my doctors talk to me about risks and stuff but I don't wait. I am very curious and like to learn. I read in the internet and magazines that diabetes, pressure and all can lead to heart problems. I use Google and sometimes many employees here [in the company] circulate information through emails and when I find something I email it to them too. We share information because there are many of us with diabetes here [laughing].

Patient 5, man, 50 yrs, Indian

Although not all patients talked about the development of heart disease as a risk associated with having any of the CRFs, many patients talked about the risk of developing other non-cardiac complications such as kidney failure, blindness and limb amputations that could result from poor

control of blood pressure or diabetes. It became apparent, during the interviews, that the perception of many of these patients regarding non-cardiac complications was influenced by many sources of information, such as the health education sessions they received in the clinic, the diabetes-specific public awareness messages and the experiences of others who developed such complications, such as, friends, neighbours or family members who have MetS features. For example, patient 29 talked about her fear of blindness because her mother lost her sight due to her uncontrolled diabetes.

P: I make sure that I take my medicines, you know. It is very important to keep everything under control. My mother lost her sight because her diabetes was always high and she was not careful with her diet.

R: And is that why you stick to your diet and medicines?

P: Yes. You know. I am afraid of that. You read about diabetes complications and my doctor always warns me about it. God protect us all. I don't want to become blind or have other problems.

Patient 29, woman, 34 yrs, Emirati

Witnessing the experience that her mother went through made patient 29 realise the seriousness of having diabetes and she became conscious of the importance of controlling her CRFs to prevent a similar experience from happening to her. As this extract demonstrates, such statements indicating patients' awareness of the risk associated with having CRFs were made as patients talked about reasons for adhering to their recommended treatment plan. Another example can be seen in the following extract from the interview with patient 12 where she talks about her fear of developing kidney failure and explains how this fear drives her eagerness to adhere to the treatment plan.

R: Are there any issues with your treatment? You know, medicines? diet? Exercising?

P: I take all my medicines on time. I've never missed a dose, you know? Really, I always make sure that I take my medicine on time always.

R: And why is it important for you to take your medicine?

P: Well.. I have to so that I don't get worse you know? I don't want to get worse, you know? I don't want to have more problems like kidney failure, or .. you know, I am very scared of this kidney failure and I just don't want to end up like that you know?

Patient 12, woman, 43 yrs, Palestinian

As these extracts from different patients' illustrate, the risks that patients were referring to were not necessarily confined to the development of cardiac complications or heart problems but sometimes encompassed other complications of CRFs such as renal failure and blindness. It was

also evident from patients' accounts, that their concern about developing non-cardiac complications underpinned their eagerness to adhere to their prescribed treatment plan.

Other patients' accounts indicated an understating of the seriousness of their CRFs. This attitude was noticed as some patients talked about the impact of having any of the CRFs on their lives. The accounts of this group of patients indicated that they undervalued the seriousness of having CRFs and perceived them as normal or common conditions. Further analysis of the responses of these patients showed that downplaying risk was engendered by two main factors: the high prevalence of MetS features in the UAE and the treatability of CRFs.

Some patients believed that diabetes was a 'common' disease that was highly manifested in the residents of the UAE. As such, viewing diabetes and other CRFs as common illnesses minimised their seriousness. For example, when patient 6 was asked to explain why he did not view diabetes as an illness, he indicated that the high prevalence of diabetes in the UAE made diabetes a normal condition that many in the UAE were diagnosed with (see box 1). In the following extract he explained his view point towards being diabetic and hypertensive.

P: I don't have any health problem. Thank God I am ok.

R: Why do you think you don't have a health problem? You just told me you had diabetes and pressure?

P: Yes, it's just diabetes and pressure.

R: And you don't see these as diseases?

P: I see diabetes as a common thing, you know? It is normal nowadays to have diabetes. Look around you. 35% to 45% of the population here have diabetes. So why should one worry? Really.

R: So you are not worried about your diabetes and blood pressure...

P: I take my medicines, I eat right foods. When you do the right thing, you should not worry.

Patient 6, man, 65 yrs, Yemeni

The above interview extract illustrates that the commonplace of diabetes in the UAE facilitated this patient's sense of the normalness of having such condition. Although patient 6 acknowledged his diagnosis and the need to adhere to treatment to control his diabetes, the fact that diabetes was highly prevalent in the UAE reduced its seriousness in his point of view. Another example was found in an interview with patient 20 who viewed having diabetes or high blood pressure as having a headache. He believed that such diseases were the 'by-product' of civilisation.

R: How do you feel about having these health problems?

P: Of course, I will not be happy to be sick [laughing]. Maybe in the beginning you get shocked to know that your blood pressure is high and nothing works in your body. You get afraid at the beginning you know? Because people tell you diabetes is dangerous, you will die, you know? but then you discover that you can live with it, you know? And today having diabetes or blood pressure is like having headache [laughing]

R: Really?...

P: Yes. I'll tell you. In this century, everyone has elevated sugars or high blood pressure. In the past people used to make a huge deal about headaches. But then they started taking Panadol® and they stopped complaining. It's no difference with diabetes and pressure because there are tablets for those too. If you take them you'll be ok

Patient 20, man, 37 yrs, Emirati

Patient 20 continued to explain that the urbanisation of the UAE has introduced the society to new unhealthy life styles that resulted in the manifestation of diseases such as obesity and diabetes. However, the availability of treatment to control or manage such CRFs made them less dangerous. The following extract from patient 20 explains this point:

We used to live simple lives in the past. We ate fish and dates. Everything was simple and healthy. There were no Kentucky [KFC®] or McDonald's®. You ate fresh food and drank clean water you know? Now everything is in cans and plastic bags and has preservatives and this is what is causing all these illnesses [...] with every new disease comes new drugs, new disease new drugs, and like that you know?

Patient 20, man, 37 yrs, Emirati

Similar to the previous example, patient 14 believed that every century was marked with an illness indicating that obesity, diabetes, and elevated blood pressure are the illnesses of the 21st century.

Obesity is the illnesses of the modern days. In the past, it was the measles or the cholera. Now it is obesity [...] it is the by-product of civilisation and technology. And that's life. So we shouldn't worry because 10 years from now it'll be a thing of the past and they'll find something new to scare people with.

Patient 14, man, 73 yrs, Sudanese

As the above extracts illustrates, some patients downplayed the risk of having CRFs as they attached attributes such as commonality, manageability, and temporariness to their presented diseases. For example, because diabetes had high prevalence in the UAE it was compared to other highly common illnesses such as having a headache, which was not perceived as a life-threatening condition. In addition, the availability of treatment rendered CRFs manageable and thus less serious than diseases that have a complex therapeutic treatment such as cancer. Another factor for the downplaying of perceived risk is that such CRFs are contemporary

disorders that are receiving a significant amount of attention but that but will wane with time as other new diseases are discovered.

Unlike study participants who understated diabetes risk because of its high prevalence in the UAE, as presented in the previous section, another group of patients tended to rank the risk of the individual CRFs. This group of patients felt that diabetes held the highest health hazard when compared to other CRFs. This attitude can explain these patients' constant referral to diabetes rather than all their CRFs during interviews. For example, patient 21, who was diagnosed with all the features of MetS, felt that diabetes posed a higher risk compared to the other CRFs. The following quote illustrates this point

R: Talk to me about your conditions. What do you feel about having all these health problems you have just mentioned?

P: I don't complain. I am happy really. You know? What can you do? If you think about it diabetes is a plague from God sent upon the people living in the Emirates [laughing] it is a plague believe me. You look around you and everyone you see has diabetes. On TV, they always talk about how widespread it is and that everyone has diabetes. It is unbelievable. The worst thing of all diseases is diabetes and it is what everyone here seems to have.

Patient 21, woman, 49 yrs, Emirati

Although patient 21 was asked to describe how she felt about all her health problem, it was clear during the interview that she was mainly concerned with diabetes and continued to refer to it throughout the interview whenever she talked about different aspects of living with or managing her diseases. She also talked about other members of her family and some of her friends who also were diagnosed with diabetes.

This attitude was also evident in patients who were not diabetic as their accounts indicated that they viewed diabetes as a more serious illness that they were grateful for not having. For example, patient 2 who was not diagnosed with diabetes, believed that developing diabetes marked a higher level of a health alert. In the following extract, patient 2 was explaining why he was not worried about his health.

R: And how does that [having elevated blood pressure] make you feel?

P: I'm ok. I don't think there is anything wrong with me it's just blood pressure. I mean I don't think I am as serious as someone who has diabetes and take 20 tablets per day, you know? If you have diabetes you have crossed the red line and you should be really careful. My doctor told me that I have high blood sugars but I am not yet diabetic so I have not crossed the red line yet. I still have a chance thanks to Allah [laughing].

Patient 2, man, 32 yrs, Emirati

Patient 2 had an elevated blood glucose level but was not diagnosed with diabetes and was not taking medicines for prediabetes. His account was similar to a number of patients who were not diabetic. These feelings were engendered by their belief that diabetes was a more serious and risky condition than the other CRFs they were diagnosed with. Not having diabetes despite having other cardiac diseases created a sense of relief in some patients, which was apparent in their accounts as they talked about the list of their presenting CRFs. Health information that highlight the prevalence of diabetes, its risk and associated complications might have enhanced patients' perception of diabetes risk superiority when compared to other CRFs.

The accounts of all patients indicated their awareness of a risk associated with their present CRFs. Although patients' attitudes towards MetS risk ranged between downplaying, grading or being concerned about developing complications, these attitudes indicated that they acknowledged some type of risk attached to having any of these CRFs. Patients' realisation of the potential risk associated with such diseases triggered their adherence to their prescribed treatment as illustrated in previous interview extracts. However, only one patient [patient 1, man, 45 yrs, British] in this study claimed to have a '*carefree*' attitude towards his treatment plan because he did not '*grasp the seriousness*' of his condition. In the following extract, patient 1 explains reasons for his poor adherence:

R: *So even when your medicines are available you will still forget to take them?*

P: *Yes. I mean my problem is.. Like today I forgot to [take my medicine] and I'm very.. a bit relaxed in thinking because of my lifestyle and my health condition. I really don't grasp the severity of it, and I am very care free so I don't realize the risk that what one day missing one tablet would do. Yes I am very carefree.*

Patient 1, man, 45 yrs, British

A case illustration of patient 1 is presented in box 3.

Box 3: Patient 1

Patient 1 was a 45-year old Scottish man who had lived in the UAE for the last 18 years. He worked nightshifts as an entertainer in one of Abu Dhabi's hotels. The interview took place in SKMC outpatient clinic. He attended the interview with his wife because she looked after his medicines and he believed that she could help him answer questions regarding his treatment. He has had high blood pressure for about 12 years. He was overweight but said that he had been slim until 16 years ago. He had a family history of high blood pressure but there was only mild diabetes in his family; therefore, he believed that the cause of his health problems were likely to be hereditary.

When he talked about his medicines, I sensed that he was frustrated because he explained that despite taking 8 or 9 tablets a day his blood pressure was still uncontrolled. He stated that he struggled more with controlling his diet and exercising. The fact that he worked long night hours made it very difficult for him to have any routine for his diet and relied on the hotel restaurant that provided him with free meals that were not always healthy. He also felt that his wife did not help as she prepared lots of sweet food for him when he got home late at night. He was not interested in joining the gym and described gym equipments as dinosaurs that he could not relate to. He lacked motivation and said that he needed 'someone to grab' him and take him to exercise for him to 'actually do it'. However, he believed that his 'carefree' attitude was because he did not 'grasp the seriousness' of his condition. He did not like the attitude of his doctor who never asked him about his work circumstances or showed concerns about his emotions and how much he struggled with dieting and exercising. He felt that his doctor cared more about his lab results and was 'all about figures and numbers'. He believed that if she talked to him like he was talking to me during the interview and listened to his concerns she would have been able to tailor his treatment to meet his needs. He, therefore, felt hopeless because his doctor could not help him to control his blood pressure.

It was difficult, after meeting patient 1, to determine the main factors that resulted in the suboptimal control of his CRFs since, as his story in box 3 illustrates, there were many other issues in his life that affected his adherence to his prescribed medicines. Although he admitted that his inability to grasp the seriousness of having all the CRFs he was diagnosed with contributed to his failure to comply with the needs of his therapeutic management, he contradicted this statement when, in another part of the interview, he admitted his awareness of the consequential complications of failure to control his CRFs. These contradicting accounts of patient 1 could suggest that 'grasping' the seriousness of an illness encompasses far more than being 'informed' of risk to include different aspects, such as patients' perceptions, reasoning, judgment and how much preventing risk fit into the social context and patients' everyday life. Patients 1 had different social limitations that might have overshadowed his attempts to comply to his treatment despite his awareness of the potential risk of poor

adherence. The word 'grasping' that patient 1 used to describe reasons for his 'carefree' attitude could have implied that his perceptions of this risk was still in a level that was weaker to combat all the barriers to adherence and trigger behaviour change towards his health condition.

This section illustrates the range of attitudes that patients in this study had towards the seriousness of MetS features. These attitudes included being concerned about developing cardiac and non-cardiac complications, downplaying risk and grading risk. Patients' accounts indicated that many factors influenced their perceptions of risk, such as health information they received from their physicians, health educators, friends, the mass media and through observing the experiences of others. However, and as was also presented through the story of patient 1, patients' awareness of risk might not always guarantee a positive change in health behaviour and better adherence to treatment as there are many contextual and emotional factors that play a significant role in determining patients' attitudes towards their treatment. More data about factors influencing patients' attitude towards lifestyle and medicine interventions are available in chapters 5 and 6, respectively.

The next section will present data describing patients' fatalistic attitude towards acquiring MetS features.

4.2.3 Patients' fatalistic attitude towards MetS

In this study, fatalism was characterised by patients' perception of CRFs as inevitable conditions that they predicted and awaited to be diagnosed with. The fatalistic attitude of some patients when describing causes of CRFs or failure to control them was evident as they used some fatalistic statements to indicate inability to counteract or combat elevation of blood pressure or blood sugar. The genetic predisposing factor to some of MetS features and the impact of leading a stressful lifestyle on developing CRFs made some patients feel that acquiring any of the CRFs or inability to control them was beyond their control regardless of their efforts to prevent such diseases. This section presents these views.

The accounts of some patients showed that fatalistic statements occurred as they talked about their family history of CRFs to explain reasons for acquiring their cardiometabolic disorders. Such accounts indicated that they forecasted their diagnosis with some or all of MetS features because another family member had that diagnosis. For example, when patient 29 was asked

about the causes of her condition she talked about the family history of diabetes and heart problems.

R: Do you know the causes of your condition?

P: It's hereditary, my mother has [diabetes], my father died because of heart problems, and now my kids are overweight, we eat a lot because we inherited a strong appetite for food. We all love food and if we are not careful the kids will end up diabetic as well.

R: Yes ..

P: You, whatever you do, you have it in your blood. You know that one day you will have it [diabetes]. You are always at that risk and you try to delay it but it is waiting for you.

Patient 29, woman, 34 yrs, Emirati

Patient 29, later on during the interview, gave examples of different strategies that she used to prevent the development of diabetes, such as dieting, exercising and using sweeteners instead of sugar in her tea. However, she believed that regardless of all her attempts she ended up developing diabetes. As can be seen in the previous extract, patient 29 also blamed excessive consumption of food on family history. Another example was found in the interview of patient 5 who indicated that he predicted being diagnosed with diabetes because other members in his family were also diabetic. In the following quote, he stated this point when he described the events that led to his diagnosis.

R: When were you diagnosed with diabetes?

P: I was first diagnosed. I think. Maybe 10 to 12 years ago. But before I was diagnosed I knew it was a matter of time because I come from a family of heart problems. My younger brother recently was diagnosed with diabetes. So it runs in the family.

R: And so did you get checked regularly for diabetes and blood pressure before you were diagnosed?

P: No I would go to the doctor for other things. But you know here [in the company] we are told to have checkups every year, for blood and pressure and also urine samples. So the doctor of course when they see something not going well, they tell you. So they follow me. But I knew I would be diabetic one day because of the family history and all that. You know. So I was not surprised.

Patient 5, man, 50 yrs, Indian

These statements and others bring to light that these patients believe that the genetic factor would defeat their personal control over health. Therefore, familial risk was perceived as an unavoidable factor that eventually resulted in acquiring any of MetS features. However, in other parts of the interview, patients tended to stress the importance of adhering to the treatment plan in order to control CRFs and minimise risk. For example, although patient 25 mentioned

family history as the cause of his diabetes and high blood pressure, he also emphasised the role of diet in controlling CRFs when he was talking about his treatment plan.

R: What about the diet? Are you following a special diet?

P: Yes. Diet is important. Very important.

R: Why do you think it's important?

P: You see it's your tummy that brings all the health problems. Whatever you eat has an impact on your health. Sitting and doing nothing instead of walking and playing sports is another cause for diabetes and obesity. So you need the exercise and you need the medicine to stay safe.

Patient 25, man, 60 yrs, Egyptian

Similarly, when patient 20 was asked about the causes for his uncontrolled diabetes, he acknowledged the importance of taking medicines and adjusting his lifestyle to improve his health condition.

R: You told me that you take your medicines regularly and don't...

P: Yes. yes . I do. I take them always.

R: Do you think there is a reason why your diabetes is still uncontrolled although you take the medicines?

P: I don't know.. but I think it's all to do with the body type. You how much you can fight it.

R: How is that? Can you please explain more?

P: You see it's [diabetes] hereditary, there is no question there, so maybe the type [of diabetes] I inherited is very strong you know? And will always be high. But maybe now I can minimise the problem by taking medicine and eating and exercising. Doing all I can to help myself feel better and keep it in control. But there will be times when it will still be high because this is how my diabetes is.

Patient 20, man, 37, Emirati

The abstract above illustrates the health uncertainty of patient 20. Although he expressed persistence in adhering to his treatment and still not controlling his diabetes, he then acknowledges that failure to control his blood sugars are beyond his control. Patient 20 again throws the blame at his genetic makeup that determined his 'type of body' and the 'type of diabetes' he has inherited to justify his failure to control his condition regardless of his adherence to treatment.

Leading a stressful lifestyle was another factor that some patients believed was unavoidable and affected their health condition. Stressful and strenuous events in life were also blamed by some patients for hindering optimal control of their CRFs, despite adhering to their recommended treatment plan. Patients used the word 'stress', 'tension' and 'pressure' to describe the outcome of leading a hectic lifestyle, encountering strenuous events in life and dealing with daily

hassles. Such strenuous events included housework, stress at the workplace, domestic chores and other family-related issues. Some patients explained that being overloaded by responsibilities at home or at work caused psychological distress that eventually elevated their blood pressure or blood glucose levels. They also believed that stress was a powerful factor that overwhelmed the effect of their medicines. For example, patient 13, who worked in a private company as an administrator, believed that work pressure was responsible for his uncontrolled blood pressure. He also talked about other family responsibilities that contributed to the difficulty of controlling his blood pressure.

R: You said that in your last clinic visit your blood pressure readings and cholesterol level were high?

P: Yes, that's correct they were high. Both [blood pressure and cholesterol levels]. I had the blood test before but when I went to the clinic the doctor had the results. Everything was ok except for the cholesterol, a little bit high. That was last month. Yes.

R: Why do you think your blood pressure and cholesterol were high? Is it the medicines? What did the doctor tell you?

P: You know the problem is not my medicines. I take my medicines always. I mean even with that I still have high blood pressure sometimes. I think it is work pressure. I can say that the reason for my condition is work tension. If your life is tension-free you won't have all these health problems. The kids and life responsibilities add to the stress and tension and that's why you develop pressure and diabetes and all the other stuff.

Patient 13, man, 49 yrs, Bangladeshi

Another example was patient 18 who also talked about the pressure and tension that resulted from being overloaded with domestic responsibilities. Based on her account, such factors were also responsible for preventing her from controlling her diet. Patient 18 indicated that stress caused her blood pressure and blood glucose to elevate even though she took her medicines as prescribed. She also found psychological comfort in eating and described her over-eating habit as an 'escape' from all the hassles she faced in life.

P: The hospital gave me meters for my pressure and sugar. I use them always and document the readings. But they are usually high [laughing].

R: Why is that do you think?

P: Believe me I do everything I should. I tried eating healthy. I work at home and I don't stop moving, I take the kids to school, I cook the food so I must lose all the fat with all these things I'm doing. But no, nothing. But I think it is life and stress, you know?

R: Can you explain please?

P: You know, life problems will never go away and they are the main cause for my pressure and diabetes. It's all the pressure that affects you from inside you know? The kids, the husband. I mean everyone has a problem that causes stress, which eventually elevates your blood pressure, the blood sugars, and it even makes you eat more because you try to escape from all these

problems by eating [laughing]. I mean I try to stick to a diet. But you can't with all this in your life.

Patient 18, woman, 54 yrs, Sudanese

As can be seen in the above extracts, patients believed that leading a stressful lifestyle or having strenuous circumstances in their everyday life were one of the main causes of their uncontrolled CRFs. Some patients also believed that stress was the cause of their CRFs despite their adherence to their medicines or lifestyle interventions. The overwhelming power of stress over health made sense to many patients with MetS who might have tried to find an explanation for their failure to control their health.

Listening to some patients talking about the causes of their health condition, it became clear that their fatalistic statements were made as a way of making sense of their failure to achieve treatment goals despite their personal control and attempts to adhere to treatment regimens. These fatalistic statements did not indicate a neglectful attitude towards health but rather a pragmatic negotiation and explanation of power-differences. In that sense, patients' behaviours were not to be blamed for failure to prevent the development of MetS or control CRFs because they have done what was expected of them, such as, adhering to their treatment regimen. In their belief and from their experience, genetics and stressful lifestyle were beyond their control and therefore an overwhelming power that defeated biomedical rules.

With this in mind the next section presents results that describe patients' strategies of coping and accepting their CRFs

4.2.4 Coping with MetS features

Having MetS means having three or more CRFs that require continuous follow-up, monitoring and adherence to lifestyle and pharmacological interventions. Therefore, coping with MetS features and the treatment requirements can sometimes be quite challenging. Coping is a response aimed at diminishing the physical, emotional and psychological burden that is linked to stressful life events and daily hassles (Lazarus and Folkman 1984). Addressing the ramifications of an illness can be a difficult and a lifelong process. Therefore, it was important in this study to explore the impact of living with multiple CRFs and identify patients' ways of coping with their health condition. The following sections describe two coping strategies that patients indicated as

they described the impact of having CRFs on their lives and the role of religion in managing MetS features. These two elicited strategies were feeling normal and religious practices.

4.2.4.1 Feeling normal

Many patients in this study said that they felt 'normal' when they were asked to describe the impact of having multiple CRFs on their lives. Patients usually explained that such diseases did not cause significant change to their routine daily lives or their families. Despite having chronic cardiometabolic disorders that required taking medicines on a daily basis and adjusting their diet, patients felt that they were still able to maintain living the way they used to before developing these illnesses. In their opinion, implementing lifestyle changes and adhering to their prescribed medicines were an expected consequence to seeking management for their illnesses. They also believed that such treatment needs were achievable and did not alter their normal lives. The following extract is from the interview with patient 12 who explained this point:

R: How did having diabetes and blood pressure affect you? You know, did it affect your life?

P: No, not really. I don't think anything changed. I am not different. Nothing has changed in me or my life. I feel I'm normal. It is only these medicines that I need to take morning and evening but other than that I am who I am and I still live my life the way I used to. Nothing has changed and I feel normal.

Patient 12, woman, 43 yrs, Palestinian

Patient 12 talked at length about her family life. It was clear that her family and social life played a great role in her health. Although maintaining the same routine family life despite having CRFs made her feel normal, she also admitted that this same family life, with its obligations, was the source of stress that prevented her from controlling her blood pressure. As such, family life and domestic responsibilities had a dual role in patients' attitudes towards health, reinforced their sense of normal being and at the same time justified their inability to achieve optimal control of their CRFs (see section 4.2.3).

Box 4 contains a case illustration of patient 12 that illustrates her health concerns that affected her health behaviour and management of her clustering CRFs.

Box 4: Patient 12

Patient 12 was a 43-year old Syrian housewife who lived with her husband and seven children. From the beginning of the interview she was keen to ask me about starting insulin and whether it was the best treatment for her since she is failing to control her blood sugars. I met her at her home in Abu Dhabi where she served me some drinks, sweets and homemade pastry. She promised that she followed the diet instructions of her dietician and that she only bought the sweets and made the pastry because I was visiting her on that day. She also pointed at her treadmill where she had it displayed in the living room and told me that she used it for half an hour every day. However, she felt that despite taking her medicines on time and improving her lifestyle, her blood sugars were always high. She was adamant that the reason behind her uncontrolled diabetes was the stressful life she was leading 'everyone is demanding in this house; the kids and my husband. They drive me crazy'. I could sense during the interview that there were many issues in the family life of patient 12 that seemed to annoy her. She believed that family affairs were a strong factor that affected her health. She was also worried about her husband who suddenly stopped taking his medicines. He had diabetes and elevated blood pressure for 11 years but 'suddenly decided that he had enough of all the drugs he was taking'. She was concerned that his health will deteriorate and indicated that that added to her agony and worsened her health condition.

Despite all the stressful events that patient 12 talked about during the interview, she stated that she 'felt normal' and that having diabetes and elevated blood pressure did not change her life. In her perception she felt that having the same day-to-day issues and concerns such as cleaning the house and attending to her husband's and kids needs meant that her health condition had little impact on her life and the lives of her family members 'they [husband and kids] are the same, they don't pay attention to my condition they still want the same attention and care from me. Nothing has changed'. She kept all her medicines in a bag and had an A4 paper where she glued pieces of all her medicines' packs that displayed the trade names of these medicines. She told me that she always carried this paper in her bag to remind herself of what she was taking when visiting new doctors. She took her medicines because she was scared that she might develop renal failure or heart problems. She indicated that she had a good relationship with her current physician and took her advice on using traditional remedies or bloodletting to which her physicians did not object. She was, however, disappointed with the new health insurance scheme and felt that it added to patients' burden, especially because not all medicines were covered by the scheme and an approval was always needed from the insurance company before the initiation of any blood test or X-ray.

Maintaining a normal life with its usual daily hassles and hectic events despite having CRFs was described in other interviews as a 'good distraction' that prevented patients from over worrying about their diseases. Competing demands such as childcare and household tasks distracted this group of patients from giving their full attention to their health condition. According to their accounts, being busy with everyday activities facilitated coping with their illnesses. In the

following example, patient 12 believed that being overwhelmed with domestic chores diverted her attention from her health and enabled her to cope better with her diseases:

My condition did not affect my family's life at all. They still have the same needs that require my full attention. It didn't affect them at all [laughing] so many things in life need your focus and attention and this is a good distraction because you don't want to be reminded constantly of what you have

Patient 12, woman, 43 yrs, Palestinian

Again, this example illustrates how domestic life and competing demands had two contrasting roles when it came to patients' attitudes towards their health. While hectic life caused stress that resulted in patients' failure to control CRFs (see section 4.2.3), they also seemed to help patients cope with these diseases by distracting their attention from overstressing about having CRFs. Another example that illustrate the role of competing demands in patients' ability to cope with illness was in the interview of patient 23 who indicated that his children's needs distracted his attention from his health condition.

R: Did having all these health problems [diabetes, high blood pressure, elevated lipid profile and obesity] affect you or your life? Did it have an impact on you or your family for example?

P: No, not really. Everything is as it is. Everything is normal.

R: And why do you think it did not change anything? Can you say more please?

P: I mean the diseases didn't change my life much. I still worry about the kids who need help in their studies. It is these issues that take over, and you don't pay attention to your health. Life goes on like they say and nothing around you changes.

R: What about the people around you? Your family for example? Where they affected by your health condition for example?

P: No. no. Why would it affect them? [laughing] no .. I mean they care about me of course. But I mean they are not affected by it or anything thank God.

Patient 23, man, 55 yrs, Emirati

In other interviews, it was apparent that patients' feeling of being normal was engendered by the asymptomatic nature of MetS features. The asymptomatic nature of MetS features meant that patients live with physically unnoticeable CRFs. In the absence of excruciating or hindering symptoms, patients were not conscious of their CRFs and carried on living their lives as they did before the diagnosis. As previously illustrated in section 4.2.2, patient 6 understated the risk of having diabetes because of the high prevalence of CRFs in the UAE. In his account, he also indicated that he defined illness through its physical signs and the severity of its impact on an individual's quality of living, such as, the ability to walk, see, and perform. The following quote from his interview illustrates this point:

In my opinion, illness is something that hinders you, something that stops you from living your life. Like paralysis and losing your sight. In my case, I have nothing like that. My illness does not do that to me, so I feel ok and normal.

Patient 6, man, 65 yrs, Yemeni

The fact that MetS features did not have physical or strenuous attributes enabled patient 6 to continue living and engage in his normal daily chores without a constant reminder of his illness or being confined by a disability. As such, patient 6 was able to retain his normal self even in the presence of chronic diseases, such as CRFs.

What further clarified this analysis were the accounts of other patients who were more alert to, and annoyed by, other symptomatic coexisting conditions when they talked about the impact of their health problems on their lives. In such interviews, physical conditions such as knee and back pain, dermatitis, gastrointestinal problems and other symptomatic conditions were perceived as life-changing conditions more than CRFs. For example, when patient 15 was asked to talk about the impact of having a number of CRFs on her life she indicated that she was more concerned with the pain in her legs than her diabetes. Diabetes did not have noticeable symptoms and was, therefore, tolerable. On the other hand, the pain in her legs was unbearable and as such had a more significant impact on her life than did having diabetes. The following extract from her interview illustrates this point.

R: can you please talk to me about your condition?

P: Thanks to God everything is ok.

R: Thanks to God. And your blood pressure and diabetes.. are they controlled well?

P: Yes, everything is well. Thanks to God.

R: Ok.. Can you talk to me about how, you know, how having these problems [diabetes, blood pressure, high lipid levels and obesity] affect you.. Your life for example?

P: I am used to it now, I don't think about it and I don't pay it attention. It's the pain in my legs that is really bothering me, otherwise everything has become part of the norm because you get used to it after a while and you don't notice it anymore

Patient 15, woman, 55 yrs, Yemeni

The accounts from the interview of patient 15 illustrated how much she was concerned about her leg and lower back pain. During the interview it was clear how significant the impact of these two strenuous health conditions were on her daily life. Although she was diagnosed with all MetS features, they were lightly mentioned throughout the interview. A summary of her interview is provided in box 5.

Box 5: Patient 15

Patient 15 was a 55-year old Yemeni widow who lived with her three daughters and married son. When I met for the interview, she insisted that her daughter attended the interview. She sometimes asked her daughters to confirm some of her answers when I asked for more details. Her medical file indicated that she had all of the MetS features. However, during the interview it was apparent that she was mainly concerned with the pain in her legs. She also talked about her back pain and believed that her doctor could not treat this problem well because she still suffered from the pain despite taking the prescribed painkiller. When I asked her about her diabetes, high blood pressure and weight problem, she indicated that they were all well-managed but that it was the pain in her legs that she could not tolerate because it prevented her from sleeping. She expressed the pain in her body by saying: 'my daughter, it feels like stabbing in my back' and gestured with her fist indicating a stabbing motion.

She felt that her physician failed to treat her leg problem because she did not listen to her needs and did not answer her questions. She said that the medicine prescribed for her leg and back pain did not work and that the physician refused to believe her when she brought that to her attention. When I asked her about the treatment plan for her CRFs, she reported that she had no problem with adhering to her medicines. However, her daughter insisted that she had difficulty sticking to the healthy diet recommended by her dietician. The daughter also stressed that her mother was 'stubborn' and 'did not care for her health and exhausted herself by taking care of her grandchildren and standing in the kitchen for long hours' which caused her leg and back pain. When I asked patient 15 to talk about the issues that would help improve her condition, she once again mentioned her leg pain and indicated that solving this problem would make her feel better.

The next section describes the role of religious practices in coping with illness. This factor was elicited when patients were asked to talk about the role of their religious beliefs in the management of their CRFs.

4.2.4.2 Religious beliefs

The second method of coping with having multiple CRFs was through religious practices. The impact of religion on patients' ability to cope was evident as some patients talked about the role of their faith on the management of their CRFs. Previous qualitative studies on different patient groups living in the UAE found that religious beliefs influenced patients' perception of their health (Ypinazar and Margolis 2006; Winslow and Honein 2007). Therefore, it was important in this study to examine the influence of participants' religious beliefs on their perceptions of their health condition and their attitude towards their treatment plan. During the interviews, patients were asked to talk about the role of religion in their health and whether they believed that their faith had an impact on the therapeutic outcome of their CRFs. The responses of some patients

indicated that religion served as a calming tool that helped them accept their health conditions and eventually cope with it. For example, when patient 14 was asked about the impact of his religion on his health he praised a strong faith and believed that it provided him with inner strength and tranquillity when dealing and living with MetS.

R: Can you talk to me about the role of religion in your health?

P: Well.. having a strong faith is a great thing.

R: How is that .. I mean can you explain please?

P: Well.. for example.. When you are sick. When you are in a good relationship with God you feel peace and tranquillity. When you know you are with God you gain strength and that helps you cope with hardship and illness.

Patient 14, man, 73 yrs, Sudanese

The role of faith in illness, as patient 14 described it, was gaining strength from knowing that you are under the control of 'God' or a powerful entity. This realisation provided patient 14 with the reassurance and the strength to withstand 'hardship and illness'. Another group of patients claimed that the calming effect of religion lies within religious practices, such as reading the Qur'an or praying. Patients 21 and 29 explained how such rituals helped them cope with their illness. Their statements came after they were asked how they believed religion contributed to the management of their CRFs.

Reading the Qur'an and praying does not improve my condition in the medical sense but it relaxes me and it fixes my mood. This brings me relief from all stressors and joy like no other thing.

Patient 21, woman, 49 yrs, Emirati

Diabetes will always be with you but with praying you feel a psychological comfort which relieves some of what you are going through. Your mind becomes clear, your heart becomes light and you stop worrying.

Patient 29, woman, 34 yrs, Emirati

As the above quotes illustrate, religious practices were not perceived as disease curing tools or methods that had a direct impact on health. Religious practices as described by patients 21 and 29 served as tranquillity and stress-relieving facilitators that indirectly helped patients cope with illness. Another group of participants in this study believed that illness was a 'test from God' for their 'patience and gratitude'. Participants in this sense felt a responsibility towards their health and an obligation to accept, cope and adhere to treatment. The following quotes of patients 19 and 24 explain this point.

Sometimes I say this [illness] is a test from Allah and I'll be rewarded for my patience. You just have to be patient, take your medicine, rely on Allah and hope for the best.

Patient 24, woman, 46 yrs, Emirati

I always say thanks to Allah. There will always be good things as well as bad things in everyone's life and illness is one of the bad things. But you have to persevere and be strong because it is a test from Allah to test your patience and gratitude.

Patient 19, man, 67 yrs, Emirati

A majority of participants in this study shared parallel views about the role of God in health and illness that helped them cope with and accept the lifelong management of MetS.

I have this condition [MetS] and I have to live with it because there is no other choice. You cannot run away and so you need to accept it and deal with it. And you don't lose hope along the way, because you know that everything is in Allah's hands.

Patient 8, woman, 52 yrs, Iranian

I have come to the realisation that this is my life and this is how I should live it [adhering to a lifelong treatment] and I have accepted it and I'm happy. These diseases [CRFs] will never go away. I will always need to take these tablets to survive and I have accepted that. You trust that Allah chose the best for you and so if this is what he chose for me then let it be.

Patient 22, woman, 52 yrs, Emirati

Perceiving illness as a test from God might have encouraged some patients to accept it as a way of showing obedience and submission to the will of their creator. Viewing bodies as gifts from God might have also engendered a sense of ownership and responsibility towards preserving and protecting health. In addition, in some Islamic scripts, believers who treat hardship with patience, tolerance and acceptance are promised spiritual benefits for their physical suffering (Adib 2004). This was always apparent in most interviews, as patients would usually narrate sublimations or words indicating gratitude and appreciations for God's will every time they talked about a management setback, such as 'I take ten types of medicines, but thank God for everything' or 'I have diabetes and pressure, but thank God, I'm coping well'. Patients might have been inclined to accept illness and demonstrate ownership of their bodies by protecting them from harm as a way of showing gratitude and appreciation of their creator.

As the previous quotes on the role of religion in the management of MetS features show, religion and religious practices functioned as facilitators to coping with illness in providing tranquillity, calmness, motivating patients to cope and accept. Patients' feeling that they were under the protections of a God or a greater power facilitated a sense of reassurance and support. In addition, perceiving bodies as gifts might have also generated a sense of ownership

and empowerment, which might have enabled patients to accept illness and then accept the management needs to improve the conditions of their bodies.

In this study, there were two main strategies for coping with MetS features, which were feeling normal and religious practices. However, as explained earlier, participants' fatalistic talk and attempts to understate MetS risk could have been used to indirectly communicate patients' other strategies of coping with MetS as reported in available research (Scrandis 2005; Keeley, Wright et al. 2009). Downplaying the seriousness of an illness might have been patients' attempts to perceive disease with a more positive light. Patients' fatalistic talk that indicated power differences and the limitations of their personal control over their health might have been patients' attempts to avoid self-blame and feelings of guilt for failure to control CRFs or prevent illness. Although such fatalistic statements were made as patients were talking about the cause of their illness, they might have still served as a way of reaching acceptance and coping with the ramifications of having multiple CRFs.

As illustrated in this section, there were many factors that influenced patients' perceptions of the features of MetS. Such factors were elicited as this group of patients talked about their illness, how it affected their lives, their causes and methods of coping. Patients' perceptions of MetS may influence their willingness to adhere to MetS treatment plan. Therefore, understanding such factors can help HCPs understand factors that shape patients interpretations of their disease, seriousness and causes.

The following section illustrates themes that described factors influencing HCPs' perception of MetS and how their perception influenced the clinical implication of the MetS definition.

4.3 Professional perceptions of MetS

HCPs' perception of MetS is an important indicator of their attitudes towards utilising MetS diagnostic criteria to identify patients at high risk of developing CVDs or diabetes when not diabetic. Although the UAE acknowledges the importance of preventing and managing MetS as a separate condition, professional opinion of the value of MetS in clinical practice can be swayed by ongoing reports about the controversy surrounding MetS (Suppes, McElroy et al. 2007; Hughes 2010). Thus, it was important in this study to explore HCPs' perceptions of MetS in the UAE. Professional perceptions of MetS were influenced by three main factors, as interview data

analysis revealed. Those factors were: (i) awareness of MetS, (ii) authenticity of MetS, and (iii) MetS clinical utility.

4.3.1 Awareness of the MetS concept

One main finding in this study was that interviewed HCPs did not have equal levels of awareness about the MetS definition. For example, physicians were able to articulate their perception of MetS better and more knowledgeably than did other HCPs. This could be attributed to physicians' higher exposure to MetS information through weekly meetings and workshops, as well as to patients who fit into the MetS definition. In the following extract, physician 4 who worked in SKMC outpatient clinics describes the high manifestation of MetS cases in the clinic as well as the efforts made to keep updated with literature about MetS:

R: From your experience, how significant is the MetS problem here in the UAE?

Physician: Metabolic syndrome is an important thing and it is something that we talk about here. Unfortunately, I don't think there are statistics that show us how wide spread it is here but we see many metabolic syndrome cases every day. It's a huge problem in the UAE [...]. There has been a lot of research around metabolic syndrome in the past few years [...] here in the family medicine clinics we have weekly seminars where we sometimes talk about this big problem.

Physician 4, woman, Jordanian

Working as physicians in outpatient clinics as well as primary care clinics exposed general physicians to cases as well as to updated information about the MetS concept and management needs. This might explain physicians' ability to show greater knowledge about the MetS concept, the manifestation of this health problem in the UAE and patients' treatment needs based on their clinical experience. On the other hand, only a few pharmacists had similar levels of awareness about the MetS concept. Pharmacists with specialist degrees such as clinical pharmacy or other postgraduate degrees were aware of the MetS definition prior to participating in the study. For example, pharmacist 7, who was a clinical pharmacist, talked in detail about the health needs of patients with MetS. Her account, as she talked about the potential role of pharmacists in the management and prevention of MetS, indicated that she was aware of the different MetS definitions.

You know, pharmacists can easily use the MetS definition in their daily practice. All we need is a measuring tape. We can scan patients prescription for medicines used for hypertension and diabetes and dyslipidaemia. And even if a measuring tape is not available or the pharmacist felt uneasy about asking the patient to have his waist measured. we can just look at the patients'

waist and decide. You know? I even don't need that [measuring patients' waist-circumference] because if I'm using the America Heart Association definition we just need any three factors. You know pharmacists can actually be very effective in dealing with this issue [identifying patients with MetS].

Pharmacist 7, woman, Emirati

Other pharmacists, mainly those in charge of non-clinical tasks, admitted that their first encounter with the MetS definition was through the information provided in the study information sheet. Pharmacist 10 explained in the following extract how she learned about MetS when she decided to take part in the study. In her interview, I asked her whether she knew about the MetS concept before taking part in the study. My question came because of previous cases where pharmacists admitted their limited awareness of the syndrome.

R: Did you know about the MetS before the interview?

Pharmacist: *No, not really. I think when I read the information sheet you emailed me I understood what MetS was. But I initially linked it to obesity. I saw the word metabolism and thought that it must be a disease that slows down the rate of metabolism and makes you gain weight [laughing].*

Pharmacist 10, woman, Emirati

A number of pharmacists interviewed, especially during the focus group, indicated that their work responsibilities were confined to dispensing and drug supply, which limited their exposure to clinical practice and therapeutic management of illnesses such as MetS. During the focus group discussion, pharmacist 12 explained that pharmacists' lack of awareness about MetS was because of their limited clinical role.

We don't do rounds, we don't do rounds alongside doctors, and we don't attend their workshops. We are not really involved in the clinical management of these patients [patients with MetS]. That is why we are not always updated or aware of something like metabolic syndrome.

Pharmacist 12, man, Syrian

Other pharmacists who were not familiar with the concept of the MetS indicated that they were familiar with the therapeutic needs of patients with the MetS features and were, therefore, capable of providing help and advice to this group of patients. They explained that they only lacked information on the MetS concept. During the focus group discussion, pharmacist 19 illustrated this point in the following quote.

Maybe we are not familiar with the metabolic syndrome, you know? That's true. but every day we deal with patients that are diabetic, hypertensive, taking statins, you know. We see this

group of patients every day and they are probably two-thirds of the patients here. But we are not informed of new things [diseases]. we need this kind of information so that we can see the bigger picture of what we are dealing with.

Pharmacist 19, woman, Jordanian

As it became clear from early interviews that not all HCPs were familiar with MetS, dieticians, pharmacists and health educators were asked if they were aware of the MetS concept at the beginning of each interview. Although dieticians and health educators claimed to be aware of the MetS concept during interviews, they were not always able to accurately define MetS or list all CRFs that contribute to MetS diagnosis. Instead, they abridged the MetS to obesity and diabetes only. For example, when dietician 4 [woman, Emirati] was asked about her perception of the MetS health problem she referred entirely to obesity.

R: *Were you aware of MetS before I gave you the information sheet?*

Dietician: *Yes. Yes of course.*

R: *And what are your views about it?*

Dietician: *It's a huge problem here. I mean there are many obese patients here and we get referrals from all the clinics. It's a serious thing, although people might not be aware that obesity is the root for diabetes and heart problems and that it can also kill them.*

Dietician 4, woman, Emirati

HCPs of different specialties, such as pharmacists, dieticians and health educators, provide care and advice for patients with MetS features on a regular basis. It is therefore vital that they also be alert to and knowledgeable about the MetS definition, risk and management needs. In this study, a group of pharmacists were not aware of the MetS definition prior to their participation in the study. Physicians in this study had a general tendency to refer to diabetes or obesity rather than the clustering of CRFs when addressing MetS health-related issues during interviews despite their awareness of the MetS definition. This could be attributed to the fact that most patients with MetS might have been identified after the establishment of diabetes. Obesity or a BMI ≥ 30 kg/m² is a prerequisite for the diagnosis of MetS according to the IDF definition (Alberti, Zimmet et al. 2006). This could explain why most physicians referred to obesity rather than the clustering of CRFs during interviews.

Data concerning professional perceptions of MetS were mostly generated during interviews conducted with physicians. Data analysis identified two central themes concerning professional perceptions of MetS: (i) authenticity of MetS, and (ii) clinical utility of the MetS definition. The following sections describe these themes.

4.3.2 Authenticity of the MetS concept

All HCPs, at the start of all interviews, were asked about their perception of MetS as a condition in its own right. The majority of participants, especially physicians, described MetS as a real condition that is highly manifested in the UAE. Participants' belief in the genuineness of MetS was prompted by three main factors: (i) their awareness of the literature on MetS, (i) identifying a high number of MetS cases during their clinical practice, and (iii) the reported high prevalence of MetS in young adults and children in the UAE. Physician 7 describes how MetS gains its legitimacy from the high manifestation of MetS cases in patients visiting his practice. Physician 2, on the other hand, talks about literature that supports the existence of MetS.

R: Can you please talk to me about your views on the MetS?

Physicians: It [MetS] is a big problem here in the UAE [the physician, talks about the prevalence in the UAE and factors influencing the prevalence]

R: What about the controversy that surrounds the MetS?

Physician: No. Actually there is no doubt in my mind that MetS exists. About 90% of patients that visit my clinic every day fall into the MetS definition. If you spend one day in this clinic I'll show you their files and you can judge by yourself. It's unbelievable how widespread it is in this country. MetS is a real condition and highly prevalent in the UAE.

Physician 7, man, Egyptian

R: What is your opinion on the controversy surrounding the MetS?

Physicians: Yes. That is true. There were different opinions and disagreements on the MetS. In the beginning when the syndrome was first introduced by the WHO people were not confident about it. But in the last ten years, the literature became flooded with articles on the MetS. So we have no doubt now that it's a primary cause of heart diseases and diabetes. With all this scientific evidence no-one can argue about MetS anymore.

Physician 2, man, Sudanese

The high prevalence of MetS in young adults and children was another common topic amongst interviewed physicians. Such participants felt that the high number of younger patients fitting the MetS definition boosted MetS realness. Physician 4 talks about how her personal experience with MetS influenced her perception of MetS.

We started seeing MetS amongst school children now. Two of my kids are obese and my friend's kids are obese. I'm scared because there is little I can do for them now except monitor their diet and push them to exercise. This makes it so real for me in particular. I strongly believe in MetS more than ever.

Physician 4, woman, Jordanian

A few physicians expressed concerns about the controversy surrounding the MetS concept. Such participants were concerned with the disagreeable definitions and pathophysiology of the MetS. In their perception, having multiple diagnostic criteria for one condition confused clinicians and discouraged them from using any of the MetS definitions. Physician 8 illustrates this point in the following quote as he was talking about the controversy surrounding the MetS.

One of the main concerns with this Syndrome is the many definitions it has like the IDF and the WHO. It can confuse doctors and make them doubt whether it exists or not. Why can't they just agree on one definition? This will make it more reliable.

Physician 8, man, Iraqi

The multiple definitions of MetS were believed to cause confusion and disagreement between physicians on the features that confirm a MetS diagnosis. Physician 8 gave an example of the IDF and WHO as two differing definitions of the MetS concept. For example, the IDF states that an individual with a BMI ≥ 30 kg/m² and another two CRFs meets the diagnostic criteria of the MetS (Alberti, Zimmet et al. 2006). The WHO definition of MetS, on the other hand, includes insulin resistance as a prerequisite for a confirmed MetS diagnosis (WHO 1999).

Participants' statements about the differing definitions of MetS were made before the harmonisations of the MetS definitions in October 2009 (Alberti, Eckel et al. 2009). As can be understood from the account of physician 8, the MetS concept would be more reliable if an agreement on the MetS diagnostic criteria became available. Therefore, concerns about MetS legitimacy might have weakened if the harmonisation of the MetS definition was published before the study was conducted.

Despite the variation between different MetS definitions that existed at the time of the study, physicians admitted that the elevated cardiovascular risk associated with the clustering of CRFs was alarming and called for the attention of the medical profession. Physician 6 explains in his quote why more focus should be directed towards the management and prevention of MetS despite its controversy.

The definition is not always agreeable, but I think in the last ten years there is more acceptance that these collections of symptoms do represent a risk factor for CVDs. I think we need to overlook these controversies and concentrate on finding effective ways to identify people at risk. If MetS can help us achieve this through its criteria then I don't see why not.

Physician 6, man, Egyptian

One physician was inclined by a recent publication to use a different name for the constellation of CRFs. The multiple names of the MetS indicate the varying and unstable underlying causes of the syndrome. Research on the aetiology of MetS continue to generate new information of possible underlying causes of the syndrome. The account of physician 7 highlighted the lack of a clear and defined pathophysiology of MetS. However, his argument was interwoven with emphasis on the need to address the risk of clustering CRFs, regardless of the naming. In the following extract, physician 7 talks about MetS aetiology as he was addressing some of the syndrome's controversies:

Physician: *There is also the issue of MetS causes and aetiology*

R: *Can you clarify please*

Physician: *You probably know this from your research. You know, there have been a lot of arguments on what exactly to call it [MetS], and I heard recently some people calling to emphasise the inflammatory and prothrombotic aspects of the syndrome. They want to call it the inflammatory thrombotic syndrome. Whether you have to call it MetS or otherwise, there is a definite indication that obesity and its associated multitude of symptoms, like central obesity, dyslipidaemia, hypertension, are contributing to a state of inflammation as well as to a state of thrombosis. So I do believe something exists. We may differ about the nomenclature, but there is some syndrome that exists and it is observed more with the epidemic of obesity*

Physician 7, man, Egyptian

As the presented accounts illustrate, some physicians expressed concerns about the absence of a widely accepted consensus defining the diagnostic criteria that make up the components of MetS. Others argued whether the naming reflected the actual underlying pathology of MetS. However, such statements were interlaced with recognition of the elevated cardiovascular risk of clustering CRFs. In their opinion, the arguments surrounding MetS naming or definition, however legitimate, were of limited clinical importance compared to the risk MetS imposes.

4.3.3 MetS clinical utility

Clinical utility of MetS in this study was indicated by participants describing factors that enhanced or hindered the use of MetS diagnosis or diagnostic criteria in identifying patients at high risk of developing CVD or diabetes, if not yet diabetic. Using the MetS definition to identify patients was not performed by pharmacists, dieticians or health educators and was confined to physicians only. This could be due in part to the practice relevance of MetS management across organisations. Data analysis identified four categories that described MetS clinical utility in the research setting: (i) applicability of the MetS definition; (ii) using the MetS diagnosis; (iii)

informing patients of MetS diagnosis; and (iv) drug therapy for MetS. Each category presents a number of factors that influenced the clinical utility of MetS. The following sections will describe these factors in details.

4.3.3.1 Applicability of the MetS definition

Clinical implications of the MetS definition in this study were characterised by physicians' ability to use the MetS definition in identifying patients at risk of developing CVDs or diabetes. Worldwide, The IDF and the AHA/NHLBI diagnostic criteria are the most commonly used in identifying patients with MetS in clinical practice (Sadikot and Hermans 2010). There are slight differences between the two MetS definitions. The IDF definition considers an ethnicity specific waist circumference or BMI ≥ 30 kg/m² as a prerequisite for MetS diagnosis (Alberti, Zimmet et al. 2006). On the other hand, the AHAH/NHLBI definition of MetS states that having any three of the five CRFs confirms MetS diagnosis (Grundy, Cleeman et al. 2005). Other internationally recognised MetS definitions, such as the WHO, necessitates a positive insulin resistance test as a requirement for MetS diagnosis (World Health Organization 1999). Using different MetS definitions within the same health care setting may result in disagreements between HCPs in the legitimacy of a MetS diagnosis and the need for therapy initiation. Therefore, it was important in this study to find out the definition of choice amongst physicians in the study and reasons behind their preference. All physicians interviewed preferred using the IDF definition of MetS. According to their knowledge, IDF was the latest published MetS definition that took into account the ethnic specificity of screened individuals. Other physicians applauded the applicability of the IDF definition within a clinical setting as Physician 7 describes in his quote.

It is a simple procedure now. You just look at the patient's waist, and decide whether this patient is at risk of CVDs or even diabetes. Just by looking at his waist you know? The IDF made it simple and easy and this is how it should be.

Physician 7, man, Egyptian

A number of physicians felt that the practicality of the MetS diagnostic criteria would be of greater benefit if applied in primary care settings or during outreach campaigns. In their perception, the MetS diagnostic criteria was a simple tool that enables primary care physicians and other HCPs to identify hard to reach individuals through random screening of CRFs. In the following quote physician 9 explains the limitations of using the MetS diagnostic tool within his daily practice or in speciality clinics.

The problem is that we see patients who already have diabetes and heart problems. I think MetS as a tool will be of significant value when applied in outreach campaigns. Because there are always those hard to reach patients that will never visit the clinic and they are the ones that we need to target. And MetS can facilitate that.

Physician 9, man, Palestinian

When patients decide to visit their family medicine clinic, they usually present with established CRFs and are, therefore, in need of both lifestyle and pharmaceutical interventions. According to the account of physician 9 and others who shared his view, this late identification of CRFs increases the complexity of management and achieving behavioural change. Thus, the MetS diagnostic criteria provides an easy to use tool to identify individuals at risk of developing CVDs before the establishment of chronic cardiac diseases such as hypertension or diabetes (Grundy 2006). The MetS definition can be utilised by different HCPs of different specialties during outreach and public awareness campaigns.

4.3.3.2 Documenting MetS diagnosis

Findings from the study suggest that MetS diagnosis was not always documented in patients' medical notes and patients were not informed of their MetS diagnosis. Identifying factors that prevent physicians from using the MetS code for diagnosis is important to understand the extent of the clinical utilisation of the MetS concept. During the process of identifying patients with MetS, it was noted that few physicians used MetS as a diagnosis. Therefore, only a limited number of manually accessed patients' medical files had MetS documented as a diagnosis for patients who had a clustering of three or more CRFs. Physicians talked about two main reasons that they believed contributed to the low use of MetS as a diagnosis in patients' medical files. These two factors were: (i) familiarity with dichotomising CRFs; (ii) not including MetS in the list of reimbursed medical diagnoses.

All interviewed physicians were asked about the limited documentation of the MetS diagnosis in patients' medical files. Some physicians believed that more time was needed for physicians to change their diagnosis habits and consider MetS as an additional diagnosis that can be listed after all risk factors are identified. Physicians' responses indicated that they were familiar with dichotomising risk factors rather than grouping them under MetS terminology. Hypertension,

diabetes and obesity were all definitions commonly used in clinical practice and each represented an instance where a continuous risk factor has been dichotomised.

Most doctors are comfortable with diagnosing patients with individual risk factors rather than calling the sum 'metabolic syndrome' so they are just used to writing the list of problems. I think it is a habit. But with time and more focus on the MetS concept physicians will start documenting MetS as a diagnosis.

Physician 1, man, Sudanese

Other physicians talked about the impact of medical reimbursement on limiting documentation of MetS as a diagnosis in patients' medical files. Physicians needed to abide by the medical insurance regulations in order for patients' medical treatment expenses to be refunded by medical insurance companies.

You'll notice that the MetS is not listed in physicians' reimbursement scheme that's purely the reason why we don't include it in the list of diagnoses otherwise we would. Treatment will not be approved and patients will end up paying for their drugs. I spoke to people from DAMAN [national health insurance] regarding this issue but they just don't get it.

Physician 3, woman, Emirati

As this section illustrates, there are still limitations to the use of the MetS diagnosis in clinical practice, such as the absence of the name for the list of reimbursed diseases and physicians preference of documenting individual CRFs in patients' medical files.

4.3.3.3 Informing patients about MetS

Patients' lack of awareness of their MetS diagnosis was noticed during patient interviews as previously discussed in section 4.2.1. This finding was enquired about during physicians' interviews. A group of physicians admitted that during patients' clinic visits they usually informed patients of the individually presenting CRFs (i.e., diabetes, hypertension, dyslipidaemia and obesity). According to interviews, physicians' rarely talked about MetS to patients or referred to their clustering CRFs as MetS. Physicians agreed on the importance of addressing MetS as an entity rather than individual CRFs. Yet, they had doubts about the added therapeutic value of involving patients or informing them of the MetS concept. Physician 10 (woman, British) illustrates this point in her quote.

R: I have noticed from my interviews with patients that they were not aware of the MetS diagnosis or definition when I interviewed them

Physician: *Maybe they were not told. I usually don't mention that to my patients either*

R: *Is there a reason why you don't inform patients of the MetS*

Physician: *I never thought of that to tell you the truth. I mean they get told that they have the components. They know they have diabetes and the other risk factors. I mean I don't see the need to tell them about MetS.*

R: *Do you think patients need to know or will benefit from information on the MetS diagnosis?*

Physician: *I don't know if patients would react differently if they got told that this is your disease: 'metabolic syndrome'. Instead of saying you've got all these individual risk factors give it the name "metabolic syndrome"? I don't really know if it would make a difference? I don't know! I haven't really thought about it, it might, I'm not sure about that actually.*

Physician 10, British, woman

Physician 7, on the other hand, felt that informing patients of their individual presenting CRFs would suffice and would be effective in communicating the seriousness of their health condition and the cardiovascular risk it imposes.

What is important is for patients to know that they have the individual risk factors and that they are dangerous for their overall health and need treatment. I don't think talking to them about the 'metabolic syndrome' will add extra benefit to their understanding or commitment to treatment.

Physician 7, man, Egyptian

The complexity of the term 'metabolic syndrome' discouraged some HCPs from informing patients of the diagnosis, especially patients with poor educational backgrounds. Physician 3 explains this point in her quote.

Certainly, you don't tell them: "listen you have something called metabolic syndrome". No. We don't do that, because first of all there is no Arabic alternative for the word "metabolic syndrome" and some of these patients won't be able to remember it.

Physician 3, woman, Emirati

Acknowledging patients' educational background calls for simplifying educational approaches. The two educators interviewed perceived "metabolic syndrome" as a complex disease name that might not always be understood by patients, especially the uneducated or the elderly who do not speak English. The following quote illustrates this point.

Simplicity is important. The idea of educating patients is to go to their level. We have patients of different educational backgrounds who find medical terms difficult to remember. Even the educated ones call hypertension 'pressure' and dyslipidaemia 'cholesterol'. All this should be taken into account when talking to patients about their conditions.

Educator 2, woman, Jordanian

In this study, HCPs rarely informed patients of their MetS diagnosis due to three main factors: (i) The complexity of the MetS term, (ii) the absence of a simple Arabic alternative name, and (iii) uncertainty in the therapeutic value of informing patients of an additional new diagnosis. Physicians' accounts indicated they felt that patients lacked the intellectual ability to understand the MetS concept. Others felt that the name 'metabolic syndrome' was avoided during patients' educational sessions in an attempt to simplify medical information and to avoid using medical jargon. Physicians were also reluctant to use the term 'metabolic syndrome' during patients' clinic visits because of its linguistic complexity. Physicians' attitude towards informing patients' of their MetS diagnosis presented in this section may explain patients' lack of awareness of the MetS name and definition presented earlier in this chapter (see section 4.2.1).

4.3.3.4 Treating patients with MetS

The primary goal of clinical management in individuals with the MetS is to reduce risk for CVDs and first-line therapy is directed toward the major risk factors: dyslipidaemia, hypertension and diabetes. The prime emphasis in management of MetS is to mitigate the modifiable, underlying risk factors (obesity, physical inactivity, and unhealthy diet) through lifestyle changes. However, if absolute risk is high enough, consideration can be given to incorporating drug therapy to the regimen. The priority of drug therapy is elevations of dyslipidaemia, blood pressure and glucose. In case a drug intervention is needed, current clinical guidelines for the management of CRFs should be followed such as the clinical guidelines for the management of diabetes and hypertension (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006; Alberti, Eckel et al. 2009).

Impaired fasting glucose (IFG), which is one of the five CRFs in MetS, is defined as a prediabetes state that indicates an increased risk of developing diabetes. Preventing diabetes is another important goal in MetS management. Data about the impact of oral anti-diabetic agents, such as metformin and thiazolidinediones, in reducing cardiovascular risk in patients with prediabetes, but with other CRFs, is insufficient. Therefore, the use of oral anti-diabetic agents in this group of patients is discouraged (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006).

In this study, a group of participants expressed willingness to start pharmacological interventions to treat MetS patients without diabetes. They were, however, discouraged because of the

unclear MetS treatment guidelines regarding initiating pharmacological therapy in prediabetes. This point is illustrated in the following quote.

If we start the prediabetes where patient's abdominal area is getting bigger and bigger and there is maybe borderline impaired glucose tolerance, you know, one of the drugs is metformin we like to use it very early with this group of patients. In the US, metformin is used in obesity and has shown good results. MetS treatment guidelines are not clear in this area unfortunately.

Physician 6, man, Egyptian

Another group of participants felt that the MetS definition did not provide novel management guidelines for the clustering of CRFs. Participants admitted that patients' are managed based on clinical guidelines of the management of individual CRFs. In their perception, the use of the MetS definition was limited to providing a simple tool of identifying individuals at risk of CVDs, as physician 7 explains in the following quote.

I think MetS is not useful in providing guidelines for management because it repeats what the other guidelines said. So it did not give the world of medicine something new, or something we did not know about before. It just lumped diseases and made you view them in a different light.

Physician 7, man, Egyptian

Physician 7, in other parts of the interview, referred to measuring patients' waist circumference that was recommended in the IDF definition of MetS as a tool that simplified cardiovascular risk assessment (section 4.3.3.1). In his perception, the originality of the MetS definition lay with the use of waist circumference as an indicator of CRFs. Other physicians reported using other clinical guidelines for the management of CRFs, such as the American, Canadian and sometimes British guidelines. Study findings suggest that physicians perceive MetS as a screening tool more than a clinical guideline for the management of clustering CRFs. This perception may explain why a group of physicians felt that MetS was better suited for CRFs screening during outreach campaigns (section 4.3.3.1).

4.4 Summary

The data presented in this chapter illustrates both patient and professional views of MetS as a condition in its own right. An interesting finding, in this study, was that patients lacked awareness about their MetS diagnosis and that physicians rarely told patients that they had a diagnosis of MetS and rather focused on the clustering of CRFs. However, all patients conveyed their sense of the augmented risk associated with the clustering of their risk. The high

prevalence of MetS in the UAE is usually publicised in the mass media in an attempt to increase public awareness of the risk of CRFs. Findings from the study, however, showed that CRFs were normalised in patients' perception because of their high prevalence in the UAE and controllability by available and affordable therapy. Contrary to this finding, patients usually graded their CRFs and ranked diabetes as the most serious. This in part could be due to the high number of public health awareness and prevention campaigns that are mainly dedicated for diabetes management and prevention in the UAE. It may also be due to patients' unfamiliarity with the MetS concept and, thus, their unawareness of the greater risk of the whole syndrome versus that of individual CRFs. Fatalistic talk was used when patients communicated their understanding of the MetS causes. Patients felt that MetS was an inevitable consequence to familial risk and a stressful lifestyle. Fatalistic talk co-occurred with statements that emphasised the important role of behaviour change in MetS management. As such, fatalistic talk may have been used as a stress relief or to avoid self-blame. Other coping measures that patients used in MetS were normalising living with MetS and religious practices. Patients' feelings of being normal were engendered by the MetS asymptomatic nature and self-distraction. Patients associated illness with physical signs, such as pain and disability. Having MetS did not alter patients' daily lives, which eventually helped them accept and cope with the ramifications of MetS. Competing demands that required patients' full attention, such as households and family matters, distracted patients from overstressing about their health condition. Religious practices provided patients with psychological comfort and tranquillity and were believed to enhance their acceptance and coping with their condition. Patients' belief that illness was in God's hands and a test of patience and gratitude gave patients a sense of acceptance and responsibility towards health.

HCPs of different specialties did not have an equal level of awareness of the MetS. Physicians were the most informed and were able to articulate their views of the syndrome from practice and exposure to the latest research about MetS. Pharmacists in charge of non-clinical tasks were the least familiar with the MetS name and definition. The majority of HCPs believed in the realness of the MetS concept. The high prevalence of MetS in both adults and children in the UAE attracted physicians' attention and increased the legitimacy of MetS in their perception. A group of physicians had concerns regarding the naming and multiple definitions of MetS; however, they all agreed that controversy around MetS was clinically insignificant when compared to the cardiovascular risk associated with the clustering of CRFs. Data analysis showed that the clinical utility of MetS by clinicians was limited by four main factors. These factors were:

(i) MetS definition ambiguity regarding pharmacological treatment in prediabetes; (ii) uncertainty over the added value of the MetS definition compared to existing clinical guidelines; (iii) lack of medical reimbursement for MetS diagnosis; (iv) familiarity with dichotomising CRFs. These factors reduced the dissemination of the MetS concept within the clinical setting. This poor utilisation of the MetS definition in clinical practice was manifested in the physicians' attitude towards MetS. Physicians' attitudes towards the MetS concept were observed as they indicated using the MetS criteria primarily as a tool for the screening of CRFs in addition to other tools, such as Framingham Risk Score. It was also evident when they expressed how they perceived MetS as medical jargon that was avoided during patient education sessions. This could in part explain patients' unfamiliarity with their MetS diagnosis. HCPs' responses demonstrated how MetS as a concept was not firmly embraced in clinical practice.

This study identified factors influencing physicians' utilisation of MetS in their clinical setting. Physicians' attitude towards the MetS definition and legitimacy as a condition was also linked to patients' attitude towards their health condition. These findings reflected a more realistic picture of the practicality of the MetS definition in the UAE. The findings also identified HCPs' assumptions about patients' ability to comprehend their MetS diagnosis and associated risk. This finding may indicate the need to explore patient-physician communication within the UAE and MetS context. Unfortunately, exploring patient-physician communication and factors influencing information exchange was not the scope of this study but could be recommended for future studies.

The following chapter will present data that describes the factors that influence patients' attitudes towards their treatment plan.

Chapter 5

Factors influencing lifestyle intervention

5.1 Introduction

This chapter presents factors that influence lifestyle interventions in patients with MetS living in the UAE. Patients' attitudes towards MetS management were elicited through exploring patient and professional perceptions of barriers and facilitators to management and adherence to the MetS treatment plan. Patients, in this study, were asked general questions about their experience of living with MetS and issues encountered when adhering to the prescribed treatment. The interview guide included topics such as barriers to lifestyle and pharmacological interventions and the impact of the UAE socio-cultural and religious context on the MetS management. HCPs were asked to talk about issues patients with MetS faced and disclosed during counselling and education sessions. They were also asked to give their perceptions on management needs from their own experience in the UAE. The interviews provided an opportunity for the participants to talk about anything important to them that was related to MetS management.

There were other themes that emerged from the data analysis which included: limitations to the role of pharmacists in counselling and patients' care plans; shortage in health care workers; lack of incentives for additional health care services; and Abu Dhabi health care reform. These themes are not discussed further within this thesis, as they were not exclusive to MetS nor directly influenced the management of patients with MetS. Themes that describe factors influencing pharmacological intervention will be presented in chapter 6 while this chapter will focus on factors influencing lifestyle interventions. Table 5.1 illustrates a summary of the key themes presented in this chapter.

Table 5.1 Summary of identified factors influencing MetS management in the UAE

Influencing factors	Main findings
Health awareness	<ul style="list-style-type: none"> HCPs felt that the lack of health education promoting a healthy lifestyle in the school education system resulted in the lack of an exercise friendly culture in the UAE HCPs also believed that being overweight was perceived to be healthy in the UAE and was therefore culturally acceptable. This cultural belief affected women's motivation to manage their weight
Socio-cultural context of the UAE	<ul style="list-style-type: none"> Restricting women from exercising outdoors Lack of culturally sensitive health clubs Traditional clothes were perceived hindering to hinder weight management Eating-centric gatherings, traditional foods and eating habits Food misconceptions Using cars instead of walking was a socially constructed behaviour. Using cars was linked to social status and discouraged some patients from walking on streets
Affluence	<ul style="list-style-type: none"> Excessive use of cars for transport limited physical activity Total reliance on domestic workers for cleaning, limited women's physical activity at home Relying on domestic workers to prepare meals prevents effective diet monitoring
Environmental factors	<ul style="list-style-type: none"> HCPs talked about aspects of the urban planning in the UAE that did not encourage pedestrian activities Patients were concerned with the introduction of fees to previously accessible free of charge beaches which they believed limited their physical activities The hot climate in the UAE did not encourage residents to undertake outdoor activities The widespread availability of fast food restaurants and the limited healthy options available in them hindered diet control
Coexisting health conditions	Coexisting health conditions such as rheumatoid arthritis, back and knee pain, and physical injuries limited patients' abilities to engage in physical activity
Personal factors	Lack of time, motivation and willpower hinder both physical activity and diet control in patients with MetS

The management of MetS involves both lifestyle (i.e., diet and physical activity) and therapeutic interventions. Current clinical guidelines for the treatment of MetS propose lifestyle changes as a first-line intervention (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006). A number of studies that investigated the impact of lifestyle modifications in patients with MetS features found that reduction in body weight improved CRF parameters (Despres, Lemieux et al. 2001; Neter, Stam et al. 2003). Adopting a healthy lifestyle that incorporates a balanced diet and regular physical activity requires a series of behavioural changes that might be difficult to achieve or maintain (Kappagoda and Amsterdam 2007). For many individuals, there are several constraints beyond personal motivation to adopting a healthy lifestyle. Cultural barriers, socioeconomic factors, psychological trauma, perceptions of health and illness and alternate health-seeking behaviours are just a few of the constraints that are likely to have a detrimental impact on health in patients with MetS (Kappagoda and Amsterdam 2007). Identifying

limitations to a healthy lifestyle will enable HCPs to consider such constraints when developing and planning lifestyle interventions or health promotion programmes. Although some obstacles and barriers to management might be similar in all patients with MetS, regardless of their race or cultural background, it is likely that other barriers might emerge specifically in the UAE given its unique cultural and religious characteristics. Therefore, it was important to explore factors influencing MetS management in patients living in the UAE.

In this study, patients' responses indicated that they found adhering to lifestyle interventions challenging compared to pharmacological interventions. All patients in this study were aware of the importance of a healthy lifestyle in the management of MetS. They were also conscious of the behavioural changes they needed to adopt in order to achieve a healthier lifestyle. However, patients admitted that they sometimes failed to maintain such changes. Patients reported a number of barriers that altered adherence to lifestyle interventions. Patient 20 Patient 20 reflects his struggle to adhere to lifestyle interventions in the following quote:

Doctors tell you about so many things [lifestyle interventions] that you need to do but they are very hard to implement, and considering my circumstances, it is even harder for me to implement them. Life is not straightforward. There are ups and downs and they affect how you think and how you live your life and how you take care of your health.

Patient 20, man, 37 yrs, Emirati

Patient 20, being recently divorced, having full custody of his three children, and working in one of the northern Emirates, talked about the difficulty to find the time to cook healthy food or exercise on a regular basis. He reported that he mainly relied on fast food for lunch and dinner and also discussed the difficulty of finding the time to walk when he returns back from work. Therefore, implementing the lifestyle changes that his physician recommended were very challenging considering his personal and work circumstances.

All HCPs agreed that lifestyle interventions were the most challenging to patients. Compared to patients' responses, HCPs gave a wider range of factors influencing MetS management that belonged to personal, environmental, cultural and educational aspects of patients' lives. Therefore, patients were asked to give their opinion on a number of these factors if they were not instinctively mentioned during the interview. Differences between patient and professional perceptions of factors influencing MetS management are presented accordingly in this chapter.

5.2 Factors influencing physical activity

All patients in this study agreed that having an active life was important to control their presenting CRFs and described means by which they try to maintain active. However, both patients and HCPs talked about a number of factors that hindered the ability of patients to maintain physically active lifestyles. Data analysis revealed six main factors that altered physical activities in the UAE: (i) lack of exercise culture (ii) socio-cultural norms, (iii) coexisting health conditions (iv) affluence; (v) environmental factors, and (vi) personal factors. Figure 5.1 illustrates factors influencing lifestyle modifications in patients with MetS.

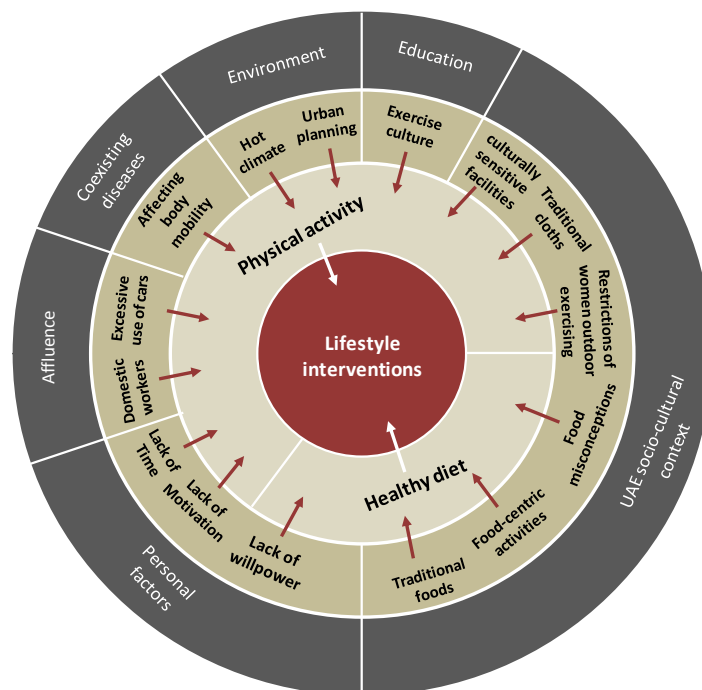


Figure 5.1 Six categories of identified factors influencing lifestyle intervention

Barriers identified belong to five main categories: socio-cultural, educational, environmental, affluence and personal factors. Most reported barriers by study informers revolved around limitations to physical activity. Each of these categories impact lifestyle as can be seen in the above diagram.

5.2.1 Lack of an exercise culture

Some HCPs justified patients' reluctance to maintain a physically active lifestyle by the lack of exercise culture in the UAE. Although patients were aware of the importance of physical activity to their health, they lacked commitment and enthusiasm towards initiating and maintaining an

active lifestyle. Many HCPs agreed that living in a society where exercise is not part of its culture, engendered such an attitude towards exercise. Physician 3 and pharmacist 6 explain this point when they were asked why they believed exercise was challenging for patients.

Exercise, it is not something that is part of our lifestyle. In western countries even senior citizens get up in the morning and walk or run. In our culture, it's a different story. I mean we are starting to change, and there are elderly patients that walk for one hour every day or swim, so you see there are some. But these examples are few.

Physician 3, woman, Emirati

Exercise doesn't seem to be part of the culture here at all. People are not used to a healthy lifestyle and some of them have never exercised in their lives or seen any members of their families do.

Pharmacist 6, woman, British

Elderly patients in particular were believed to be the least engaged in exercise and physical activity in the UAE. Apart from the lack of an exercise culture, these patients were not able to comprehend the meaning of the word exercise when used by HCPs and were clueless on how to perform exercises. Pharmacist 7 explains this point in the following quote.

I don't think it's appropriate to tell a 50 or 60-year old woman from this culture to exercise. How would a woman of that age from this culture comprehend what exercise is or how it should be performed? Maybe if you talk to a 60-year old European woman about exercise she'll know what you're talking about, but the concept of exercise is not something older people in the UAE can identify with and understand, it's an odd term to them

Pharmacist 7, woman, Emirati

Pharmacist 7 blamed the inappropriate educational approach used with patients that does not take into account a patient's age, educational and cultural backgrounds. Failing to acknowledge patients' educational needs especially in promoting physical activity resulted in failure to achieve behavioural change. Other HCPs felt that most patients, regardless of their age, were unfamiliar with exercise and a healthy lifestyle because it was absent from the Emirati school educational system. In their opinion, emphasising the importance of a healthy lifestyle in schools' curriculums may help build an exercise friendly culture. Physician 8 explains this point in the following quote.

The lack of education in schools and homes about healthy lifestyles is having a major impact. It is part of the curriculum in the UK as probably you know. They do educate kids in elementary schools what they should and should not eat. They teach them the importance of exercise. The same thing in US schools. As far as I know it is zero here.

Physician 8, man, Iraqi

One pharmacist believed that the Emirati culture applauded obesity in women and perceived it as a beauty feature. From their perception, some women might not be encouraged to lose weight by their families.

I think there's a big cultural acceptance of being large. I think that Arab men like large women; I think they find them very attractive. So if you are a woman growing up in this culture you won't be thinking of exercising as part of your daily programme because it is not needed.

Pharmacist 6, woman, British

Most responses from patients, however, indicated that they saw physical activity in the broad context that covered a range of activities. A number of patients were able to define exercise as a subset of physical activities that are planned, structured, repetitive and have a final or intermediate objective. However, most participants described daily activities such as sweeping, vacuuming and walking within the office during working hours as physical activities. Participants considered such incidental activities as physical activities that fulfilled part of their MetS management plan. Although a small number of patients engaged in leisure or recreational types of physical activity, most of the physical activity undertaken by participants originated from daily incidental activity or walking to the mosque for prayers. Furthermore, when discussing physical activity the majority of participants used the terms physical activity and exercise interchangeably, which suggests that they were not clear on how each differed from one another.

All participants indicated the importance of maintaining a physically active lifestyle in the improvement of CRFs. None of the patients interviewed had views that indicated otherwise.

5.2.2 Socio-cultural norms

In this study, certain aspects of the UAE socio-cultural context were believed to affect the implementation of physical activity. The role of the UAE culture was first mentioned by a dietician as she described constraints that Emirati patients experienced as they attempted to adhere to their treatment plan.

There are many cultural chains tying this society and stopping it from becoming more physically active. I think the problem sometimes is not in individuals, it is in the whole society and how this society thinks and behaves and in what it believes too.

Dietician 1, woman, Jordanian

The role of the Emirati culture in patients' physical activity was further explored in the following interviews with all participants. Data analysis revealed that some Emirati social norms restricted women from exercising outdoors, and called for more culturally sensitive health clubs to be established. The following sections present these findings in more details.

5.2.2.1 Women's outdoor exercising

Despite increased public awareness campaigns on the importance of exercise to health, HCPs felt that the reason behind the observable lack of exercise by women stemmed from some socio-cultural norms in the UAE. HCPs believed that in some families, husbands or fathers disallowed their wives or daughters from running and power walking in public places. Such activities were sometimes permitted when in groups or in the company of a male family member. Physician 3 explains this point in the following quote.

Some husbands will not allow their wives or daughters to exercise. They might not be encouraging: 'I don't like her to go out a lot' so we ask them to, at least, exercise indoors. Or to buy equipments that they can use inside their houses.

Physician 3, woman, Emirati

Only three female patients interviewed indicated that some Emirati traditions constrained their physical activity. Such participants admitted that they willingly refused outdoor exercising to avoid scrutiny or disdainful comments by passerby if they try to brisk walk. A daughter of a female patient explained this point as she was talking about exercise options her mother could engage in.

My mother won't walk in public places. She is an old woman who wears a veil and Abaya and it will look awkward if she does. She won't because she'll be scrutinised and will hear silly comments from people in the streets. We have a big garden in the house. She can freely and peacefully walk there.

Daughter of patient 22, woman, 56 yrs, Emirati




It is important to mention that the type of activities participants were referring to in this section were brisk walking, jogging and running. Public places that such activities were performed

included public gardens and Abu Dhabi's seafront referred to as 'the Corniche' (see Table 5.2). The cultural beliefs that restrict women from exercising were sometimes interpreted as an excuse to escape physical activity. Physician 4 explains this in the following quote:

Families not allowing women to exercise is not a valid excuse. They can always do something else. These women can join a gym club or exercise indoors. Sometimes they just use these excuses to avoid exercising.

Physician 4, woman, 45 yrs, Jordanian

Table 5.2 A photographic illustration of public places where residents of Abu Dhabi exercise

Picture	Comment
	Abu Dhabi Corniche or seafront is one of the public places many residents of the city use to walk, brisk walk, run or jog. The cornice stretches along Abu Dhabi's coast. In the picture, you can see two men walking and a woman walking and wearing the veil.
	A picture of a public gardens recently established in Abu Dhabi. Such gardens are equipped with devices that visitors can use to workout different body muscles. In the picture, two women are engaging in two different physical activities.
	Women wearing the veil while walking in part of Abu Dhabi Corniche. Some women prefer to walk in groups or in the company of a male member of the family (Debelkova 2010).

Other participants felt that the Emirati society has changed and has become more liberal. Some participants indicated that the modernisation of the UAE in the last three decades has led to greater flexibility in gender rules, which allowed women to work alongside men in different

places. In that sense, social norms that constrained women from being openly active in public places were waning with time. Pharmacist 2 explains this point in the following quote:

Yes, that is true. There are families that disallow their daughters from exercising outdoors, but this is changing. Today families and people are more flexible. Society is changing with time. People travel to other countries and learn from what they see. We are also open to other societies and we learn new ways of living. So this habit is getting weak as time passes by.

Pharmacist 2, woman, Emirati

One health educator explained that women's avoidance of outdoor exercise is due to fear of being identified. Although walking outdoors in gardens and the seafront is not a dishonourable act, women in the UAE are very conservative and like to maintain their privacy. Educator 1 usually asked this group of patients to wear veils while exercising to avoid being identified by the public.

I usually advise women to cover their faces with a veil. Some say that they won't be able to breathe: 'I will suffocate, I won't be able to breathe' she would say. I ask them to wear something light or porous so that the air will penetrate and they'll be able to breathe. They just don't want people to recognise them and say: 'oh! we saw the wife of so and so walking on the beach yesterday'. It is a very conservative and private society.

Educator 1, woman, Bahraini

The quote from Patient 22 presented earlier, suggests that female patients might still not take part in outdoor exercising, regardless of whether they have their faces covered. However, this view might also be influenced by the participant's age and status in her family as her daughter indicated (i.e., a mother of 56 years of age). Contrary to this view, two female patients' interviews admitted that power walking outdoors was an acceptable activity because it was performed while wearing veils. Patient 28 explains this point.

I always go out with my veil. Not just for exercising. I feel comfortable wearing it and free to walk fast and sometimes run. Nobody knows you and nobody judges you. It could be a bit suffocating when the weather is hot but you get used to it.

Patient 28, woman, Emirati

It is important to mention that other women that participated in this study said that they walked in public places like public gardens and Abu Dhabi's Corniche on a regular basis. They did not indicate that walking was an unacceptable activity in their families or that their husbands and fathers opposed it. This suggests that all women living in the UAE do not necessarily experience the socio-cultural factors that might limit women's participation in outdoor exercise. Therefore,

generalisation of socio-cultural factors should be avoided and other factors such as personality and age should be considered when promoting physical activity.

5.2.2.2 Lack of culturally sensitive health clubs

The UAE has many women-only health clubs that exclusively cater for the female population of the country. Some of the women-only clubs are fenced buildings with security guards that do not allow men to access or use these facilities. However, in this study some HCPs talked about women's reluctance of joining women-only health clubs because of the presence of security cameras referred to as 'hidden cameras'. Female patients also feared mobile phone cameras that might be secretly used by other female members to take their pictures whilst exercising. HCPs reported that some conservative women were mainly scared of having their pictures distributed to strangers or posted on the internet. In their perception, such an act would jeopardise their reputation and dishonour their family names. Dietician 2 explains reasons behind women's fear of women-only gyms in the following quote.

Some ladies think there are hidden cameras in gyms that will take their pictures wearing exercise outfits and then distribute them on the internet. Many of the women-only health clubs have a bad reputation because of this rumour. So women decide to avoid them altogether.

Dietician 2, woman, Emirati

Women's reluctance to join health clubs because of fear of security cameras was explored further with female patients in this study. Only one female patient interviewed shared similar concerns regarding cameras in women-only health clubs. In the following quote, she explains why she left her previous women-only health club and joined a new one.

The health club I used to be in was good. [...]. But my friends told me it had hidden cameras. My husband asked around and he heard rumours too. So I stopped going there. Now I go to another one, my husband said it was safe and it has a good reputation.

Patient 24, woman, Emirati

Cultural specifications in women-only health clubs included the need for women-only walking tracks and open swimming pools that allow women to exercise outdoors without wearing traditional black garments or veils. One patient was saddened when her health club that provided options for outdoor activities was closed.

We would walk or swim wearing our training outfits and swimsuits. [women-only health clubs] provided freedom and privacy. God forgive them, they closed it and now we walk in the Corniche with our abayas and veils in the extreme hot weather or we go to these closed gyms. But it was different then.

Patient 29, woman, 34 yrs, Emirati

Culturally-related barriers to exercising were not entirely specific to female patients with MetS. Some male patients participating in the study indicated the lack of culturally sensitive health clubs that respected their Islamic religious beliefs. Mixed sex health clubs were another indoor exercising option for men in the UAE. However, a group of male patients perceived mixed sex gym clubs to be disrespectful of the UAE's religious and cultural values. A number of patients indicated that such clubs were avoided. Outdoor exercises were an alternative but were sometimes avoided during the extremely hot and humid months of the year. Patient 14 narrates the events that led him to stop going to a gym club.

I used to be a member in a good gym. There were special hours for men, and special hours for women and the times never overlapped. But years later the club management allowed women to come during men's exercise hours. When that happened, I was annoyed and felt sorry for these women. How can she degrade herself by wearing these revealing clothes? It was very offensive. I thought I shouldn't expose myself to these sins, so I stopped going there.

Patient 14, man, 73 yrs, Sudanese

Patient 14 felt that mixed sex health clubs subjected him to mix with and observe women wearing revealing exercise outfits. This setting antagonised his Islamic disciplines and was believed to be unacceptable culturally and religiously.

5.2.2.3 Traditional clothes

Both old and young Emirati men still prefer to wear the traditional dresses called the dishdasha, which is an ankle-length white shirt. Women, on the other hand, wear the traditional long, black over-garment, called the abaya, on top of their dresses. HCPs felt that such attires obscured body changes due to weight gain and prevented them from noticing any increase in their waist circumferences. Some patients resisted the idea of wearing contemporary clothes, such as trousers or exercise outfits. As such, HCPs felt that men's and women's traditional clothes were inconvenient for efficient physical activity. In the following two quotes, two HCPs describe how Emirati traditional clothes hinder weight management.

It's really hard for a dishdasha to get very tight, you don't realise that you're getting a bit fatter when you're always wearing it.

Pharmacists 6, woman, British

They also dress in these loose traditional clothes that hide their bellies. I ask them to wear trousers, at least at home, but they refuse.

Educator 1, woman, Bahraini

Others felt that such modest, long clothes could be uncomfortable when exercising outdoors during hot climates. In their perception, exercise was a complex activity and clothes that hinder movement can add to its complexity and alter patients' adherence to regular exercising. Patients interviewed did not equally share such views regarding the impact of their traditional clothes on their physical activity.

Women here are fully covered and that is a barrier to exercise. They must be feeling really hot under all that fabric.

Physician 10, woman, British

When patients were asked if their clothes hindered their exercising or movement, patients made quick remarks such as: 'my clothes are fine', 'no problem with my clothes'. Others indicated that they usually dress in appropriate exercise clothing when attempting to exercise. Although most patients did describe the UAE's hot climate as a limiting factor for exercising, patients did not associate annoyance with the traditional clothes they wore.

Although all patients in the study acknowledged the importance of exercising in the improvement of their MetS features, they admitted that their reluctance to exercise was partly due to cultural barriers. Such barriers included: (i) constraints on women's outdoor exercising; (ii) lack of culturally sensitive health clubs that prohibit the use of cameras; and (iii) traditional clothes. Other HCPs suggested strategies that took into account Emirati's societal rules and at the same time facilitated patients' engagement in physical activity. Such strategies included advising women to wear a veil when exercising outdoors or walking in closed malls while shopping. This can be an ideal alternative for outdoor brisk walking especially for women wanting to avoid public scrutiny and the hot climate of the UAE.

It is important to mention that socio-cultural barriers to exercise do not necessarily affect all residents of the UAE. The UAE population are of different nationalities and communities of variable cultural and religious backgrounds and might not all experience similar barriers to

physical activity. Before 2006, SKMC used to be a government owned health care service dedicated to Emirati citizens only. As part of Abu Dhabi's health care reform, the national health insurance scheme (DAMAN) was implemented. This was subsequently followed by the privatisation of all Abu Dhabi's government health care services. As a result of this, all residents of Abu Dhabi, citizens and expatriates, became medically insured and were able to access all Abu Dhabi's health services, including SKMC. In this study, many of HCPs' views on the impact of the Emirati culture on MetS management were discussed with UAE citizens as the reference population/group. This may have resulted as data were collected a couple of years after Abu Dhabi's health reform and in reality SKMC was still providing health care mainly to Emirati citizens. With this in mind, diligence was exercised to ensure that interview questions would not further reinforce this inherent bias and questions were designed to capture the views of the other nationalities that might be using SKMC services. Participants' answers indicated what patient group (citizens or expatriates) they were referring to.

It is important to acknowledge that other individual factors such as age, gender, level of education, personality, intelligence, experience, occupation and socio-economic factors might come into play and impact patients' health behaviour. Thus, broad generalisations in explaining people's beliefs and behaviours should be avoided.

5.2.3 Coexisting health conditions

Coexisting health conditions in this study refers to diseases that impaired patients' movement or hindered their ability to engage in physical activity and exercise. Most patients interviewed indicated that coexisting health conditions were a significant barrier to exercising. Rheumatoid arthritis, knee and back pain or, in some cases, injuries from accidents were the most talked about barriers by patients.

I used to walk. And I did that regularly until I got this fracture in my foot. Now I can't walk like I used to. It is very painful when I step on my foot. I had this fracture for 5 months now and it is still painful.

Patient 13, man, 49 yrs, Bangladeshi

Most patients interviewed looked forward to maintaining a routine exercise regimen but felt inhibited by coexisting symptomatic health conditions. Some patients, on the other hand, commenced different physical activities due to coexisting illnesses. Swimming was the most

popular alternative to walking and other forms of physical activity by most of this group of patients. Patient 3 illustrates this point:

In the house my movement is limited. Since I was diagnosed with rheumatoid arthritis I can't move like I used to. So I decided to swim. My daughters said that swimming would be gentle on my knees. So now I swim once sometimes twice a week.

Patient 3, woman, 69 yrs, Yemeni

A group of patients interviewed were dissatisfied with their inability to exercise due to coexisting health conditions. Their limited physical activity resulted in more weight gain, which made them feel hopeless and powerless. Patient 6 explains this point in his quote:

You feel hopeless because you can't do anything. I want to move and walk like I used to but the pain in my knees, in my back are not permitting me. I sometimes feel like crying and feel depressed.

Patient 6, man, 65 yrs, Yemeni

HCPs on the other hand indicated that such health conditions were consequential complications to uncontrolled MetS. In their perception, patients needed to realise that muscle and joint injuries and inflammations could have been avoided if patients reduced their extra weight. Physician 4 explains this view in the following quote:

Patients always complain of their joints and knees. But they need to understand that all these problems are because of the extra weight. It's a vicious cycle and the more they ignore exercising the more their condition deteriorates.

Physician 4, woman, Jordanian

HCPs felt that coexisting physical barriers and diseases could hinder movement and result in more weight gain that can eventually worsen these coexisting diseases. Swimming was one of the alternative physical activities that most physicians advised this group of patients to take part in. However, swimming might not be attainable or acceptable by some patients due to cultural obligations. Crosson and authors (2010) explored physicians' perceptions of barriers to control CRFs among patients with diabetes. Interviews were conducted with 34 physicians from five states in the USA. Coexisting diseases such as pain and depression were believed to compete with patients' efforts to control CRFs. Such competing conditions limited patients' ability to exercise, distracted patients and physicians from addressing diabetes management and resulted in patients' depression (Crosson, Heisler et al. 2010). Similarly, in this study, lack of movement

due to coexisting health conditions altered lifestyle intervention and in some cases resulted in feelings of hopelessness and sometimes depression (see patient6).

5.2.4 Affluence

In this study, HCPs used the term affluence to describe patients' affordability of luxurious living. Affluence, in their perception, resulted in patients' sedentary lifestyle and poor adherence to physical activity and, as such, was one of the contributing factors to the high prevalence of MetS in the UAE. Excessive use of cars for commuting and the total reliance on domestic workers were two by-products of affluence that limited patients' physical activity.

Some HCPs felt that such behaviours were exclusive to the Emirati population of the UAE. They felt that Emirati patients with MetS indirectly associated the use of cars with social status, and they perceived walking in the streets as degrading to one's social class. The following quote explains this point.

You rarely see people walk! I wish I could see an Emirati walking in the streets. I am serious. I wish I could see an Emirati crossing the road on his feet. It makes me wonder why? Why don't they walk or cross the street like other nationalities that live here. If they go to shops they'll park their cars exactly in front of the entrance and don't mind getting a ticket as long as it'll spare them a few steps. It's outrageous, you know? I feel it's in their blood and in their social system. They think it's degrading to be seen walking in the streets [laughing].

Dietician 1, woman, Jordanian

Dietician 1, who was born and brought up in the UAE, believed that Emiratis total reliance on cars for transport was alarming. During the interview she recalled many examples from her memory as a student and then as a health care professional dealing with Emirati patients with MetS. She implied that Emiratis avoidance of walking in streets, through using cars or disallowing women from walking in public, stemmed from unique and newly constructed social beliefs.

I don't know honestly why Emiratis behave in such a way. In the past, they were not like that, I mean, I've lived in this country my whole life. I was born here in '79 and I know the changes this country went through, and this helps me a lot in my work. But these beliefs are not restricted to driving cars, there are other things that are new to this society like women not being able to power walk in public places or in the Corniche. Even if she was allowed, she'll be teased by young men and she won't feel comfortable.

Dietician 1, woman, Jordanian

Another aspect of affluence was the use of domestic workers in homes for cleaning, cooking, gardening and babysitting. The increased number of domestic workers and servants in Emirati homes reduced the amount of physical activity available for female patients. In many cases when female patients complained about the lack of time available to perform exercise, engaging in house work as another form of physical activity was prevented by their total reliance on their house domestic workers. Dietician-4 explains this point in the following quote.

There are a lot of house cleaners and servants in one house. There isn't just one house cleaner there is more than one. So what is left for the mother or daughter? Nothing. There is no physical activity for the mother or wife to do while at home which adds to the problem

Dietician 4, woman, Emirati

Conversely, in this study, many patients interviewed did not refer to the use of cars or domestic workers as a barrier to their physical activity. Cars and domestic workers were perceived as help and methods that facilitated a better quality of life. In their perception, the hot climate of the UAE mandated the use of cars for commuting. In addition, many female patients believed that domestic workers were there to help and make time for themselves and their families. The following quotes explain patients' views on cars and domestic workers.

The hot weather leaves you no option [but to drive a car]. When I travel abroad I walk so I have nothing against walking. When I come back from work exhausted, you won't expect me to also walk in the heat to the mall. No. You'll think I'm mad [laughing].

Patient 20, man, 37 yrs, Emirati

Patient 18 indicated that having a housecleaner allowed her to have time for exercising. In this regard, house chores were not always regarded as a workout that aids in weight loss. Domestic workers were needed to free time for structured exercising.

I work in the house. The house cleaner doesn't do everything of course. Having a house cleaner will not make you fat like they say on TV. There are other factors in life that would. The house cleaner is there to help. Because I need time for myself, for my family, to do exercise, you know, to take care of myself in general.

Patient 18, woman, 54 yrs, Sudanese

The attitude of patients towards the use of domestic help is similar to what Winslow and Honein have identified. In their study, they explored the health needs of Emirati women through focus groups. The findings showed that women perceived domestic help as a bridge that helped with various domestic responsibilities. Domestic workers were also perceived as a barrier because they jeopardized the confidentiality and privacy of families they worked for. However, domestic

workers were not perceived as a barrier because they reduced the amount of physical activity women could have engaged in (Winslow and Honein 2007).

5.2.5 Lack of time and motivation

Some patients interviewed indicated personal factors that prevented them from frequently exercising. Personal factors included lack of motivation and social and family support. Some patients lacked motivation to join the gym or exercise on regular basis. Family and social support were perceived as motivating factors that might enhance patients' engagement in exercise. Other patients lost the motivation and willpower to exercise because of long working hours and exhaustion. Patients 1 and 9 illustrate this point.

To me exercise facilities look like a bunch of metal dinosaurs just setting there. It feels alien to me to go to the gymnasium. But it would help if I can find someone that will push me, will encourage me, you know?

Patient 1, man, 45 yrs, British

I'm very lazy to do any exercise; I come back from work at 5 [pm] I come back tired and wanting to eat, watch TV and sleep. You lose motivation and energy. There is no energy left to keep you going.

Patient 9, woman, 43 yrs, Palestinian

Losing motivation to perform exercise was engendered by competing demands and lack of time. Patients felt that long working hours, constant travelling, running family chores, childcare and other social and family responsibilities frequently prevented them from undertaking physical activity. In the following quote, patient 29 illustrates this point:

You know? I work from 7 am until 3 pm and when I'm back I need to do the cooking, help the kids with their homework. Suddenly it's bed time. So I can't have time for exercise in this busy schedule.

Patient 29, woman, 34 yrs, Emirati

All HCPs agreed that lifestyle intervention and behavioural change required an intrinsic patient-related driving force and was not something they could influence by their actions or advice. The quote from Physician 7 illustrates this point:

Lifestyle is difficult. We understand that patients are under great pressure, because it requires strength and willpower. Lifestyle is difficult because it is self-motivated. There isn't much that we as physicians can do about it except give advice and encouragement

Physician 7, man, Egyptian

One study investigated barriers to physical activity in patients with diabetes attending the Diabetes Clinic in Dundee through interview questionnaires. Findings suggested that lack of time and distraction by other activities were among the barriers to physical activity (Thomas, Alder et al. 2004). Another study explored barriers to lifestyle interventions in 450 patients attending a primary health care centre in Saudi Arabia. The lack of willpower was ranked the second most hindering factor to exercise. In addition, 76.8% of participants reported lack of social support as another barrier to physical activity and 73.2% felt that they lacked the energy to perform exercise (AlQuaiz and Tayel 2009)

5.2.6 Urban planning and accessibility

Some HCPs and patients indicated that the urban planning of Abu Dhabi did not encourage pedestrian activities. The lack of arcade zones such as walkways, and covered passages throughout the city meant that residents were not able to commute on foot and had to rely mostly on cars and buses. Walkways and cycling tracks were available only in the Corniche area or in public gardens. Daily walking can increase mobility and lessen sedentary habits. However, the lack of pedestrian-friendly zones in Abu Dhabi made it difficult for patients to include foot transportation in their daily incidental exercise. Physician-10 compared the urban planning of Abu Dhabi to European countries and found that the latter facilitates unofficial exercising which is not the case in the UAE.

I think it's just very difficult to walk around the cities the Emirates. In Europe you go shopping, you take public transportation, you walk or you cycle. You're getting all that sort of unofficial exercise every day. Here it's geared for the car. Urban planning here forces you to drive everywhere. Even when the weather is nice and you could walk, it's dangerous to walk and everything is spread out so people take the car.

Physician 10, woman, British

A few patients also talked about the inaccessibility to free exercise facilities, such as beaches for swimming. The recently introduced beach entry fees were believed to reduce the use of such facilities by residents in the city. Thus, reducing accessibility to physical activity. Patient 6 described in his interview how his habit of swimming every day was affected due to privatisation of beaches.

I used to come back from work, rest for a couple of hours and then go to the beach and swim for at least half an hour. The beach is across the road from where I live which helped a lot. Now they closed [the beach], they blocked all entrances. They closed it for renovation. And to start charging people entrance fees. So I don't swim at all now.

Patient 6, man, 65 yrs, Yemeni

In this study, a number of patients indicated their commitment to daily or regular exercising. Some were members of or frequent visitors to a gym or a health club. Others talked about strategies they followed to maintain a physically active lifestyle. These strategies included women engaging in house chores, using stairs instead of lifts, walking in the house back garden, brisk walking in public places with other family members or walking to the nearby mosque for prayer five times a day.

I like walking, especially in between prayer times. I walk from my house to the nearby mosque. After the early evening prayer, I walk around the block. When it calls for the last prayer of the night, I pray and then head back home.

Patient 17, man, 60 yrs, Jordanian

Of note, patients' responses indicated that coexisting diseases and lack of time and motivation were the most limiting factors to physical activity. HCPs mostly indicated other factors such as the socio-cultural norms and affluence. This may suggest a patient-professional communication gap, which may have resulted due to differences in how patients and professionals perceive barriers to lifestyle interventions. Communication was not the focus of this study, therefore themes that reflect that aspects will not be presented in this thesis.

The flowing section illustrates and discusses factors that influenced adherence to healthy diet identified in this study.

5.3 Factors influencing diet control

Diet control is the other component of lifestyle intervention recommended by the IDF and AHA/NHLBI for the management of patients with MetS (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006). In addition to other factors related to other lifestyle habits, the impact of a healthy diet has been confirmed in many studies (Bianchi, Penno et al. 2008; Al-Sarraj, Saadi et al. 2009). Increasing scientific evidence has emerged indicating that diets rich in fruits, vegetables, whole grains, fish, nuts and low-fat dairy products have protective health effects (Grundy, Cleeman et al. 2005). However, there are many factors that influence adherence to a

healthy diet regimen that can include both personal and environmental factors. Therefore, it is important to identify and understand such factors in order to construct effective interventions that improve patients' adherence over time (Fappa, Yannakoulia et al. 2008). In this study, participants indicated a number of factors that were believed to influence patients' adherence to a healthy diet. These factors included social gatherings and eating habits, traditional foods, fast food and lack of willpower. The following sections illustrate these factors in more details.

5.3.1 Eating-centric social activities and traditional foods

Social norms and cultural factors were elicited as HCPs talked about barriers to diet control. Three main aspects of culture work hand-in-hand when influencing patients' adherence to their recommended diet regimen. These were: (i) eating-centric social activities, (ii) traditional foods and cuisines and (iii) sharing one plate of food. This section presents these themes as described by the study participants.

Many HCPs indicated eating-centric social activity to be one of the main factors that limit patients' ability to adhere to their diet plan. Social gatherings and events where food is served in abundance are very popular activities in the UAE. In the UAE, like in many countries in the Middle East, people have the habit of serving food during social gatherings of families and friends or in weddings and lunch invitations. During such gatherings, guests are served lots of food and lavish choice of expensive delicacies in abundance. In the Arabic tradition, it is considered courteous of the guests to eat what they are served. To refuse such hospitality when offered can cause offense to the host. Several health professionals, as well as patients said that this hinders adherence to healthy diet programmes. Patient 20 talks about this factor in the following quote:

We have our culture, our customs that play a huge role in our lives. For example there are the food invitations that you cannot escape. I remember I stopped having late dinner for two weeks but then all my plans were ruined because of [food] invitations. In the beginning, I used to refuse but people disapproved. You know, in our tribe we should accept invitations otherwise your people [tribe] won't be pleased with you.

Patient 20, man, 37 yrs, Emirati

Traditional foods served at homes or during these events were also a concern and believed to be damaging to patients' healthy diets. Participants described traditional cuisines as unhealthy

foods that were rich in carbohydrates and saturated fat content. Physician 5 explains this point in the following quote.

Our culture depends on socialising lunch and dinner invitations, big feasts, it's a way of showing hospitality and one's generosity, so people indulge when it comes to food, especially and mainly with carbohydrate based meals, rather than vegetable based meals, so all of this, and you can't do much about it because it's a custom, it's a culture.

Physician 5, woman, Jordanian

Dieticians also talked about some eating-customs practiced by a number of patients that affected diet control. Some Emirati families still practice the tradition of eating foods such as rice by sharing one large plate. This eating-custom made portion size and plate size difficult for patients to implement in their daily lives. Dietician 4 explains this point in the following quote.

Some families, especially those living in the west part of the Emirates, still eat from one plate. In such cases, it's difficult to ask them to monitor their portion size or their plate size. This habit is on the decline but we do come across patients who just can't control their diet because of this custom.

Dietician 4, woman, Emirati

Family gatherings where food is shared in one large plate was a barrier to diet control indicated by HCPs in another recent qualitative study in the UAE (Ali, Bernsen et al. 2009). This habit was also common in other Arab countries like Somalia and Oman and were also considered to hinder lifestyle intervention (Owens, Piccinin et al. 2009; Al-Sinani, Min et al. 2010).

5.3.2 Misconceptions about dates and honey

A number of HCPs in this study talk about patients' excessive consumption of dates and honey, which have high calorie content. People in the UAE have the habit of eating dates throughout the day while drinking the traditional Emirati coffee. Among all HCPs, only dieticians and health educators talked about patients' overconsumption of dates and honey. This could be explained by the nature of their health care service that explores patients' lifestyle and attitudes towards treatment plans. Such HCPs found that convincing patients to reduce their daily consumption of dates or honey was very challenging because of the religious and traditional value of these foods.

Some patients with diabetes insist on drinking honey and eating dates simply because it is mentioned in the Qur'an as a cure for illnesses. In this case, I cannot contradict their religious beliefs this is what they believe in, so I don't argue.

Educator 1, female, Bahraini

Date palms have a religious and traditional value to many Muslims around the world. Religiously the date palm is mentioned 20 times in the holy Qur'an and is described as the 'blessed tree'. Dates are also an essential food item that Muslims break their fasting with during the holy month of Ramadan. Muslims follow the actions of the Prophet Mohamed when he used to break his fasting with three dates. The prophet also praised the nutritional value of dates and advised his followers to consume them daily (Adib 2004). The UAE is believed to have the highest number of date palm trees in the world with 42 million trees (Salem 1996; UAE Interact 2010). One of the UAE's ways of preserving its heritage and traditions is to annually celebrate date harvesting. Farmers from all over the country exhibit their date produce where people and visitors from different parts of the world come to witness this celebration (UAE Interact 2010). In almost all Emirati homes, dates are always served on large plates that are placed in sitting rooms or on coffee tables.

Honey, on the other hand, gained a lot of its popularity in the UAE and other Islamic countries from traditional Islamic medicine. Both the holy Qur'an and the Hadith¹⁰ mention honey and emphasise its therapeutic benefits. Thus, honey is one of the main ingredients that is used to medicate patients in Islamic medicine (Adib 2004; Deuraseh 2006). The health educators interviewed indicated that patients' misinterpretation of the Islamic scripts fuels their attitude towards honey. In their perception, health care professionals need to be equipped with Islamic knowledge in order to rectify patients' belief about the consumption of dates and honey.

Some patients have poor educational backgrounds so they interpret these Islamic scripts wrongly. Our role is to educate them. So it is important that we have a good understanding of the Islamic teachings and scripts so that we can rectify their misinterpretations and convince them. I tell them: 'honey is good for health but it is mainly for wound healing and diabetic foot. And dates are rich in fibres and vitamins but you have to take them moderately' so I don't totally oppose their beliefs, but I amend them.

Educator 1, woman, Bahraini

Most patients interviewed talked about the health benefits of dates and honey but stated that they consume small amounts according to their dietician's recommendations. Patients

¹⁰ Hadith: are narrations concerning the words and deeds of the Islamic prophet Mohamed. Hadith are regarded by traditional Islamic schools of jurisprudence as important tools for understanding the Qur'an and in matters of jurisprudence

interviewed were aware of the risk of over consuming such foods to their CRFs. This was due to previous educational sessions with health educators and dieticians as the following quote illustrates:

I eat dates and honey of course. I mean who doesn't? But I eat them with balance. I only drink honey when friends bring me some from Yemen. But I don't drink a lot. And dates just like my dietician told me, three to seven, not more. Don't worry, I know the risk to my health and I am very careful.

Patient 21, woman, 49 yrs, Emirati

Dietary misconceptions were assessed in 1,039 patients with diabetes living in Saudi Arabia. The results of the survey showed that 34.3% and 17.0% of the participants believed that honey and dates were good food items for diabetics, respectively. (Al-Saeedi, Elzubier et al. 2002). Misconceptions about the value of honey in diabetes were also identified in a study that surveyed the knowledge, perceptions and barriers to diabetic care of 240 Arab patients with diabetes living in Israel (Khatib, Efrat et al. 2007). The study also reported that 56% of the participants believed that honey did not affect blood glucose levels. In both studies, patients' attitudes towards honey and dates were attributed to inaccurate Islamic and culturally-bound beliefs. In this study, HCPs talked about patients' culturally influenced beliefs about dates and honey benefits and the impact it had on their dietary habits. However, culturally competent health education programmes provided to patients with MetS included such topics and worked on rectifying patients' dietary misconceptions.

5.3.3 Lack of willpower

Lack of self-control and willpower was cited as a barrier to patients' adherence to a healthy diet by both patients and HCPs in this study. Patients' reported that difficulty in controlling their appetite for food was mostly experienced during family gatherings for foods.

Frankly speaking, at home it is very hard to restrict yourself to a specific diet. Anyone who claims they do is saying nonsense. At home, the whole family is eating normal food and I'm the only person who is not. This huge temptation is hard to resist. So I end up joining them and eat what they are eating.

Patient 14, man, 73 yrs, Sudanese

In the case of patient 14, the external environment further weakened his self-control and ability to adhere to a healthier diet. Other patients believed that healthy diets consisted of 'salads' or

only vegetables. The fear of being deprived of meat or carbohydrates discouraged some patients from starting a healthy diet regimen. Patient 1 illustrates this point in the following quote:

I don't like salads and green stuff. I've tried this since I was a child and failed. But I really did try to change my lifestyle. I tried it for four months but I just could not continue. I could not stop eating the things that I like.

Patient 1, man, 45 yrs, British

One health educator felt that such factors come into play in lifestyle interventions. She also felt that personal factors could be utilised to motivate patients to adhere to their treatment plan.

Single women are always motivated for reasons other than their health. They think they will kill two birds with one stone, you know, look attractive and be healthier. Married women, you look at them and they just don't have this additional factor. They think 'we already have husbands, so why work harder' [laughing] but I tell them: 'you don't want him to go around and get a second wife who is slimmer and healthier' believe it or not, sometimes it works [laughing].

Educator 1, woman, Bahraini

This finding suggests that messages that remind people of other advantages to implementing a healthy lifestyle, such as looking attractive or preventing husbands from getting a second wife, can sometimes be incorporated into health promotion strategies. Such messages and others that encompass socio-cultural and personal factors can sometimes motivate patients and increase their willpower to follow lifestyle interventions. In addition, more attention should be given to the environment patients live in and how much it contributes to patients' weak willpower (see patient 14). The spread of fast food chains and the limited number of restaurants that serve healthy foods or diabetes-specific diets were believed to worsen patients' self-control and ability to adhere to their diet regimens. Patient 29 explains this point:

When I go with my kids to the mall, I look for restaurants that might serve healthy food, but I don't find any. All you see is Kentucky [KFC®], McDonald's®, Burger King®. The kids scream, they want food, and you become hopeless. I end up buying these things and joining them as well. That's what makes diabetes prevalence worse in this country.

Patient 29, woman, 34 yrs, Emirati

Relying on servants to prepare meals in some families was another factor that prevented patients from taking control of their diet. Servants would cook without being monitored by any family member. Thus, they might use unhealthy ingredients, such as saturated fats or high quantities of salts. Dietician 3 explains this point in the following quote:

There is also the problem of the house cook who prepares the food in his own way. Even when they give him instructions on what to use and how much to add of this and that, you are never certain they will always follow the instructions. They're not aware of their employers' condition and they might be uneducated.

Dietician 3, woman, Emirati

The high number of fast food restaurants in the UAE, like in many countries around the world, is an environmental factor that can compete with a person's intention to maintain a healthy diet.

5.4 Variation in patient and professional views

Factors that affect lifestyle interventions, which were identified in this study, are grouped into internal and external factors. Internal factors include lack of motivation and willpower and coexisting health conditions. External factors, on the other hand, include the UAE socio-cultural context, environmental and affluence-related barriers. Data analysis found that patients' views about the most influential factors varied from those specified by HCPs.

HCPs were aware of many of the barriers identified by patients in this study or barriers reported in previous studies, such as the role of the socio-cultural context of the UAE, social support and patient-related factors. However, the responses of many HCPs indicated that external factors were strongly influential in patients' implementation of physical activity and diet control. Internal factors such as coexisting health conditions, on the other hand, were perceived as consequences of an unhealthy lifestyle that worsened with MetS. In many interviews, the educational system was blamed for nurturing sedentary lifestyles and creating generations that were unaware of the importance of healthy living. Socio-cultural norms were perceived responsible for women's inability to engage in outdoor activities.

Patients, on the other hand, were mainly concerned with personal factors such as lack of motivation and willpower to engage in regular physical activity or adhere to a healthy diet. The coexistence of other health problems such as rheumatoid arthritis, back and knee pain, and physical injuries were detrimental to their physical activity and hindered them from participating in many forms of exercise. Restricting women's outdoor exercising was expressed by a few female patients in the study. Others believed that many of the Emirati social-norms and traditions were waning with time due to development and exposure to other societies and cultures. Traditional clothes that were perceived as a barrier by HCPs were utilised by other

participants (i.e., health educators and female patients) to facilitate women's outdoor exercising. Wearing veils was recommended to women who feared societal scrutiny but at the same time wanted to perform outdoor activities. Other female patients did not feel physically hindered when wearing traditional attires and indicated that such clothes provided obscurity and privacy while exercising, hence facilitating outdoor exercising.

Interestingly, patients found the UAE socio-cultural norms to strongly influence their dietary control and were, therefore, strong detrimental factors to physical activities. Patients' statements about their inability to control their diet were usually interwoven with statements about societal rules that render weight management challenging. Ziebland et al (1998) assessed the relationship between reported barriers to lifestyle preventions and subsequent behavioural changes. Results of the survey showed that participants who reported internal barriers were less likely to take more exercise than those who cited only external or mixed barriers to changing. These findings emphasise the importance of acknowledging internal barriers as strong limitations to behavioural change (Ziebland, Thorogood et al. 1998).

A number of physicians described patients' lack of motivation or willpower to exercise or control diet as 'laziness' and 'sheer excuses'. Many HCPs agreed that adherence to lifestyle interventions are in the patient's hands and often felt that 'nothing I do will change anything'. Others expressed frustration because of their inability to improve patients' adherence. Many HCPs also believed that many local residents of the UAE were resistant to exercise and lifestyle concepts because of the absence of an exercise culture. Conversely, patients were able to see physical activity in the broad context that covered a range of activities. Patients also described daily incidental activities as physical activities that fulfilled part of MetS management. Interestingly, none of the HCPs interviewed identified their actions or inactions in care provision as a barrier to patients' poor adherence to lifestyle interventions. Barriers in their perception were either patient behaviour-related or enhanced by external factors. Thus, when patients fail to meet treatment targets they are usually labelled noncompliant (Anderson and Robins 1998). Variation in perceived barriers between HCPs and their patients can indicate patient-provider communication issues where patients' experiences and concerns about their health may not have always been communicated to HCPs (Abdulhadi, Al Shafae et al. 2007).

5.5 Summary

Study participants revealed a number of factors that affected the implementation of lifestyle interventions in patients with MetS living in the UAE. These factors belonged to six main categories: Educational, socio-cultural, environmental, personal, affluence and coexisting health conditions and physical injuries (Figure 5.1).

The lack of an exercise culture in the UAE was apparent in residents' impartial attitude towards exercise and physical activity. The UAE's socio-cultural factors were believed to affect both physical activity and diet control. These factors included social norms that restricted women's outdoor activities and discouraged them from joining health clubs. It also included traditional clothes that HCPs believed hindered efficient physical activity and weight management. Socio-cultural factors were not equally perceived as barriers to physical activity by patients but were believed to be detrimental to a healthy diet. The UAE's hot climate during most months of the year discouraged many patients from outdoor exercising and encouraged the overuse of cars in transportation. A few HCPs indicated that Abu Dhabi's urban planning limited pedestrian activity. Coexisting health conditions and physical injuries along with lack of time, motivation and willpower were believed to be damaging to physical activity by many patients in the study. The impact of affluence on lifestyle interventions were manifested in patients' excessive use of cars for commuting and their total reliance on domestic workers for house cleaning and meal preparation.

Data analysis showed that there were variations in professional perceptions of barriers to lifestyle interventions compared to patient views. HCPs were mainly concerned with external factors such as environmental and socio-cultural related factors. Patients' responses, on the other hand, indicated that internal factors (i.e., lack of motivation, time and willpower and coexisting health conditions) were more detrimental to physical activity and diet control. This may suggest an inefficient communication of patients' factors during provider-patient encounters. Exploring patient-provider communication was beyond the scope of this study, therefore, themes that might have implied a communication related issues would not be included or further discussed in this thesis.

The following chapter presents factors that affect patients' attitudes towards their prescribed medicines.

Chapter 6

Factors influencing medicine use

6.1 Introduction

This chapter presents themes that describe barriers to patients' adherence to medicines. These themes were elicited as participants talked about issues affecting both lifestyle and pharmacological interventions in the management of MetS. Clinical guidelines for the management of MetS recommend adjusting patients' lifestyle to target underlying risk factors such as obesity, inactivity and an unhealthy diet. Medicines are prescribed if patients present with diabetes, CVDs or if the 10-year risk as determined by Framingham Risk Score, is relatively high. In such cases, prescribing medicines for the management of established cardiometabolic diseases should follow the recommendations of specialised clinical guidelines (e.g., clinical guidelines for diabetes, hypertension, CVD prevention) (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006).

In this study, 19 patients were diagnosed with diabetes but none had a history of cardiovascular complications. The treatment plan for all patients included advice on lifestyle adjustments and medicines for their presenting CRFs. Different combinations of oral anti-diabetic agents, antihypertensive agents, statins and other lipid lowering agents were regularly prescribed to the study participants. Other medications such as multivitamins and non-steroidal anti-inflammatories were also prescribed in some cases. A few patients were also on insulin therapy and some were prescribed orlistat¹¹. All patients interviewed received their prescribed medicines from pharmacies located in outpatient or family medicine clinics. Under the new national health insurance law, patients also had the option of collecting their medicines from private pharmacies. All study participants were asked to talk about their medicines and to describe issues that affected adherence to their prescribed medicines. Table 6.1 illustrates a summary of the key findings identified in this study concerning factors affecting pharmacological interventions.

¹¹ Orlistat is an anti-obesity agent licensed for use in obese patients whose BMI ≥ 30 kg/m² or in individuals with a BMI of 28 kg/m² in the presence of other risk factors such as type 2 diabetes, hypertension, or hypercholesterolaemia

Table 6.1 Summary of identified factors influencing medicine use

Influencing factors	Main findings
Patients beliefs about medicines	<ul style="list-style-type: none"> ▪ Patients believed that medicines were addictive harmful chemicals ▪ Patients preferred western manufactured brands of medicines ▪ HCPs did not object to patients' use of complementary medicines but were concerned with the safety, reliability and effectiveness of such therapies
Polypharmacy	<ul style="list-style-type: none"> ▪ HCPs believed that polypharmacy led to patients' confusion and forgetfulness which eventually affected their adherence ▪ Polypharmacy increased patients' concern about side effects and encouraged them to look for alternative natural therapies
Accessibility to medicine	<ul style="list-style-type: none"> ▪ Changes in medicine brands or doses resulted in patients' confusion and sometimes poor adherence ▪ Some patients' health insurance policies did not cover the costs of specific types of medicine such as statins. Others were not always able to afford prescription copayments
Poor drug education	<ul style="list-style-type: none"> ▪ HCPs reported that patient beliefs about medicines were largely due to poor awareness about health and medicines ▪ Patients' attitudes towards provided health information and the underutilisation of pharmacists in patients' health education were the two overlapping factors contributing significantly to patients' attitudes towards their prescribed medicines

Not all patients were able to remember or accurately pronounce the names of their prescribed medicines. However, they were able to describe their prescribed medicines by referring to their physical attributes such as colour, formula and strength. Most patients claimed to take their medications as prescribed, and a few of them said they occasionally omitted taking a dose due to forgetfulness. None of the HCPs interviewed reported factors concerning novel pharmacological management of MetS. Most of their concerns regarding pharmacological interventions revolved around factors influencing patients' perception of and attitude towards their prescribed medicines. According to most interviewed HCPs, poor or nonadherence was one of the main limitations to MetS treatment success. Nonadherence to prescribed medicine and lifestyle interventions resulted in poor control of CRFs. Data analysis of interviews found that factors influencing patients' attitudes towards prescribed medicines belonged to four categories: (i) beliefs about medicines, (ii) polypharmacy, (iii) medicine accessibility, and (iv) information about medicines.

6.2 Patients' beliefs about medicines

Patients' beliefs about medicines may affect their adherence to their prescribed medicines. Even before developing a disease, people have general beliefs about their medicines that orient them either toward or away from prescribed medication (Horne, Weinman et al. 1999). Data analysis

found that patients had three beliefs about their prescribed medicines that might have affected their adherence: (i) perceiving medicines as addictive and harmful chemicals; (ii) beliefs about different brands of medicines; and (iii) beliefs about complementary medicines. The following three sections present and discuss these findings in detail.

6.2.1 Medicines are addictive and harmful chemicals

The word ‘addiction’ was used by a number of patients to indicate their fear of becoming totally dependent on medicines. This group of patients believed that medicine use would deprive them from ever being able to live without them. Patients’ beliefs about the addictive nature of their medicines discouraged them from adhering to their medicines. One patient believed that the body loses its ability to combat diabetes because of getting used to medicines.

I have to admit that at the beginning, when I was first diagnosed [with diabetes] I didn’t want to take my medicines. I was scared I’ll get addicted to them. The body becomes lazy when you use medicine. Then it can’t function on its own. And then you end up depending on it for the rest of your life.

Patient 28, woman, 45 yrs, Emirati

An interesting finding in this study was patients’ habit of abruptly stopping their medicine-taking for a few days. The notion of getting addicted to medicines encouraged a number of patients interviewed to frequently stop taking their medications for one or two days. They believed that such behaviour enabled their bodies to regain strength and independence. The following quote was taken from an interview with Patient 13.

P: I stop taking my medicines sometimes. Not for long. One day every two months or so. I don’t want my body to get dependent on the medicines. It’s good to allow your body to function on its own. Shocking your system and waking it up. You know. It’s reassuring especially when nothing goes wrong when you stop, you know, like my blood pressure is ok, my diabetes is ok. Like that. You know?

R: What does your doctor think about it?

P: I don’t think he noticed. Because like I said, you know, my health is not affected.

Patient 13, man, 49 yrs, Bangladeshi

A few HCPs were aware of patients’ fears of addiction but felt that such attitudes were only apparent when attempting to add another oral drug or insulin injections to the treatment plan. However, none of the interviewed HCPs were aware that patients’ fears of addiction to medicines resulted in planned treatment being abruptly stopped. Many HCPs strongly believed

in the effectiveness of education in rectifying patients' beliefs about their medicine and their fear from getting addicted. The following quote illustrates this point.

I normally find that adherence is affected when they are about to switch into a basal insulin programme. They are scared of needles, they think it's serious. They fear getting dependent on medicines and that scares them. Yes. I think adding insulin is the hardest challenge we face here.

Pharmacist 2, woman, Emirati

A few patients who were either on or in the process of starting on insulin therapy as part of their treatment plan expressed uneasiness towards the use of insulin. This discomfort was engendered by two main factors: (i) associating insulin therapy with diabetes complications or the seriousness of their health condition; and (ii) the fear of getting dependent on insulin therapy for the rest of their lives. Patients believed that insulin was the last resort therapy that doctors prescribe when oral medicines fail to deliver therapy goals. Therefore, insulin therapy indicated a worsening of their diabetes. Patients also associated insulin therapy with total dependence on an injection for the rest of their lives. These thoughts made some patients reluctant and sometimes resistant to insulin therapy. Patient 6 narrates his experience with oral medicine and insulin in the following quote:

You know, to think that you'll always need tablets or injections to stay alive is a terrifying thought. Before I became diabetic I never understood that. I used to feel sorry for my [diabetic] friend. Before we started a meal, he would have to leave the gathering and go somewhere private to inject himself. Now that I am diabetic, I am scared of starting insulin. The memory of him taking a corner and injecting himself scares me to death, you know? I don't want to be hopeless and unable to eat without having to inject myself first.

Patient 6, man, 65 yrs, Yemeni

Another group of patients in this study perceived medicines as chemicals that are harmful to their bodies. Patients' awareness of the potential side effects of drugs fuelled their belief in the detrimental characteristics of their prescribed medicines.

Medicines are useful I have to admit. They fix your blood pressure and your diabetes. But in reality they are chemicals and not natural things. They are made in laboratories. Chemicals can destroy your body, can affect your heart, your brain, your kidneys. So they damage one while fixing another.

Patient 16, man, 57 yrs, Palestinian

In this study a group of patients reported that medicines were addictive harmful substance. Some also indicated that such a perception affected their adherence to their prescribed

medicines. HCPs were mainly aware of these types of patient concerns about initiating insulin therapy. However, none of the interviewed HCPs articulated concerns similar to what patient 6 expressed in the previous quote.

6.2.2 Different brands of medicine

A group of pharmacists in this study talked about the impact of the brands of medicines on patients' adherence. Medicine shortages were occasionally resolved by a temporary supply of different brands of the same medicines. These changes, however, were not always welcomed by patients when visiting the pharmacy for prescription refills. Some patients believed that different brands of the same medicine varied in their efficacy, side effects and potency. Patients sometimes refused to have their medicine brands replaced by another. Pharmacists believed that patients' perception of the brand of their medicines affected their adherence to the treatment plan.

Patients are used to one brand and they don't want us to change it for them. They sometimes argue: 'why did you change my medicine? This one won't work. Now my blood sugars will elevate'. So they're either psychologically affected by the change in the brand or the new brand is actually not giving them good results.

Pharmacist 10, woman, Emirati

The first policy on the prescribing of generic medicines in Abu Dhabi was published in May 2010 (HAAD 2010). Before that date, physicians in the UAE were encouraged to prescribe using generic names rather than brand names of medicines. Most physicians in SKMC prescribed using generic names of medicines. However, SKMC's drug formulary contained branded medicines that were subject to change upon medicine contract renewal or whenever there was a shortage of certain brands. This meant that patients would sometimes receive different branded medicines depending on the availability of that specific brand. According to participants' responses, most patients noticed the change to the brands of their prescribed medicine. Patients' reactions towards brand changes varied but was mostly characterised by disapproval and sometimes resistance. In the following two sections, the views of patients and professionals are presented to facilitate a deeper illustration of this factor's impact on the pharmacological management of patients with MetS.

One important finding in this study was patients' perceptions of western manufactured brands of medicines (WB). Pharmacists talked about cases where patients' refused to receive equivalent non-western branded (NWB) medicines of their regular drugs because they believed western brands were more effective. Some patients did not mind waiting for a WB of their chronic medicine to become available and collect it later. Although pharmacists explained to patients that NWBs were as good as WBs, patients usually insisted on taking the WBs. Pharmacist 2 talked about her experience concerning this point in the following quote:

Patients like Amoxil®, Tenormin® and Glucophage®, you know, all the western brands. When they see Julphar® [a local UAE drug manufacturer] they immediately say: "I want the original not the copy. If you give us this we won't take it". I try to explain that we don't have a stock of the brand they want, they say they'll wait for it until it arrives. It is very hard to deal with this problem. If I put myself in their place I would probably do the same.

Pharmacist 2, woman, Emirati

The drug market in the UAE includes drug products manufactured by many global, regional and local drug companies. The UAE ministry of health (MOH) mandates that all branded and generic medicines be supported by studies of bioequivalence and to pass quality assurance tests in local drug laboratories. Drugs are licensed to be sold in the UAE market only when these two requirements are met (MOH 2010). NWBs of medicines are not generics but rather branded medicines that drug manufacturers in the UAE or other Arab countries manufacture after the original brand, which is in most cases a patent-expired WB, (Figure 6.1). Many pharmacists interviewed indicated that patients preferred WBs over NWBs of the same generic.

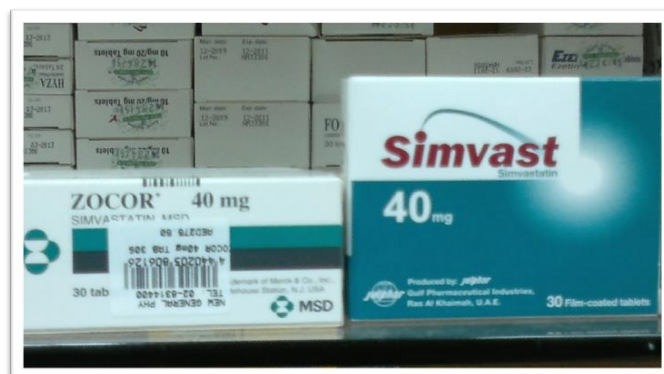


Figure 6.1 Example of western branded and non-western branded medicines

Zocor® 40mg (on the left) is the original patent brand of simvastatin manufactured by the western drug company Merck & Co. Simvast® 40mg (on the right) is the local brand of simvastatin manufactured by the Emirati drug company Julphar. Both Zocor® and Simvast® are branded medicines and not generics. Many patients indicated that they preferred WBs to NWBs of medicines.

In the current study, patients were asked about their perceptions of different brands of their medicines. They were also asked whether they preferred a WB to a NWB of the same generic and how they believed this affected their health and medicine use. A number of patients believed that NWBs were ‘cheap copies’ of the ‘expensive original’ WBs indicating the superiority of WBs over NWBs in efficacy and quality. Other patients supported their claims with details of suboptimal therapeutic outcomes experienced with NWBs.

We all know that these [NWBs] are copies. A copy is always a copy, it is never the original thing. I tried Atenol® [a local atenolol brand] once and my heartbeats shot up to the roof. It is not the same as Tenormin®. I tried it and I can assure you that there is a difference between the two. Even when you look at the price of these copies they are always cheaper because they [manufacturers] know it's not as good [as WBs].

Patient 4, man, 60 yrs, Yemeni

Patient 20 felt that only chronic conditions required the use of WBs to ensure efficacy. In his perception, diseases such as diabetes and blood pressure were ‘serious conditions’ that required ‘serious drugs’.

I don't mind using [locally manufactured] cough syrup and Adol® [paracetamol] they are ok. But for my blood pressure and diabetes I prefer the real thing. These are serious conditions [blood pressure and diabetes] and for a serious condition you need to take a serious drug, you know?

Patient 20, man, 37 yrs, Emirati

A few patients believed that WBs sold in their countries of origin were of superior efficacy and quality to identical WBs sold in the Emirati drug market. They indicated the differences in packing and their own experiences as proof of differences in quality between the two identical WBs.

I had some stock of the medicine I received when I used to live in London. Although they give me similar medicines here, they are not like the ones sold over there. They send us rubbish, you know? The stuff that they won't allow their people to take. Even their Panadol® is different from ours. The packing, the shape of tablets, the taste it's all different. You take it and five minutes later the headache is gone. The Panadol® we buy here works after one hour and sometimes it does not work at all. There everything is fresh and better. Here it's probably old stock that doesn't work.

Patient 22, woman, 52 yrs, Yemeni

The viewpoint of patient 22 could explain the negative perception of another group of patients in this study towards WBs. A distrustful attitude towards western foreign policies made some

patients suspect that western products available in developing countries and the Middle East to be harmful. Patient 20 explains why he preferred local brands of medicines to WBs in the following quote:

Drugs are harmful chemicals especially the ones that come to us from the west because they don't care about us. Anything that has defaults or errors in the chemical mixture, they won't throw away, no, they'd rather make money from it, so they will sell it to us because they see us as stupid and unworthy of living. I believe that all medicines are harmful because they are unnatural. But if we are going to buy these chemicals anyway we should at least support our local companies. You know? [Laughing].

Patient 20, man, 37 yrs, Emirati

Some patients believed that all medicines were harmful chemicals regardless of where they were manufactured. These patients did not mind using NWBs as they did not see any difference in efficacy between the two brands, because they believed all medicines to be unnatural substances.

I take anything. I don't mind. If they want to give me an English drug, that's good. If they want to give me an Egyptian drug that's good as well. At the end they are all chemicals. You swallow them, they go into your stomach, do their thing and then your blood pressure is ok.

Patient 5, man, 50 yrs, Yemeni

Another patient said that she preferred a NWB to a WB of medicine because it did not cause her irritation. Although this patient has medical insurance and does not pay for her medicines, in her story she revealed how the pharmacist tried to advocate for the western brand by implying that it's 'original', 'better' and 'more expensive'. The pharmacist did not have the non-western brand that she wanted and wanted to convince her of the only brand he had in his pharmacy stock.

Neurobion® does not suit me, you know, I wanted the other one, you know? The Jordanian one, I can't remember what it's called. The pharmacists said: 'take this [Neurobion®]. It's the original; it's more expensive than the other one. It's better' I told him no. I don't like it, because it did not suit me.

Patient 9, woman, 43yrs, Emirati

In the current study, some patients showed indifference to medicine brands. However, this attitude was sometimes engendered by patients' beliefs that all medicines are chemicals regardless of their country of origin. Others preferred NWBs to WBs because of positive experiences with the former. This could suggest that patients' perceptions can change based on positive outcomes that they experience with medicine brands.

Pharmacists interviewed were more familiar with patients' attitudes towards medicine brands compared to other HCPs in this study. This could partially be due to their speciality that enables them to interact with patients through the process of prescription refills and medicine supply. HCPs believed that patients' attitudes towards medicine brands were due to: (i) patients' negative experiences with NWBs; (ii) lack of education about medicines; (iii) the influence of the society that promotes western manufactured products; and (iv) the influence of physicians. An interesting finding was HCPs positive perception of WBs that enabled them to sympathise with patients' disapproval of a NWB medicine substitute. Pharmacist 7 illustrates this point as she narrates her own experience with WBs and equivalent NWBs:

To tell you the truth, I agree with these patients [who refuse NWBs]. I myself don't use local [brands of] antibiotics. From my experience they are not as good [as WBs] and I'm honest here. So they have the right sometimes. I think patent medicines should always be prescribed, especially with diabetes, heart diseases and infections.

Pharmacist 7, woman, Emirati

HCPs also believed that patients' preference of WBs was worthy of further investigation to explore NWBs efficacy through empirical studies. HCPs believed that such studies would help determine the legitimacy of patients' claims. Other pharmacists felt that patients' familiarity with and trust of their regular brands was responsible for their attitude and not necessarily the manufacturing country of the branded medicine. One physician felt that the western manufactured products in general received high praises from media and society. This, in her perception, might have contributed to patients' biased attitudes towards WBs of medicine. Her following quote explains this point:

We love anything that comes from the west, we like their cars, their clothes, their drugs and their food. In the media, we praise everything that comes from the west. And it affects the ordinary people. If you ask me sometimes it is a bit of this attitude, you know? If it is from America or from Europe then it must be the best.

Physician 4, female, Jordanian

Some pharmacists believed that physicians' attitude towards WBs of medicine influenced patients' beliefs about the brands of their prescribed medicines. In the following quote pharmacist 2 explains this point as she describes her experience with patients refusing to have their WBs changed to NWBs.

Our problem is the doctors. They don't prescribe generics, and they write specific brands on the prescriptions. Sometimes they tell patients to refuse any other brand. I think doctors are brain washed by medicinal representatives. And then doctors brainwash patients to believe that certain brands are better than others.

Pharmacist 2, woman, Emirati

Physicians interviewed did not express any preferences for specific brands of medicines. They reported that patients are prescribed evidence-based medicines. They indicated that most medicines used for the management of CRFs are patented brands of medicines, which can sometimes be western manufactured brands of medicines. This, they explained, was the reason they sometimes used the brand rather than the generic name of medicines in patients' prescriptions. Physicians also stressed the importance of including brands that have undergone quality assurance tests in the hospital formulary.

I don't accept any drug to be included [in the drug formulary] if it did not pass the quality assurance test. It has to be trialled and proved to be excellent and able to deliver the therapeutic goal. Everything needs to be evidence-based. Those are the medicines that we need to prescribe for our patients if we truly care about them and we want to provide them with the best quality of health care.

Physician 7, man, Egyptian

Abdul Rasool et al (2010) assessed physicians' prescribing habits in the UAE by screening 150 prescriptions and surveying the perceptions of 100 physicians about irrational use of medicines in the UAE. All prescriptions scanned were issued by the participating physicians in the survey. Although 72% of physicians reported the use of generic names of medicines in their prescriptions, prescription analysis showed that only 7.35% of medicines were prescribed by their generic names (Abdul Rasool, Fahmy et al. 2010). Another European survey investigated physicians' attitudes towards the prescribing of generic medicines. Results showed that one quarter of the 117 general practitioners that participated in the survey reported their need for additional clinical trials on the effectiveness generics. They indicated that such studies would encourage them to switch from prescribing branded medicine to prescribing generics. These findings suggest that although physicians acknowledge the importance of generic prescribing, this belief was not always translated into practice (Kersnik and Peklar 2006). HCPs' attitudes towards the use of generics in prescribing can affect patients' perceptions of the brands of their medicines. In a qualitative study that explored patients' attitudes towards generic antihypertensive medicines, a number of Norwegian patients indicated that they trusted their physician's choice of medicines. They were, therefore, left uncertain when pharmacists changed the brands of their medicines (Toverud, Roise et al. 2010).

In the current study, some HCPs also believed that idealising western products in general through media and society influenced patients' preference towards WBs. One patient who preferred NWBs reported that pharmacists sometimes unintentionally promoted WBs in their attempt to convince her to accept having her medicine brand changed (see patient-9 in section 6.3.2.1). This example illustrates how some HCPs may unintentionally emphasise the medicine brands to patients rather than the generic component. This example and others in this section also highlight the significance of medicine brands and their manufacturing countries as a powerful factor that influences both patient and HCP perceptions of medicine in the UAE. To our knowledge, this is the first study that identified such findings where patients talked explicitly about reasons behind their preference of WBs or NWBs.

6.2.3 Complementary therapy

Complementary therapy in this study refers to patients' use of unconventional medicines or strategies in the management of their presenting CRFs. Based on HCPs' experience, complementary therapy was very popular amongst people living in the UAE and especially patients with MetS. HCPs felt that there were two main factors to patients' preference of complementary therapy: patients' awareness of the potential side effects associated with their conventional therapy and perceiving medicines as harmful chemicals (see section 6.2.1).

They love complementary medicine in this country. Oh my God! They have a plant or a remedy for every problem. Sometimes they use herbs that their grandfathers used. And you never find out because they drink it like they drink water. They think such therapies are safer than conventional medicine. They see herbs as normal and natural so they think they are safer than taking a tablet or an injection

Physician 2, man, Sudanese

Participants in the study reported a number of alternative therapies used by their patients such as herbal medicine (e.g., Myrrh, Ginger, Thyme, Senna and Black seed), ozone infusion therapy, and wet cupping. This section presents three main forms of alternative therapies that were believed to be popular amongst patients with MetS living in the UAE: (i) herbal medicine; (ii) ozone infusion therapy; and (i) Islamic medicine.

Herbal medicines are defined as preparations containing plant components in a raw, semi-processed or processed state, which are used for the treatment or prevention of diseases.

Individuals living in the UAE can easily purchase herbal medicines from specialist outlets known as 'condimental' shops or through other retail outlets such as pharmacies, health food shops and supermarkets (AlBraik, Rutter et al. 2008). In this study, HCPs believed that patients with MetS frequently used herbal medicine alongside their conventional prescribed medicines. Many HCPs did not object to patients' use of herbs but were mainly concerned over the quality, safety and efficacy of herbal remedies and the potential herbal/conventional medicines interaction caused by their concurrent use.

I don't mind them using green tea, or senna, or any of their Yaddoh [grandmother] remedies. These are not harmful herbs. But I'm really worried about these capsules that some patients get from somewhere or someone trying to rip them off. It could damage their kidneys or interact with their medicines.

Pharmacist 6, woman, British

A number of patients interviewed reported that they were either using or used herbal medicines in previous occasions. Some patients indicated that herbal medicines were used conjointly with conventional medicines to help achieve better therapeutic outcomes. Others indicated that using herbs was intended to avoid the need to add or increase the dose of prescribed medicines (see sections 6.2.1).

I take a mixture of ginger and fenugreek which helps with my blood pressure and cholesterol. I do not want my doctor to give me more medicines. So far, I take five medicines for everything. And this mixture I take will add extra benefit

Patient 24, woman, 46yrs, Emirati

Ozone infusion therapy was another alternative therapy that HCPs believed was popular amongst MetS patients in the UAE. Ozone infusion therapy refers to the use of ozone in limited doses to help heal various medical conditions. During an ozone infusion therapy session, the patient's blood is drawn into a bottle where it is infused with ozone and then transfused back into the patient. Ozone therapy claims to improve the body's immune system, blood circulation and to activate cellular metabolism (Cassileth 2009). HCPs talked about the popularity of ozone infusion therapy amongst patients with MetS or CVDs in the UAE. Patients use ozone infusion therapy to normalise their lipid profile and treat other cardiac conditions. Despite the weak evidence in support of its effectiveness, many patients undergo ozone therapy due to their fear of side effects from prescribed medicines.

Ozone therapy is very popular here. Patients travel to India or to one of the centres here. They pay a lot for one session. They believe that it gives the body energy, rebuilds normal coronaries or the vasculature system in the body, and reduces cholesterol and many things. People have doubts about conventional therapy and instead go for these things. Psychologically they feel better. Patients think that it's a natural therapy so it's better than taking chemicals. But is it really effective? I don't think so.

Physician 4, woman, Jordanian

Only one patient reported using ozone therapy to help 'cure' her diabetes. Patient 29 travelled to Jordan after reading about it in a magazine and discussed going through a single session. She did, however, indicate that such an attempt was made at the onset of her diagnosis with diabetes and she was only prescribed a single anti-diabetic agent at that time:

I did one session of the ozone therapy at the beginning of my diagnosis [with diabetes]. I thought maybe it will reverse the diabetes or stop it from progressing since I was at the first stages and was taking only two tablets of metformin®. But it did not work. Maybe I needed to do more sessions but I didn't notice changes so I stopped.

Patient 29, woman, 34 yrs, Emirati

Patients' fear of the side effects of conventional medicine drove them to seek complementary treatments. HCPs did not disapprove of ozone therapy or feel that it endangered patients' adherence to prescribed medicines. Their responses mainly indicated their doubts about the effectiveness of ozone infusion therapy.

Islamic medicine or Arabic medicine refers to the traditional medicine that is partially inspired by Islamic teachings and aims at treating or preventing a number of diseases (Saad, Azaizeh et al. 2005). Islamic medicine originates from the time of the Muslim prophet Mohamed when he gave his followers some medical advice on the treatment of specific illnesses, such as diarrhoea, constipation and headaches. More methods were added throughout the years by scholars and other Muslim traditional healers. However, three methods of healing that the prophet used were documented, which included honey, cauterization and hijama or wet cupping (Adib 2004). Hijama, which is Arabic for wet cupping, was a practice HCPs talked about and believed patients performed to help manage some of their health conditions (Figure 6.2).



Figure 6.2 A man undergoing hijama or wet cupping

Hijama is one of the traditional practices of Islamic medicine that is encouraged by the Muslim prophet Mohamed. Blood is released through vacuuming from a small skin incision and collected into a small glass cup. It is believed to be beneficial in many conditions such as headache, general body pain and elevated blood pressure.

Many HCPs considered hijama to be part of the preserved Islamic medicine tradition, which is practiced by many licensed Islamic medicine health centres in the UAE, and they did not object to having it done for conditions such as high blood pressure and migraine. They were mainly concerned about the competency of the healing centres at which such practices were performed.

I have a lot of patients who do hijama. Recently I had a patient who said: 'I've done it last month. I'm very healthy, and I have to repeat it again every six months'. I don't mind that at all. I'm only concerned about blood-borne infection, this is really my nightmare so I advise them to do it somewhere reliable. [...] I believe in the therapeutic value of the hijama. It is mentioned in the Hadith and there is scientific evidence that supports that.

Physician 6, man, Egyptian

Only one patient interviewed admitted undergoing sessions of hijama twice a year to prevent regular migraine attacks and improve her blood pressure. Another two revealed their intention of performing it in the future. In all three cases, patients indicated that their physicians were informed of their plans and that they gave them their approval and support.

I do hijama twice a year for my migraines. I usually tell my doctor before I do it and she doesn't mind at all. I tell her about everything I'm planning to do because there are people who sell you things [herbs] and she usually advises me and tells me whether something [herbal medicine] will work or not.

Patient 12, woman, 43yrs, Palestinian

HCPs' attitudes towards Hijama stemmed from their understanding that such practices did not harm patients' health or alter their conventional management of MetS. Others believed in the therapeutic value of such practices and therefore gave their approval or encouraged patients to perform such therapies. Hijama or wet cupping is an ancient medical technique. It is also currently practiced in many parts of Europe and the East (Haller 1973; Ban 2010; Cao, Han et al. 2010). The therapeutic benefits of hijama in health conditions such as blood pressure and lower back pain were explored and identified through a number of randomised control trials (Ahmadi, Schwebel et al. 2008; Farhadi, Schwebel et al. 2009; Lee, Choi et al. 2010). The use of hijama by people in different communities was also explored through qualitative studies conducted in Israel and Iran (Tandeter, Grynbaum et al. 2001; Rahnama, Hidarnia et al. 2010). However, the use of hijama in patients with MetS in the UAE is not adequately reported in literature. Other HCPs, in this study, believed in the therapeutic value of such practices and therefore gave their approval or encouraged patients to perform such therapies. In general, HCPs did not object to patients' use of complementary medicines but were mainly concerned about the quality safety, efficacy of such therapies (i.e., herbal medicines, ozone therapy or Islamic medicine). However, they agreed that patients' misconceptions about their prescribed medicines must be rectified through education and proper medicine use assessment.

6.3 Polypharmacy

Polypharmacy is a commonly used term that means the use of multiple medications by the same patient (Lee 1998). Patients with MetS have a clustering of CRFs that may require a complex therapeutic regimen to ensure control and achieve therapeutic goals. In addition to lifestyle interventions, patients with MetS might end up taking antihypertensive medicines, oral anti-diabetic agents, medicines for dyslipidaemia and sometimes anti-obesity agents. Patients with MetS might also need to take more than one agent for the management of a single CRF. Thus, polypharmacy is one of the consequences of pharmacological interventions in patients of with MetS (Grundy 2006; Kappagoda and Amsterdam 2007).

All patients interviewed had four or more medicines prescribed for the management of their clustered CRFs. During interviews that took place inside patients' homes, patients usually showed the researcher their 'bag of medicines', a plastic bag used to store all their prescribed medicines. In interviews conducted in other places or over the phone, patients reported similar

methods of storing drugs. Patients' narratives indicated their sense of polypharmacy and the large number of medicines they were prescribed.

Look [pointing at the plastic bag of medicine] I keep all my medicine here. I'm a walking pharmacy –laughing- they prescribed everything they could for me. Anything people [with MetS] use I have here. Drugs for the [blood] pressure, for diabetes, for cholesterol. vitamins. Panadol®. Medicine for my back. Medicine for my knees. Everything you can think of is in this bag [laughing].

Patient 3, woman, 69 yrs, Yemeni

HCPs cited polypharmacy as the most influential factor in regard to patients' attitudes towards their prescribed medicine and as a major limitation to patients' adherence. They believed that polypharmacy complicated MetS management and subjected patients to the problem of forgetfulness and confusion, especially patients with poor educational backgrounds.

Polypharmacy is the patients' main problem. Having to take between 10 to sometimes 15 medicines can confuse some or make them forget what they took and what they didn't. Some are illiterate and can't remember drug indications, what tablets are for diabetes and what tablets are for hypertension, you know?

Pharmacist 12, man, Syrian

A few pharmacists felt that polypharmacy was not a critical barrier especially with patients on chronic medications. In their perception, patients with chronic diseases such as MetS develop strategies that facilitate their adherence. The following quote illustrates this point:

Maybe on diagnosis patients might struggle with their medicine, but with time they know everything and remember everything. Taking medicine becomes second nature. They also develop techniques to remind themselves of medicine and we help them with that. They put their medicines in plastic bags so that they don't lose anything. They mark their medicine to know which is for what. They become the experts.

Pharmacist 14, woman, Egyptian

Most patients interviewed reported strategies similar to those described by pharmacist 14 to facilitate their adherence. Many patients did not express or report difficulty in adhering to their multiple prescribed medicines. Patients also showed techniques that they used to remind themselves of their drug names and indications. An example of such a techniques was keeping all medicine in one location (i.e., plastic bag or a box) and writing indications on top of the medicine packs. If the patient was illiterate, lines or numbers would replace words to indicate number of doses per day on the top of medicines boxes. Pharmacies usually gave dosette boxes

mainly to illiterate patients or elderly patients who did not have a carer to assist them in taking their prescribed medicines.

Another group of patients in the study expressed uneasiness towards having many drugs prescribed for them. However, they were mainly concerned with the chemical impact of these medicines on their bodies and potential side effects. This group of patients' perceived medicines as chemicals that cause damage to their bodies. Such patients believed that increasing the number of medicines increased their exposure to chemicals and eventually the risk of being harmed. Patient 13 explains this point in the following dialogue with the researcher:

R: Are you happy with the amount of drugs you are taking?

P: No. no. I'm not happy

R: Why is that?

P: I feel I'm taking more medicines than I should. You know? These [medicines] are chemicals. They're all made of chemicals. And I'm taking too much. This may harm my other organs like my kidneys and my liver.

R: What do you do about that? Do you stop taking them? Do you tell your doctor?

P: She knows I'm not happy, she says: 'no they are good for you'. So I'm looking for a good remedy [herbal medicine] to reduce the intake of these tablets.

R: And if you find this remedy, will you stop taking these tablets?

P: No. no. I just want to reduce the number of tablets, so if I can find a herb that will fix my cholesterol I won't be needing Lipitor®. You know what I mean?

Patient 13, man, 49 yrs, Bangladeshi

Difficulty in coping with and adhering to multiple medicines was not a direct cause of these patients' discontent with polypharmacy. Perceiving medicines as harmful chemicals that might damage vital bodily organs was the main reason behind patients' dissatisfaction with polypharmacy (see section 6.3.1.1).

A number of pharmacists believed that the use of drug combination formulations would help lower the impact of polypharmacy in the management of MetS. Drug combination formulations would reduce the number of tablets taken by patients with MetS on a daily basis and would, therefore, reduce confusion and forgetfulness.

One of the best solutions to avoid polypharmacy to give patients drug combinations. You know. Combinations will reduce the number of tablets patients will need to take every day. They won't miss their medicines or get confused.

Pharmacist 16, female, Egyptian

Other pharmacists reported the use of dosette boxes more frequently with older patients or those with MetS. Adherence to medications among patients with chronic conditions is disappointingly low. The pharmacological treatment of patients with MetS results in prescribing complex drug regimens that might affect patients' adherence (Kappagoda and Amsterdam 2007). HCPs concerns about polypharmacy were not equally shared by patients. The accounts of many patients indicated that what they found challenging was not the number of medicines but rather their lack of competence during the start of the treatment regimen. However, they explained that with time they acquire the necessary skills to manage their medicines more effectively. The following extract is taken from an interview with patient 16. He was asked to describe how he felt towards taking 10 tablets every day:

R: So how many tablets do you take?

P: I take about 10 everyday [patients gives detailed explanation about each drug]

R: And how is that with you? Is it difficult? You know.. to take them and remember them?

P: Oh no. not at all. I just take them. You get used to it. I mean they were not that many when I was first started [taking medicines] But they increased with time [laughing]. No it is not difficult. Maybe in the beginning because you are new [to taking medicines] but the doctor explains to you everything. And you take them as directed.

R: And do you take them every day? Or do you forget them sometimes?

P: No. no. I never forget taking them.

Patient 16, man, 57 yrs, Palestinian

As illustrated in this section, although polypharmacy was an issue that concerned HCPs, patients expressed skills and competence when it came to managing their medicines. However, increasing the number of prescribed medicines enhanced patients' concerns about the safety of these medicines.

6.4 Medicine accessibility

Medicine accessibility in this study referred to factors that impact patients' access to their pharmacological management. HCPs and patients cited medicine shortages and the new medical insurance scheme as the two main factors that affect patients' accessibility to their drugs. Patients' overuse of medicine was also reported by participants. The following sections present these findings.

A number of pharmacists and patients in the study reported cases of unavailability of medicines or unavailability of required dosage/strength at times of prescription refill. Medicine shortages

were often resolved by temporary replacements with other brands, agents or doses (Figure 6.3). This, in their perception, confused patients and further complicated their management (see section 6.3.1.3). Pharmacist 8 explains this point in the following quote:

Sometimes it is our fault that patients don't take their medicines because we sometimes run out of some drugs. I remember at one time we ran out of Co-Diovan® 160/25mg, so we gave patients two tablets of the Co-Diovan 80/12.5mg. When we ran out of that we gave them 2 tablets of Diovan 80mg and half a tablet of the hydrochlorothiazide 25mg. And all this confuses patients. Not to mention changing brands, which is another problem.

Pharmacist 8, woman, Emirati



Figure 6.3 Example of multiple medicine dosages that can result in patients' confusion

In the previous quote narrated by pharmacist-8, the shortage in Co-Diovan® 160/25mg (the pack in the middle) was replaced by two tablets of Co-Diovan® 80/12.5mg (pack on the right). Such changes in doses can sometimes result in patients' confusion and errors in doses.

In the following quote, Patient 8 narrates her experience when her regular insulin brand was short of supply. The quote illustrates how medicine shortages can indirectly affect patients' adherence with their pharmacological interventions.

A few months ago [the pharmacy] ran out of the insulin needles [insulin in vials] and wanted to give me [insulin] pens. I said no. I don't like pens I like the needles. So I told them no way. They said that I'll wait for a long time and I can't stay without insulin, you know. So I said yes. And they showed me how to use it. I took them and it was a very bad experience, you know? Really bad. I felt I was going to die. I could not use them well. Maybe the doses were not accurate. I don't know. Three days later I bought the insulin from a private pharmacy. I spoke to my doctor and told him I was going to die because of these pens.

Patient 8, woman, 52, Iranian

Other patients indicated that when the required medication, dose, form or even brand was not available in the hospital, they were purchased from private pharmacies. This in some cases could be linked to patients' brand preference, which was discussed in section 6.2.3.

6.4.1 The impact of health insurance

The Abu Dhabi national health insurance scheme was another factor that participants in this study believed limited patients' accessibility to medicine. Before January 2007, the UAE government provided free health care service, including treatment to all residents of the Emirates. Due to the country's high expenditure on health care, a new comprehensive health insurance law was enforced on all residents of Abu Dhabi where costs are shared between employers and employees. However, there are different types of health insurance policies that vary according to a working individual's monthly income. Employees of low monthly income are provided with basic medical insurance that covers the treatment of defined chronic illnesses and specific drug types (HAAD 2005). Patients with basic health insurance policies do not have all their chronic medicines covered, which was either solved by patients paying for the full price of these medicines or not collecting them at all.

Low-income people cannot afford the drugs even with DAMAN. Their medicinal insurances does not cover everything, especially if they have the basic plan, which doesn't cover everything. And of course they stop taking medicines that they can't afford. Their lipid profile would usually be very high. But we can't prescribe a statin because we know that the medical insurance doesn't cover it. Statins are expensive and so they end up unable buy it.

Pharmacist 5, woman, Jordanian

The issue of medicine costs or prescription copayments was reflected in pharmacists' various strategies to reduce medication cost for patients such as: (i) splitting prescribed medicine over two prescriptions to reduce the copayment charges, (ii) offering financial support to such patients during prescription refills or more commonly (iii) using free samples of medicines provided by medical representatives. A group of pharmacists talked about a number of cases where they paid prescription copayments for patients who could not afford it. Pharmacist 17 from the focus group illustrates this in the following quote:

When the patient is in the pharmacy I try to amend and adjust the prescription so that he'll pay the least amount of money and at the same time get all his medicine. Sometimes I help him financially. Sometimes we [pharmacists] collect money from each other and pay his copayment

charges. Not all of patients can [pay]. We help them for Allah. We get more blessings when we help them. So we do help.

Pharmacist 17, woman, Egyptian

A few patients talked about the impact of the new health insurance programme on their adherence. This could be explained by the small number of patients with the basic health insurance policy taking part in this study. These patients were concerned with the additional prescription copayments that affected their monthly expenditure. Patients described different strategies used to reduce their prescription costs such as omitting some of the prescribed items at the time of prescription refill, or taking a smaller dose or buying a cheaper over-the-counter product from a private pharmacy. The use of free medicine samples or medicine returns offered by pharmacists and physicians was also mentioned. Patient 10 talked about her pharmacist's attempt to help by providing her with medical samples of her monthly statins and insulin pens.

Thank God for [pharmacist name] he gave me some Lipitor® and Mixtard® pens. He had some extra or samples I think. He managed to get me two Mixtard® pens and said he will call me as soon as he gets more. Doctors also help me and give me some samples too. So I manage, but if it wasn't for them I would have paid a lot.

Patient 10, woman, 50 yrs, Palestinian

Another patient was mainly concerned with the time she spent waiting in the hospital for the health insurance company to authorise her medical tests such as laboratory tests, X-rays and MRI scans.

It is no longer a [medical] service now. You wait for ages for the hospital to contact the insurance company to see if your health policy covers the medical tests. They should provide a better service. We are paying more now for everything but the service is deteriorating. You come out of the hospital sicker than when you came in.

Patient 12, woman, 43yrs, Palestinian

Findings from this study indicated that medicine inaccessibility was significant amongst patients with the basic health insurance plan. Pharmacists and physicians were aware of the impact of the national health insurance on medicine accessibility and its effect on patients' adherence to prescribed treatment. They also reported strategies used to help this group of patients overcome copayment difficulties. The privatisation of the health care service in Abu Dhabi affected medicine accessibility and resulted in inequality of health services amongst the

country's residents. During this study, literature that explores the impact of Abu Dhabi's new national medical insurance schemes on patients' health outcomes was not available.

6.4.2 Irrational use of medicines

Irrational use of medicine, in this study, referred to patients' unmonitored excessive supply of their regular medicines or the use of unneeded medicines. HCPs reported two behaviours of patients that result in irrational use of medicines: (i) visiting different private clinics or travelling abroad for treatment; and (ii) requesting additional medicines from their physicians. Some HCPs referred to such behaviour as 'medicine shopping' indicating patients' unreasonable tendency to collect extra or unneeded medicines. HCPs talked about patients' habit of visiting other private clinics for the management of their CRFs despite receiving monthly treatment from one of SKMC's family medicine clinics.

Patients in the UAE like to go to different doctors and so sometimes it is hard to follow your patients and they go here and there and everywhere and get different advice, different medicine and they get confused, the doctors get confused. We call that 'medicine shopping' and we really don't want patients to end up taking double the recommended doses.

Physician 10, woman, British

Pharmacist 1 felt that such behaviour increased the risk of double dosing and toxicity. She also indicated that a centralised database to monitor patients' visits to different clinics in the UAE would help update patients' medicine profile. This type of information would enable HCPs, including pharmacists, to monitor patients' 'medicine shopping' behaviour.

There is no computer system that's universal that looks at it so that any pharmacist or any physician who goes into the system can see that there is a potential problem. Patients go to different clinics and have different medical files in each of these clinics. We need a system that will allow us to see what these patients were prescribed.

Pharmacist 1, woman, Canadian

Other HCPs talked about patients' habits of demanding certain types of medicine in every visit to the clinic. Based on their experience, patients demanded physicians to prescribe at least three medicines in every visit regardless of the actual purpose of the visit. In some cases, patients' irrational demands forced physicians to prescribe unneeded painkillers or nutritional supplements to satisfy their needs.

Some patients love medicines. They will not be happy if they leave [the hospital] without a prescription. They think that doctors should prescribe something in every visit even if they have no problems. I sometimes feel sorry for the doctors here because they are under constant pressure from them. Some doctors end up prescribing multivitamins or Panadol® you know? Just to keep them quiet.

Pharmacist 10, woman, Emirati

When patients were asked about the ‘medicine shopping’ behaviour, a group of patients admitted visiting private clinics and sometimes travelling abroad for medical treatment. Patients referred to such behaviour as ‘double checking’ and indicated that they aimed to get second opinions about their health conditions. They also talked about special measures used during these visits to avoid double dosing of their medicines. Other patients indicated that they tend to see other physicians when they are about to undergo surgery or other invasive interventions. Patient 11 illustrates this point in the following quote.

My children pushed me to do it [see doctors abroad]. My daughter was there with her husband for general health check-ups and she said: ‘come on mother, since you’re here [Bangkok] you should see the doctors to’ my daughter wanted to make sure I’m ok. But I took all my medicine with me and showed it to the doctor there. I told him: ‘see. This is what they give me in the Emirates. So if you’re going to prescribe me something make it something new’ [laughing].

Patient 11, woman, 67 yrs, Emirati

People in the UAE have the right to seek treatment anywhere they choose. However, they are not encouraged to visit more than one health facility for the treatment and follow-up of their diseases. Findings from this study indicated that patients’ attitudes towards seeking health treatment contributed to the irrational use of medicines. HCPs in this study felt that patients’ irrational use of medicines was enhanced by the lack of a centralised patient medical records database that would enable HCPs to closely monitor updates on patients’ pharmacological treatment resulting from their uncontrolled visits to private clinics, ‘medicine shopping’ and mobilisation between private clinics. Interestingly, patients in this study had a positive opinion regarding seeking other clinics and travelling abroad for treatment. In their perception, seeking treatment was to ‘double check’ their health status and to provide themselves and their concerned family members with psychological comfort that they did not need further intervention. Patients’ irrational use of medicines described in this section is not parallel to patients’ negative perception of medicines presented in sections 6.2 and 6.3. The fact that two conflicting views towards medicine were identified in this study highlights the importance of individualisation during education and counselling sessions. One-to-one communication with

patients will enable HCPs to identify patient-specific educational needs and design the right educational intervention.

6.5 Patients' poor education about medicines

In SKMC, health educators provide patients with information about their diagnosis and management needs during one-to-one education sessions. However, HCPs reported that patients had limited ability to obtain, process and understand basic information about their prescribed medicines. They believed that such factors were responsible for patients' wrong beliefs about medicines, their unrealistic expectations of the therapeutic outcomes of their prescribed drugs and their failure to adhere to their medicines. However, HCPs did not define this barrier as a provider-related barrier. To HCPs' understanding, patients received adequate health education sessions about their diseases and treatment needs from the treating physician, the pharmacist or the health educator. HCPs also described various methods used during clinic visits to ensure patients understand and are able to retain information about their drugs and appropriate use. Such methods included the use of written material, pictures for illustration, Arabic printed drug instructions on medicine boxes, the use of dosette boxes to facilitate adherence, avoiding the use of medical jargon and the use of an interactive communication loop. HCPs believed that factors outside the realm of their responsibility resulted in patients' poor drug education and consequential poor adherence. In the following quote, physician 2 expresses his frustration as he attempts to identify the entities responsible for patients' poor education and adherence:

There is nothing more we can do. We talk to them, give advice, prescribe the top and up-to-date treatment for them. We refer them to health educators. We encourage them and we motivate them. Our resources and expertise have been drained to the last drop. I think the ball now is in the court of the patients themselves and the health care system to try and improve patients' sense of health and responsibility.

Physician 2, man, Sudanese

HCPs reported a number of factors that they believed affected patients' health education. These factors included: (i) limited number of medical staff to cater for patient educational needs; (ii) high patient-to-provider ratio, which limited the time available for patient education during routine clinic visits; (iii) patient-related factors that hindered adequate education (i.e., patients' educational background and high no-show rate to health education session); and (iv) lack of collaboration between the health care system and other governmental and private authorities in health promotion campaigns. However, underutilisation of pharmacists in patient education and

patients' attitudes towards health education were the two overlapping factors that were reported in most of the interviews. The following two sections present these two factors in more details.

Most pharmacists in the study indicated that their limited participation in patients' treatment plans and health education was partially responsible for patients' attitudes towards medicines. Five pharmacists interviewed had a more clinical role that allowed them to assess patients' medicine use in one-to-one sessions. However, physicians referred patients to clinical pharmacists in cases of suboptimal therapeutics outcomes where nonadherence was suspected as a contributing cause. Other pharmacists interviewed were assigned non-clinical pharmaceutical tasks that included medicine supply and prescription refills. For this group of pharmacists, patient-pharmacist interaction was achieved during medicine dispensing only. In such occasions basic information about medicine indication, doses and proper use was rapidly provided through a narrow dispensing window. Patients usually lined up in long queues, which prevented privacy, and discouraged patients from enquiring about drug-related issues (Figure 6.4).



Figure 6.4 The pharmacy setting that limited efficient patient counselling

The pharmacy layout did not permit efficient patient counselling or assessment of medicine use. Pharmacies have two windows for dispensing, men's and women's. The close proximity of these windows and the queuing of patients (there was a person in front of the man in the white shirt) prevents privacy, thus discouraging patients from enquiring about their medicine.

Pharmacists suggested that improving the pharmacy layout would facilitate their educational role and would eventually rectify patients' beliefs about medicines and improve their adherence. Pharmacist 13 explains this point in the following quote.

If you look at the pharmacy layout you'll immediately realise that whoever designed it wasn't aware of pharmacists' important role in patients' education. Narrow windows that you can barely communicate to patients through, no waiting area, patients queuing, no privacy, no counselling rooms. But despite all of this, we do our best to tell patients all the information they need with the limited resources we have.

Pharmacist 13, man, Palestinian

In this study, pharmacists' counselling skills were reserved for cases of suspected patient nonadherence only. This limited the proper utilisation of pharmacists and hindered pharmacists from delivering proper drug education and counselling to patients with MetS. Although pharmacists had the opportunity to provide patient-oriented pharmaceutical care at each patient encounter (clinic visits, prescription refill, etc.), technical barriers such as the pharmacy layout hindered pharmacists' full contribution to patients' medicine use assessment. In a study by Skomo et al (2008) patients indicated that they would be encouraged to ask pharmacists questions about their medicines if the pharmacy layout was improved to facilitate counselling and access to pharmacists' advice.

Several pharmacists reported that many patients refused their invitations to have their medicines use assessed or to receive detailed information on medicine use and indication during prescriptions refill. They believed that patients' familiarity with the use of their monthly medicines, lack of time and the pharmacy setting discouraged patients from accepting pharmacists' invitations to have their medicine use reviewed.

We [pharmacists] want to help them. If I offer to give them explanations, they shout: 'no. no we're in a hurry' so sometimes you're scared to even ask. And sometimes they are embarrassed to ask because the pharmacy is crowded with patients and they don't want people to overhear.

Pharmacist 3, woman, Sudanese

Patients' responses about the contribution of their HCPs to their health awareness or drug knowledge varied between different patients regarding different HCPs. Patients were mostly critical of their physicians for not being patient-centred in their approach. They indicated that physicians usually ignored or did not enquire about their needs during regular clinic visits. Some patients reported physicians' lack of eye contact and others indicated physicians robotic and predictable responses and activities. Patient 1 illustrates this point in the following quote:

The moment I walk in [to the doctor's office] she barely looks at me. And then she immediately starts writing my refill prescription. There is no eye contact. There is no "hi how are you? How

are you feeling today?" There is no proper conversation, you know. They don't seem to be interested in you, they're all figures and numbers.

Patient 1, man, 45 yrs, British

The interview analysis revealed patients' sense of their pharmacist's busy working schedule. A busy pharmacist seemed to justify both the pharmacist's lack of attention to patients' educational needs and patients' reluctance to enquire about their diseases or medicine. Different patients gave different examples of scenarios where an opportunity to enhance their health awareness was lost because they were embarrassed to interrupt the work flow of their HCPs. One example was given by patient 19 when he was explaining why he never asked pharmacists for information about his medicines.

Pharmacists are very busy people. When I go to collect my medicines, they are talking to this, giving medicines to that, writing papers, standing all day on their feet. I feel sorry for them. And despite all of this they prepare my medicine for me, label them, put them in a bag and give it to me with a big smile.

Patient 19, man, 67 yrs, Emirati

In the current study, HCPs believed that patients' lack of health education that included comprehensive information about their MetS and its management was responsible for patients' attitudes towards their prescribed pharmacological treatment. HCPs reported many factors that altered efficient health education that were either health care system-related or patient-related. However, underutilisation of pharmacists in patient drug education and patients' attitudes towards health education were the two most reported factors in the HCP interviews. Pharmacists cited many technical barriers that hindered their contribution to patients' health awareness. Patients, on the other hand, expressed reticence towards pharmacists and were sensitive to their hectic working hours.

6.6 Summary

This chapter presented four main factors that affected patients' attitudes towards their prescribed medicines. These factors were: (i) patients' beliefs about medicines; (ii) polypharmacy and treatment complexity; (iii) accessibility to medicines; and (iv) patients' poor drug education. Patients' beliefs that medicines were harmful and addictive substances drove some to look for natural alternatives, such as herbal medicine and ozone therapy. In some cases, patients intentionally stopped taking their medicines for a few days to avoid getting addicted to them.

Changes in medicine brands, form or doses that occurred in cases of medicine shortages resulted in patients' confusion and were sometimes rejected. Many patients believed that western manufactured brands of medicines were better, more effective and more potent than equivalent non-western manufactured brands. HCPs believed that polypharmacy complicated the management of MetS and influenced patients' adherence to their treatment plan. A number of patients struggled with prescription copayments, while others had a basic health insurance plan that did not cover all prescribed medicines. HCPs also believed that patients' ability to visit different private clinics or travel abroad for treatment resulted in duplication of their medications and overdosing. HCPs felt that patients' attitudes towards their medicines was engendered by their poor awareness about medicines.

The following chapter will present themes that describe facilitators to the management and prevention of MetS as suggested by the study participants.

Chapter 7

Facilitators to MetS management

7.1 Introduction

This chapter presents facilitators to the management and prevention of MetS in the UAE as suggested by the study participants. As participants reported barriers to MetS management, they also spontaneously suggested interventions that they believed would either limit or counteract the barriers' impact. However, at the end of each interview, all participants were specifically asked to propose solutions that might improve the management of MetS or prevent an increase in its prevalence in the UAE. Interestingly, HCPs were able to articulate a wider range of facilitating strategies than patients did during interviews. HCPs responses indicated that they were more concerned with solutions that addressed the management and prevention of MetS on a population level, such as public health awareness, disease prevention strategies and health research.

Patients' responses, on the other hand, addressed gaps within existing health care practices and their own contribution or lack of contribution to their overall health status. Such solutions included improving patient-provider communication, patient behavioural change, resolving barriers to lifestyle interventions, such as coexisting health conditions and lack of motivation. Patients were also asked to share their perceptions of some of the facilitators suggested by HCPs. Table 7.1 presents the key facilitators that are discussed in this chapter.

Table 7.1 Summary of reported facilitators to MetS management in the UAE

Facilitators to management of MetS
<p>Health promotion and disease prevention strategies</p> <ul style="list-style-type: none"> ▪ HCPs believed that health education provided in primary health care settings or through health promotion campaigns were effective tools in providing the population with skills to protect and control their health ▪ Intersectoral health alliance, research and Emiratisation were perceived as key factors that can improve health promotion and patients' behavioural change ▪ UAE government, mass media and school health were the three main non-health sectors that were perceived as highly influential in enhancing health promotion in the UAE ▪ HCPs reported a lack of health needs assessment, which were perceived as vital for constructing and remodelling public health policies ▪ A number of HCPs indicated that Emiratisation of health professionals could achieve cultural concordance between HCPs and patients ▪ Emirati athletes and Emirati women exercise instructors can be used as role models to improve patients' attitudes towards exercise and minimise socio-cultural limitations to lifestyle interventions ▪ Some HCPs talked about plans to incorporate religious teachings that advocate for healthy lifestyles into the health promotion programmes as well as using some religious figures as role models
<p>Strategies to improve management of MetS within the clinical setting</p> <ul style="list-style-type: none"> ▪ Improvement of MetS management within the clinical setting was the focus of patients' responses with regard to facilitators ▪ Patients talked about the need to improve their health behaviour towards lifestyle interventions ▪ Patients cited that listening skills and time issues during counselling needed to change in order to improve their management. In their perception, physicians needed to listen to their personal concerns and views about their life and treatment ▪ Other strategies to resolve previously reported barriers, such as patients' empowerment, eliminating or reducing the impact of barriers to adherence to the treatment plan, were also reported

Looking back at participants' responses, it is evident that replies indicating barriers and facilitators that hindered or promoted the management of MetS belong to different stages of the MetS prevention and management cycle (Figure 7.1). There were many factors that increased an individual's chance of developing any of the CRFs that make up MetS (phase 1). Such factors encompassed a genetic predisposition to developing CRFs and patients' health behaviour (i.e., unhealthy diet and sedentary lifestyle). Individuals with clustering CRFs were not always detected or identified. Outreach CRFs screening campaigns and public health awareness were believed to enhance these individual's chances of being diagnosed together with unplanned clinic examinations (phase 2). Many of the HCPs' responses regarding facilitators to MetS management indicated the need to tackle factors in phases 1 and 2. They also believed that factors that either increased public chances of developing MetS or reduced their chances of being diagnosed needed to be addressed and targeted through disease prevention and health promotion strategies.

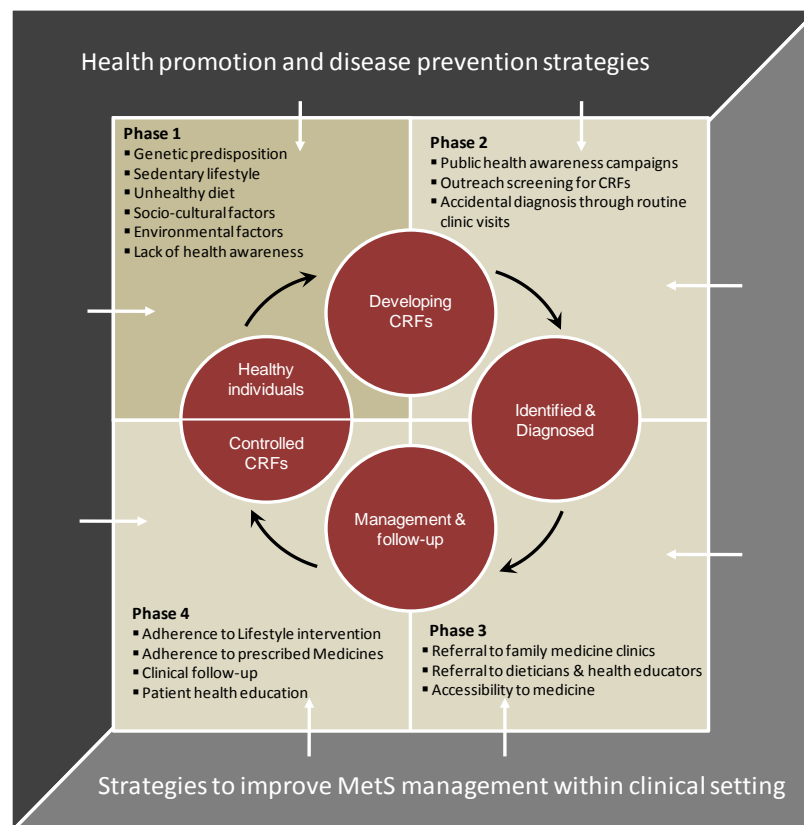


Figure 7.1 Strategies for MetS prevention and management

Participants' responses indicated that MetS development and management fall into four main phases. Phase 1: factors that increase an individual's chances of developing MetS. Phase 2: factors that enhance the identification and diagnosis of patients with MetS. Phase 3: factors that facilitate the management of patients with MetS. Phase 4: factors that help patients control their presenting CRFs. Public health promotion strategies should minimise the impact of phase 1 and enhance phases 2 and 4. Other strategies should target factors increasing patients' diagnosis, treatment, follow-up and adherence to the treatment plan

Patients, on the other hand, were mainly concerned with addressing factors that affected their accessibility to treatment (i.e., health insurance), their own health behaviour (i.e., adherence to physical activity and healthy diet) and their relationship with their HCPs. All these factors aligned themselves with phases 3 and 4, as can be seen in the diagram. These factors were presented and discussed in previous chapters. Therefore, the beginning of this chapter is mainly dedicated to new facilitators that revolve around the utilisation of health promotion and disease prevention strategies in MetS. A summary of all the facilitators that were perceived to enhance MetS management within the clinical setting are provided towards the end of this chapter.

Facilitators that are presented in the following sections were mainly reported by HCPs. However, patients' perceptions on such strategies were also investigated and will be presented when applicable. Facilitating strategies in the following sections are: (i) health education and health

promotion; (ii) intersectoral health alliance; (iii) national health research; (iv) Emiratisation; and (v) religion.

7.2 Health promotion and disease prevention

Health education, health promotion and disease prevention were terms that participants used interchangeably during interviews. Such terms were used to indicate methods of changing patients' health behaviour and improving their lifestyle. Health education provided in primary health care settings or through health promotion campaigns was believed to be an effective tool in informing patients of the importance of protecting and controlling their health. Health promotion in MetS, which HCPs discussed, encompassed more than promoting for a healthy lifestyle and included the importance of early screening of CRFs and adherence to the treatment plan when diagnosed. HCPs believed that if patients were constantly provided with appropriate information about all aspects of disease prevention and healthy living, this would guarantee a change in attitude and in turn would directly influence their behaviour.

I think people need health education, people need to be aware, empowered and in control, the public health in this country needs to focus on health education just like what we have in the UK [...]. Send people strong messages, you know, like those TV ads about the consequence of not using a seatbelt while driving. Many people here have started using them since these messages started. So the stronger and the more frequent the messages, the stronger the impact on people's health behaviour. I think health awareness and health promotion is what this country needs to tackle a problem like the MetS.

Pharmacist 16, woman, Jordanian

In the study setting, most patients were usually referred to a health educator upon diagnosis or when specific health knowledge-related gaps were identified. During interviews, patients were asked about their perception of the health education sessions and its impact on their health behaviour. All patients who admitted receiving a one-to-one health education session reported their satisfaction with the service and indicated its role in enhancing their health awareness and rectifying some of their health beliefs. However, some patients admitted that internal and contextual factors were more influential on their health behaviour than becoming more health informed. Patient 19 explains this point in the following extract from his interview:

R: *Did the health educator explain to you everything about diabetes, the diet [...]?*

P: *She explained everything. She also gave me a small book with pictures.*

R: *Did this information change the way you eat or make you exercise more?*

P: [laughing] not everything. I did not change me 100% because of this visit. Whoever tells you that is a big liar [laughing]

R: Can you explain, was the information not suitable for you?

P: No, it's not that. You see when you listen to her [educator], you say to yourself: 'wow, this sounds great' but in real life there are other things that come in the way and prevent you from following these instructions, even though you know they are not good for you. You are a human being, you crave for things. You want to eat this, to eat that. Some days you don't feel like exercising. Sometimes you want to just set, you know?

Patient 19, man, 67 yrs, Emirati

HCPs responses indicated that health promotion strategies could be improved through three main strategies: (i) intersectoral health alliance; (ii) local and national health research; (iii) Emiratisation. The following three sections present these three strategies in detail.

7.2.1 Intersectoral health alliance

HCPs perceived MetS as a national health burden that needed to be addressed at a population level. HCPs believed that a conjoined effort of stakeholders, such as government departments, health authorities, educational authorities, the mass media, urban planning, and even members of the Royal family, would help address MetS holistically and not in a merely treatment-oriented manner. They also felt that intersectoral health alliances would enable the targeting of services based on wider consultation and pooling of knowledge and expertise and would enable the use of different tools and strategies that cater for different community needs, thus narrowing the gaps.

I really think that the government, the media, TV, newspapers, social network, schools, even women's organisations, I think they all should join in this mission [health awareness]. I think we should address MetS through the joint efforts of different sectors. They all should promote for health through using different tools. This is a big step and it might take time, but it's an important step to take for the whole population of the UAE.

Physician 9, man, Palestinian

Health Promotion involves various players through the intersectoral or multisectoral approach. An increasing number of players are being introduced to health promotion concepts and practices, including those practicing in the non-health sectors. Health promotion strategies have been integrated into many health and development programmes. Intensified focus on the 'healthy settings approach' has paved the way for partnerships with government sectors and the private sector. Therefore, a comprehensive health promotion system highlights the importance of coordinated action at multiple levels (i.e., national, local, organisational and programme

levels). Health, in such a case, becomes the collective responsibility of the whole society and not an individual's alone (Naidoo and Wills 2009). The UAE government, mass media and education authority were the three most talked about stakeholders in the ideal non-health alliance and were perceived as the most influential in driving health promotion and behavioural change. The following three sections discuss their role as perceived by the study participants.

7.2.1.1 The role of the government

Many HCPs agreed that the UAE federal government represented the most senior authority that can enhance the development and implementation of health promotion activities through its supervision and sponsorship. In their opinion, a health promotion system needs a stable basic infrastructure or system building blocks, such as finance, workforce, resources, information systems and organisational and intersectoral teams and partnerships. These building blocks are harnessed to work together as a system through governance arrangements and consequent policy and planning framework. Dietician 1 illustrates this point in the following quote:

I think a health problem like MetS needs to be addressed from a higher managerial level. I think a national health promotion strategy should be included within the country's public health policy, which the government is authorised to do. The country's need to prevent and manage MetS should be assessed, goals determined, framework or an action plan designed and then implemented and then assessed. If I try resolving a national health problem like MetS through one department or sector, through local policies, then I'm only solving a small portion of the problem. I think the government needs to set a policy at a national level.

Dietician 1, woman, Jordanian

According to the 2008-2013 WHO action plan report for the prevention and control of noncommunicable diseases, government elaboration is needed to provide high-level policies and plans, as well as programmes related to advocacy, community mobilisation, environmental interventions, health care system organisation and delivery, legislation and regulations (WHO 2008). Some HCPs reported the absence of collaboration between local health authorities (i.e., Abu Dhabi and Dubai's health authorities), independent health organisations and the UAE ministry of health. HCPs believed that such collaborations would result in health equity and would emphasise the need to address MetS as a national burden that affects all residents of the UAE. HCPs talked about the lack of coordination between the health authorities of different Emirates or between health authorities and the country's ministry of health (MOH). Physician 5 explains this point in the following quote:

There are [health promotion] initiatives scattered here and there, but because they're not under one umbrella the effort is segmented. Abu Dhabi has its own programmes, Dubai health authority has its own programmes. Not to mention the northern Emirates that have their own health issues. So all these efforts are not augmented, they are not unified. What we need is a role played by the government, something that will unite all these health institutes and authorities. This will create health equity, and the establishment of powerful health promotion strategies that are applicable to all residents of the UAE. And when it's a policy produced by the government it can be easily enforced and no authority can argue with it you know? So when there is such unity, such collaboration, better programmes and better implementation will follow.

Physician 5, woman, Jordanian

The health care services of Abu Dhabi were regulated, operated and financed by the UAE government through the MOH. However, in 2006, Abu Dhabi health reform resulted in the breakdown of the MOH's responsibilities and the formation of three independent bodies responsible for regulating (HAAD), operating (SEHA) and financing (DAMAN) the health care services of Abu Dhabi alone. Ever since, Abu Dhabi has worked on establishing an independent strategy for the Abu Dhabi health care system which is fully aligned with the Abu Dhabi Government 2010-2030 Strategy Map (HAAD 2009). The current role of the MOH is to unify the health policies in the country and develop a comprehensive nationwide health service.

Many HCPs in the study gave examples of health promotion campaigns that were organised and operated by different organisations within the city of Abu Dhabi or through the whole of the UAE. Some of these examples were reported in chapter 2 (Table 2.3). Diabetes, obesity in adults and in children, as well as CVDs, are health burdens that are recognised by all health organisations in the UAE and receive great attention and focus by health promotion and public awareness organisers; however, the UAE still lacks a unified national health policy that addresses such anomalies as a national health burden.

Some participants perceived the lack of a clear health strategy in the UAE as an obstacle that prevented structured prevention and management of MetS. In their perception, strategies declared by health authorities in the country are ambiguous and unrealistic. HCPs indicated that most health promotion campaigns address individual CRFs, such as Diabetes and obesity, with little or no focus on MetS as a predisposing factor to Diabetes or CVDs, which are both health burdens in the UAE. Pharmacist 10 illustrates this point in the following quote:

The health promotion approaches give a lot of attention to diabetes. I mean, that's understandable since we have the second highest prevalence of diabetes. But what about prediabetes, what about MetS? I think the government needs to look at diabetes from its roots and that is through MetS. There should be a policy and a clear plan regarding the prevention of MetS and health promotion. Instead of focusing on one risk factor we should have a policy that addresses all the risk factors, but see them as one risk and the MetS concept enables this.

Pharmacist 10, woman, Emirati

As previously identified and presented in this study, the medical term 'metabolic syndrome' was not as well known as other conditions, such as diabetes or hypertension. No patients were familiar with the term 'metabolic syndrome' as a diagnosis for their condition. The unavailability of an Arabic alternative to the MetS term and uncertainty about patients' ability to comprehend the MetS concept were among the factors that discouraged health care professionals from informing patients of their MetS diagnosis. MetS was the top priority on the list of public health priority target health problems produced by HAAD in 2010; however, most of health promotion strategies that are organised and sponsored by HAAD address individual components of MetS with great focus on diabetes and obesity. This may be an additional factor in patients' lack of awareness about the MetS concept compared to other anomalies such as obesity, diabetes, and hypertension. It also indicates a lack of penetration of the MetS concept into public awareness. Comprehensive and integrated national approach to the MetS can help of arresting this public health epidemic.

7.2.1.2 The role of schools

The role of schools in health promotion was elicited as HCPs talked about the lack of an exercise culture in the UAE (see section 5.2.1). Participants felt that learning about health-related knowledge, attitudes and behaviour at an early age would help create generations that were more health conscious. Schools were another context for health promotion, because they reach a large proportion of the population for many years. They also stressed the importance of including health education in school curriculums to allow ongoing and progressive health programmes that build on previous learning and allow children to extend their knowledge and skills appropriate to their stage of development. Some HCPs used their own experience of western schooling systems to help explain the value of targeting younger generations for health promotion. Physician 7 explains this point in the following quote:

I had my training in Scandinavia and they have a beautiful system of having an active health education, they call it school nurse and school doctor. Their function is to teach children about healthy food, exercise. They arrange trips to the woods making them familiar with a healthy environment and nature. Sometimes they campaign for health where parents can also get involved. It was a great experience and my kids learned a lot. We need something like that here. I don't know if exercise is thought of in school curriculums here, but I believe that structured health education from a young age will influence people's behaviour.

Physician 7, man, Egyptian

One patient in this study indicated health education at schools and universities as a key factor in resolving the high prevalence of MetS. Patient 2 was asked about his view on the solution to his health condition. He stated that narrowing the gap between the health care system and the education system in the UAE will help tackle the country's health challenges.

P: There's a gap between the health care system and the educational system. There's no link between the two.

R: And how do you think this has affected your health?

P: Because I am the product of this system. Although in my time, things were much better. But if I look at the students' diet at schools, they eat junk and are allowed to order burger delivery too. There is no focus on exercise. They're only interested in football, but they don't think about the concept behind football, they're not told to see the whole picture. You know, they're not told that exercise is part of a lifestyle, healthy diet is part of a lifestyle. They don't know that. They're not informed about the health risks in this country. You know why? [...] Because the government doesn't have a vision, if they did they would address this problem from all aspects starting from kindergarten to the work place. But they don't have a vision and this is why we're suffering now and will continue to produce unhealthy generations.

Patient 2, man, 33 yrs, Emirati

In the Emirates, there were a number of school focused health promotion interventions such as 'The Fat Truth' (Ministry of Health 2009) and 'No to Obesity' (Ramandeep 2010) that addressed obesity in children and teenagers living in the UAE. Seminars, oral presentations and workshops concerning diabetes and obesity were also among health promotion activities that were sponsored by the health authority of Abu Dhabi (Diabetes UAE 2007; HAAD 2010). Such interventions came in response to the high prevalence of MetS, and obese and overweight children and teenagers living in the UAE (Eapen, Mabrouk et al. 2010; Ministry of Health 2011). A systematic review looked at the effectiveness of school-based lifestyle interventions in the UK that aimed at changing children's attitudes towards diet and physical activity. Findings suggest that the impact of such interventions were inconsistent and short-termed (Brown and Summerbell 2009). This suggests the importance of having an ongoing and progressive health promotion programme that is built into the school's curriculum in order to achieve a long-term effect. However, there is no available data in the UAE that indicates whether a whole school

approach to health promotion has been implemented apart from the existing short-term lifestyle interventions. However, HCPs aspired to have something similar to the Healthy Schools Programme in the UK. The Healthy Schools Programme is a joint initiative between the Department for Children, Schools and Families and the Department of Health. Their main goal is to achieve locally agreed health and well-being outcomes for children and young people. Healthy schools that have been established since 1999 promote a whole school / whole child approach to health by introducing the health promotion concept into the school philosophy. An annual assessment of the success of the Healthy Schools Programme is needed to maintain the foundation of health and well-being which is achieved through the National Healthy School Status (Healthy Schools 2009). In the UAE, a whole school approach to health promotion programmes within a MetS context might be an idea worthy of consideration.

7.2.1.3 The role of the mass media

The mass media are tools for the transfer of information, concepts and ideas to both general and specific audiences. Mass media is defined as any printed or audio-visual material designed to reach a mass audience, such as newspapers, radio, television, internet, posters and magazines (Naidoo and Wills 2009). All HCPs in this study cited mass media as an important tool in advancing public health goals. They believed that health messages could reach a wider audience and hard to reach individuals that could have developed MetS features, but are still unidentified or undiagnosed. Although HCPs talked about different types of media that can be utilised in health promotion, they mainly focused on health promoting messages communicated through the television. Media was perceived to be effective in rectifying some of patients' cultural beliefs or social norms that might counteract their implementation of lifestyle interventions. HCPs' responses indicated great optimism that regular strong health messages would induce a massive shift in patients' attitude and health behaviour and thus improve their lifestyle.

The level of reading in this country is not as impressive as watching TV and other media sources. But I don't think TV and media sources have done enough to emphasise the problem or the epidemic of MetS, or how much it's really important to change lifestyle to improve health, or changing diet, in addition, or smoking and many other culturally influenced habits. People believe what they see. Media influences people a lot. We experience the impact of media on our youngsters, and women as well. And we can use that in health as well and change people's behaviour.

Pharmacist 15, man, Palestinian

The mass media are able to deliver short-term, intermediate-term, and long-term effects on audiences. Short-term objectives include introducing health concepts; increasing awareness and knowledge; updating old or rectifying inaccurate information; and enhancing audience recall of particular advertisements or public service announcements, promotions or programme names. Intermediate-term objectives, on the other hand, include all of the above, as well as changes in attitudes, behaviours and perceptions of social norms. Long-term objectives include all of the aforementioned goals, as well as focused reform of perceived social norms and maintenance of behaviour change (Mcdermott and Albrecht 2011). HCPs' responses indicated their aspiration to an intermediate or a long-term effect of the mass media or the use of television in podcasting health messages. However, available data suggests that the impact of media facilitated health promotion campaigns on health behaviour with regard to physical activity and diet control are usually short-term changes (Marcus, Owen et al. 1998; Bauman, Bellew et al. 2001). Using the media to communicate health promotion messages can only produce short-term effects and, therefore, needs to be set against the persistent influences of social and structural factors, settings and reinforcements for sedentary behaviour. Integrated efforts, involving health education, motivation, verbal reinforcement and other tools are necessary to maintain and build on the initial changes of health behaviour obtained using the mass media.

In their responses, patients mainly referred to written and televised health promotion messages. Patients' perceptions about the role of the media in their health awareness or health behaviour belonged to three main categories: (i) appreciation of information; (ii) pessimism towards the role of the media in influencing behavioural change; (iii) discontentment with the style in which health promotion messages were delivered. However, the three groups did not value media facilitated health promotion messages as a tool that guarantees behavioural change. Data previously presented in this thesis, illustrated examples of patients using the internet and printed material to gain information about the cardiovascular risk associated with MetS (section 4.2.2). Some patients complimented the current government's efforts and felt that it provided them with more information than they had received from their care provider.

Public awareness is good, because it makes you careful. There are things that you've never heard of from your doctor or nurse so when you hear about it in the media you don't do them again and you become wiser. On TV they talk about real things, things from people's experience. Doctors don't talk about real life, they only tell you what they learn in books, but TV programmes add a bit of reality to the illness.

Patient 6, man, 65 yrs, Yemeni

Other patients believed that the media role was confined to conveying basic information about diseases and was, therefore, more useful to newly diagnosed patients. However, the media usefulness was limited with regard to complex information about diseases or influencing the a shift in their behaviour.

TV ads won't help you. Maybe it's useful for people who don't know or those who are newly diagnosed, you know? But it doesn't make you careful, or eat less, or exercise more. No. because you can watch all the TV programmes in the world, you can read all the medical magazines in the world, but if you don't have the willpower and desire to change within you, you won't change. No force in this world will change you, right?-laughing-

Patient 24, woman, 46 yrs, Emirati

Other patients felt that the current messages broadcast on television and sometimes published in newspapers need to cater for different patients of different educational and cultural backgrounds. Complicated medical jargon or imbedding English words in the midst of Arabic text were frequently noticed in televised health promoting programmes.

I think media needs a bit of improvement, because it doesn't appeal to everyone. My parents are illiterate and they don't always understand what the TV presenters are saying. They use a lot of medical jargon. The presenter will be saying something like: 'you must do exercise' [in English] when he should've said exercise [in Arabic]. They should consider people who might not understand English or don't have a medical background.

Patient 28, woman, 34 yrs, Emirati

In the UAE, a variety of health messages about diabetes, physical activity and diet have been part of broadcast media (particularly television) for a couple of years. In addition, pamphlets and posters are everywhere in patients' surroundings, including public places or in clinics. However, little is known about the efficacy of media-based methods in promoting higher levels of physical activity behaviour among patients with MetS or any other health condition in the UAE. Despite HCPs' enthusiasm towards the use of the media in health promotion and their optimism of its impact on patients' health behaviour, findings from this study reflect the findings also reported in the literature, which suggest that such a tool is only useful in the short-term (Marcus, Owen et al. 1998; Bauman, Bellew et al. 2001). More investigation should take place to identify appropriate and culturally sensitive strategies that the media can adapt when facilitating health promotion messages.

7.2.2 The role of local research

Over the past decade, investment has increased in the infrastructure for health research in the UAE; however, many HCPs believe that gaps still remain and additional work is needed to aid the reduction in the high prevalence of MetS and its constituting CRFs. They also felt that the unique socio-cultural context of the UAE highlighted the importance of local empirical research to identify the specific health needs of the country's population. According to HCPs' responses, local or national health research was capable of delivering four main objectives: (i) assess health needs of patients with MetS living in the UAE; (ii) provide a guide to improving the UAE health care system (iii) develop new initiatives for health promotion and health education campaigns for patients with MetS; and (iv) reduce health care inequalities throughout the UAE. Pharmacist 7 explains this point in the following quote:

We don't have documented data or statistics here unfortunately. There is no research on the Arab population or MetS patients here. Nothing. So how can I know what this population needs? From my observations from my experience, I might have a slight idea, and I can act upon this knowledge at work, but it could've been better if there was reliable data from trials or studies. Our problem is that we don't have health research in the region that can reflect reality. We have studies from the west, but it doesn't say anything about the people here. We need research, to tell us what patients in this region need that guide us when we come to design our health policy. I mean, let's be honest, we bring western experts or we buy ready-made policies with millions? Why do we do that when we can simply look at ourselves and see what is right for us?

Pharmacist 7, woman, Emirati

The role of research was also linked to the efficacy of health promotion strategies used in the UAE for lifestyle. Few HCPs indicated that effective and realistic planning of health promotion campaigns should be based on public needs assessment. Imported interventions or health promotion templates are compatible with the health needs of patients living in western societies and might not cater for all the health needs of patients living in the UAE. They also reported the lack of impact and outcome assessments of existing health care policies or promotion strategies. Educator 1 explains this point in the following quote:

All the interventions that we use here are imported from the west. We think that if it worked there, it will definitely work here. But that's not always true. If you see the campaigns they run every year, I know organisers are Emiratis, which is good, but the approach is very western, when I talk to patients here in the clinic, I can see they're simple people, some are religious, so these health promoting strategies might not be acceptable for them,

Educator 1, woman, Bahraini

Assessing the population's needs is the first step in establishing a health promotion programme and health promotion activities. The reason for assessing the health needs of a specific community or population is to identify both positive and negative influential factors that should inform the development process of health promotion programmes (Naidoo and Wills 2009). However, an initial community health needs assessment was not reported in the disease prevention programmes (Hajat and Harrison 2010; WEQAYA 2010) or the health promotion programmes (Diabetes UAE 2007) presented earlier (see section 2.4). In addition, an assessment of efficacy through measuring clinical outcomes for these programmes was not available. Such data could be useful in identifying gaps and areas of improvement if similar programmes are to be launched in the future. Data that describes public perceptions of health campaigns in the UAE was not available. Walk-UAE, which is one of the "Diabetes-Knowledge-action" public awareness campaigns, advocates for physical activity through an annual walkathon (Diabetes UAE 2007). This aims at encouraging the public to engage in brisk walking, jogging and other outdoor activities (Figure 7.2).



Figure 7.2 WALK-UAE is part of the "Diabetes-Knowledge-Action" campaign

WALK-UAE is part of a health promotion campaign that is held annually to advocate for physical activity and healthy lifestyles (Diabetes UAE 2007). Findings from the study indicated that some socio-cultural norms might prevent some women from participating in this activity. Health needs of communities should be assessed to identify positive and negative factors that might influence lifestyle interventions. Such findings can inform the framework of health promotion programmes.

In 2010, the Municipality of Abu Dhabi City has distributed sports and fitness equipment to a number of public parks and open spaces free of charge to be used by the public (Municipality of Abu Dhabi 2010). This step came in conjunction with the UAE government's quest to improve

and develop social lives and provide an environment to enhance a healthy lifestyle (Figure 7.3). However, findings from this study cited many cultural and religious limitations to the implementation of lifestyle interventions, one of which was restrictions on outdoor activities.



Figure 7.3 Gym equipment in Abu Dhabi public parks

The municipality of Abu Dhabi city has fitted public parks and open spaces with gym and exercise equipment in conjoint efforts with the government of Abu Dhabi to create an environment that will encourage and facilitate exercising (Municipality of Abu Dhabi 2010). Findings from this study identified culturally-related barriers that might limit or prevent women's use of such equipment.

One of the scopes of the public health and policy division is the establishment of a research regulatory framework in collaboration with other UAE regulators and development of a funding process to promote and sponsor research into Abu Dhabi's disease priorities (HAAD 2009). Part of the social sustainability initiatives of HAAD, as stated in the same report, was to evaluate effectiveness, accessibility and quality of personal and population-based health services, and to conduct research for new insights and innovative solutions to health problems in the UAE (HAAD 2009). Exploring health policies in the UAE was not part of the study aims and objects. HCPs indicated policy-related factors that might have indirectly affected MetS prevention and management strategy. However, this remains an area worthy of further investigation in future research. Relevant findings presented in this thesis could be used to guide the design of research in variable areas that were indicated by the study participants.

7.2.3 The role of Emiratisation

Emiratisation is a term used to describe the process of nationalisation of human resources in the UAE. Emiratisation is a government initiative that started in the mid 1990's and works towards an organised and efficient employment of Emirati citizens in the local and private sectors (Emiratisation 2009). Emiratisation was implemented to help the UAE face some of its political, economic, environmental and societal challenges. It was also created to minimise the country's high reliance on expatriate workforces and encourage the active participation of national Emiratis in the industrial society (Randeree 2009). Although, only eight of the HCPs interviewed were Emiratis (1 physician, 4 pharmacists and 3 dieticians), the role of Emiratisation in MetS was also reported by other non-Emirati HCPs. Emiratisation was repeatedly indicated by many HCPs as one way of minimising the cultural gap between patients and their HCPs. In their perception, Emirati HCPs are more aware of the socio-cultural needs of Emirati patients and are, therefore, more capable of addressing culturally-related barriers to management, while designing patients' treatment plans. Dietician 4 (woman, Emirati) explains this point in the following quote:

As an Emirati professional you know the culture and the tradition of the country. And you'll be able to guess what some patients need, you know? You'll be able to talk and communicate with them on this level. Some physicians are not aware of people's eating habits, for example, and so they don't use examples from patients' culture when they give advice on diet, for example.

Dietician 4, woman, Emirati

Emiratisation of social workers was applauded during many interviews with expatriate HCPs. Emiratis working with patients and their families would enable patients to communicate their social and cultural issues. Emiratis in these posts would work jointly with other HCPs on social matters that may affect patients' present and future health. They can also coordinate between patients and HCPs and resolve any treatment choice disputes that may evolve due to cultural incompetence. Physician 10 explains this point in the following quote:

I think social work is where UAE people need to be. This is something that they can do well, you know, like public relations officers who've got social work degrees and that's something this country needs, social workers, I mean, in the UK we have social workers for lots of reasons, they are the patients' advocates, but they have to understand the culture of these patients.

Physician 10, woman, British

The word Emiratisation was also used when HCPs were talking about ways to increase patients' interest in exercising. Identifying Emirati women as being involved in professions such as sports, cookery, and exercise instructors might shift women's perception towards engaging in sports or

even exercising outdoors. The latter example seemed a bit ambitious given the socio-cultural structure of the UAE; however, pharmacist 6 was convinced that Emirati role models for active healthy lifestyles might result in behavioural change.

People will understand the importance of exercising when Emirati ladies become gym instructors, Emirati ladies putting out videos, you know? Like all the western celebrities putting out fitness videos, why can't some of the Emirati ladies put out fitness things? You've got some wonderful, wonderful Royal family members here that are fit, very active; they're all in this sporting team here in Abu Dhabi Dubai, why can't they do something you know?

Pharmacist 6, woman, British

Patients' responses regarding their views of having an Emirati HCP indicated satisfaction and sense of national pride. Feeling 'proud' when seeing an Emirati as a physician, pharmacist, or occupying any other health care profession was perceived as a 'great achievement' and a 'triumph' for the country. They also felt that Emiratis in such positions would facilitate communication and appreciation of their traditional heritage when designing a treatment plan.

P: It is a joy to see a doctor from your country. This is a great achievement for the country and it makes you raise your head up high.

R: What about treatment? Are they better than non-Emirati doctors?

P: They are all good. All the people working here are competent and the country makes sure they have genuine certificates and years of experience, I have to say the truth. But with someone from your country you feel relaxed like seeing a member of your family, like seeing your son or your daughter. You have this great trust that you are at home that you are in good hands. They'll know my culture, they'll know how to show respect to me and treat me as their father.

Patient 19, man, 67 yrs, Emirati

Racial concordance between patients and physicians was reported to affect patients' satisfaction with and use of health care in the literature. For example, Saha et al (1999) found that black patients were more satisfied with the care they received from black physicians as opposed to non-black physicians and were more likely to report receiving preventive care and necessary medical care than blacks with other-race physicians (Saha, Komaromy et al. 1999). Another study that examined the impact of patients' ethnicity/race and gender on their assessment of shared decision-making showed that patients seeing physicians of their own race rated their physicians' decision-making styles as more participatory. Similarly, participants from this study highlighted the importance of achieving cultural concordance between patients and HCPs through the process of nationalisation or Emiratisation. Although improving cross-cultural communication can be attained through training HCPs about the health needs of Emirati patients', some HCPs

were convinced that cultural concordance could increase patients' satisfaction with health care and eventually affect their health behaviour. Emiratisation was also perceived as influential in the healthy lifestyle promotion process. Emirati sport elites or even women exercise instructors can change patients' attitude towards exercise and probably alleviate some of the socio-cultural limitations to women's participation in exercise.

7.2.4 The role of religion

The use of the Islamic teachings in promoting a healthy lifestyle was indicated by many HCPs, including non-Muslims. Religion as a culturally constructed institution influenced people's behaviour with regards to health and healthy lifestyles, and HCPs were aware of the role of religion as part of people's lives in the UAE. HCPs talked about using Islamic teachings on issues pertaining to health and illness and focusing on a healthy lifestyle as a means of protecting one's body to promote physical activity, diet control and smoking cessation. They believed that linking various Islamic concepts to contemporary health promotion campaigns was capable of bringing about desired behavioural changes in patients with MetS.

We can use Islamic teachings to encourage people to change their diet and exercise more. The Islamic teachings that instruct people to take care of their body, you know. Like reminding them of prophet Mohamed's teachings to divide your meal into three sections: 'one third for your solid food, one third for your water and one third for the air you inhale'. To move and exercise, to only eat when hungry and stop before you're full, all these are the Islamic messages that we can use in our health promotion programmes. And people like religion, they are convinced more, and when it is conveyed through a health worker that augments its impact.

Dietician 3, woman, Emirati

Other HCPs talked about the use of religious scholars and famous religious role models to send health messages and teach people about the importance of adopting a healthy lifestyle. The Islamic law contains many teachings and provisions that urge fostering of one's health and preserving it against factors that might weaken it or increase its susceptibility to disease. Laws that forbid alcohol and smoking, and encourage the adoption of healthy diet, seeking treatment, taking medicine and engaging in sports can all be incorporated into religious lectures and during Friday prayer. This point is illustrated in the following quote:

One of the ideas that we thought about for our health promotion programme was the use of some religious leaders and role models to help us promote a healthy lifestyle and living habits like not smoking. I don't think that smoking had been banned by religious leaders in the UAE, but

I know Islamic scholars in Saudi Arabia and in Egypt did. So maybe at some point in some of the outreach programmes we can invite some of these religious leaders to give a talk and play an active role in promoting smoking cessation, exercise, good eating habits. Basically reminding people of the Islamic view of lifestyle

Physician 8, man, Egyptian

A study conducted in the USA explored the role of Muslim Imams in promoting healthy lifestyles in their communities. Semi-structured interviews were conducted with 12 Muslim community leaders. Results indicated that Imams can promote a healthy lifestyle through the use of scripture-based messages during Islamic events and by evaluating health care decisions for Muslim patients (Padela, Killawi et al. 2010).

In the current study, religion was also viewed as a means to encourage patients' adherence to treatment plans, because Islamic teachings instruct Muslims to seek treatment and to medicate when ill; religion was perceived as an adherence-promoting factor. Such teachings can be used to motivate patients also to adhere to lifestyle interventions. Physician 1 explains this point:

We, as Muslims, refer to the Qur'an and teachings of the prophet. Both instruct us to seek medication and treatment, our prophet said that God has created a treatment for every illness that he's created. This was a call from the prophet to go and seek treatment. So with this in mind, Muslims are encouraged to adhere to treatment to prevent their bodies from harm and make it better.

Physician 1, man, Palestinian

Available literature reported the relationship between religion and positive health behaviour, such as adapting a healthy lifestyle, hygiene and early screening for noncommunicable diseases (Hill, Ellison et al. 2007; Grace, Begum et al. 2008; Harrigan 2009; Naewbood, Sorajjakool et al. 2010). There is also support for health-education interventions at places of worship and evidence demonstrates that some church-linked health programmes are effective for modifying unhealthy behaviour (Kelly and Huddy 1999). Similarly, the idea of utilising Islamic lifestyle teachings in health promotion programmes to encourage behavioural change is not new. The World Health Organization Eastern Mediterranean Regional Office (WHO-EMRO) in Cairo is actively carrying out research on health promotion within an Islamic perspective. They have published several articles under the series of health education through religion (WHO-EMRO 2009). The series included articles such as: (i) Islamic Rulings in Smoking, (ii) Health Promotion through Islamic Lifestyles; (iii) The Role of Religion and Ethics in the Prevention and Control of AIDS, (iv) Health, an Islamic Perspective, and (v) Health as a Human Right in Islam.

In the UAE, where religion is so much a part of people's daily life, Muslims and Muslim organisations can easily ascertain all they need to know through the deployment of Islam. Islam places health as a fundamental right of every human being, which makes it a powerful source of guidance and information when it comes to issues related to disease prevention and health promotion. Islam prioritises health, placing it as second in importance to faith. Embedded in the very essence of the Islamic law is the protection of the five essential needs to human fulfilment, which are faith, life, progeny, property and mind. Three out of the five, namely life, progeny and mind, cannot be adequately safeguarded without the protection and preservation of health.

Patients indicated in their interviews that religion played a psychological role and influenced their ability to accept negative health conditions and to cope with stressful events. They also indicated the importance of seeking treatment, taking medicine and protecting the self from harm and linked these concepts to religious teachings. Patient 19 explains this point in the following quote:

Religion has a very strong role in my condition. God instructed us to consider all causes and effects when handling any matter and this applies to illness, so you pray and ask Allah for help, but you take medicine as well, so I take the tablets, two tablets twice and so on.

Patient 19, man, 67 yrs, Emirati

Muslim's behaviour and actions are governed by the tenets of Islam, which are well outlined in the Qur'an and the prophets' teachings. Therefore, HCPs' use of Islamic teachings might have been built upon their assumption that such rules can trigger behavioural change and govern treatment choices. However, HCPs need to be reminded that patients' normative beliefs and social pressures could also affect their health behaviour. In the study, some HCPs talked about using Islamic laws that ban certain risk behaviours in order to encourage behavioural change. HCPs need to also be reminded that a primary objective of health education is to allow individuals the freedom to choose among health behaviours or, at the very least, voluntarily participate in health-related behaviour (Naidoo and Wills 2009). Therefore, the use of religious teachings as an additional option can produce a more acceptable education tool without jeopardising patients' empowerment or freedom to choose.

7.3 Improving MetS management

Data presented in previous chapters indicated distinct barriers to management of patients with MetS. These barriers belong to five main categories: (i) participants' awareness of the MetS concept and definition; (ii) clinical utility of the MetS definition; (iii) implementations to lifestyle interventions; and (iv) patients' attitude towards prescribed medicines; Facilitators were discussed earlier in relative chapters to maintain consistency and to limit repetition of themes across chapters. Table 7.2 provides a summary of the barriers and facilitators to MetS management, as indicated by study participants and reported in chapters 4, 5 and 6. Participants' responses indicated different layers of factors that affect the MetS prevalence and management in the UAE.

Table 7.2 Summary of identified barriers and facilitators to MetS management

Management Factors	Barrier	Facilitator
Patients' perceptions of MetS	<ul style="list-style-type: none"> ▪ Patients were unfamiliar with their MetS diagnosis but aware of the clustering of their CRFs ▪ Patients either felt normal, downplayed risk or graded the importance of individual MetS features ▪ Fatalistic talk was triggered by patients' awareness of the causes of MetS, mainly genetics and stress. 	<ul style="list-style-type: none"> ▪ Health education includes informing patients of their disease. This will increase patients' sense of the whole risk associated with the clustering of their presenting CRFs and enhance adherence ▪ Factors that trigger patients' fatalistic attitude should be explored. ▪ Fatalism can be a form of patients coping with their condition and should not be antagonised
Clinical utility of the MetS concept	<ul style="list-style-type: none"> ▪ Restricting the use of the MetS definition in screening and outreach campaigns ▪ Unclear MetS treatment guidelines ▪ Not informing patients about their MetS diagnosis 	<ul style="list-style-type: none"> ▪ Physicians of different medical specialties need to be informed of the MetS concept and encouraged to refer new cases of MetS to family medicine clinics ▪ Utilising the MetS definition in outreach campaigns for the screening of CRFs and identification of hard to reach patients with MetS
Lifestyle interventions	<ul style="list-style-type: none"> ▪ Lack of awareness of the importance of a healthy lifestyle ▪ Socio-cultural norms and traditions that limit lifestyle interventions ▪ Food misconceptions ▪ Affluence, lack of motivation, time and willpower ▪ Environmental factors (i.e., urban planning, hot climate and lack of healthy food restaurants) 	<ul style="list-style-type: none"> ▪ Enhancing public awareness and education on the personal, health care system and community levels including the use of mass media and school curriculums ▪ Establishing culturally sensitive exercise facilities ▪ Government alignment with non-health sectors' such as food regulation, urban planning, media and telecom to facilitate the creation of a health environment that encourages a healthy lifestyle.
Medicine use	<ul style="list-style-type: none"> ▪ Patients' belief that medicines are addictive, harmful chemicals ▪ Preference for western manufactured brands of medicine ▪ Limited accessibility to medicines because of the new health insurance scheme or irrational use of medicines ▪ Complexity of treatment and polypharmacy ▪ Limited role of pharmacists on medicines use assessments 	<ul style="list-style-type: none"> ▪ Patients' belief about medicines should be explored and assessed ▪ Comprehensive education about: condition, prescribed medicines, side effects and the importance of adherence ▪ Pharmacists should contribute to patients' health education process ▪ Pharmacists need to be equipped with tools that facilitate counselling

As seen earlier and as presented in previous chapters, HCPs' responses regarding barriers and pertinent solutions were mostly population-focused. HCPs indicated that health awareness and empowering patients were two key factors to achieve patients' autonomy and shared decision-making. They also called for more health education programmes and ongoing health promotion strategies to influence patients' behavioural change and adherence to the treatment plan.

HCPs did not report any practice-related factors that can be improved or remodelled to deliver a better MetS management. On the other hand, patients' responses regarding facilitators to improving MetS management revolved around either their own attitude towards their treatment plan or their patient-physician encounter. This could be partially due to the phrasing and timing of the question asked and how patients understood it. Throughout the interviews, patients were able to articulate a wide range of barriers and, equally, suggested solutions to these barriers (table 7.2). However, towards the end of the interview, and when they were asked about means of improving "their" condition, patients' answers were focused around self-behaviour and the patient-physician relationship. With that last question, their immediate attention might have been drawn towards their personal contribution or lack of contribution towards their health. This section of the chapter is dedicated to presenting patients' views regarding factors that will improve their treatment outcome which are: (i) changing health behaviour; and (iii) patient-physician relationship.

7.3.1 Changing health behaviour

The need to change health behaviour was the most reported facilitator by patients who believed that the key to improving their health was self-determined. This group of patients praised their health care facility, medicines and HCPs, but displayed self-blame for failure to adhere to lifestyle interventions. Patients indicated that the key to their health improvement was their unattained adherence to physical activity and/or diet control. Many patients explained that lack of willpower to control their diet or maintain regular exercising was the 'weakest link' in their treatment plan as patient 5 explains:

To stay healthy I need to maintain three factors: food, exercise and medicine, but I know that I am bad with two factors, food and exercise; they are gone. So if I don't take my drugs as well, then I'm left with nothing to control my diabetes. [...] for me I think if I'm able to be good in my diet and exercise, my health will improve significantly. Diet and exercise are my weakest link.

Patient 5, man, 50 yrs, Indian

Patients' self-blame was sometimes interlaced with hopelessness and despair about improving their condition. Failing to reduce weight despite dieting and exercising and inability to control CRFs resulted in patients' confusion and despair. Patient 1, who previously admitted his lack of motivation and willpower to exercise or control his diet, believed that there was no solution to his uncontrolled CRFs.

There is nothing left I can do. Now I just come in to pick up the medicines for refill and stuff like blood tests. My physician said to me that she's giving me all the tests that she knows in all the books, but she still doesn't know why I am this size or why my BP is so high. She's looking at me for help. She told me to exercise many times, but I just can't. So if she is telling me that she is stuck at a crossroads then. Well, I'm no doctor and I don't know what more I can do.

Patient 1, man, 45 yrs, British

Coexisting health conditions that limited patients' physical activity were another factor that engendered patients' despondency. Many patients expressed sincere aspirations to start or resume exercising but were hindered by conditions that limited their mobility, such as body injuries or rheumatoid arthritis. Patient 6 who previously expressed his hopelessness and depression because of his inability to exercise (section 5.2.3), reiterated his concern when he was asked about solutions:

R: *What do you think will help improve your condition?*

P: *I know that the only thing that I'm not doing now is exercising. I really want to. I want to walk like I used to, but my knee problems are preventing me from doing so. I think that's the only thing that will make a difference. But I just can't now.*

Patient 6, man, 65 years, Yemeni

Chapter 5 presented patients' responses about external and internal limitations to lifestyle interventions. As patients answered questions about facilitators to MetS management, they expressed self-blame and lack of contribution to management because of their poor adherence to lifestyle interventions. However, self-blame was sometimes accompanied by statements about their struggle to adhere because of internal limitations (i.e., lack of motivation or physical injuries) and feelings of hopelessness. Chapter 4 presented a number of patients' strategies to cope with their presenting CRFs that included normalisation of MetS and competing demands. Patients' self-blame might be another strategy used to reach acceptance of their failure to improve treatment outcomes. As such, HCPs need to take into account patients' coping strategies when evaluating the impact of MetS on their psychosocial wellbeing. Exploring

patients' coping strategies might help HCPs identify patients in need of counselling or social support.

7.3.2 Patient-physician relationship

Improving patient-physician encounters during consultations was a popular facilitator that many patients reported during interviews as they gave their views on methods to improve MetS management and their health condition. Patients exclusively referred to their physicians in their answers, which illustrates that physicians were the key players in delivering MetS patient care. Patients indicated that attentive listening to their complaints and treatment concerns was missing during counselling sessions. Patients believed that listening had a positive impact on their health because it allowed physicians to know their circumstances and eventually design an appropriate treatment plan. In their perception, a treatment plan that acknowledged their needs was easier to follow and adhere to. Patient 19, who has diabetes, felt that physicians applied a standardised treatment to all patients. He believed that his treatment plan should be tailored to his needs, which can only be achieved if his physician listened attentively to his concerns:

The doctor needs to listen to me, because not all diabetic patients are the same, just like the fingers in your hands they are not the same. The same thing applies to patient, but the doctor never asks me anything about me about what I like. Because if he did, he will know what type of treatment will work best for me.

Patient 19, man, 67 yrs, Emirati

Patients described their physicians' robotic prescription refill writing during routine visits with minimum eye contact and conversation. This description was expressed again as patients talked about facilitators to improving their condition with more emphasis on listening and showing compassion. Patient 21 believed that her physician's exclusive attentiveness towards her medical profile, rather than her views, contributed to his poor therapeutic outcomes:

My doctor does not seem to look into my eyes much when she's talking to me. She's always down on the paper and not interested in what I need to say. She pretends to be listening, but I know that she's not. I know that if she did she'd do a better job and she'll prescribe something better. The medicine doesn't suit me and if she just listens to me, really listens, she'll understand what works for my body.

Patient 21, woman, 49 yrs, Emirati

Patients' views on facilitators to MetS management reinforced the belief that attentive listening of physicians to their patients positively influences the healing process and improves therapeutic

outcomes. Experiencing physicians' attentive listening and compassion motivated patients to disclose their views, concerns and circumstances.

7.4 Summary

This chapter has illustrated how both patients and HCPs perceived facilitators to MetS. Although both participant groups reported a wide range of barriers to MetS prevention and management, they provided limited but distinct answers as they were asked direct questions about facilitators to MetS management. This could be attributed to the phrasing of the question and the way participants interpreted it. HCPs thought of solutions that would be applicable to the whole population; therefore, they mainly cited public health policy and health promotion programmes as key tools to MetS prevention and behavioural change. Patients, on the other hand, talked about solutions that affected their own performance in the management process. They talked about their attitude towards their treatment plan and factors that could improve their patient-provider encounters. Facilitators were orientated into two main categories: (i) disease prevention and health promotion strategies; and (ii) strategies to improve MetS management within clinical settings.

HCPs believed that the incorporation of non-health sectors as facilitators to health would help address MetS holistically and not in a merely treatment-oriented manner. The UAE government, schools and the mass media were the three main stakeholders that HCPs believed to be highly influential in public health promotion. Cross-governmental collaboration in health promotion was perceived as key in MetS prevention and management and reflects the UAE public health vision for its population. HCPs also called for coordination between different health authorities across all Emirates of the UAE to achieve unity and prevent disparity. Preventing MetS in children and young adults through engaging schools and introducing health concepts into school philosophy was a popular view amongst most HCPs interviewed. The mass media, particularly television, was also applauded by all HCPs and believed to be a powerful motivator to behavioural change. Emiratisation of health care professionals and the use of Emirati role models for sports and exercise training was also suggested. Emiratisation was believed to bridge the communication gap and enhance cultural concordance in clinical practice. The idea of using religion in promoting healthy lifestyles was engendered by an awareness of Islamic teachings that urged fostering of health and protecting the body against diseases. HCPs, however, felt that research that assessed population health needs was lacking in the UAE. There was also a call for

research that assesses the health impact and effectiveness of existing health promotion programmes.

Patients' answers to direct questions about facilitators included their genuine desire to improve or adhere to lifestyle interventions. However, patients' self-blame was sometimes interwoven with feelings of despair and hopelessness in achieving further therapy progress. This may indicate signs of anxiety and depression, which highlights the importance of assessing patients' psychological wellbeing. Patients stressed the importance of physicians' attentive listening and claimed that this was influential in their treatment outcome.

The following chapter will present the discussion of results presented in chapters 4, 5, 6 and 7.

Chapter 8

Discussion, implications and reflections

8.1 Introduction

This final chapter discusses four main areas of this thesis: Section 8.2 discusses the study findings and demonstrates how they relate to the literature, especially the literature on factors influencing the management of MetS in the UAE and perceptions of MetS. The implications of the study findings for patients, professional practice, health service and society are discussed in section 8.3. The limitations of the research are also discussed in section 8.4. The chapter then presents the researcher's reflections on the research and the dilemmas faced during translation from Arabic to English in section 8.5. The chapter concludes with proposals and suggestions for future work that were elicited as a result of this study.

The overall aim of this research was to elicit factors that impact the management of MetS in the UAE through exploring patient and professional perceptions of MetS and its management. The study objectives as outlined in section 1.2 were addressed in detail in different chapters throughout the thesis. Health concerns in patients with MetS remain under-reported in the literature (section 2.9), which inspired the study aims and objectives. A qualitative approach that drew on the broad principles of grounded theory was undertaken to meet the aims of the study. Constant comparison analysis was employed to help identify factors that influenced patients' health behaviours and attitudes towards their MetS treatment plans. The study aims and objectives were all met and the findings are set out in this section.

This study has made use of two research methods (in-depth interviews and a focus group interview) in order to explore patient and professional perceptions of factors affecting the holistic management of MetS. Using two methods of data collection enabled a greater depth of exploration than might have been achievable by a single method. The use of a qualitative approach was successful in accessing detailed data that illustrated factors affecting MetS management in the UAE. Common themes were found throughout the data from multiple participants, both patients and HCPs. This allowed for contrast and comparison of the data. Two examples are the impact of socio-cultural norms on lifestyle interventions and factors affecting

patients' medicine use. These topics emerged in both HCPs and patient interviews and the similarity of opinions voiced by both groups supports these themes.

Not all themes were found to be supported by all sources of data. For example, when participants were asked about facilitators to MetS management, HCPs were mainly concerned with health promotion strategies that can result in behavioural change. In contrast, patients' responses conveyed their sense of hopelessness in adhering to lifestyle interventions because of coexisting health conditions or physical injuries. This disparity may suggest the need for more patient-centred health approaches that explore patients' views and concerns rather than public-targeted approaches that might fail to cater for patient-specific health needs. The emergence of repeated themes throughout the data sets again adds to the validity of the results by supporting and enhancing each theme. Additional perspectives can be added to the interpretation of the data and this is a major strength of the research presented here.

In the following sections, the different themes will be discussed and compared to existing literature to highlight new areas that are specific to this study population.

8.2 Discussion of key findings

This section discusses the study results, which are: (i) factors influencing patients' perceptions and beliefs about their condition; (ii) factors influencing the clinical utilisation of the MetS concept; and (iii) factors affecting patients' attitudes towards their treatment plans.

8.2.1 Factors influencing patient perceptions of MetS

Illness perceptions are organised cognitive representations or beliefs that patients have about their illness (Conner and Norman 2008). Although scientific descriptions of disease provide an understanding of cause and process, they fail to depict patient experiences of the disease. However, this does not indicate that lay perceptions lack awareness of the natural processes and determinants of the illness. They actually encompass all aspects of a disease that include: (i) aetiology (its cause); (ii) disease onset noted by signs and symptoms; (iii) pathophysiology (how the disease will progress and what is wrong); (iv) treatment; (iv) prognosis (the future); and (v) overall effect on lifestyle (Pollock 2005). The perception that a patient holds toward all these

aspects of a disease could be the product of a number of influencing factors, such as his or her experiences, learned knowledge, and interactions with other people.

The way in which individuals perceive their illnesses is likely to affect many aspects of their health behaviour, including seeking help, the particular nature of the help that may be sought, adherence to the prescribed treatment and the likelihood of response to such treatment. Research investigating the role of illness perceptions in medical conditions has grown rapidly in recent years mainly due to the strong associations found between patients' perceptions of their illness and behavioural outcomes. Eliciting patients' interpretations and perceptions of their illnesses can provide a base for understanding the way in which patients conceptualise the cause, course and appropriate management of these diseases, and it can clarify the factors that helped shape the understanding of these diseases. This information can eventually lead to improved quality of care, which is more responsive to patients' specific needs. It was, therefore, important in this study, as part of identifying factors that influence the management of MetS, to explore patients' perceptions and beliefs about having MetS and the clustering of CRFs that constitute the definition of the MetS.

8.2.1.1 Awareness of the MetS concept

One of the limitations of this study was patients' unfamiliarity with their MetS diagnosis or the MetS concept prior to taking part in the interviews (sections 4.2 and 4.2.1). Although the MetS diagnosis was documented in the medical files of some of the study participants, patients admitted that they were not informed about MetS by their physicians prior to reading the study information sheet. It was, therefore, hard to investigate their perception of the MetS concept or their feelings towards being diagnosed with MetS as a condition in its own right. An awareness of the MetS concept would have included awareness that the clustering of three or more of patients' presenting CRFs was termed 'metabolic syndrome' and that such clustering increased their chances of developing diabetes and heart problems. As people with an illness obtain new information about their condition (e.g., informing patients of the MetS diagnosis and concept by their physicians during any phase of their treatment) they might simultaneously evaluate their attempts to moderate, cure or cope with its effects which could result in the formation and development of new interpretations of their disease based upon these experiences. Illness representations are in effect cumulative, with information being adopted, discarded or adapted as necessary. Thus, it is unclear how this information might have informed the patients' accounts

had it been provided to them by their physicians at one point during their treatment phase. For example, Grundy (2006) argues that informing patients of the significance of the clustering of CRFs on their health will communicate a greater sense of urgency for intervention than would the awareness of the risk of a single CRF, thus motivating their behaviour change. One qualitative study that explored Chinese diabetic patients' perceptions about illness and treatment strategies found that the patients' focus on reducing sugar intake only was related to the Chinese name of diabetes, which translates into sugar-in-urine (Lai, Lew-Ting et al. 2004). The study authors suggested that using the term 'metabolic syndrome' instead of diabetes may rectify patients' misconception of diabetes dietary requirements and will encourage a holistic approach towards diabetes management (Lai, Lew-Ting et al. 2004). Similarly, if we are to apply these arguments into my study, patients' awareness of the MetS concept might have generated different accounts to those disclosed in this study.

As study participants admitted their lack of familiarity with the MetS concept or diagnosis, it was difficult to link all their perceptions of illness exclusively to MetS as a concept and a diagnosis. However, patients' responses in this study reflected their perceptions and experiences of living with a clustering of CRFs, which also agrees with the essence of the MetS concept. Thus, patients' accounts of their disease experience might be similar to that expressed by patients aware of their MetS diagnosis. The literature review did not identify studies that explored patients' perception of the MetS concept. Only one qualitative study explored the impact of having knowledge about the MetS risk on the health behaviour of 13 adult Swedish patients (Frisman and Bertero 2008). Findings from that study showed that despite participants' awareness of their diagnosis and the cardiovascular risk associated with having MetS, contextual factors hugely influenced their health behaviour and resulted in their inability to maintain a healthy lifestyle (Frisman and Bertero 2008). Results also suggest that having awareness of the MetS name, meaning and risk was not solely sufficient to guarantee behaviour change. Other factors such as patients' contextual settings and motivation need to be addressed when managing patients with MetS. These results also suggest that awareness of MetS might not have stimulated different attitudes towards treatment or a better behaviour change than an awareness of the risk of individual CRFs.

Despite patients' lack of knowledge of the MetS concept, they were informed about all their presenting individual CRFs. Patients' accounts also reflected their understanding of having multiple CRFs (i.e., hypertension, diabetes, elevated lipid profile and obesity) using words such as 'cocktail' (referring to having a mixture of CRFs) and 'more than one enemy' (as patients talked

about the augmented impact that the cluster had on their health) to describe the clustering of such diseases. In their description of their health condition, patients talked about the causes of these CRFs, factors affecting their control and their risk concerns. These accounts were categorised into three subcategories: (i) perception of risk; (ii) coping; and (iii) fatalism.

8.2.1.2 Perception of MetS risk

In their interview, patients indicated the augmented burden that the clustering of these CRFs had on their health. Patients felt that having multiple CRFs 'weakened' and 'exhausted' the body. One patient described it as 'fighting more than one enemy' indicating the augmented fatiguing and draining impact these multiple CRFs had on his body. However, few patients talked specifically about the risk of developing CVDs and mentioned a number of sources to their knowledge such as their physicians, the mass media or other social interactions with friends and work colleagues. Other patients were more concerned with developing non-cardiovascular complications, such as renal failure, blindness and limb amputations as a result of nonadherence and/or failure to control their CRFs.

The available literature shows that patients generally have insufficient knowledge about CVDs (Merz, Buse et al. 2002; Goldman, Parker et al. 2006; van der Weijden, van Steenkiste et al. 2007). For example, in the USA, Merz et al found that 68% of their surveyed diabetic patients (n=2008) did not consider CVD to be a serious complication of diabetes and were more likely to be aware of complications such as blindness (65%) or amputation (36%) rather than heart disease (17%), heart attack (14%) or stroke (5%). In addition, a significant number of the patients in that study did not name any cardiovascular condition as a serious complication of diabetes (Merz, Buse et al. 2002). Findings are also similar to those identified in the qualitative study of Lai and colleagues (2007) where a number of patients in Taiwan expressed more concern towards developing diabetes complications that would result in undergoing dialysis or limb amputations than they did towards developing CVDs (Lai, Chie et al. 2007).

In this study, patients' awareness of the risk of developing CRFs complications was also apparent as they talked about reasons for adhering to their treatment plan. In many interviews patients repeatedly indicated that they were keen to adhere to their prescribed medicines and lifestyle advice because they wanted to avoid developing such complications. Multiple theories and models have been developed to try and explain how people make decisions, particularly those

related to risk (see section 2.6). For example, the HBM suggests that an individual's engagement in a particular behaviour such as taking medications is a function of their beliefs about the perceived threat of the disease and an evaluation of the *risk/benefit* of the recommended course of action (Horne and Weinman 1998). This study did not use any of the existing health models as a framework for data analysis; however, this particular aspect of the HBM is consistent with patients' accounts as they expressed their eagerness to adhere to their treatment plans to prevent complications resulting from suboptimal control of the CRFs. One patient in the study indicated that his 'carefree' attitude towards his health was because he did not comprehend the severity of his condition and that resulted in his frequent forgetfulness to take his medicines on time. He believed that a better understanding of his condition and the risk it holds might improve his adherence.

Further analysis of patients' accounts revealed a range of views regarding how they perceived the seriousness of these cardiac conditions. Apart from talking about the complications of uncontrolled CRFs, some patients' accounts indicated downplaying of the risk of having MetS features. Another group seemed to rank diabetes as more serious than other CRFs. For example, the responses of a group of patients indicated downplaying of diabetes or hypertension risk. There were two main factors that resulted in patients' downplaying of risk: (i) awareness of the high prevalence of these CRFs in the UAE; and (ii) the curability or treatability of such diseases.

Some of the patients' accounts indicated that due to the high prevalence of these CRFs in the UAE, which they claimed to be aware of, they had a sense of how common these diseases were and, therefore, a sense of them not being so severe or important. Some even suggested that it was 'normal' to have an individual with diabetes or hypertension in every house in the UAE. Others believed that such anomalies were the result of the modernisation and urbanisation of the UAE that began with the booming of the oil industry. This finding is also comparable to a study from the USA, where Wang and others (2009) examined individuals' perceptions of risk, worry, severity and control for six common chronic illnesses such as heart disease, diabetes, stroke, and breast, ovarian and colon cancer. They found that diabetes was perceived to be the least severe condition amongst study participants (Wang, O'Neill et al. 2009). In the UK, a qualitative study by Walter and Emery (2006) examined and compared the perception of risk between individuals with a family history of common diseases such as cancer, heart diseases and diabetes. Results showed that participants viewed having a family history of diabetes as the least threatening. Participants had a lower perceived risk of diabetes due to the availability of medicines to control the disease

and their association of old age with the cause of the condition (Walter and Emery 2006). Literature in health psychology has also shown that people's interpretation of an illness or their judgement of how much medical attention it needs is affected by their knowledge of the prevalence of that illness and its symptoms (Jemmotta, Croylea R.T. et al. 1988). In Jemmotta et al's study (1988), participants who estimated the prevalence of a condition as relatively high also rated that condition to be less serious than conditions with lower prevalence. In addition, participants who had a history of a health condition ranked this condition less serious than those who did not. Authors of that study argued that this tendency towards the 'normalisation' of risk of some health conditions could impact patients' health behaviour with regards to seeking help or adhering to the treatment plan (Jemmotta, Croylea R.T. et al. 1988). In the UAE, publicising the prevalence of diabetes, obesity and MetS through health awareness programmes and health promotion campaigns (see section 2.4) aims to increase public awareness of the risk of MetS features. However, findings from this study showed that this target was not always attained as some of the interviewed patients understated the risk of developing such conditions and perceived them as 'common' conditions that many are susceptible of developing. In addition, patients also felt that CRFs were a consequence of the urbanisation and modernisation of the UAE. They felt that obesity, diabetes and hypertension were a by-product of leading a western-inspired lifestyle, where fast food chains and inactivity dominated people's lives in the UAE. This finding is similar to that in Herzlich's (1973) research, which found that most people perceived illness as an external product of a way of life, precisely urban life (Herzlich 1973).

Another factor that engendered patients' understatement of the risk of their CRFs was their belief that such conditions were treatable through the use of medicines. For example, one of the study participants compared diabetes to headache because such conditions were managed using drugs. In his perception, the availability of a therapeutic management for an illness undervalued the perception of the risk of that condition. Many illness representation models have been developed to help understand factors influencing people's perception of diseases. For example, Leventhal et al (1980) proposed the *illness representation model* which consists of five attributes: (i) disease identity (i.e., the labels placed on the disease and the symptoms patients view as being part of the illness); (ii) timeline (expectations about the duration and the characteristic course of the disease); (iii) consequences (the expected outcomes and sequences of the disease and effect on patients and their families); (iv) causes (personal ideas about the causes of the illness); and (v) controllability/ cure (beliefs about the degree to which the disease is amenable to control or cure). Studies that used such a model to examine patients' perceptions of their illness found that

the ability to control and cope with a condition lowered patients' perception of risk (Walter and Emery 2006; Lai, Chie et al. 2007). In addition, Weinman and Petrie (1997) stated that there are logical interrelationships between different components of the illness representation model. For example, believing that an illness is controllable and treatable is associated with perceptions of lower seriousness and associated risk (Weinman and Petrie 1997). This interrelationship may explain findings from my study where patients understated the risk of having any of the CRFs because of the availability of therapeutic management.

Contrary to the downplaying of risk, another group of patients ranked the seriousness of individual CRFs. This attitude could be attributed to the fact that patients had a constellation of CRFs and their perception of risk varied across the different CRFs in their diagnosis. For example, some patients indicated that diabetes was the most serious illness when compared with hypertension, obesity and dyslipidaemia. Most of the patients interviewed were diagnosed with diabetes in addition to the other CRFs and they also received their health care from SKMC diabetic primary care centre. Other patients that were not diagnosed with diabetes received their health care from other general family medicine clinics that were not specific to individual CRFs (i.e., hypertension, obesity and dyslipidaemia). The specialised health care dedicated to patients with diabetes, which is not provided to other individual CRFs, could explain patients' tendency to rank diabetes with a higher level of risk compared to hypertension, dyslipidaemia and obesity. In addition, the higher media attention to diabetes and the diabetes-specific public awareness campaign in the UAE (section 2.4.2) could have encouraged this perception, which was also evident in patients' accounts. Patients' perception about one illness not only has implications on how they view their other illnesses, but also the preventative actions they take to minimise the risk of their diagnosed illnesses. Existing perceptions for one disease might also influence the way patients interact with new health information relating to this or other diseases (Wang, O'Neill et al. 2009). None of the patients interviewed were familiar with the MetS concept, which states that risk of the whole syndrome is greater than the sum of its parts (see sections 1.2 and 2.8). This may also explain why patients' perceived risk was not the same for all their diagnosed CRFs.

8.2.1.3 Coping with MetS features

Coping is defined as a response aimed at diminishing the physical, emotional and psychological burden that is linked to stressful life events and daily hassles (Lazarus and Folkman 1984). Coping includes anything an individual does to reduce the impact of a perceived or an actual stressor.

Thus, it can operate by either altering or reducing the negative emotions associated with the experience of an illness, such as positive thinking and distraction, or by targeting the actual stressor, such as learning new skills to combat stress or seeking new information about the condition (Lazarus and Folkman 1984). Coping is also a dynamic process that involves a constellation of both cognitive and behavioural strategies. Cognitive strategies are those that control emotional responses to an event, including denial, minimisation and partialisation. Behavioural strategies are those that deliver better knowledge about the condition and allow patients to become more involved in their health care (Corbin and Strauss 1988). In the literature there are many overlapping terms used to describe patients' strategies in coping with their illness. However, the two main categories that encompass both cognitive and behavioural coping strategies are the problem-focused and emotion-focused strategies (Lazarus and Folkman 1984). Emotion-focused strategies include cognitive coping efforts such as positively reappraising the illness in order to see it in a more positive light; seeking emotional support; self-distraction, venting and praying. Such strategies allow patients to process emotions by acting and thinking and, thus, managing the emotional response to their illness. Problem-focused strategies, on the other hand, are instrumental coping efforts that are directed at the illness to either reduce its demand or increase the patients' resources. Problem-focused coping efforts include changing behaviour to control illness; repressing competing activities in order to focus more on the illness and on ways to resolve it; and seeking support (Lazarus and Folkman 1984). Emotion-focused and problem-focused coping strategies may be used simultaneously or alternately. Therefore, it is difficult to distinguish between them in the coping process (Folkman and Moskowitz 2000). Patients' ultimate goal of coping is to adapt to their chronic illnesses by creating a situation where the illness is being acknowledged but does not affect their family, decisions and daily activities (Dimond 1984). In this study, coping was evident in patients' accounts as they talked about different aspects of their condition, such as risk, the impact of having multiple CRFs on their lives, and the role of religion in the management of their CRFs.

When patients were asked to describe how having multiple CRFs changed their lives, almost all patients indicated that they felt 'normal'. Patients usually stated that having these CRFs had an insignificant impact on their lives or the lives of the people around them. Patients in that sense did not deny having multiple CRFs, however, they claimed that adjusting and coping with such conditions was attainable because these CRFs did not alter their normal activities or their family life (Dimond 1984). Normalisation is another coping strategy that has been reported in the literature (Sharpe and Curran 2006). Patients who display such an attitude do not deny having an

illness or the symptoms experienced with their illnesses. However, they see such symptoms as normal consequences of having these illnesses. For example, patients diagnosed with rheumatoid arthritis might claim that they feel normal despite the fact that there were days when they experienced severe pain (Scharloo, Kaptein et al. 1998; Sharpe and Curran 2006). In addition, patients with diabetes might report feeling normal although their therapeutic management requires the use of insulin injections and alterations to their diet (Sharpe and Curran 2006). Similarly, patients in this study, although diagnosed with multiple CRFs, repeatedly reported feeling normal and indicated that taking medicines and adjusting their lifestyle was not difficult to cope with. The word 'normal' that patients used in their responses to describe how they lived with their CRFs was not used to indicate their sense of an illness-free state or illness denial, but rather their sense of maintaining a normal life activity despite having multiple CRFs. Further data analysis of patients' responses regarding the impact of having multiple CRFs showed that normalisation was engendered by two main factors: the asymptomatic nature of these CRFs and having other responsibilities in life that distracted their attention from worrying about their diseases.

The asymptomatic nature of the CRFs meant that patients were not constantly alerted by these diseases. Patients' accounts indicated that they were more concerned with coexisting symptomatic health conditions, such as injuries from accidents, back and knee pain and rheumatoid arthritis. Patients indicated that such non-cardiac health conditions had a higher impact on their daily lives than did their presenting CRFs. For example, a painful knee or lower back pain prevented some patients from sleeping and a leg injury prevented others from exercising. On the other hand, their presenting CRFs did not have a similar impact on their physical activity, their lives or the lives of others around them, because they did not have strenuous or intolerable symptoms. When some of the patients were asked to elaborate, their responses indicated that their interpretation of illness drew on physical signs in the body, such as feelings of pain or the inability to see and walk. Ypinazar and Margolis (2006) identified similar findings in their study of the health beliefs of elderly Emiratis. In their study, patients' perceptions of illness was associated with apparent physical symptoms and pain. Physical functionality and vitality, such as the ability to do what needs to be done, were also rated the most important determinants of 'health' in previous studies (Benyamini, Leventhal et al. 2003; Hughner and Kleine 2004).

Patients in this study were able to normalise living with MetS features because of the absence of physical signs of their CRFs. This finding could also be comparable to findings from a qualitative study conducted in the USA, which explored the perceptions of 39 patients with diabetes (Olshansky, Sacco et al. 2008). A key theme identified from data analysis was 'normalising identity as a person with diabetes' where participants in the study viewed themselves as healthy, normal people. Maintaining the lifestyle changes prescribed while also seeking a sense of normalcy was participants' way of coping and dealing with their new identity as patients with diabetes. Normalising patients' identity enabled patients to perceive prescribed lifestyle interventions as a factor that improved their health and wellness. Normalising identity also included identifying themselves as a 'person with diabetes' rather than 'a diabetic person'. In this sense, diabetes became less central in their personal self-definition and was therefore viewed as something that is part of who they are (Olshansky, Sacco et al. 2008). Similarly, a group of participants in this study referred to themselves as normal individuals who happened to be diagnosed with multiple CRFs. Adhering to their prescribed medicines, adjusting their diet and increasing their physical activity were not perceived as significant alterations of their previous lifestyle but rather a normal consequence to their illness and their means of restoring and maintaining their normal health and normal selves.

Competing demands, such as 'house chores', 'helping the kids with their homework', and 'attending to the needs of the family', was another factor that engendered patients' normalisation attitude. Most of the study's participants were married and had families that they were responsible for. This group of patients indicated that their health condition did not alter their domestic life or daily routine. Apart from having a clustering of CRFs, taking prescribed medicines, adjusting their diet and improving their physical activity, these patients felt that their health condition had little impact on their lives and families. They also believed that daily competing demands were not altered by having CRFs or adhering to the prescribed treatment plan. However, they indicated that these competing demands distracted them from constantly worrying or thinking about their illnesses. Tuncay and colleagues examined the coping strategies used by 161 Turkish adults with type 1 and type 2 diabetes and found that self-distraction, such as engaging in activities to distract oneself from worrying about health, was among the most frequently used coping strategy, in addition to religion and venting. The study also found that lower levels of anxiety were associated with increased use of self-distraction for diabetes-related emotional distress (Tuncay, Musabak et al. 2008). As explained earlier self-distraction is one of the

emotion-focused coping strategies used by patients with chronic illnesses and evidence from my study shows that patients with MetS features also used such strategies to cope with their CRFs.

Another coping strategy that patients might have used to adapt to their condition was the downplaying of the risk of CRFs that was discussed earlier in this chapter. Some of the study participants perceived diabetes, hypertension and other CRFs as common illnesses because of their high prevalence in the UAE. In addition, the curability or controllability of such CRFs also rendered these diseases less serious or with lower risk. Patients' tendency to downplay the risk of their CRFs could also indicate one of the patients' coping strategies with such diseases. Understating the risk of CRFs could be classified as a cognitive strategy that patients adopted to facilitate coping with and accepting these diseases. Viewing such illnesses with a more positive light (i.e., common illnesses and of less seriousness) enabled study participants to cope with such chronic and lifelong conditions. This finding is also comparable to those identified in the qualitative study by Scrandis (2005) where she explored the extent and process by which women with postpartum depression seek social support. The result of her study found that the development of interpersonal relationships between participants and other women with postpartum depression made them aware of the commonness of this condition among women after giving birth. The fact that this disorder was so commonplace facilitated feelings of being normal and enhanced coping in that group of women (Scrandis 2005).

As explained earlier, religion and faith are considered two of the emotion-focused efforts that some patients use to help them adapt to chronic illnesses (Lazarus and Folkman 1984). This was also identified in patients' accounts as they answered questions about the role of their religious practices and religious beliefs on their health condition. Patients did not report that faith had a direct effect on the management of their clustering CRFs. However, they indicated that having faith helped them find tranquillity and calmness which might have indirectly helped control their CRFs. Words such as 'empowering', 'tranquillity', 'calmness', and 'acceptance' were used by participants to describe the impact of religion on living with MetS (see section 4.2.4.2). They also talked about the role of a strong faith in accepting the illness and eventually coping with it and its therapeutic demands. Winslow and Honein (2007) found similar results in their study that explored Emirati women's health needs. Women in their study believed that part of the impact of religion on health was due to the relaxing and psychological comfort it provided (Winslow and Honein 2007). Another group of patients' perceived illness as a 'test from God' for their 'patience and gratitude', which they believed provided them with inner strength to withstand illness and

adhere to the treatment plan. Perceiving illness as a test from God was also identified in other qualitative studies on patients with similar religious backgrounds (Abdoli, Ashktorab et al. 2008; Azaiza and Cohen 2008). For example, Abdoli et al (2008) found that patients' beliefs that illness was in God's hands enabled them to accept having diabetes and endure it. According to Islamic scripts, Muslims are instructed to view sickness as a test from God and tolerate it with patience, acceptance and gratitude. They are also instructed to view their bodies as gifts that they need to protect and take care of and, thus, they are obliged to medicate and seek treatment when ill. In the Islamic scripts it is also stated that believers who display such attitudes are promised spiritual benefits for their physical suffering (Adib 2004). These scripts and Islamic teachings might have influenced patients' attitudes in this study as they felt that it was their role as believers to accept and tolerate illness. Available literature also reports that religion, among groups of different religious beliefs, provided a profound guiding role during illness (Koenig, Larson et al. 2001). Religion helped patients of different faiths cope with diverse medical conditions, such as cancer, asthma and diabetes (Koenig, Larson et al. 2001; Koenig 2004; Winslow and Honein 2007; Azaiza and Cohen 2008). Similarly, some patients in this study utilised their religious beliefs to cope with their health condition through gaining acceptance, tranquillity and empowerment.

8.2.1.4 Patients' fatalistic attitude

Another theme identified in this study was patients' fatalistic attitude towards acquiring MetS features (see section 4.2.3). This was apparent when patients used fatalistic statements to talk about the causes of CRFs or factors preventing optimal control of such diseases. Patients' accounts indicated that, among other factors that caused the development or poor control of CRFs (e.g., sedentary lifestyle and excessive eating), family history and stress were the most reported causes by many. For example, patients believed that developing MetS features was unavoidable if they had a family history of such diseases and some suggested that they forecasted their diagnosis and that 'it was a matter of time' before it was confirmed by their physician. Genetic determinism claims that a human's genetic makeup determines their behaviour and is used sometimes to justify the unhealthy activities of individuals, such as over eating and a sedentary lifestyle (Wang and Coups 2010). Although the causes of obesity are multi-factorial, a number of studies confirmed the presence of a genetic predisposing factor to obesity, diabetes and other CRFs (Walley, Asher et al. 2009). Researchers argue that patients' awareness of the existence of an obesity gene might negatively affect patients' beliefs about their health and their role in managing obesity. Patients' awareness of the genetic predisposition to their CRFs can

result in their genetic deterministic attitude and failure of behaviour change (Marteau and Weinman 2006).

The available literature reports that perceived family history of diseases, such as cancer and heart disease was associated with a fatalistic attitude towards health behaviour and in some cases failure to change behaviour (Marteau and Lerman 2001). In this study, although patients indicated the role of family history in acquiring CRFs, they did not report their unwillingness to take their medicines, eat healthily or increase their physical activity. During interviews, patients' fatalistic talk was intertwined with emphasis on the importance of adherence to their treatment plans in the management of their presenting CRFs. This attitude is comparable to results from other studies that investigated the association of patients' knowledge of their familial risk of developing diseases and fatalistic attitude. In such studies little evidence was found to confirm such a claim (Hunt, Davison et al. 2000; Pijl, Timmermans et al. 2009; Wang and Coups 2010). For example, Pijl et al (2009) conducted a small randomised control trial that assessed the influence of informing patients of their familial risk of diabetes through self-reported behavioural outcome for three months. The results showed that the group of patients that received familial risk information reported greater control over preventing diabetes and eating more healthily when compared to the group that received general risk information. Wang and Coups (2010) investigated whether endorsing the idea of genes as a cause for obesity may increase genetically deterministic beliefs and reduce patients' motivation to adhere to lifestyle interventions. The results from their survey showed that only 19% of the respondents believed in the profound role of the genetic predisposition as a direct cause of obesity compared to 72% who agreed that an unhealthy lifestyle was a direct cause of obesity (Wang and Coups 2010).

Fatalistic statements also occurred as patients talked about the impact of life hassles on their health and failure to control their presenting CRFs. In their perception, strenuous life events (i.e., domestic chores, work place pressure, being overloaded with family responsibilities and other family-related issues) resulted in poor control of their blood pressure and blood glucose levels. They also indicated that despite their adherence to the treatment plan, such external factors affected their health problems. They also reported that, such life hassles, were unavoidable which further hindered their attempt to control their CRFs. This attitude is similar to that identified in a qualitative study that explored the perceptions of 13 Hispanic women with diabetes about their health problems (Adams 2003). The study found that patients referred to stress as a cause of diabetes and reported encountering immensely stressful events at least one year prior to their

diagnosis (Adams 2003). Another study identified a social gradient in work stress and MetS, which suggests greater exposure to work stress among less advantaged social groups (Brunner, Marmot et al. 1997). In addition, Chandola et al (2006) found that exposure to chronic work stress increased men's and women's risk of developing MetS by two and five-folds, respectively, when compared to individuals who were not exposed to similar work stress. They also identified a dose-response relation between exposure to job stress and the MetS (trend $P < 0.05$ for men; $P < 0.01$ for women) (Chandola, Brunner et al. 2006).

In this study fatalistic talk occurred when some patients described the causes of developing CRFs or failure to control their diagnosed CRFs. Patients mainly referred to the genetic predisposing factors and the impact of leading a stressful lifestyle and believed that such factors were unavoidable and uncontrollable which hindered their attempt to improve their health condition. Rotter (1966) also reported that people's locus of control (LC) determines the extent to which they feel that they have control over a situation or that the situation is being controlled by external factors such as fate, luck or chance (see chapter 2 section 2.6.4). For example, a patient with an external LC would be more likely to believe that outside circumstances control their health while a patient with an internal LC would take responsibility of what happens to their health (Horne and Weinman 1998). Wallston and Wallston (1978) referred to external factors as 'chance' and 'powerful others' when they applied the LC concept to health and called it the multidimensional health LC (Wallston and Wallston 1978). Similarly, some patients in this study indicated that external factors such as leading stressful lifestyle and having a family history of CRFs were uncontrollable factors that influenced their chances of developing CRFs or hindered the control of their illness despite their adherence to the treatment plan. Many studies used the health LC to predict patients' health behaviour. For example, some studies found that 49 individuals high in internal locus of control were more likely to adhere to HIV (Molassiotis, Nahas-Lopez et al. 2002), hypertension (Kirscht and Rosenstock 1977) and diabetes medication regimens (O'Hea, Grothe et al. 2005). Overall, it has been found that the health LC is relatively weak in predicting health behaviour including adherence to medication and accounts for only small amounts of the variance in patients behaviours (Conner and Norman 2005).

As explained earlier, patients' fatalistic talk was interlaced with statements that endorsed compliance with lifestyle and pharmacological interventions. As previously presented in chapter 2 (see section 2.5.1.1) Keeley et al (2009) found that fatalistic talk was a socially constructed activity used to negotiate power-differences, express limited power to control one's health and reflect

the complexity of illness prevention. Similarly, patients in this study might have used fatalistic talk to express their limited power to prevent the development or control of their presenting CRFs. They believed that a stressful lifestyle, life hassles and a genetic predisposing factor were external factors that were beyond their control. They also believed that despite their adherence to their treatment plan, they could not overcome the impact of such factors on their health. However, such fatalistic statements were interwoven with statements that emphasised the importance of adhering to treatment and leading a healthy lifestyle, which confirms Keeley et al's argument that fatalistic talk, in such cases, indicated uncertainty and the inability to find explanations or causes for illness despite changing behaviour or leading a healthy lifestyle. As such, fatalistic talk was used by patients to convey their realistic understanding of issues outside their control that can result in illness despite prevention measures (Keeley, Wright et al. 2009).

As discussed in this section, patients' attitudes towards their condition was influenced by many factors, such as the asymptomatic nature of the MetS features, competing demands, life hassles and leading stressful lifestyles, the high prevalence of CRFs in the UAE, the availability of therapeutic management and treatability of such diseases, awareness of complications and their religious beliefs. Although such factors might have resulted in patients' underestimation or ranking of the seriousness of CRFs, that did not stop patients from emphasising the importance of leading a healthy lifestyle and adhering to their recommended treatment plan in order to control such anomalies. The findings also suggested patients' attitudes towards their health problem could have been a coping strategy that enabled them to accept these CRFs and withstand treatment needs. Such coping strategies included normalisation, fatalism and downplaying the seriousness of CRFs. A noteworthy finding was patients' unfamiliarity with the MetS concept and diagnosis. This issue was further explored with the physicians who participated in the study and is discussed in section 8.2.4 and 8.2.4.4. It might still be unclear how information on the MetS diagnosis and definition provided by HCPs might have influenced patient perceptions of their condition, seriousness, coping strategies or even their attitude towards the recommended treatment plan; however, it is important to acknowledge that findings from this study illustrate the actual perceptions and emotional concerns of MetS patients in regard to their health condition and social context. Notwithstanding, it will still be interesting to see in future research how such information, once it is provided through the health care setting, affects illness perception and attitude towards treatment of this group of patients in the UAE.

With patients' perceptions of their health condition and the clustering of CRFs, the discussion now moves to factors influencing patients' attitude towards lifestyle interventions.

8.2.2 Factors influencing patients' attitude towards lifestyle intervention

The multifaceted nature of MetS calls for the implementation of both lifestyle and therapeutic interventions with a primary focus on controlling diet, reducing fat intake and increasing physical activity. However, like Drummond and Mason (1990) who stated that 'health exists in a state of competition with other factors deriving from the individual's context' (p, 38), changing behaviour in order to adopt a healthier lifestyle is expected to conflict with numerous contextual and emotional challenges, which may eventually affect the holistic management of patients with MetS (Drummond and Mason 1990; Kappagoda and Amsterdam 2007). Social scientists argue that an ideal way to get a sociological understanding of people's food habits is to explore such behaviours within the context of the social organisations in which they occur and to elicit the social relationships and belief systems that influence such behaviours (Calnan 1990). This study examined patients exercise and eating behaviours with relation to their setting and social organisations, which identified a number of factors that influenced lifestyle intervention. Such factors stemmed from the: (i) contextual features of the UAE (i.e., social norms, urban planning and affluence); (ii) environmental (i.e., hot climate, pedestrian-unfriendly urban planning, the abundance of fast food chains and lack of healthy alternatives); (iii) health-related factors (i.e., physical injuries and other co-existing symptomatic anomalies); (iv) structural factors (i.e., lack of social support, family responsibilities and long working hours); and (v) emotional factors (i.e., lack of motivation to initiate or maintain a healthy diet and structured exercise programme).

Available literature provides evidence on the impact of culture on people's health behaviour and its role in determining lay perceptions about health and illness and means of obtaining health care (Kleinman, Eisenberg et al. 1978; Naeem 2003; Horne, Graupner et al. 2004; Helman 2007; Willis and Elmer 2007; Shuval, Weissbluth et al. 2008; Ludwig, Cox et al. 2011; Nam, Chesla et al. 2011). Similarly, participants in this study reported a number of socio-cultural norms that influenced the implementation of lifestyle interventions. These cultural norms included: (i) restrictions to women's outdoor, and to some extent, indoor exercising; (ii) traditional clothes that constrained movement; (iii) traditional eating habits, such as eating-centric activities, traditional cuisines and sharing one plate of food; (iv) food misconceptions with regards to honey and palm dates (see section 5.2.2).

Research conducted in the UAE reported similar cultural barriers to lifestyle interventions as identified in this study. For example, Ali et al found that some social-cultural factors restricted outdoor exercising for a group of women with diabetes and some reported their need for women-only walking tracks and culturally sensitive gyms that do not allow the use of security cameras or mobile phones with cameras (Ali, Bernsen et al. 2009; Ali, Baynouna et al. 2010). In a survey that explored factors influencing physical activity in patients with diabetes living in the UAE, most of the reported culturally-related barriers to exercise were specific to women. Such barriers included the limited number of women-only gyms and culturally sensitive health clubs (Al-Kaabi, Al-Maskari et al. 2009). Some of the local newspapers and internet sites in the UAE occasionally report incidents of pictures being taken and published of women in shopping malls, women-only social gatherings and fitting rooms in shops without these women's consent (Al Arabiya News Channel 2009). Such news might discourage women from visiting places that have security cameras or that allow mobile phones with cameras because of the fear of having their pictures taken. Retaining modesty was also paramount for Muslim patients with diabetes living in non-Muslim communities, such as the UK and Israel (Khanam and Costarelli 2008; Shuval, Weissblueth et al. 2008; Ludwig, Cox et al. 2011). For example, in the UK, walking was perceived by a group of patients as an acceptable activity for women rather than other vigorous exercises because it reserved modesty (Grace, Begum et al. 2008; Khanam and Costarelli 2008). In another study in the UK, the lack of culturally sensitive health clubs was also a concern for female Muslim patients with diabetes who were reluctant to join mixed-sex health clubs (Lawton, Ahmad et al. 2006). In a conservative society like the UAE, where many women are expected to cover their heads, wear ankle-length dresses and sometimes cover their faces, the idea of having their pictures taken, when not dressed in this manner, was daunting. Thus, some women in this study resisted the idea of joining women-only gyms that have security cameras and requested modifications that accommodate for their cultural rules to be applied to gyms in the Emirates.

Contrary to some HCPs' concerns regarding the negative impact of traditional Emirati clothes on exercising, a few female patients suggested that wearing long dresses and covering their faces while exercising provided them with a more comfortable setting to exercise outdoors. In their opinion, such modesty-reserving and identity-obscuring clothes protected them from being scrutinised or identified by the public and, therefore, facilitated their exercising. This view was also supported by some interviewed health educators who saw the need to tailor lifestyle interventions to fit the socio-cultural demands of the Emirati society. This finding indicates the

importance of applying the principles of cultural competence to overcome cultural barriers and help patients make the lifestyle changes necessary to lose weight and reduce the risk of MetS. Kousar et al were successful in reverting some of the MetS features in a group of Pakistani patients living in Australia through the use of a culturally appropriate lifestyle intervention (Kousar, Burns et al. 2008), which is an approach that can also be adopted in the UAE.

The study also identified other social norms that limited patients' control of their diet, such as consuming traditional foods that are rich in carbohydrates, sugar content and saturated fats, sharing one plate of food, which altered the regulation of portion size, eating-centric activities or social foods, feasts and festivals and food misconceptions (see sections 5.3.1 and 5.3.2). These findings were also congruent with other studies that explored factors influencing diet control in patients with diabetes and other chronic illnesses. For example, Ali et al found that participants described traditional Emirati cuisines as unhealthy foods. They also indicated social foods and eating-centric activities as a barrier to dietary control and reported the need for education on healthy diet (Ali, Baynouna et al. 2010). Family gatherings where food is shared in one large plate was a barrier to diet control indicated by HCPs in another recent qualitative study in the UAE (Ali, Bernsen et al. 2009). This habit was also common in other Arab countries like Somalia and Oman and were also considered to hinder lifestyle intervention (Owens, Piccinin et al. 2009; Al-Sinani, Min et al. 2010).

Honey and palm dates were religiously promoted as therapeutic substances that enhance the body's defence mechanisms. Patients, therefore, believed that consuming large quantities of both foods were beneficial to the body and have some therapeutic effects, especially with diabetes. Dietary misconceptions were assessed in 1,039 patients with diabetes living in Saudi Arabia. The results of the survey showed that 34.3% and 17.0% of the participants believed that honey and dates were good food items for patients with diabetes, respectively. (Al-Saeedi, Elzubier et al. 2002). Misconceptions about the value of honey in diabetes were also identified in a survey that explored the knowledge, perceptions and barriers to diabetic care of 240 Arab patients with diabetes living in Israel (Khatib, Efrat et al. 2007). The study also reported that 56% of the participants believed that honey did not affect blood glucose levels. In both studies, patients' attitudes towards honey and dates were attributed to inaccurate Islamic and culturally-bound beliefs. Helman (2007) reports that viewing food as medicine or with healing properties is a feature of many cultural groups, including the Islamic world, the Indian subcontinent, Latin America and China. He also indicates that in many cases such misconceptions about food and

drink may have negative effects on patients' health, which is similar to what participants in this study have reported.

Helman (2007) also presented a number of interrelationships between culture and eating habits such as feasts, festival, social eating, and food medicines and how folk models about diet influenced health. He states that 'food is more than just a source of nutrition' and 'its role is deeply imbedded in the social, religious and economic aspects of everyday life' (p. 52) and, thus, carries many symbolic meanings that help in the build-up of relationships between members of society. Therefore, dietary beliefs and practices are difficult to change even if such eating habits interfere with an individual's health and adequate nutrition (Helman 2007). Many participants in this study (HCPs and patients) suggested that social eating habits and food misconceptions were challenging to modify or abolish in the UAE. However, health educators in this study reported that they used the principles of cultural competence and health education to modify such eating behaviours, which included asking patients to eat seven palm dates every day, rectifying food misconceptions, designing diet programmes using traditional foods and educating other members of the family about healthy diet.

A number of patients and a few HCPs, on the other hand, argued that socio-cultural factors were no longer profound in the contemporary Emirati society. Old social and gender rules that might have influenced exercising and eating habits in the past were waning due to culture integration and the modernisation of the UAE society. In their opinion, this societal evolvement facilitated behavioural change through, for example, giving women the liberty to publicly engage in different types of physical activity and enabling Emirati families to adopt a lifestyle that is more grounded on the modern definition of healthy living (i.e., consuming foods of low fat and sugar content and increasing daily physical activities). They believed that more attention should be given to other structural and personal factors as they have an equal role in patients' adherence to lifestyle interventions.

Although cultural norms provide guidelines for understanding health, illness and health care of individuals within their socio-cultural structure, Ahmed (1996) argues that culture should not be stripped of its dynamic social, economic, gender and historical context and treated as a rigid concept that is not subject to changes across time and open to different interpretations across different people. The problem with relying entirely on social norms and cultural rules to understand behaviour is that it could obscure other broader factors that may have equal if not

stronger impact on patients' health behaviour (Ahmad 1996). Therefore, consideration must be taken to the wider context in which patients' behaviours and actions take place and not only their underlying belief system or social rules. Anderson et al (1995), in their study of how Canadian women with diabetes of Chinese and European descent manage their condition, found that strategies used to manage diabetes did not indicate ethnicity roles but were rather influenced by the contextual features of women's daily lives coupled with their ability to access resources (Anderson, Wiggins et al. 1995). Drummond and Mason (1990) report that patients with diabetes face multiple constraints that influence their treatment plan and that include a wider range of structural and material factors, such as domestic, home, work, financial and emotional factors (Drummond and Mason 1990). Vieira et al published a review on the significance of dietary and behavioural changes in patients with cardiometabolic disorders, including MetS, which examined 15 qualitative studies that explored patient perceptions of lifestyle interventions. They found that patients adherence to diet and exercise regimens was a dynamic process that depends on various personal and contextual factors and that HCPs need to understand such constraints when designing lifestyle interventions or assessing patients adherence (Vieira, Cordeiro et al. 2011). Similarly, in this study, a number of patients reported structural, financial, environmental and emotional factors that they believed strongly influenced lifestyle intervention and that did not necessarily indicate the cultural characteristics of their setting. Such factors included lack of time because of competing demands; coexisting health conditions that restricted mobility and physical activity; environmental factors; affluence; and lack of desire and motivation to engage in exercise or control diet.

Lack of time because of long working hours and other family and domestic responsibilities competed with patients' attempts to engage in regular structural exercising. The responses of many patients indicated that they saw physical activity in the broad context that covered a range of activities. They, therefore, perceived daily incidental activity as a type of exercise that can positively contribute to their health. Such activities included walking to the mosque for prayers, sweeping, vacuuming and walking within the office during working hours. Similar constraining factors were also reported in the literature. For example, in the UK, one qualitative study investigated barriers to physical activity in patients with diabetes attending the Diabetes Clinic in Dundee. Findings suggested that lack of time and distraction by other activities were among the barriers to physical activity (Thomas, Alder et al. 2004).

Coexisting health conditions that limited mobility or regular exercising such as rheumatoid arthritis, knee and back pain and injuries from accidents were also identified as barriers to physical activity in this study (see section 5.2.3). Such factors were also reported in the literature. For example in the UAE, coexisting diseases, such as osteoarthritis, were the most reported barrier to physical activity (32.1%) in an Emirati self-reported survey that assessed physical activity in 390 patients with diabetes (Al-Kaabi, Al-Maskari et al. 2009). Crosson et al explored physicians' perceptions of barriers to control CRFs among patients with diabetes. Their results showed that coexisting diseases such as pain and depression were believed to compete with patients' efforts to control CRFs. Such competing conditions limited patients' ability to exercise, distracted patients and physicians from addressing diabetes management and resulted in patients' depression (Crosson, Heisler et al. 2010). Similarly, in this study, a group of patients who expressed a sincere desire to engage in regular exercising indicated that other health problems that limited mobility also hindered physical activity. Lack of movement due to coexisting health conditions in some cases resulted in feelings of hopelessness and sometimes depression.

The hot climate and pedestrian-unfriendly urban planning were another two factors that rendered outdoor exercising a challenge for a number of interviewed patients. The role of weather in physical activity was also reported in the literature and extreme weather climate such as snow, heat and rain was also identified as a limiting factor to outdoor exercising in a number of studies (Eyler, Baker et al. 1998; Wilcox, Tudor-Locke et al. 2002; Belza, Walwick et al. 2004). In addition, lack of accessibility to exercise facilities because of location inconveniences was one of the most cited barriers to physical activity in many communities around the world (Jones and Nies 1996; Thomas, Alder et al. 2004; Stamm and Lamprecht 2005).

Another limiting factor to lifestyle interventions identified in this study was affluence or the affordability of a sedentary lifestyle. Affluence was reported by many HCPs in this study, especially when talking about the excessive use of cars for transportation and domestic workers for household activities, which limited patients' physical activity (see section 5.2.4). Some even suggested that such behaviour stemmed from unique and newly constructed social beliefs in the Emirates and believed that it was a behavioural feature of Emiratis only. Patients, on the other hand, perceived cars and using the aid of domestic workers with house chores as 'help' and mechanisms that facilitated a better quality of life. They explained that the hot climate of the UAE mandated the use of cars for commuting and many female patients believed that domestic workers were there to help and make time for themselves and their families. They also argued

that using the help of the domestic workers enabled them to dedicate more time for their regular and structured exercising. These views were also identified in Winslow and Honein's (2007) study where participants perceived domestic workers as a bridge that helped in various domestic responsibilities.

Lack of self-motivation, drive and desire to initiate or maintain physical activity or diet regimen was a commonly reported limiting factor by many patients, including those who indicated other structural or environmental factors (see section 5.2.5). Lack of motivation in regard to lifestyle intervention was also reported in the literature. For example, in Saudi Arabia, one study explored barriers to lifestyle interventions in 450 patients attending a primary health care centre and found that lack of willpower was the second most hindering factor to exercise. In addition, 76.8% of participants reported lack of social support as another barrier to physical activity and 73.2% felt that they lacked the energy to perform exercise. In addition, lack of willpower was the most common barrier to diet control (80.3%) (AlQuaiz and Tayel 2009). Lack of self-control was also reported as a barrier to diet control by Emirati women at risk of diabetes (Ali, Baynouna et al. 2010).

Participants' accounts also indicated that they lacked the motivation to exercise and diet when there were other limiting factors (e.g., lack of time, exhaustion because of long working hours, lack of family and social support, the absence of a role model, inconvenience of the location of the gym and inability to control appetite). Belza et al (2004) explored factors influencing physical activity from the prospective of older adults from seven ethnicities that included American Indian/Alaska Native, African American, Filipino, Chinese, Latino, Korean and Vietnamese living in the USA. They found that lack of motivation was a common theme amongst all seven ethnic groups. The responses of participants in their study indicated that even in the presence of exercise facilitators, lack of motivation was still a more powerful limiting factor (Belza, Walwick et al. 2004). Some HCPs interviewed indicated that they usually seek unconventional strategies that were inspired from some Emirati social norms to motivate patients to control their diet and exercise more. In their perception, single women were more enthusiastic about losing weight in order to look attractive prior to their weddings or other celebratory social occasions. Married women, on the other hand, were less motivated but were sometimes stimulated when reminded of polygamy or threatened by the idea of her husband getting a second wife. Such an approach suggests that the principle of cultural competence should not only be restricted to designing

health interventions but could also be utilised in delivering health messages and motivation strategies.

Lang and Froelicher (2006) indicate that lifestyle intervention is a multifaceted activity that is influenced by multiple factors that come into play and influence the degree to which such interventions can be adopted and maintained. Similarly, patients and HCPs in this study reported a wide range of barriers to diet control and exercise that did not always indicate a cultural role but stretched to include structural, material and emotional factors. It is, therefore, important that HCPs assess patients' behaviours and actions within the context that these behaviours take place.

A noteworthy finding in this study was that despite patients' awareness of limitations to diet control and exercise, they all admitted that healthy lifestyle was important to improve their health condition and control their CRFs. Many patients also expressed their enthusiasm to resolve barriers to lifestyle intervention and sometimes expressed hopelessness and depression when such barriers were difficult to overcome such as physical injuries and lack of motivation. Davison et al (1992) argues that promoting the 'healthy lifestyle' ideology has emphasised people's sense of personal responsibility in the maintenance of their own health and ability to avoid the development of chronic disease through adopting 'good' health behaviours that involves eating healthy food and regular exercising (Davison, Frankel et al. 1992). The focus on health behaviour and accepting personal responsibility for health without acknowledging the social process is not necessarily empowering and might encourage self-blame and despondency (Backett 1990). Bissell et al (2004) explored the views and experiences of a group of British Pakistani patients with diabetes of their treatment in the context of the concept of concordance. Results from that study showed that while patients expressed anger at their GPs for not being able to understand the emotional and material challenges they faced to control their diet, they also expressed self-blame and responsibility for failure to change behaviour. Bissell et al argue that these mixed accounts from patients illustrated their attempts to accommodate for the demands of everyday life that strongly impact their lifestyle interventions and the compliance model that implies their responsibility towards their own health (Bissell, May et al. 2004). Similarly in my study, all patients accepted responsibility to control their CRFs and prevent future complications; however, they also reported contextual, emotional and material challenges that affected their adherence. While it is important for patients to be aware of the role of their own behaviour in health, it is essential that HCPs do not separate lifestyle from the social condition and circumstances in which it takes place

in order to address a broader range of barriers and thus, design interventions that accommodate for patients' circumstances.

With factors influencing the implementation of lifestyle interventions in patients with MetS in the UAE, I now move to discuss factors patients' use of their medicine.

8.2.3 Factors influencing medicines use in patients with MetS

The primary goal of the clinical management of patients with MetS is to mitigate the modifiable, underlying risk factors (obesity, physical inactivity and diet) through lifestyle changes. However, if patients are presented with elevated blood lipids, hypertension and/or diabetes, consideration should be given to incorporating drug therapy to the regimen in order to target these clustering risk factors (Grundy, Cleeman et al. 2005). The treatment plan of all patients in this study included advice on lifestyle adjustments and medicines for their presenting CRFs. During interviews, it was evident that all patients were able to list their prescribed medicines by name or through the physical attributes of these medicines, such as the colour, dose and shape of tablet or capsules. They were also able to match the indication of each of these medicines correctly. Patients' accounts indicated that they appreciated the importance of taking their medicines as instructed by their doctors for the management of their presenting CRFs and the potential risk of not adhering to medicines as directed. However, responses of both patients and HCPs revealed a number of factors that influenced medicines use, which belong to three main categories: (i) patients' beliefs about medicines; (ii) accessibility to medicines; and (iii) knowledge about medicines. The following sections discuss these findings in detail.

8.2.3.1 Beliefs about medicines

Research on lay beliefs about medicines indicate that people have a range of positive and negative views about medicines across different populations, disease groups and countries (Horne, Weinman et al. 1999; Britten 2008). Although patients in this study reported that they adhered to their prescribed medicines, some expressed negative views about the safety of their medicines, which included describing them as 'chemicals' 'harmful', and 'addictive' (see section 6.2.1). Most of the views expressed by patients, except those indicating brand loyalties, were negative perceptions about medicines. Britten (2008) states that people do not report many of their positive views about medicines when interviewed because they believe that medicine

necessity, effectiveness and safety are obvious attributes of medicines and do not need explanation and justification. Similarly, patients in my study might have assumed that the aim of my enquiry about their medicines was to elicit the peculiar and not the ordinary since the norm is the widely promoted effects of medicines that include their ability to control or revert CRFs and improve overall health and wellbeing (Pollock 2005; Britten 2008). However, and as will be discussed later in this section, some patients praised some of their prescribed medicines when talking about their preferred brands and reasons for their preferences.

The study also found that patients' feeling about medicine's harmful effects on the body was enhanced by increasing the dose or number of their prescribed medicines. These perceptions encouraged some to stop taking their medicines for a short period of time (i.e., drug holidays) or look for alternative therapies (e.g., herbs, ozone infusion therapy and Islamic medicines) to minimise medicines harmful effect on the body. Such views have been reported in literature that explored factors influencing patients' attitude towards their medicines. For example, Horne et al (1999) reported that patients attending a herbal clinic were significantly more likely to perceive medicines as essentially harmful substances that are overused by doctors than a matched sample attending a community pharmacy (Horne, Weinman et al. 1999). In the UAE, Albraik et al (2008) explored the pattern of herbal medicine use in 330 patients visiting a primary care clinic in Abu Dhabi. The survey results showed that 76% of the respondents used herbal medicine in the past, while 38% were still using at least one herbal medicine alongside their conventional treatment (AlBraik, Rutter et al. 2008). Britten (1994) found that some of her study participants described medicines as unnatural chemicals that were harmful to the body and others believed that medicines reduced the body's ability to combat infections by damaging the immune system (Britten 1994). Patients' fear of addiction to their prescribed medicines was cited as one of the contributing factors to patients' nonadherence to medicines (Vlasnik, Aliotta et al. 2005). Fear of losing independence was also linked to patients reluctance of accepting insulin therapy to be added to their treatment plan (Austin 2006), which was also identified in my study. A group of Norwegian hypertensive patients expressed fear of getting addicted to medicines including their antihypertensive medicines (Toverud, Roise et al. 2010).

Fallsberg (1991) identified four main categories of the words people used to describe medicines which included: (i) medicines are something positive; (ii) medicines are something negative; (iii) medicines are a 'necessary evil'; and (iv) medicines are referred to only with respect to form and administration (Fallsberg 1991). She found that patients that described medicines as 'necessary

evil' saw that medicine provided them with the necessary help but caused harm to their bodies at the same. This attitude is similar to that identified in my study where, despite patients' claim of adhering to their prescribed medicines and acknowledgement of medicines' role in managing their CRFs, they also expressed concerns about their potential harm to their body and possibility of dependence. Pollock (2005) explains that patients' adherence to their prescribed medicines despite their concerns about their safety could be due to their awareness of the 'benefit of medicines in the restoration or maintenance of their normal lives and selves'; however, they will still 'resent their ongoing need and incapacity to do without' (p. 27). This is again similar to a few patients' accounts who express concerns about initiating insulin therapy because of their fear of losing their dependence and relying on injections for the rest of their lives.

Patients' responses also indicated that their negative feelings about medicines (i.e., medicines are harmful, addictive and chemicals) intensified as the number of their prescribed medicines increased. They explained that taking many medicines increased the chance of experiencing adverse effects or organ damage. Some reported that they would prefer to substitute some of their conventional medicines with alternative therapies such as herbs and traditional remedies to reduce the number of medicines prescribed and to minimise the harm they might be subject to because of taking many drugs.

Another important finding in this study was brand loyalty as reported by some of the study participants (see section 6.2.2). Their accounts indicated that both patients and HCPs distinguished between different brands of bioequivalent medicines. Some even went to the extent of indicating that medicines manufactured in European or North American countries (i.e., Western manufactured brands of medicines or WBs) were superior in effectiveness to bioequivalent brands of medicines manufactured locally or in other neighbouring Asian and Middle Eastern countries (i.e., non-Western brands of medicines or NWBs). Some participants referred to NWBs as 'cheap' and 'copies' of the WBs which they also described as 'real' and 'original'. Such attitudes were believed to affect patients' adherence especially when they refused to have their regular brands of medicines substituted with NWBs. A few patients, on the other hand, expressed concerns about the safety of WBs because they did not approve of the foreign policies of the Western countries that manufactured these medicines. In such cases patients believed that locally manufactured medicines were safer and deserved their support. Other patients were indifferent to medicines brands and indicated that all medicines, regardless of their brand name or country of origin, were harmful chemicals. According to participants' accounts,

factors engendering such beliefs included: (i) previous negative experience with NWBs; (ii) the influence of HCPs who unintentionally promote WBs; (iii) misconceptions about Western manufactured products; and, sometimes, (iv) patients' political views.

Patients' attitudes towards WBs is not equally reflected in the available literature. Literature on patients' brand loyalty mostly examined patients' perceptions of the generic versus the branded medicine and not their perceptions of different branded medicines (Ganther and Kreling 2000; Hakonsen, Eilertsen et al. 2009; Hassali, Shafie et al. 2009; Shrank, Cox et al. 2009; Hakonsen and Toverud 2010; Patel, Gauld et al. 2010; Toverud, Roise et al. 2010). However, one qualitative study that explored perceptions of generic medicines in Iraq, reported that participants were not familiar with the term 'generic medicines' and referred to branded medicines similar to the patent original brand with the term 'tejari', which is Arabic for 'commercial' (Sharrad and Hassali 2011). Therefore, their accounts might have reflected their opinions of a range of branded medicines rather than their perception of generic versus patented medicines, which is similar to patients' behaviour in my study. They also found that factors that lead to participants' preference for patented brands included: (i) physicians' inclination to prescribe innovative drugs; (ii) patients' comfort with innovator brands; and (iii) experiences with counterfeit medicines in the Iraqi drug market (Sharrad and Hassali 2011). Another qualitative study in the UK that explored the perceptions of British Pakistanis and British Indians of their oral anti-diabetic medicines identified similar patients' views towards Western manufactured brands of medicines. They found that these patients perceived their oral anti-diabetic agents to be essential, more effective and of better quality than those that could be obtained from the Indian subcontinent. Study authors concluded that patients' preference of WBs might have been influenced by their experience with counterfeit medicine available in patients' countries of origin. This negative experience may have damaged their trust in NWBs (Lawton, Ahmad et al. 2005).

Results from this study illustrated how the attitude of some patients towards different brands was sometimes influenced by their preconceived ideas about the countries that manufactured their prescribed medicines. For example, perceiving Western countries as scientifically, industrially and technologically more advanced than other parts of the world, might have inclined patients to perceive medicines produced by these countries to be more potent and effective than those produced locally. Conversely, a few patients preferred to use locally manufactured brands of medicines and resisted WBs because of their anti-Western political views. Their accounts indicated their belief in conspiracy theories or that the West practiced anti-Middle Eastern foreign

policies, which repelled them from using WBs. Unfortunately, the associations between political views and patients' perceptions of brands of medicines are not adequately reflected in literature. However, Pollock (2005) points out that 'medicine-taking behaviour is framed by cultural norms' (p. 28). The literature also indicates that people do not use medicines in a vacuum and that social, cultural, political and economic realities contribute to how people perceive and use their medicines (Blaxter and Britten 1997; Britten 2008). Similarly, patients' attitudes towards the brands of their medicines in this study might have been influenced by the collective and shared opinions and political views of their societies and communities about Western countries or goods produced in Western countries, which either orientated them towards or away from using WBs.

The literature also reports that patients' perception of their medicines' effectiveness can be influenced by the medicines' physical attributes such as colour, shape, branding and price (Lonnroth, Tran et al. 2001; Helman 2007; Britten 2008; Patel, Gauld et al. 2010). Patients in this study referred to NWBs as cheap alternatives to the more expensive WBs, which might have suggested a greater effectiveness of the latter. As such, medicine price became an indication of the medicines' quality and effectiveness in combating a health condition. Patel et al explored South African consumer perceptions of drug quality and whether these perceptions influenced how people procured and used their medicines. Participants' in their study perceived generic medicines and medicines supplied without charge through the state to be of poor quality and treated them with suspicion (Patel, Gauld et al. 2010). Similarly, in the UAE medicine imported from Western countries are usually sold for higher prices than those manufactured locally or imported from neighbouring countries. Patients, therefore, might have been under the assumption that price difference reflected quality difference, which may have eventually reinforced brand loyalty.

Literature also reports that patients value and appreciate what their physicians prescribe for them (Britten 2008). The attributes of prescribers, such as their level of enthusiasm when prescribing the medicines or how they praised the treatment, can also affect patients' attitude towards their medicines (Helman 2007; Britten 2008). Similarly, in this study, participants' accounts indicated that some physicians influenced patients' brand loyalty by refusing to prescribe locally manufactured medicines or praising WBs during prescription refills, especially when trying to convince patients to accept alternative brands. Such attitudes from HCPs towards WBs influenced patients' beliefs about the superiority of WBs in quality and effectiveness to NWBs. Participants in the study of Sharrad and Hassali (2011) indicated that they had confidence in what the physicians

prescribed for them. They also reported that their physicians 'refused to prescribe the commercial drug' for them and advised them 'to use the original'. Patients in my study also reported similar inclinations from HCPs. Experiencing side effects with certain brands of medicines might have also contributed to patients beliefs about these medicines. Pound et al (2005) reported that patients sometimes resisted medicines because they experienced side effects such as nausea, vomiting and GI distress, which was also the case with some patients in this study.

Pound et al (2005) produced a model that describes ways in which people take their medicines. In that model they suggest four categories of medicine takers that included: (i) passive accepters of medicines who take medicines without giving it a lot of thought; (ii) active accepters who have thought about taking their medicines, tested them and then took them as prescribed; (iii) rejecters who reject taking their prescribed medicines after a period of time and may use alternative therapies; and (iv) active modifiers who modify their drug regimen. They also stated that these four groups are not static and that patients may use different approaches in taking their medicines (Pound, Britten et al. 2005). In comparison with my study results, it was apparent that a group of patients had concerns about their medicines, such as medicines' safety, efficacy, brand superiority and potential dependence. It was also apparent that some of these concerns have influenced patients' ways of taking their medicines and may have inspired some modifications that included: (i) taking drug holidays where medicine doses were omitted every now and then to prevent dependence and 'regain body's natural defence mechanisms'; (ii) resisting brand substitution and displaying brand loyalty; and (iii) seeking alternative therapy (i.e., herbal remedies, ozone infusion therapy and Islamic medicine) to prevent the need to increase the dose or the number of their prescribed medicines. However, participants' accounts indicated that some of these modifications were disclosed with their HCPs who approved and sometimes encouraged such practices (e.g., taking herbs or using Islamic medicines) but at the same time ensured patients' safety and adherence to prescribed medicines. Literature on medicine use indicates that regardless of the efforts to improve patients' adherence to their prescribed treatment, patients will continue to test their medicines and modify their treatment regimens and reduce their medicines intake (Pound, Britten et al. 2005). However, Pollock and Grime (2000) argue that since patients' modifications to their treatment regimens tend to under rather than over-medicate, then HCPs should accept that and assist patients in finding their own level of treatment (Pollock and Grime 2000).

8.2.3.2 Accessibility of medicines

Data from this study also showed that the limited or excessive availability to medicines influenced patients' medicines use. The new health insurance scheme and medicine shopping behaviour were two factors that some participants believed influenced patients' accessibility to medicines (see section 6.4). For example, the health insurance policy of some patients did not cover the costs of all their medicines, which meant that some of the medicines were sometimes not dispensed, which affected patients' adherence and therapy outcomes. A few patients in this study talked about the financial burden caused by prescription copayments, particularly with regard to the fact that essential MetS treatments such as statins were not covered by their health insurance policy. In addition, the pharmacological management of MetS involves the prescribing of multiple medicines that target each of the clustering CRFs, including drugs for elevated blood pressure, diabetes, high blood lipids and obesity. In most cases of MetS management, patients may need to use more than one agent from each these drug groups, which results in increasing the financial burden on patients through increasing prescription copayments. Available literature reports that patients' use of medicine was affected by financial difficulties that hindered medicine accessibility (Blaxter and Britten 1997; Pound, Britten et al. 2005; Britten 2008). For example, health economic studies in the USA (Soumerai, Avorn et al. 1987; Stuart and Grana 1998) and the UK (O'Brien 1989; Hughes and McGuire 1995) show that drug consumption by the patient is reduced with increasing prescription copayment. Other studies found that paying for medicine prescriptions was an important factor that prevented non-exempt patients from getting their medicines dispensed (Beardon, McGilchrist et al. 1993; Jones and Britten 1998). In the UK, Schafheutle et al (2002) explored the impact of medicine charges on decisions made by a group of patients with chronic diseases on the management of their health. The results found that participants used a wide range of cost-saving strategies to reduce the expense of their medication, such as not collecting some prescribed items dispensed, reducing doses or buying a cheaper over-the-counter product (Schafheutle, Hassell et al. 2002).

In this study, cost-saving strategies were initiated mostly by some physicians and pharmacists during medicine supply and prescription refill, which included dividing prescribed medicine over two prescriptions to reduce the copayment charges; offering financial support to such patients during prescription refills; or more commonly using free samples of medicines provided by medical representatives. Some of these strategies were similar to those reported by Weiss et al (2001) who explored strategies used by a group of GPs in the UK to help patients with prescription copayments. Results in that study found that GPs' strategies to facilitate medicine accessibility

included recommending the purchase of an over-the-counter medicine, re-using returned medication, and prescribing more for a family member that was exempt from prescription charges. One of the patients who had a basic health insurance policy stated that she relied on the generosity of her pharmacists who provided her with insulin pens that were either returned by other patients or were samples provided by the medical representative of some drug companies. Many HCPs also indicated that their cost-saving strategies were not enough to help this group of patients overcome their financial barriers and that such a factor might affect the adherence and therapeutic outcomes of patients with MetS. It was evident from participants' accounts that the privatisation of the health care services in Abu Dhabi that started in 2006 affected medicine accessibility and resulted in inequality of health services amongst the country's residents. Some pharmacists suggested that the health insurance policy needed to be reviewed or to create payment expiations for patients of low annual incomes.

In contrast to limited accessibility to medicines reported by study participants, over-accessibility to medicines or 'medicine shopping' was another issue that HCPs complained of during interviews and felt that it increased patients' risk of adverse effects or toxicity (see section 6.4.3). HCPs reported that some patients collected medicine prescriptions for their chronic illnesses from different private clinics simultaneously and sometimes travelled to seek treatment abroad. They believed that this behaviour resulted in over-prescribing and double dosing, especially if the same drugs were being prescribed by many physicians. In the literature, the practice of patients requesting care from multiple physicians simultaneously with regard to the same episode of illness without referral either because they are reliant on certain prescription drugs or they are seeking better services has been referred to as 'doctor shopping behaviour (DSB)' (Kasteler, Kane et al. 1976; Olsen, Kane et al. 1976). DSB is similar to what the HCPs in this study believed patients were doing in the UAE. However, HCPs referred to it as 'medicine shopping' to emphasise that the aim of patients was to obtain more of their prescribed medicines. DSB is a universal phenomenon and has been explored in many studies with patients from different countries and cultural backgrounds (Olsen, Kane et al. 1976; Lo, Hedley et al. 1994; Abdo-Rabbo, Al-Ansari et al. 2009; Abdul Rasool, Fahmy et al. 2010). For example, in Oman, Abdo-Rabbo et al (2009) explored medicines use in 6,675 patients visiting different primary care centres and found that 66% of respondents visited multiple facilities on the same date for the same complaint. Results also showed that 39% of respondents did not accept a non-drug therapy after their clinic visit and 30% preferred prescription of three or more medicines per visit (Abdo-Rabbo, Al-Ansari et al. 2009). In the UAE, a survey that explored patients' irrational use of medicines found that patients had the

habit of visiting multiple clinics simultaneously for the same health problem (Abdul Rasool, Fahmy et al. 2010).

The danger of DSB is that it exposes patients to the potential risk of drug-drug interaction, cross-reactions and even fatalities during excess medical treatment (Lo, Hedley et al. 1994). DSB has also gained a lot of attention and publicity in the last decade because of its association with the deaths of many Hollywood celebrities who obtained narcotic drugs and prescription pain killers from multiple physicians simultaneously (Park 2010). HCPs in this study showed similar concerns about the outcomes of DSB in patients with MetS or other chronic illnesses and believed that a health care system that monitors patients' mobility across different health facilities would minimise such behaviour. Aside from addiction or reliance on prescription medicines, available literature on DSB reports a number of other factors that may also trigger this behaviour. Such factors include: (i) lack of confidence in and dissatisfaction with physicians or the cost of the health service; (ii) poor patient-provider relationship; (iii) conveniences of the location of the health service; (iv) patients' high tendency to adopt the sick role and higher disposition towards hypochondriasis¹²; (v) financial difficulties; and (vi) other individual predispositions such as demography characteristics, social structure and health beliefs (Aday and Andersen 1974; Kasteler, Kane et al. 1976; Olsen, Kane et al. 1976). However, when patients in this study were asked about reasons for seeking multiple physicians for their chronic illness, their accounts did not indicate that their DSB was triggered by dissatisfaction with the health service they were receiving their treatment in, financial difficulties or physician-related factors. Instead they explained that their intention for visiting other physicians regarding their CRFs was to 'double check' their health condition and to 'get a second opinion'. According to their accounts, double dosing due to receiving extra quantities of their regular medicines was avoided by providing the new physician with a list of their current medications. By doing so, patients made sure that the new physicians would be informed of their existing therapeutic treatment and would, therefore, avoid prescribing the same treatment regimen again.

Kasteler et al (1976) argue that once patients realise that 'medicine is provided in a seller's market' they start to feel that they can access different health care providers and do not need to wait for a referral to actually see another physician. They also report that patients tend to believe they have a right to the best health care and would, therefore, want a complete return for the

¹² Hypochondriasis is sometimes referred to as health phobia or health anxiety and refers to excessive preoccupation or worry about having a serious illness. An individual suffering from hypochondriasis is known as a hypochondriac.

money they spent on their treatment (Kasteler, Kane et al. 1976). Although most of the patients interviewed in this study did not pay for their health care and instead relied on their health insurance policy for medical expenses, their accounts illustrated their desire to ensure they were receiving the best treatment. They also illustrated that they were aware of the risk of receiving similar prescriptions from multiple physicians and were, therefore, minimising harm by informing every physician they visited of their existing therapeutic regimen.

As illustrated in this section, participants' accounts indicated that they had thought about their medicines and were mainly concerned about their safety, efficacy and potential for dependence. The accounts of some patients indicated their attempt to modify their regimen through (i) including an alternative therapy to their treatment regimen in order to minimise the risk of conventional medicines; (ii) taking drug holidays to retain the body's natural defence mechanisms; (iii) resisting the initiation of insulin therapy because of their fear of dependence; (iv) DSB to ensure they were receiving the best treatment available for their health condition; and (v) showing brand loyalty. However, despite patients concerns about their medicines and attempts to modify their treatment regimen, they continued taking their medicines. In a study that explored issues of compliance in a group of patients with asthma, Adams et al (1997) found that patients' who complied with the treatment had accepted asthma as a condition into both their lives and self-image. Therefore, 'accepting treatment was a valuable aid to their self-presentation and an expected, normal consequence of having an on-going medical condition or chronic illness' (p. 197). Similarly, in my study, because medicines can influence patients' experience of identity and sense of wellbeing, accepting medicines regardless of concerns could indicate a patient's way of normalisation and maintenance of their life and self (Adams, Pill et al. 1997; Pollock 2005). This is also relevant to what was discussed previously in section 8.2.1 where patients' fear of developing complications of their CRFs such as heart diseases, blindness, kidney failure and amputations motivated them to adhere to their prescribed treatment. Taking medicine and implementing lifestyle interventions was the patients' method of protecting their health from further deterioration. In addition, patients' concerns about their medicine is always antagonised by the active marketing of medicines that promote medicines as agents that treat diseases and restore wellbeing and the ability to withstand stress (Pollock 2005). This factor could have also influenced the attitude of patients in this study towards taking their medicines. Pollock (2005) clarifies that patients feel the need to reach a middle ground that would help them balance their personal concerns about medicines and their promised benefits, their trust in their HCPs and distrust in drugs, resistance to treatment regimens and acceptance of expert authority,

their longing for autonomy and doubt about self management of their condition. It is, therefore, important for HCPs to be aware of this context in order to understand and respond sensitively to patients' attitude towards medicine. They also need to accept that patients will continue to test and modify their treatment plan and should, therefore, help them find their own level of treatment (Pollock 2005).

8.2.3.3 Knowledge about medicines

Another noteworthy finding in this study concerning factors influencing patients' medicine use was knowledge about drugs. Most HCPs believed that the attitude of patients towards conventional therapy (e.g., negative views, poor adherence, brand loyalty and DSB) could be rectified through providing them with comprehensive information about medicines and other MetS treatment requirements (see section 6.5). The limited number of health educators, underutilisation of pharmacists in the health education process and patient-related factors (e.g., educational background, high rates of non-attendance at health education sessions and refusing to have their medicines use assessed by pharmacists when offered) were also reported as factors affecting patients' knowledge. In addition, all pharmacists interviewed agreed that having a bigger role in patients' health education would improve patients' adherence to their prescribed treatment. Their accounts indicated that patients' reluctance and sometimes resistance to receiving advice on their medicine use was due to multiple factors, such as the lack of a consultation rooms and specialised training for pharmacists on medicines use assessments.

Data from patients' interviews showed that not all patients in this study were able to list their prescribed medicine by name. However, they were able to describe these medicines through their physical attributes (i.e., colour of tablet, form and dose) and relate these medicines to their accurate indication. They were also aware of their recommended doses and some talked about mechanisms that they used to help remind them of their doses (see section 6.1). Some patients talked about their awareness of the consequences of not taking their medicines as recommended by their doctors. During patients' interviews I did not get a sense of their lack of awareness or ignorance towards their treatment plan. However, hearing HCPs call for more efforts to be placed on patients' drug education was understandable as they might have been influenced by the widespread understanding that patients adherence improves with providing comprehensive information about medicine use (Blaxter and Britten 1997; Pollock 2005). The interest in patient health education began in the 1970's as links between patient ignorance and widespread non-

compliance in medicine-taking were discovered and made through a number of health research studies (Ley 1979a; Ley 1979b; Ley 1982; Paterson, Russell et al. 2001). Such studies found that patients were not able to recall most of what the physician had told them during the consultation, which strengthened the assumption that patients' incompetence led to treatment failure. Since then, professional perspectives have become more focused on the problem of patients' noncompliance and have started to view patients' attitude towards medicine, especially when rejecting conventional prescribed treatment, as irrational and an indication of their ignorance and incompetence. This has increased professionals' sense of duty towards patients' education and their attempt to improve communication and provide patients with factual information about their treatment plan, which was also apparent in the accounts of many HCPs in this study.

Given the complex nature of MetS treatment where multiple drugs are prescribed to help control the clustering CRFs, regular follow-up reviews of patients' medicine use could help HCPs identify treatment and patient-related issues that might affect clinical outcomes (Kappagoda and Amsterdam 2007). One way of assessing medicine use is through the utilisation of pharmacists during drug counselling sessions and prescriptions refill. After all, pharmacists' role in improving adherence and therapeutic outcomes of patients with CRFs and the effectiveness of their collaboration with physicians to improve therapeutic management are well documented in the literature (Smith and Salkind 1990; Morrow and Hargie 1992; Carter and Elliott 2000; Chen and Britten 2000; Campbell 2002; Cording, Engelbrecht-Zadvorny et al. 2002; Joy, DeHart et al. 2005; Morello, Zadvorny et al. 2006). One example is Chen and Britten's study that examined pharmacists' counselling of a group of patients in a primary care clinic. Pharmacists were able to identify a number of beliefs about medicine that were not previously picked up by physicians during clinic visits. They were also able to provide feedback to physicians on how patients used their medication and factors affecting adherence (Chen and Britten 2000). In Jordan, pharmacists' role in the management of MetS was assessed in six family medicine outpatient clinics using a randomised controlled trial (Hammad, Yasein et al. 2011). Pharmacists were involved in providing patients with drug counselling, answering patient and physician enquiries and providing advice on the importance of adherence and a healthy lifestyle. Although the study did not identify issues related to patients' medicine use habits, the results, however, showed that pharmacists' intervention was associated with a significant shift of patients from a MetS status to a MetS-free status. The results from such a study and many others have reinforced the assumption that patients' noncompliance and clinical outcome could be resolved by providing effective information, which reflects the enormous efforts placed on interventions to change patients'

attitudes towards their prescribed medicines (Blaxter and Britten 1997; Gottlieb 2000). The strong belief in the impact of information and drug education on patients' medicine use behaviour was also evident in the accounts of many HCPs in my study as they talked about utilising pharmacists in health education to improve patients' drug knowledge and eventually medicine use.

HCPs also need to pay attention to the type of information patients want in a consultation or medicine use assessment and the way through which this information is communicated. In this study, for example, pharmacists reported that patients usually refused to have their medicines reviewed because they were regular users of their medicines and claimed expertise and competence. This attitude of patients is appreciated considering the characteristics of a chronic health condition such as MetS where patients are normally regular users of their medicines. Therefore, with time, through repeated clinic visits and communication with HCPs patients start to gradually acquire the needed factual knowledge about their medicines. As such, patients become real experts with the skills and competence needed for self-management of their multifaceted health condition. However, pharmacists and many physicians interviewed in this study seemed to be keen on providing information and expressed disappointment of patients' resistance to their counselling attempts. Thorne et al in their qualitative study found that HCPs still regarded themselves of a superior competence and knowledge when dealing with patients with type 1 diabetes who were experienced in the complicated insulin therapy needed to control their blood glucose levels (Thorne, Ternulf Nyhlin et al. 2000). Physicians in their study disregarded patients' expertise and skills and discredited their contribution to the management of their diabetes. Although HCPs in my study did not express these views in their accounts, they still perceived themselves as the main source of knowledge and indicated that their contribution to patients' education was the missing link to patients' behaviour change with regard to medicine use. Available literature also suggests that premature advice that pharmacists provide without waiting for patients to initiate the topic or without eliciting the patient's needs is usually unappreciated and is often rejected by patients. In some cases, pharmacists continued to give advice despite patients' display of knowledge and competence (Pilnick 1999; Salter, Holland et al. 2007). Results reported from these studies and accounts of pharmacists and other HCPs in my study, regarding the need to improve patients' knowledge, illustrate the existing hierarchy of knowledge in the health care setting. The literature indicates that physicians believe that patients' knowledge obtained from their input is more credible and legitimate than knowledge obtained from other sources (Pilnick 1999; Salter, Holland et al. 2007). This seemed to be the assumption of many HCPs in my study, who felt solely responsible for providing accurate information about

medicines to patients (e.g., pharmacists insisting to provide counselling to patients on chronic medications), without acknowledging or accepting patients' own experience and competency to taking their drugs.

While it is important to provide patients with comprehensive information on their medicine to help improve patients' adherence, HCPs need to remember that the way in which medicines are used is complex and involves many factors. Pollock argues that 'patient rejection or modification of medical treatment and intervention is not as professionals commonly assume the product of ignorance or incapacity, rather, it results from the application of a different kind of rationality, reflecting different priorities and values from those pursued in clinical medicine' (Pollock 2005, p. 75). Certainly this study illustrated such complexity through eliciting a number of factors that affected medicine use within the MetS context. Although patients in this study claimed competency and adherence to prescribed treatment (see chapter 6, section 6.1), their accounts revealed factors that influenced their medicine use which illustrates that increasing knowledge might not always guarantee improved adherence or less therapy modification.

A noteworthy finding in this study was the accounts of many patients that indicated their satisfaction with pharmacists' contribution during prescription refill. Other patients sympathised with pharmacists' busy working schedule, which discouraged them from asking questions or seeking advice during prescription refills. These views are comparable to those identified in a qualitative study in the USA that explored the perception of people with migraines about the role pharmacists' may play in helping them manage their condition. Many patients in that study viewed pharmacists as unapproachable and expressed reluctance to ask them questions about their medicines because they appeared busy. Other patients cited the layout of the pharmacy as an additional barrier that prevented communicating with pharmacists (Skomo, Desselle et al. 2008). Concerns about time pressure and the awareness of feeling hurried in the consultation were identified in the literature as factors that prevented patients from playing an active role in consultations or seeking advice when needed (Tuckett, Boulton et al. 1985).

Tuckett et al (1985) recorded the consultations between 16 GPs and 328 patients in 1,302 clinics around the UK to help researchers understand the mechanisms underlying good communication between patients and physicians and the consequences of failing to understand each other's views during the consultation. They identified many factors that included physicians' ineffective communication skills, lack of interest in patients' experiences and concerns and unawareness of

patients' ideas and views about their illness. They argued that physicians needed to acknowledge that patients' knowledge and understanding would continue to grow through the input of different sources of information such as family, friends, society and health care. They, therefore, encouraged physicians to change how they perceived their role in a consultation and to start viewing patients as experts on their health concerns that they could learn from and work with to reach a treatment plan that best managed the patients' health problems (Tuckett, Boulton et al. 1985). Although the study of Tuckett et al was carried out more than 20 years ago, their observations are comparable to some of the patients' accounts in my study who expressed their disappointment in their physicians' lack of listening and attentiveness to their personal and health concerns. Further exploration of aspects of patient-provider encounters that might have influenced the communication of information was not carried out in my study as it was beyond its aims and objectives. Clinical consultations are social interactions between the life-world and the system prospective. Therefore, an exploration of this relationship requires a robust research tool that is able to capture the wider socio-cultural constraints that influence the production and communication of medical knowledge and the making of treatment decisions. Such tools would have included observation or recording of patient-provider encounters, which were not used in this study. However, accounts from my study that indicate the presence of patient-provider barriers during clinic consultations might inspire future researchers who are interested in exploring this dimensions of patient management within the MetS context or other illnesses in the UAE.

The next section will discuss factors limiting the utilisation of the MetS concept within the clinical setting and public health in the UAE.

8.2.4 The utility of the MetS concept in clinic work and public health

The clinical utility of the MetS concept refers to the applicability of the MetS diagnostic criteria as a tool for identifying individuals at high risk of developing type 2 diabetes and cardiovascular complications within the primary care setting. It also refers to the use of the MetS concept as a clinical guideline for management of this group of patients who would benefit from an early therapeutic intervention (Grundy, Cleeman et al. 2005; Alberti, Eckel et al. 2009). Apart from a few studies that assessed public and professional awareness of the MetS definition (Suppes, McElroy et al. 2007; Becker, Bromme et al. 2008; Lewis, Rodbard et al. 2008), there has been very little research directly addressing the utilisation and implication of the MetS concept in primary

health care or its impact on public health and/or health promotion activities. In the midst of the continuing controversy that surrounds the MetS concept and the voices of experts that still dispute on its value in clinical practice, HCPs might find themselves uncertain and sometimes disagreement on the legitimacy of MetS as a cardiovascular risk predicting tool or a clinical guideline (Simmons, Alberti et al. 2009). Therefore, one of this study's aims was to elicit the views of HCPs on the clinical practicality and limitations of the MetS concept based on their own experience and to ultimately gain a deeper understanding of the contextual and organisational constraints to its use. Exploring HCPs views on the MetS concept identified six main factors that limited the utilisation of the MetS concept within a clinical setting. These factors included:

1. The unequal awareness of the MetS concept amongst different health specialities
2. Physicians' uncertainty towards the ability of the MetS concept in guiding the clinical management of this group of patients, especially in prediabetes
3. The multiple definitions and names of MetS that confused its application in clinical practice
4. Physicians' uncertainty about the usefulness of the MetS concept in triggering patients' behaviour change
5. The absence of the MetS from the list of reimbursed medical diagnoses
6. Physicians' preference of documenting the individual CRFs rather than the MetS diagnosis

These limiting factors are discussed in the following sections.

8.2.4.1 HCPs' awareness of the MetS concept

Upon investigating the perceptions of HCPs about the MetS concept, their accounts showed that physicians were better informed about the MetS definition and diagnostic criteria than other HCPs of different specialities, such as pharmacists, dieticians and health educators. Some pharmacists admitted that their first encounter with the term 'metabolic syndrome' was through the study information sheet. This variation in awareness of the concept amongst HCPs could be attributed to the level of exposure to and the use of the MetS criteria across different health specialties and departments. For example, some physicians explained that they were in constant contact with patients who met the diagnostic criteria of MetS through their clinical practice and were regularly updated with research on MetS through meetings, training workshops and seminars. Other HCPs did not have that level of exposure to the MetS concept and were not involved in the process of identifying patients with cardiometabolic diseases through the use of

any screening tool, including the MetS diagnostic criteria. HCPs' limited awareness of MetS identified in this study is not adequately reflected in the literature. However, in Evans et al's (2007) study in the UK, many of the physicians who were involved in the development of the WAKEUP toolkit felt that they lacked knowledge about MetS and were keen for written materials, including information on the nature of MetS, its causes and risks (see section 2.4.3). Therefore, two toolkits were designed that provided information about MetS to patients and physicians (Evans, Greaves et al. 2007).

Another example of the limited knowledge of MetS amongst HCPs was identified through an online survey that assessed the awareness of 500 American psychiatrists of MetS in patients with bipolar disorder (Suppes, McElroy et al. 2007). Results showed that, although all participants reported awareness of MetS, only 28% correctly listed all the CRFs that constituted MetS. The study concept was based on the fact that some of the medicines used for the management of bipolar disorder could result in weight gain and eventually MetS. Therefore, enhancing psychiatrists' awareness of MetS would prompt better monitoring of MetS risk in that group of patients (Suppes, McElroy et al. 2007). Similarly, facilitating the prevention and management of MetS across different health specialities and departments through the dissemination of the MetS concept amongst different HCPs could drive a widespread monitoring of cardiovascular risk parameters and initiate early lifestyle and therapeutic interventions.

Available literature also reports that pharmacists, as members of the health care team, have a valuable role in identifying patients with MetS and providing them with education and lifestyle modification advice (Irons, Mazzolini et al. 2004; Sanders, Lubsch et al. 2006; Schneiderhan, Batscha et al. 2009; Olenak and Calpin 2010; Benavides, Kohler et al. 2011; Hammad, Yasein et al. 2011). Therefore, pharmacists' involvement in a multidisciplinary approach might enhance the prevention of CVDs through the screening of MetS features and early detection of patients in need of interventions.

8.2.4.2 The usefulness of the MetS clinical guideline

All physicians expressed their support for the MetS concept and the need to use it in their daily clinical practices. Some physicians acknowledged that the MetS definition highlighted the need for early diagnosis and therapeutic interventions for individuals at higher risk of developing diabetes and cardiovascular complications. They also perceived the MetS criteria as a simple and

easy to use tool that was available and accessible to all HCPs, which enabled fast and effective identification of patients at risk of CVDs. Despite these positive views, some physicians expressed reservations on the exclusiveness of the MetS concept to guide the clinical management of patients at risk of developing CVDs or its ability to promote patients' behaviour change. For example, some physicians believed that the MetS criteria were outperformed by traditional clinical guidelines of individual CRFs, especially in the absence of a clear recommendation for a pharmacological intervention in prediabetes, such as the use of metformin in patients whose body mass index was more than 30 kg/m². The lack of a clear recommendation for a medicine intervention in patients with prediabetes to prevent the development of diabetes is frequently cited by the critiques of the MetS concept (Simmons, Alberti et al. 2009; Hughes 2010; Sadikot and Hermans 2010).

So far, the MetS clinical guidelines restrict the use of glucose lowering agents in prediabetes due to the lack of clinical evidence on the cardiovascular protection effect of such an intervention. Therefore, patients with MetS but in a prediabetes state are only placed on intensive lifestyle intervention (Grundty, Cleeman et al. 2005; Grundty 2006; Alberti, Eckel et al. 2009). A recently published review encouraged the use of drugs in prediabetes, such as metformin, in addition to lifestyle interventions due to its cardiovascular protective properties (Sullivan and Ratner 2011). However, until an evidence-based medicine intervention in prediabetes gains official recognition by the MetS advocates, physicians might remain unmotivated to prioritise the MetS criteria over traditional clinical guidelines of individual CRFs. Notwithstanding, physicians still believed that MetS criteria provided an available, accessible and affordable tool that could enable the early diagnosis of individuals with cardiovascular risk and the initiation of a comprehensive treatment of the risk for diabetes and CVDs. They, therefore, welcomed the idea of having the MetS criteria used by HCPs, such as nurses and pharmacists, during their clinical practices or in outreach campaigns to screen for CRFs.

8.2.4.3 The controversy of the MetS definition and aetiology

Another group of physicians believed that the clinical utility of the MetS criteria was confused by the existence of multiple definitions that resulted in identifying different risk populations. Although the components of the two most popular versions of the MetS definition (i.e., the IDF and the AHA/NHLBI versions) are the same, physicians stated that the two definitions differ in the weighting given to the components that define an abnormality and the manner in which they can

be combined to make a positive diagnosis. This variation in cut-points and criteria that determine diagnosis might result in confusion and disagreement amongst physicians on which definition to choose and why. However, it is important to mention that this research took place before the harmonisation between the two commonly used definitions of MetS (Alberti, Eckel et al. 2009), which has ironed out the creases between the MetS definitions of the AHA/NHLBI (Grundy, Cleeman et al. 2005) and the IDF (Alberti, Zimmet et al. 2006). Therefore, HCPs' accounts on the confusion resulting from multiple definitions of MetS might have reflected their perceptions before the harmonisation report was published.

Physicians also reported that the different definitions and names of the syndrome (i.e., the insulin resistance syndrome, syndrome X, cardiometabolic syndrome and metabolic syndrome) indicated the lack of an accepted central underlying mechanism that can explain its aetiology and pathological history. Insulin resistance (Reaven 1988) and central obesity (Carr, Utzschneider et al. 2004) have both been proposed as underlying aetiologies of MetS. However, other central or contributory mechanisms have also been considered, such as chronic activation of the immune system; some endocrinological and hormone disorders; chronic stress; and the contributions of cytokines, hormones and other molecules produced by adipocytes (Eckel, Grundy et al. 2005; Ford 2005b). In addition, genetic predisposition and lifestyle are also reported to play a role in the development of MetS (Fernandez-Twinn, Ekizoglou et al. 2006). Although the absence of a clear explanation for the aetiology of MetS can suggest that it is a provisional rather than a definitive concept, physicians still asserted that MetS is a real condition. Physicians also stated that the medical community should not be distracted by the controversies surrounding the syndrome, as the MetS concept is useful in detecting cardiovascular risk.

8.2.4.4 Informing patients about the MetS concept and diagnosis

The accounts of other physicians indicated uncertainty about the therapeutic benefit of disseminating the MetS concept amongst patients. Data analysis showed that two main factors resulted in physicians' reluctance to inform patients about their MetS diagnosis or concept, which were the complexity of the term 'metabolic syndrome' and their doubt in its ability to trigger behaviour change. This group of physicians expressed their lack of confidence in patients' ability to understand the term 'metabolic syndrome' and believed that simplifying health information required the dichotomisation of the MetS features through informing patients of the individual CRFs (i.e., blood pressure, diabetes, elevated lipids and obesity) rather than calling them

collectively 'metabolic syndrome'. The unavailability of a simple Arabic alternative to the term 'metabolic syndrome' was another factor that discouraged physicians from informing patients of the MetS diagnosis and believed that such a complex term¹³ would be difficult for patients to remember or understand. In addition, physicians felt that they did not see the benefit of informing patients about the MetS because they doubted the superiority of such information in triggering behaviour change over information on individual CRFs. In that sense, the MetS concept did not offer a promise to enhance adherence or guarantee an improvement in therapeutic outcomes. Such beliefs are opposing to Grundy's argument that informing patients of the significance of the clustering of risk factors on one's health would communicate a sense of urgency for intervention than would the presence of a single risk factor (Grundy 2006). The literature also reports that patients who received sufficient information about their chronic heart diseases showed a significant improvement in their adherence to their treatment plan (Alm-Roijer, Stagmo et al. 2004). Hammad et al (2011) also found that pharmacist-led MetS management, which included providing patients with information about their diagnosis and the MetS concept, helped reverse MetS status in 39.1% of the study participants. Unfortunately, studies that explore reasons behind physicians' reluctance to inform patients about their MetS diagnosis or the incorporation of the MetS concept into patients' health education were unavailable during the write-up of this thesis. However, Evans et al (2007) in the UK developed the WAKEUP toolkit to provide patients with sufficient information about the MetS concept through the feedback of both patients and physicians who were keen on enhancing patients' awareness about the syndrome (see section 2.4.3). The attitude of physicians' in the Evans et al study is contrary to the attitude of physicians in my study who did not see a need to inform patients about MetS.

Physicians' views towards the impact of enhancing patients' health knowledge on health behaviour were inconsistent in this study. For example, physicians were adamant that enhancing patients' health education would improve their medicine use behaviour (see section 8.2.3.3). However, physicians seemed less enthusiastic towards informing patients about the MetS concept and doubted its significance in triggering behaviour change. This attitude could be attributed to the limited amount of research on MetS that is dedicated exploring the clinical utility of the MetS concept or its role in health education and improving patients' health behaviour. It could also be explained by the lack of an organisational or institutional support of the MetS concept where

¹³ Mutanazelat Al-Aidh is the Arabic literal translation of 'metabolic syndrome'. Physicians believed that this Arabic alternative for MetS was complex and difficult for patients to remember and understand unlike diabetes (sukkari in Arabic) and hypertension (pressure in Arabic) that are easy to memorise and understand.

HCPs are provided with the policy and the tools that facilitate its utilisation within the clinical setting.

8.2.4.5 Limitations to the use of the MetS diagnosis

The lack of support from health organisations and policy makers to enhance the clinical utility of the MetS concept became more evident as a number of physicians expressed their disappointment towards the absence of the MetS diagnosis from the list of reimbursed health conditions. Physicians explained that because MetS was not included in the list of reimbursed diseases, patients' health insurance policies did not cover prescribed medicines prescribed based on a MetS diagnosis. Therefore, documenting the MetS diagnosis in prescriptions would increase prescription copayments and eventually complicate adherence, especially in patients with basic health insurance policies. Physicians' reluctance to document MetS as a diagnosis is reported in the literature. For example, although the MetS international code for diagnosis (ICD-9-CM code 277.7) was introduced in 2001, physicians in the USA seldom use this code in diagnosing patients with MetS (Reynolds, Muntner et al. 2005; Ford 2005a). This attitude is not surprising considering that the website of the Endocrine Society warns its members about the denial of coverage by health insurance companies when a MetS diagnosis is used. It also claims that lack of reimbursement is mainly due to the inclusion of obesity in the MetS definition (Reynolds, Muntner et al. 2005). Such health insurance policies that prevent reimbursement of prescriptions based on a MetS diagnosis, and, therefore, increase prescription co-payments, can discourage physicians from using the MetS as diagnosis. Physicians' inability to document the MetS diagnosis could have also reduced the perceived value of informing patients about MetS concept. Some physicians also admitted that they also were accustomed to documenting individual CRFs rather than MetS in patients' medical files. They added that dichotomisation of MetS is a common feature in the definition and therefore, they did not see the need to document the MetS diagnosis. However, they believed that the use of the MetS diagnosis might increase with time as the concept starts to disperse throughout the clinical practice and across different disciplines, and with the elimination of organisational restrictions to its use.

8.2.4.6 The role of MetS in public health and health promotion

Almost all HCPs talked about the importance of including the MetS concept in the public health care policy and health promotion campaigns. They believed that the core principle of such

approaches should be to reduce the prevalence of underlying causes of MetS and key risk factors for CVDs (i.e., low levels of exercise, high fat consumption, elevated blood pressure and diabetes) across the entire adult and young populations of the UAE (see chapter 8). They also focused on a number of government sectors and stakeholders (i.e., health authorities, schools and higher education authorities, the mass media, urban planning and even members of the royal family) who they believed could collaborate to help address MetS holistically and not in a merely treatment-oriented manner. They felt that intersectoral health alliances would enable the targeting of services based on wider consultations, pooling of different knowledge and expertise and the use of different tools and strategies that cater for different community needs, which would narrow the gaps and result in health equity amongst patients with MetS. HCPs' accounts indicated that they were not mainly concerned with enhancing public awareness of the MetS concept, but rather with strategies that would target the broader determinants of cardiovascular prevention and would, therefore, have a powerful impact on the overall health of the population. This could explain why all their accounts about methods to improve the management of MetS revolved around health awareness and health education that would improve patients' health behaviour. However, HCPs' strong belief in the role of changing health behaviour is understandable since the prime emphasis in the management of MetS per se is to alleviate the modifiable, underlying risk factors (i.e., obesity, physical inactivity and diet) through lifestyle changes (Grundy, Cleeman et al. 2005; Alberti, Zimmet et al. 2006). They also repeatedly stated, during interviews, that lifestyle interventions were the most challenging aspect of MetS management for patients compared to taking medicines (see 6.1).

In 2007, MetS was ranked a top health priority in HAAD's list of health priorities for Abu Dhabi's public health strategy (HAAD 2007). Available data on health promotion strategies in the UAE indicate the presence of a number of approaches that targeted MetS features but with greater focus on diabetes and obesity (ICLDC 2007; HAAD 2009; Hajat and Harrison 2010; Olenak and Calpin 2010; WEQAYA 2010). Many of these approaches were facilitated through the conjoint efforts of different concerned sectors in the UAE, including the authorities that represent health, schools, tourism, communication and urban planning (see sections 2.4.1 and 2.4.2). Although the core principle of most of these campaigns was to prevent diabetes and increase public awareness about the importance of early screening and management, they also drew public attention to other causes of MetS and CVDs, such as hypertension, obesity, sedentary lifestyle and unhealthy diet. The impact of such health prevention and promotion strategies or their effectiveness in preventing CVDs or MetS features has not been assessed yet. While there is very little research

directly addressing the impact of MetS on public health and/or health promotion activities, the introduction of the concept and the consequent surge of interest in the syndrome have stimulated valuable thinking and research across different disciplines in different parts of the world. For example, MetS interventions led by nurses (Palmer and Luther 2007) and pharmacists (Irons, Mazzolini et al. 2004; Sanders, Lubsch et al. 2006; Schneiderhan, Batscha et al. 2009; Olenak and Calpin 2010; Benavides, Kohler et al. 2011; Hammad, Yasein et al. 2011) were reported to be successful in the screening for MetS, providing education and improving therapeutic outcomes. In 2009, the Hungarian National Committee of Pharmaceutical Care produced a MetS pharmaceutical care programme, which provides interested pharmacists in Hungary with the training required for MetS screening, patient education and management. After completing the training programme, pharmacists are then authorised to provide a pharmacy-led MetS management programme in their respective places of work (i.e., community pharmacies or hospitals) to patients who meet the MetS criteria (Hungarian National Committee of Pharmaceutical Care 2009). The Government of Japan has recently introduced a national screening programme using the MetS concept as a single point of entry to identify people at high risk who might benefit from an intervention to reduce CVD risk (Kohro, Furui et al. 2008). Other anecdotal evidence, including HCPs' accounts in this study, suggests that the MetS concept has educated HCPs on the importance of risk factor clustering and the need to assess related risk factors when one risk factor is detected. It has also encouraged HCPs not to focus simply on diabetes or CVD (Grundy 2006; Sadikot and Hermans 2010). However, one could still wonder how advocating prevention measures that are exclusive to MetS would differ from the strategies used to tackle any of its features such as hypertension, diabetes and obesity. Certainly, more research is needed to explore the impact of the MetS concept on health behaviour and the therapeutic outcomes of MetS patients in order to formulate a clearer idea on the impact of its utility in public health. However, until such tangible evidence becomes available, policy makers might feel reluctant to introduce the MetS concept into national or local health campaigns. Health authorities in Abu Dhabi have recognised the importance of including the MetS as a prime target in Abu Dhabi's public health policy; however, the MetS concept is still absent from health promotion messages and campaigns and limitation to its clinical utility still exists.

As discussed in this section, physicians' accounts indicated their concerns about the multiple definitions of MetS, the controversy surrounding its pathophysiology, its limitation to guide the clinical management in prediabetes, the uncertainty towards the benefit of including the concept in patients' health education and the limitations within health policy to its use as a diagnosis.

However, they still insisted that MetS was a 'real condition' that brought the attention of the medical community to a complex set of CRFs that increased an individual's potential for developing CVDs. Physicians' also seemed to agree on the importance of a collaboration of different clinical disciplines to facilitate patients' identification and early interventions using the MetS criteria. Despite HCPs' reservations about informing patients of their MetS, they were confident that public health policy should adopt the concept in health promotion strategies. This could suggest professionals need for an official recognition of the MetS concept to motivate its use in the clinical setting. It might also indicate that they perceive MetS as a concept that does not have a utility beyond its ability to screen for CRFs and identify patients at risk of CVDs, which is a view that is advocated by the critics of the syndrome (Brietzke 2007; Ferrannini 2007; Kahn 2007; Gale 2008).

8.2.4.7 Conclusion on the utility of the MetS concept (the researcher's opinion)

Overall, it was interesting to listen to physicians express concerns about the MetS controversy and limitations to its clinical utilisation, whilst maintaining optimism about its potential role in identifying patients at risk of CVDs. This attitude is understandable knowing that for us to reach a distinct opinion on the utility of the MetS we need to investigate four main areas, which are the pathophysiology of the syndrome, its epidemiology, clinical work and its impact in public health. As far as the pathology of the syndrome is concerned, there is still ongoing research that has not yet identified an agreeable and clear underlying aetiology of the condition. This lack of clarity in the pathophysiology of MetS suggests that the definition of the syndrome is still provisional and not definite indicating that our understanding of this concept is still limited and in need of further research. However, one can still challenge this assumption by the acknowledgment of other chronic conditions that still do not have a defined pathophysiology. For example, research on the underlying causes of diabetes and essential hypertension are still generating new data on their underlying mechanisms. However, no one questions the authenticity of diabetes and essential hypertension as diseases in their own right. One way of defending MetS is to acknowledge the fact that it is a complex disorder with multifactorial underlying risk factors. The two main underlying causes that have gained worldwide acceptance are insulin resistance and central obesity. However, ongoing research on the pathophysiology of the syndrome will continue to produce new information similar to that of other chronic diseases.

When it comes to the epidemiology of MetS, estimates suggest that it is present in at least a third of the population in most countries (Tonkin 2004). For example, in the UAE the syndrome prevalence amongst the population of adults from different ethnicities was found to be 40.5% (Malik and Razig 2008). Even in sub-Saharan African countries, where the prevalence of CVD is low, MetS is emerging as a public health problem, largely because of the long-term use of antiretroviral drugs in HIV-positive individuals (Mutimura, Crowther et al. 2008). Regardless of the definition used to identify these estimates, the MetS concept was able to highlight the burden of this composite risk profile that appears to be large and increasing worldwide.

Unfortunately, research on the clinical utility of MetS is extremely limited. This study is likely to be the first that has explored physicians' perspective of the MetS definition and factors affecting its use within their clinical practices. Accounts from HCPs indicated overwhelming limitations to a real clinical utility and public dissemination of the MetS concept. These limitations ranged from a health policy that impairs the use of the diagnosis, personal preferences for documenting individual CRFs rather than the MetS diagnosis, failure of the concept to deliver novel management guidelines, especially for patients with prediabetes, and uncertainty about the therapeutic value of introducing the MetS concept to patients. HCPs, however, admitted that the MetS criteria provided an easy to use, accessible and affordable tool to screen for CRFs and identify patients at risk of CVDs. They were also enthusiastic towards a multidisciplinary approach where different health specialities are involved in the screening process. This, they believed, would prompt a better cardiovascular prevention strategy and enable early therapeutic intervention. These accounts, however, indicated that the MetS concept is mainly valued as a tool for risk screening rather than a concept that guides clinical management. This perspective towards the MetS concept is also adapted in research that explores the role of pharmacists in MetS management. In these studies, the MetS concept was utilised as a diagnostic tool rather than a clinical management guide (Schneiderhan, Batscha et al. 2009; Olenak and Calpin 2010; Benavides, Kohler et al. 2011; Hammad, Yasein et al. 2011). Although this confirms the perception that the MetS concept fails to attract professionals to use it as a clinical guideline, it also counteracts critics' claims that traditional cardiovascular risk prediction algorithms such as Framingham (Sytkowski, Kannel et al. 1990), surpasses the MetS concept in its ability to identify cardiovascular risk. In addition, the fact that such studies reported the success of pharmacists' interventions in identifying patients with MetS and providing them with the necessary health assessment, contradicts critics' claims that the MetS concept fails to identify CVD risk and should be avoided in screening for cardiovascular risk.

Research that can provide information on the impact of the MetS concept on health promotion and public health is very limited or non-existent. Although Abu Dhabi's health authority has acknowledged the MetS as a health burden that affects almost half of the multiethnic adult population of the country, the MetS concept has still not been utilised in the country's health promotion campaigns or public health strategies. Therefore, there is little that can be concluded on that aspect.

More research on the four key areas (i.e., pathophysiology, epidemiology, clinical work and public health) that assess the utility of the MetS concept is still needed. Until then, the question of whether the MetS concept has a useful role in clinical practice remains valid and probably still unanswered.

I now move to present the implications of this study for patients, professionals, society and health policy of the UAE.

8.3 Implications of the study

The results of this study have provided valuable insights that further our understanding of the complexities of MetS management and the utilisation of the syndrome concept in practice. The data also provide an insight into factors that impact patients' perceptions of their clustered cardiometabolic diseases. The following section draws on the findings of this study and presents the implications for patients, society, professionals and policy makers.

8.3.1 Implications for patients

The study was able to identify several issues that are of importance to patients with MetS. Although this group of patients were aware of the CRFs documented in their medical files, they were unfamiliar with the MetS diagnosis. This was due to physicians' reluctance to inform them about the MetS concept. Grundy et al (2006) argues that informing patients about the MetS diagnosis, which signifies a risk factor clustering, would convey more of a sense of urgency for adherence than would the presence of only a single risk factor. Since disease representations are in effect cumulative, with information being adopted, discarded or adapted as necessary, this suggests that as patients become better informed of the MetS diagnosis and concept, their

attitude towards the associated risk and treatment needs may improve accordingly. Patients' accounts indicated that, in the absence of information about the MetS concept, other factors affected patients' perceptions of their CRFs in this study. For example, the communality of developing CRFs in the UAE, physical attributes of these diseases, information about illness and the experiences of other patients with MetS features seemed to affect patients' perceptions of MetS features. This resulted in a range of attitudes towards the seriousness of CRFs that included downplaying risk and grading the risk of individual CRFs. Disseminating the MetS concept amongst this group of patients might reinforce and enhance patients' awareness of the cardiovascular risk and might therefore result in better perception of the seriousness of having a cluster of CRFs.

Patients' accounts regarding the management of their clustered CRFs indicated some challenges that hindered their adherence to lifestyle interventions. Such factors did not always reflect a socio-cultural constraints and sometimes indicated structural, environmental, emotional and financial factors. Patients, therefore, should be encouraged to talk about limitations to lifestyle interventions during their consultations with their physicians, dieticians and health education workers. Such information will help in the tailoring of lifestyle interventions that accommodate patients' individual needs and circumstances.

This study was also able to identify a number of factors that affected patients' use of their prescribed medicines. Negative views about medicines, brand loyalty, and accessibility to medicine were factors that affected the attitude of patients with MetS in this study. Available literature indicates that patients will continue to modify their treatment regimens (Pound, Britten et al. 2005). Therefore, patients should be encouraged by HCPs to express their concerns about their prescribed medicines and assisted to find their own level of treatment. Patients should also be empowered to become more assertive in discussing treatment options with their physicians and pharmacists. Patients' empowerment will generate a better sense of responsibility towards health and eventually improve adherence (Koelen and Lindstrom 2005).

8.3.2 Implications for professionals

There are a number of implications for HCPs based on the findings of this study. One key finding from this study is that pharmacists, health educators and dieticians were not well informed of the MetS concept and were not involved in the screening of this group of patients. A recognition of MetS amongst all HCPs of different specialties could drive a widespread monitoring of

cardiovascular risk parameters and initiate early lifestyle and therapeutic interventions in this group of patients (Grundy 2006). Therefore, training for different HCPs on the MetS concept and management guidelines through continuous professional training programmes, workshops or local seminars could facilitate the dissemination of the MetS concept amongst different health professions and clinical specialities. This could also be coupled with an organised and well-planned multidisciplinary approach that facilitates the identification and referral of patients with MetS to the necessary family medicine clinics to initiate an early intervention. Engaging different health professionals in the screening of MetS features will lead to better monitoring and prevention of cardiovascular risk. A multidisciplinary approach will also help to reinforce health information and enhance awareness amongst this group of patients, as they will receive more informed health messages and advice on lifestyle from different clinical specialities.

Another key finding in this study was factors that affected patients' attitudes towards their medicines. Many of these issues were elicited during pharmacists' interviews and the focus group; however, pharmacists were not actively engaged in assessing the medicine use of patients with MetS or issues affecting their adherence to treatment. The literature indicates that pharmacists were effective in the screening of MetS features and in providing this group of patients with medicine use assessment and health education necessary to improve their therapeutic outcome (Hammad, Yasein et al. 2011). Therefore, pharmacists should actively engage in the medicine assessment of patients with MetS and organise pharmacy-led services where factors affecting medicine use in this study could be addressed during counselling sessions. Many pharmacists in this study felt that their attempts to initiate medicine assessment during prescription refills were usually rejected by patients. Therefore, training programmes for pharmacists on counselling techniques and communication is key to guide medicine assessment and improve their communication skills. However, pharmacists should also remember to assess patients' needs before initiating advice. They also need to treat patients as experts on their health and medicine. Many MetS patients are on chronic medicines and usually visit the pharmacy for repeat prescriptions; therefore, pharmacists should expect that such patients acquire knowledge and competency with time and eventually become experts in their health and self-management.

Another key finding in this study was physicians' reluctance to inform patients of the MetS diagnosis and concept. The complexity of the term and concept and their uncertainty of the therapeutic benefit this information would have on patients' health behaviour were the two main factors that prevented physicians from disseminating the MetS diagnosis and concept amongst

patients with MetS. This attitude is inconsistent with their statements about the importance of providing patients with information about their health and treatment to improve their attitude towards medicine-taking. These views also contradict their enthusiasm about engaging pharmacists in MetS management through MetS screening and education programmes. Therefore, physicians need to be consistent in their attitude towards providing patients with information relevant to their diseases and treatment plan. They should also remember that part of patients' empowerment is attained through providing patients with comprehensive information about their diagnosis and the risks associated with their diseases. This may mean that physicians will need to work with health educators, pharmacists and other members of the multidisciplinary team to develop simple education materials/programmes about MetS that are designed specifically for patients with MetS.

HCPs need to recognise the sophistication of patients' assessments of the seriousness of their conditions and their risk of developing CVDs (see section 8.2.1). They also need to understand how such assessment affects the choices patients make to reduce this risk. They also need to be aware of the personal and contextual factors that influence patients' adherence to treatment. This means moving away from the view that patients should be compliant with lifestyle targets or medicines and the moral implications associated with this view.

HCPs also need to encourage patients to talk about their concerns regarding their diseases and prescribed treatment. The role of leading a stressful lifestyle on the management of CRFs, misconceptions about the Risk of MetS features and brand loyalty were amongst the health issues identified in patients' accounts. HCPs should, therefore, be trained on methods to effectively elicit patients' treatment needs and explore their views, beliefs and concerns about treatment. A shared decision-making approach would probably be of value to help physicians as well as pharmacists to empower patients and encourage them to talk about their treatment needs. Available literature reports that patients who were actively involved in making decisions about their treatment plan were able to achieve better management of their diseases and reduce functional limitations (Pollock 2005). Dowell argues that establishing a consultation environment where patients' and physicians' intentions are made clear would prevent the prescribing of unnecessary medicine. It would also increase patients' commitment towards the treatment plan because their autonomy and self-determination has been respected and acknowledged (Dowell 2004). Health professionals should also acknowledge and accept that patients will continue to modify their treatment or reject some of their prescribed medicine. Therefore, HCPs should

understand the contextual factors and patients' beliefs and values that influence their decisions and medicine use and work with them to find their preferred treatment options.

HCPs need to also be equipped with information about social-cultural norms and even religious beliefs in order to understand patients' stances concerning their beliefs and cultural norms. As such, HCPs can then provide patients with different treatment options that best suit their beliefs. They can also rectify some of the patients' treatment misconceptions or health behaviours by using culturally appropriate approaches. In relation to information about medicines, patients should be provided with accurate and clear information about the potential for medicines to cause harm, which health professionals continue to have reservations about (Raynor, Blenkinsopp et al. 2007). This might clarify some of the misconceptions that some patients had about the risk of medicines, which affected their medicine use.

8.3.3 Implications for society

The study was able to highlight some of the contextual factors that affected patients' implementation of their treatment plans. These factors sometimes indicated a strong dominance of socio-cultural norms and beliefs about patient approaches to the management of MetS, which affected their health behaviour. Since society can sometimes play a key role in determinants of health and health behaviour (Naidoo and Wills 2009), society should be informed of the MetS burden in the UAE and the risk the country faces in terms of the high prevalence of MetS features and the potential cardiovascular complications. Members of the UAE society should also understand how this health problem, if left unaddressed, would eventually affect them and their families. Such awareness might enable society to comprehend and appreciate their role in facilitating the prevention and improvement of MetS through providing social support to its members and advice to health policy makers.

According to reported estimates, the population of the UAE has reached eight million. The vast majority of the population are foreigners from different parts of the world. The Emirati population of one million, on the other hand, represent the minority (UAE Interact 2010). This suggests that different communities of different cultural backgrounds and different health beliefs and values reside in the UAE and access its health care facilities. Literature on health promotion indicates that strengthening community actions results in the empowerment of people to take responsibility of their health and gain control over the factors affecting their therapeutic

outcomes (Naidoo and Wills 2009). Therefore, different communities living in the UAE should realise the importance of working in partnership with health care leaders and policy makers to facilitate the tackling of the MetS health problem. Community members, as such, can act as advocates for their socio-cultural needs and can provide advice on the best ways to cater for those needs. For example, individuals in need of women-only gyms or healthy restaurants in malls and shopping centres can communicate these needs to policy makers through their community representatives. In addition, the collaborative role of society in the management of MetS would extend a sense of responsibility towards promoting health and combating contextual barriers. This could reduce the impact of socio-cultural roles that currently hinder MetS management because members of the community will feel responsible towards their health and the health of people living in their societies.

8.3.4 Implications for health policy

The place of MetS within the UAE health policy remains a question that requires thorough assessment and exploration. Findings from this study, however, highlighted potential gaps within the UAE's public health policy and health promotion programmes that address MetS. Participants' responses regarding facilitators to MetS prevention and management in the UAE identify areas in need of further improvement. Currently the MetS concept is included in one of the targets of the public health targets of Abu Dhabi. An extension of this policy is needed to include health policies of other cities in the UAE, which could be facilitated through the authority of the country's ministry of health. The collaboration between local health authorities in the UAE could result in health equity and would emphasise the need to address MetS as a national burden that affects all residents of the UAE.

Results in this study showed that many patients graded the risk of individual CRFs rather than viewing all as driving forces of cardiovascular complications. They also believed diabetes to have the highest risk compared to blood pressure and obesity. This could in part be due to health promotion campaigns in the UAE that mainly focus on diabetes and encourage early screening. Therefore, disseminating information about MetS during health promotion campaigns might communicate the augmented risk of the clustering CRFs rather than individual CRFs, such as diabetes. This might also encourage patients to address all CRFs rather than focus on one or perceive one disease as more serious than the other.

The absence of the MetS diagnosis from the list of reimbursed diseases antagonises the efforts of Abu Dhabi's health authority in tackling the MetS risk in the UAE. The MetS burden has been recognised by the public health policy of Abu Dhabi since 2007 (HAAD 2007) and has been incorporated into its health promotions and cardiovascular prevention plan (HAAD 2009). Therefore, the MetS diagnosis needs to be included into the list of reimbursed diseases to further enhance the clinical utility of the syndrome.

The study identified many barriers that were influenced by socio-cultural norms. Therefore, public health promotion for the prevention of MetS needs to address these barriers and cater for them in their strategies. Providing multiple options that meet the needs of different communities of different cultural background will be ideal for the management of MetS. Health policy makers might benefit from allowing members of different communities to act as advocates of their communities' needs. This will ensure that health reforms cater for the multicultural population of the UAE.

The new national health insurance policy imposed limitations on the patients who had the basic health insurance scheme. Health authorities need to create exemptions on prescription copayments for patients with chronic illnesses, including patients with MetS. This will facilitate access to medicines and will minimise the risk of nonadherence. Creating copayment exemptions for patients with basic health insurance policies will work alongside the public health policy objectives in tackling the MetS health burden in the UAE.

There is also a need for more national health research that explores health needs for the prevention and management of MetS. The health authority of Abu Dhabi (HAAD) reported MetS as one of the top health challenges in the UAE (HAAD 2009). HAAD also collaborated with other non-health authorities to advocate for healthy lifestyles through the implementation of different health promotion (Diabetes UAE 2007) and disease prevention programmes (Hajat and Harrison 2010; WEQAYA 2010). However, there was no reported information on whether population health needs were assessed prior to the implementation of such programmes. There were also no reports that indicated whether the health impact or effectiveness of ongoing health promotion programmes were assessed and evaluated. Lack of literature that describes health needs or the health care system in the UAE was a barrier identified when designing this study (see section 2.2.1) and was equally reflected in participants' responses (see section 7.2.2). The study also identified many of the patients' misconceptions about lifestyle and medicines, their condition and

the risk of CRFs. Through national health research, such issues can be further explored on a sample that represents the UAE population and findings from such studies can inform future health promotion strategies.

Having discussed the significance of the findings, how these relate to the literature and the implications of the findings for patients, professionals, society and policy makers, the discussion now turns to consider the limitations and strengths of the study.

8.4 Study limitations and strengths

As with any research, there were several limitations that affected the data presented in this thesis. The first limitation was the study sample (29 patients, 27 HCPs and 9 pharmacists in the focus group). The study was conducted in one hospital in Abu Dhabi. Patients were mostly recruited from SKMC outpatient clinics and family medicine clinics while they attended their clinic appointments. Therefore, this sample may not be representative of all patients with MetS in the UAE. In addition, patients who access medical care may be more concerned about their health or face a different set of barriers to MetS management than those who do not access medical care or attend their appointments.

Recruitment of HCPs was a mixture of direct approach and then snowballing. This may suggest that only HCPs who were enthusiastic about taking part in the study were included. Snowballing meant that initially interviewed HCPs suggested others for the study, which may have resulted in bias. As discussed in section 3.7, a sample selection in qualitative research is not usually intended to be representative of a large population or to produce generalisable data; rather the study aims to provide reliable, detailed information, which accurately reflects the context of the research or the individuals that are the topic of the research. Patients' selection was not confined to UAE nationals, as SKMC started registering and treating patients of different nationalities since the enforcement of the national health insurance scheme in 2007. By including a wider range of nationalities we aimed to identify health care issues that can be transferable to other patients with varying ethnic background, gender and age.

As previously presented in section 3.7, the participant sample was guided by emerging data and continued until no new themes emerged. No new themes appeared to emerge as the interview reached 25 patients and 23 HCP interviews. However, an additional four patients and four HCPs

were interviewed to ensure no new themes were missed or ignored. Some of the themes identified during the focus group did not emerge in previous interviews. These new themes were concerned with the pharmacy profession and pharmaceutical care in the UAE and were not specific to MetS management. All participants in the focus group were pharmacists which could explain why, at some point during the meeting, discussion diverted to include topics of shared interest, such as strategies to improve pharmacy practice in the UAE. Pharmacy profession-related themes were not discussed or included in this thesis but highlighted areas for future research (section 8.6).

The researcher's identity as a pharmacist may have influenced participants' responses. For example, it is possible that patients tried to give an impression that they adhered to their treatment plan during interviews when they were asked about factors affecting their therapeutic outcome. They might have been inclined to report external factors, such as work stress, genetic, and lack of social support, to justify suboptimal control of their CRFs rather than their medicine use and health behaviour. However, they might have also been inclined to provide me with detailed information about their health condition and concerns about their therapeutic management because they trusted me as a HCP. During interviews, many patients referred to me as 'doctor', which is what pharmacists are commonly addressed by in the UAE. They sometimes shared information about the health of their relatives and asked for professional advice. Other patients admitted that their attitude towards diet and exercise were responsible for their uncontrolled CRFs and indicated that a change in their health behaviour might improve their health condition. Such accounts indicated that patients were able to freely engage in the interviews and express their views and opinions regarding factors affecting their health. In general, patients were found to be relaxed during interviews and appeared to trust me with information about their health and treatment plan, which facilitated the generation of accounts that helped answer the research questions. More elaboration on the researcher's impact on the interview dynamics and participants' responses is provided in section 8.5.1.

The researchers' identity might have also influenced the accounts of HCPs. For example, HCPs might have tried to convey their competence in managing patients with MetS and to blame patients' health behaviour for the inability to attain therapeutic goals. They might have felt the need to present themselves knowledgeable about the MetS concept and its management. However, many HCPs admitted their lack of knowledge about the MetS concept despite their exposure to this group of patients during their daily practice. Some physicians took responsibility

for patients' unawareness of their MetS diagnosis and admitted their role in the limited utilisation of the MetS within clinical practice. Such accounts and others illustrated HCPs willingness to express their views on MetS and different factors that affect MetS management in the UAE.

To minimise the impact of the researcher identity on participants' accounts, patients and HCPs were informed that the research was independent of SKMC and that taking part in the study would not affect their treatment or work respectively. Participants were also assured of the confidentiality with which their identities and accounts would be treated and handled. In addition, participants were allowed time to ask the researcher about her identity, job, study location, and future implication of the research. They were also provided with an information sheet prior to participation. In this way, the participants knew more about the study and about the researcher. In order to check for researcher bias, coding of data was checked and the findings were discussed with the research supervisors who were satisfied that the coding was accurate. Table 3.2, presented in chapter 3, illustrates all measures taken to ensure the credibility of this study.

Despite the above-mentioned limitations, a large amount of valuable data were collected and analysed during this study. This study was able to draw on views of both patients and HCPs in conjunction with the researcher's notes. This facilitated the exploration of MetS management in the UAE from the perspectives of multiple participants and through a range of paradigms. As outlined in the literature review (section 2.9.2), research that explored patient and professional perceptions of MetS and its management within the UAE context are lacking. Therefore, this study provides valuable information on MetS management needs in the region and was able to highlight areas for future studies.

8.5 Reflexivity

Assessing the standard of qualitative studies relies on the transparency with which the research process was conducted. Therefore, researchers need to acknowledge their own presuppositions, what they bring into the research and how this influences the research process. The researcher's epistemology needs to be acknowledged in order to assess the validity of a qualitative study. Social scientists have considered how the contextual details, such as the interview setting and the interactions between their own and the respondent's personal characteristics, may influence their data. Awareness of these factors is called reflexivity (Charmaz 2006). As researchers, we need to

sustain an informed reflexive consciousness to contextualise our own subjectivity in data interpretation and representation of experiences in the research process. Self-reflexivity allows for the understanding of our personal incentives for conducting research and responsibility towards the studied population. As such, the real challenge in qualitative research is not to eliminate but rather to document the influence of self, others and the research context on what we see, how we see and what made us see. As self-reflexive researchers, we need to constantly acknowledge our place in the setting being investigated. We need to carefully monitor our position in the research process, and the relationship with the study participants, which is important in maintaining a focus on the research agenda (Guillemin and Gillam 2004). This section presents some thoughts on the research process including the researcher's identity, recruitment to the study and influence on interviews.

8.5.1 The researcher's identity

The emphasis on the close connection between personal and representational process has formed the common ground of qualitative research. Our representations are only partial truth. How we represent and account for others' experiences is intimately related to who we are and the connections need to be spelled out (Guillemin and Gillam 2004). It is within this common ground that I root my self-reflexive account of the study I conducted about patient and professional views of MetS in the UAE. Going back to the UAE to conduct the qualitative research raised many questions. Trying to separate 'home' from 'work' was challenging. I knew as an Emirati and a Muslim the impact of the socio-cultural context of the Emirati society on many aspects of life, yet I was embarking on research that required asking about the 'obvious'. 'How can I assess neutrally? How can I ask about issues that I might know the answers to?' I was concerned about facing the obviousness of what my informers might be saying. I strove to find a position from which I could see the world I knew well with a new mindset and a new pair of eyes. While a foreign researcher runs the risk of being culturally blind, an indigenous researcher runs the risk of being blinded by the familiar. The literature on indigenous research addressed the problem of location by emphasising the difficult task native researchers' face in creating enough distance between themselves and their own cultures (Dwyer and Buckle 2009).

During the fieldwork I introduced myself as a Pharmacist/PhD student who is affiliated with a British institution. Being a Muslim, female and an Emirati are also key components of my identity. However, I did not feel the urge to include such identities into my portfolio as I felt that my dress

code (in the traditional Emirati black attire), my surname and the accent I spoke with would give away my nationality, religion and cultural background. As I tried to assign myself in a defined social category, it was resisted by my informers' unintentional attempts to stretch my identity so that it embraced different attributes including their own. I faced a number of challenges and opportunities as a result of my positionality in the research. I have come to recognise how significant individual and cultural contexts allow access, rapport and trust to groups of patients and HCPs. While doing the field research, my status was simultaneously that of insider and an outsider. The insider-outsider position is sometimes seen as an epistemological principle centred on the issue of access. From the literature, I have reviewed in my study it seems that the issue of access can take two forms. One is a 'monopolistic access' in which researchers have exclusive knowledge of the community and its members or have privileged access by having a claim to the hidden knowledge of the group that an outsider as a 'professional stranger' who is not a member of the community under study would not be able to access. In this framework the insider is an individual who has intimate knowledge of the community and its members which offers insights that are at times difficult to access by an outsider. The advantage of having shared experience with informers is that it provides researchers with greater access, better cultural interpretation, and deeper understanding and clarity of thought (Dwyer and Buckle 2009).

I was a relative insider by virtue of my indigenous cultural status and my nationality. My national identity assertion did not mean my Emirati identity so much as being from the UAE and its indigenous people. As the research progressed I felt that 'nationalism' might have overarched my gender, social, religious and educational positions when it came to how people connected with me. I was mostly referred to as the 'Emirati who is doing a PhD'. Nationalism, national identity and preserving heritage within the UAE were and still are the focal interest of the country's ruling elites. The national identity ideology of the UAE does not reflect a nationalist history associated with a struggle for self-determination seen, for example, in other parts of the Middle East, nor does it relate to the national prejudice and expansionism associated with some European nations in the nineteenth and twentieth centuries. The nationalism of the UAE does not derive from a conscious act of liberation but rather nationalistic sentiments are employed as a tool to build and develop a relatively young nation-state. As an Emirati brought up in the UAE, nationalism was nurtured in schools, universities and in workplaces. Advocating nationalism in such intensity, promoted patriotism and loyalty to the UAE. As Emiratis, we perceived ourselves and those who followed us as 'builders of the nation'. Helping 'builders build the nation' was perceived as a national duty. Because the UAE joined the global map in the early 1970's, the production of local

professionals and intellectuals was still in the development phase. Nationalism was not merely employed for physical construction but also to pave the way for nationals (individuals) to develop intellectually and professionally.

The nationalism ideology was put into re-play mode as I witnessed the impact of my nationality in gaining access and to informers' responses. I was frequently praised about my educational background by informers, 'God protect you, you're doing a PhD now! You make us all proud'. On numerous occasions at the end of an interview participants would recite a short supplication wishing me success 'maybe one day you'll be the Minister of Health. God willing'. Such statements co-occurred with acknowledgements of our national commonality: 'you are our daughter it's our pleasure to take part'. Being an Emirati PhD student might have stimulated their nationalistic sentiments. In that sense, taking part in the study might have been perceived as a national duty. Taking part in the research resembled, in part, helping a member of the national population become a better contributor to the society. Helping national individuals better themselves was consistent with their nationalistic sense.

Declaring my profession as a pharmacist added to my ability to establish better rapport with informers. Informing participants of my pharmacy profession as part of my research identity brought in different dynamics concerning the insider-outsider and the politics of representation across other axes of the social differentiation beyond sharing nationality or ethnicity. In the Emirati society, like many in the world, HCPs are perceived as having an elite social status. Different HCPs (i.e., doctors, pharmacists, dentists and laboratory chemists) are all referred to as 'doctors' and are believed to have a trusted moral authority over other professions. Patients' responses in particular indicated a sense of trust and a desire to share information about their health with me once they realised I was a pharmacist. This became salient as a number of patients disclosed intimate details about their health condition and sensitive side effects of some of their prescribed medicines: 'you are a doctor so it is ok to tell you this'.

Although I met my informers as a fairly casually dressed woman wearing the traditional Emirati attire, the fact that I carried a notebook and a digital recorder placed me in a conflicting position of difference. Research is not a commonly seen activity in places of public gathering. People usually associate research with 'reading books' or engaging in 'lab-based experiments'. Signing a consent form, getting interviewed and having responses audio-recorded were other aspects of the qualitative research that attracted informers attention. A few informers questioned the value of a

consent form: 'only political prisoners sign consents! I'm not a criminal'. Others resisted having their voices audio-recorded and sometimes pleaded to have it erased or deleted once their responses were transcribed. Myths, and sometimes facts, surrounding Middle Eastern states' security services discourage people from engaging in conversations that might reflect upon a government organisation. The risk of being misinterpreted was not worth taking if the consequence was losing your job, or being interrogated. I sympathised with my informers as I remembered my father's advice on my first day of work: 'keeping quiet and not criticising or questioning authority guarantees ambitious employees promotions and long lasting jobs'. Arabic literature is rich with proverbs that cement the idea of being watched or the risk of being detained: 'stay silent and you'll confuse your enemy', 'the walls have ears'. This became a vivid memory as I heard some informers mention their American and British nationalities indicating 'immunity' and authority to cross boundaries without risking career loss or getting arrested: 'I have an American passport so I'll tell you the truth as it is, I'm not afraid'. I became concerned that reassuring my informers of the study's confidentiality might not be convincing enough. Although my research gave informers the freedom to address any factor they saw as influential in MetS management, I did not want them to feel restrained about confronting taboos.

Even though my research tools might have positioned me as the 'other' in that manner, the fact that I lived in the UK and studied in a British institution promoted openness and disclosure of perceptions and views by the informers. Many Arab communities believe that Arabs/Muslims who live in western countries become appreciative of the value of independence and autonomy: 'you're open minded and understanding. I think it's because you live in the UK'. It is common in Middle Eastern communities to associate democracy with western societies including outsiders who live in such societies. Informants frequently linked my pro-democracy (by association) identity with my previously established national (builder of the nation) identity and perceived me as the reformer and ameliorator: 'soon you'll come back and you'll fix everything'. In general, people were by and large incredibly willing to talk. At some point, I realised people love talking and they just need some sort of ground to voice their opinions: 'we can talk to you for hours, but you probably don't have time. I wish we had similar meetings in our department so we can just get everything off of our chests'. The issue of confidentiality needed to be ensured strictly and it was critical to achieve mutual trust between the respondents and the interviewer during the interview process.

It was hard to define the role of my gender (female) in the research and how it lends itself to my positionality in isolation from my religion and nationality. Although my research did not explore sensitive health issues, the collaborative role of my gender, nationality and religious position influenced the technicality within which this research was conducted when approaching male participants of the study. As a Muslim female Emirati brought up in an Islamic society, I felt responsible towards my religious and traditional heritage. Being a good researcher, in my belief, should not compromise being a good Muslim/Emirati. I had to act and behave in a way that satisfied the societal rules and expectations. While female patients and female HCPs had the privilege of selecting a location for the interview (i.e., clinical setting, work place, homes, public places or over the phone) men, on the other hand, were left with two options, which were either within a clinical setting or through a telephone conversation. Although gender segregation in public places is no longer a social necessity in the UAE, women and men of no marital or immediate family relationship are not expected to be seen together in public places nor to be together alone behind closed doors. In cases where I needed to meet my informer in his office or in one of the health education rooms the door was always kept slightly open. I am not certain whether this was a deliberate act or if this setting was spontaneous, but in all similar cases the door was never fully closed. I had to question whether this arrangement has violated the confidentiality of the interviewee making the conversation liable to eavesdropping by passerby. Although this was not, in all cases, an issue for my informers, I did reach a conclusion that I had no option but to accept this arrangement.

My religious identity was a powerful commonality that came into play at specific points during interviews conducted with Arabic/Muslim informants. Participants' sense of our religious unity was augmented as I asked about the impact of the UAE socio-cultural context on MetS management. Informants constantly directed answers towards the British institution I was studying in rather than directing them at me: 'When you go there, tell them that [...]'. Because I am a Muslim/Emirati, my informers assumed that I knew the answers to questions regarding the impact of the UAE socio-cultural context. The assumption that such questions were engendered by my lack of knowledge was unrealistic. The only logical explanation to such enquiry was to inform the British institution about the religion. As the topic of religion was raised, participants would immediately align me to their side where 'we' (participant and I) became 'one' against the other 'you and I know very well that our religion encourages us to medicate'. The study informants knew that research data will subsequently be reported to the British institution where there will be a number of non-Muslim/non-Arabic (western) panel of co-researchers: 'tell them

that [...]'. Explicit responses about the relation between religion and health were narrated with intensity and passion to an extent that made me feel they were using it as an opportunity to defend Islam: 'it's good you are there [in the UK], when they see a good example of Muslims, they'll change their view about Islam'. I felt that informants were using our global identity as Muslims regardless of our social, class and educational differences. Globally we have been homogenised and our identities were flattened and erased. I became an insider in this sense for my research informants because of my outsider status in the eyes and the minds of people who view all Muslims through a 'western' paradigm.

In other instances, some respondents were asking irrelevant questions that were not related to the field of interest. Some were more interested in my family background, why I chose the UK to study, how I paid for my tuition fees or how they (or their son/daughter) can apply for a PhD in the UK. Some asked me for advice on patient-provider relationship issues or who to contact to complain about an incident they encountered in the clinic. I had to politely engage with or listen to such conversations and steer them back to my research questions. In dealing with such dynamics of conversation, I sometimes needed to bargain in negotiating what was in the best interest in both getting my research done and not offending the respondent. From my previous professional experience, I know that such questions need to be diplomatically handled. In this manner, the fieldwork was an intensely personal experience for me. It felt like being part of a larger family where people felt free to interfere and be dogmatic. It also raised the questions about the ethics and politics of research involving negotiating relationships that simultaneously are respectful and allowed the research to proceed (to the extent possible).

Such positioning meant that research ethics had to be negotiated in practice on a continual basis. Such fluidity and openness in the research process is not always easy to endorse or maintain, especially when inserted into multiple scales of power relations and institutional affiliations, time constraints and distances (physical, emotional, philosophical and political). I know that regardless of all attempts to fill in gaps and position myself where my informers wanted me, I will always have limited ability to access people's lives and learn about their concerns and views. The important thing for me was to be as faithful to the relations in that space and time, and to the stories that were shared and the knowledge that was produced through the research, however limited or partial. In this respect, while the participants and I did not share some of the identities, we were able to share many views on the basis of mutual respect and trust that helped us to have some common ground from which to speak (Bolak 1996; Brayboy and Deyhle 2000).

It is important for researchers to reflect upon their professional backgrounds and their personal characteristics and to address the impact of such attributes on data collection and analysis. It is critical to pay attention to reflexivity, the production of knowledge and the power relations that are inherent in the research processes in order to undertake ethical research, especially in the international field of research contexts. Reflecting upon my professional background and the way others constructed my identity helped enable the engagement with the research process and data analysis in a more meaningful way (Mays and Pope 1995).

8.5.2 Translation dilemmas

Good qualitative cross-cultural research analysis is not an easy task as it requires knowledge and understanding of different approaches and techniques of the appropriate language. In my research it was fundamental that the process of translation/interpretation is investigated and that the epistemological implications of being the researcher and translator/interpreter at the same time are examined. Translation and interpretation in research involves the hierarchies of language, power and the situated epistemologies of the researcher and issues around naming and speaking for people who may be seen as 'other'. In a society, individuals who do not speak the dominant language of the international research arena are dependent on others to speak for them; speaking for others, in any language, is a political issue which engages the use of language to construct the self and others (Temple and Young 2004).

As a bilingual individual, I have been involved in translation at different stages in my life, at school and university projects, for my family members who could not speak English and during my professional development. Dealing with translation dilemmas was, to some extent, part of the way I learned and communicate with others. The importance of identifying the act of translation and interpretation was particularly important in terms of exploring my epistemological position as the researcher. As Temple and Young (2004) explain, 'translation itself has power to reinforce or to subvert long standing cross-cultural relationships, but that power tends to rest in how translation is executed and integrated into the research design and not just in the act of translation per se' (P:167). As such, I found it important that, as a researcher, I acknowledge my position within the social world, the relationships within research and explore how my location influenced the way I interpreted things. A cross-cultural researcher involved in translation argued that there is no single correct translation/interpretation of a text. Translation is not a matter of

finding the meaning of a text in a culture by using a dictionary but in understanding that the language is attached to local realities, to literacy forms and to changing identities (Regim, Naidoo et al. 2010). Through my own experiences in the translation and interpretation of data I realised that communication across two languages involved more than a literal relocation of information. The translation and interpretation process involves discussing concepts, ideas and positions which are all important parts of the negotiation process of 'cultural meaning'. Language and interpretation were identified and presented as a theme by some of the study participants when defining barriers to patient-provider communication (section 7.4). The role of interpretation in conveying cultural concepts was evident as some participants' misinterpreted patients' religious phrases (section 7.2.1).

During the translation and interpretation process, I had to make decisions about the cultural meanings that patients' responses (language) indicated. I spent a lot of time trying to evaluate the degree to which different worlds inhabit the same meaning. Because I am fluent in Arabic, I had an advantage, as far as research methods are concerned, over other researchers in cross-cultural research who do not have mastery of the language. My ability to discuss points in the transcribed text, reassessing the meaning and how much it reflects the cultural concept conveyed, became one way of assessing the validity of interpretation (Young and Ackerman 2001). However, this did not necessarily produce texts that were absolute truths, because as a researcher I am always situated in complex social locations. Through my dual role as the researcher and translator/interpreter, the role seemed to be shifting and this was linked to how I am positioned.

Researching from inside the language of the informants is a fulfilling and liberating act when the researcher-interpreter shares the common culture of those researched. This, however, does not necessarily mean that multilingual researchers produce better research than the monolingual researcher. In addition, being a multilingual researcher is not the only enquiry to better represent informants (Young and Ackerman 2001). Twine (2000) points out that translation/interpretation is not merely about 'racial matching' of the researcher with the informants because race and ethnicity are not the only, or always the over-riding factor in the translation/interpretation process. Twine stresses that having a certain degree of 'insiderness' because of language nativity is not a guarantee of an unproblematic position and, at the same time, difference may be a stimulator as well as a block to communication (Twine 2000). In any research that involves the use of translators/interpreters, it is critical that the translator/interpreter adopt the role of an informant or a 'neutral and objective transmitter of messages' (Temple & Young, 2004:167).

Without establishing the views and perceptions of the translator and interpreter about the issues being explored, it becomes difficult to allow for differences in understanding of words, concepts and worldviews across the languages. Therefore, reporting the translator/interpreter's involvement in the research process is important. Acknowledging the translator/interpreter's social position contributed to the knowledge being produced, because as individuals we are all positioned differently in the social world influencing our understanding of people as social actors (Temple and Young 2004).

As researchers we need to be reflective of the ways in which we, as individuals with social identities and particular perspectives, influence the interpersonal relations of the fieldwork. As researchers we need to be aware of our own social and political positions, make the translation/interpretation process visible and be responsible for the research data and the population we study. It is also important that translators/interpreters are included in the reflexive act. As a bilingual researcher, I have come to learn that one cannot assume that translating concepts across languages is not problematic. During interviews, I realised that a number of the Arabic HCPs were concerned about how their responses would be interpreted into English 'when you start translating, if there is something that you can't find an English alternative to call me and I'll help you'. Because of the culture and religion laden data, informants did not want misinterpreted data to be presented to a non-Arabic speaking panel when the data was transmitted to the UK: 'Our religion instructs us to medicate [in Arabic] so when you translate this use the word medicate [in English]'. The fear of having these values misinterpreted was linked with their concerns about having Islam and Arabic cultural concepts misinterpreted by a non-Arabic speaking panel. Although during the process of interpretation/translation I made sure that I conveyed the actual meaning, I have to admit that as a Muslim/Emirati I shared my informants' concern. In my study, I felt that I have spent time trying to make my identities as the translator/interpreter, researcher and Muslim visible, which have highlighted some of the tensions in asking the researcher to represent the 'other'.

8.6 Recommendations for future research

This thesis reported a number of important findings that have been highlighted throughout this chapter, but it also generated a number of areas for future investigation that included UAE health policy, patient-provider communication and pharmaceutical care in the UAE. Details about these areas are presented in this section.

8.6.1 The UAE health care policy

Whether it was a lack of health research or poor publications, there seems to be a need to explore patient-provider communication and the impact it has on patient satisfaction and therapeutic outcomes within the UAE context. The multicultural nature of the health care system in the UAE has widened the language gap and the consequential cultural incompetence between patients and HCPs. The strategy of health authorities in the UAE to close communication gaps was through providing onsite language interpreters. However, findings from this study suggest that the ramifications of cultural incompetence still existed and affected patient-provider communication and relationships.

8.6.2 Patient-provider communication

This study also identified a lack of concordance, as well as factors that hinder patients' empowerment and autonomy as reported by the study participants. Future studies can explore factors limiting cultural competence, concordance and patient-centred health care approaches. An ethnographic study that includes both observations of counselling sessions and interviews with patients and HCPs would provide an in-depth understanding of the dynamics of patient-provider relationships. Findings from such studies can then be utilised to design interventions that might improve patient-provider relationships and patients' satisfaction in the UAE.

8.6.3 Adherence to treatment plan

This study was also able to identify factors that altered patients' adherence to both lifestyle interventions and prescribed medicines. Some of these factors were influenced by the UAE socio-cultural context, food misconceptions and patients' beliefs about medicines. The prevalence of such factors and the extent to which they influence health behaviour and therapeutic outcomes in MetS management can be further validated in a population that represents the whole of the UAE or in culturally similar populations. Findings from such studies coupled with findings from this study can be used to design culturally sensitive interventions that enhance adherence to the prescribed MetS management.

8.6.4 Pharmaceutical care in the UAE

Another interesting finding from this study, which was not presented in detail, was pharmacists' limited role in patients' treatment plans. This finding was not merely restricted to pharmaceutical care of patients with MetS, but rather included all patient groups. Pharmacists were able to report many of the patients' beliefs about medicines that affected adherence; however, they were not involved in patients' health education and rarely assessed patients' medicine use. Future research can explore the pharmacy profession and pharmaceutical care in the UAE and factors influencing its development. Such studies can help identify gaps in the profession and the development of interventions that will ameliorate pharmaceutical care in the UAE.

8.7 Conclusion

This was a qualitative study that aimed at exploring patient and professional perceptions of MetS in the UAE. Through conducting semi-structured interviews and a focus group discussion, this study was able to identify a number of factors that influenced the holistic management of MetS. Factors such as the complexity of the MetS name and the absence of MetS from the list of reimbursed medical conditions discouraged physicians from informing patients of their MetS diagnosis and limited the clinical utility of the MetS concept, respectively. Family restrictions of outdoor exercising by women, lack of culturally sensitive health clubs, food-centric activities and eating habits were among the socio-cultural factors that hindered successful implementation of lifestyle interventions. Beliefs about medicines influenced patients' medicine-taking habits and altered their adherence to prescribed pharmacotherapy. Study participants reported a number of facilitators that they believed would improve MetS prevention and management in the UAE. HCPs emphasised the key role of the public health policy to prevent MetS and promote a healthy lifestyle.

This study provides important new information for understanding the dynamics of patients' health behaviour and attitude towards MetS treatment in the UAE. It also illustrates how aspects of the health policy and professionals' clinical practice limit the clinical utilisation of the MetS concept. Efforts to promote healthy behaviour and enhance the prevention and management of MetS in the UAE need to be stepped up and be tailored to patients' personal, social and cultural needs. HCPs should adopt a more patient-centred approach while acknowledging patients'

backgrounds in order to address different factors that impact patients' health behaviour and adherence to treatment plans.

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Appendix 1: SKMC ethical approval letter



INSTITUTIONAL REVIEW BOARD MEDICAL RESEARCH COMMITTEE

3rd July 2008

Ms. Naseeba Al Ozaibi
PhD Research Student
Division of Social Research in Medicines and Health
School of Pharmacy, University of Nottingham
University Park Nottingham NG7 2RD

**RE: PROTOCOL #72 – IDENTIFYING FACTORS THAT INFLUENCE BP CONTROL IN
HYPERTENSIVE PATIENTS WITH CARDIOMETABOLIC RISK FACTORS**

Dear Ms. Al Ozaibi,

The Research Committee has approved your research protocol titled as above in its meeting held on 24th June 2008.

The committee has reviewed and approved the following documents submitted by you.

1. Protocol Final Version (dated 28-May-08)
2. Informed consent document in Arabic (final Version dated 28-May-08)
3. Informed consent document in English (final Version dated 28-May-08)
4. Letter of support (to whom it concern) from ADNOC scholarship department
5. The PhD study protocol (dated 28-May-08)
6. Patient information sheet (Arabic and English versions (dated 28-May-08)
7. The following committee members were present for the meeting and have voted for its approval.

#	Member Name	Committee Position	Designation
1.	Dr. Ali Khalil	Chairman	Consultant Endocrinologist
2.	Dr. Jaishen Rajah	Member	Consultant, Pediatrics
3.	Dr. John Mansfield	Member	Chair, Department of Anesthesiology
4.	Jeanette DeBall	Member	Clinical Pharmacist
5.	Dr. Afrozul Haq	Member	Sr. Clinical Scientist (Clinical Chemistry, Dept. of Lab Med)
6.	Dr. Naghwa Nawaz	Member	Consultant, Department of Radiology
7.	Dr. Samer Ellahham	Member	Consultant, Department of Cardiology

The Research Committee has been organized and operates according to the Good Clinical Practice (GCP) guidelines.

We wish you all the best.

Regards,

ALI KHALIL, MD, FRCPC, FACP, FACE
Chairman, Research Committee

Patient and professional perceptions of metabolic syndrome and its management in the UAE

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information.

What is the purpose of the study?

Metabolic syndrome is defined as the clustering of cardiometabolic risk factors (i.e., hypertension, type 2 diabetes or impaired fasting glucose, dyslipidaemia and obesity). Metabolic syndrome is believed to be the new driving force of type 2 diabetes and cardiovascular diseases. The multifaceted nature of the metabolic syndrome mandates the implementation of both lifestyle and pharmacological interventions. However, many factors can prevent successful management. In the UAE it is estimated that 40.5% of the country's adult population have metabolic syndrome. Literature that describes the needs of patients with metabolic syndrome in the UAE is scarce; therefore, the aim of this study is to explore patients' health needs through the perceptions of both patients and health care professionals in the UAE.

Why have I been chosen?

Health care professionals who are involved in the management of patients with metabolic syndrome are an important source of information about patients' health needs and other factors that might hinder or facilitate their management. Physicians, pharmacists, dieticians and health educators are part of the multidisciplinary team of metabolic syndrome management and are invited to take part in the study.

Do I have to take part?

No. It is up to you to decide whether you want to take part. If you do, you will be given this information sheet to keep and be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason. Any data collected from you will be destroyed if you decide to withdraw from the study.

What will happen to me if I take part?

You will be interviewed by the researcher for approximately 30 minutes to 1 hour. This interview will gather information about your knowledge and experience in managing patients with metabolic syndrome. You will be asked whether you will allow the researcher to audio tape this interview or not. You and the researcher will agree on a location and timing for the interview once you agree to take part.

What do I have to do?

Once you agree to take part in this study you will only be required to take part in this interview.

What are the possible disadvantages and risks of taking part?

It is not anticipated that there will be any risk associated with the study. The interviews are unlikely to cover any sensitive issues, and you will not be forced to answer any questions you feel uncomfortable with.

What happens when the research study stops?

The study will not affect your continued treatment in any way.

What will happen to the research study records?

Data will be stored securely in a locked cupboard. Any data stored electronically will be fully password protected and at the end of the study data will then be destroyed.

What will happen to the findings of the research study?

The findings of the study will be published as a full report, as a research paper in academic and professional journals and presented at conferences. This is likely to be in 3-years time when the full study is completed. If you would like a copy of the findings, please let the researcher know either through email or by phone (see contact details at the end of this sheet).

No individual patient will be identified in any of the reports, papers or findings.

What if there is an issue that I want to report?

Any issue related to the interview that you feel needs to be reported can be reported to SKMC assigned co-supervisor : Dr. () Contact number ()

Will my taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence.

Who is organising the research?

This study is organised by the Division of Social Research in Medicines and Health at the school of pharmacy in the University of Nottingham and the researcher for a PhD degree.

Contact details for further information:

If you have any questions or need further information, either now or at any time during the research, please contact me at the contact details given below:

Miss Naseeba Al Ozaibi BSc/MSc
Division of Social Research in Medicines and Health
School of Pharmacy
University of Nottingham
NG7 2RD
Email: paxna@nottingham.ac.uk
Tel UK: ()
Tel UAE: ()

Thank you for taking the time to read this information sheet

Patient and professional perceptions of metabolic syndrome and its management in the UAE

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information.

What is the purpose of the study?

Metabolic syndrome is defined as the clustering of cardiometabolic risk factors (i.e., high blood pressure, type 2 diabetes or high blood glucose levels, elevated lipid profile and obesity). Metabolic syndrome is believed to be the new driving force of type 2 diabetes and cardiovascular diseases. The multifaceted nature of the metabolic syndrome mandates the implementation of both lifestyle and pharmacological interventions. However, many factors can prevent successful management. In the UAE, it is estimated that 40.5% of the county's adult population have metabolic syndrome. Literature that describes the needs of patients with metabolic syndrome in the UAE is scarce; therefore, the aim of this study is to explore patients' health needs through the perceptions of both patients and health care professionals in the UAE.

Why have I been chosen?

You have been chosen because you have the metabolic syndrome; therefore, you are a suitable candidate for this study. Patients with metabolic syndrome are able to talk about their health needs. Therefore, your participation in this study will help researchers understand factors that can improve patients' management and strategies that can prevent metabolic syndrome in the future.

Do I have to take part?

No. It is up to you to decide whether you want to take part. If you do you will be given this information sheet to keep and be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason. Any data collected from you will be destroyed if you decide to withdraw from the study.

What will happen to me if I take part?

You will be interviewed by the researcher for approximately 30 minutes to 1 hour. This interview will gather information about your knowledge and experience with metabolic syndrome and its management. You will be asked whether you will allow the researcher to audio tape this interview or not. You and the researcher will agree on a location and timing for the interview once you agree to take part.

What do I have to do?

Once you agree to take part in this study you will only be required to take part in this interview.

What are the possible disadvantages and risks of taking part?

It is not anticipated that there will be any risk associated with the study. The interviews are unlikely to cover any sensitive issues, and you will not be forced to answer any questions you feel uncomfortable with.

What happens when the research study stops?

The study will not affect your continued treatment in any way.

What will happen to the research study records?

Data will be stored securely in a locked cupboard. Any data stored electronically will be fully password protected and at the end of the study data will then be destroyed.

What will happen to the findings of the research study?

The findings of the study will be published as a full report, as a research paper in academic and professional journals and presented at conferences. This is likely to be in 3-years time when the full study is completed. If you would like a copy of the findings, please let the researcher know either through email or by phone (see contact details at the end of this sheet).

No individual patient will be identified in any of the reports, papers or findings.

What if there is an issue that I want to report?

Any issue related to the interview that you feel needs to be reported, can be reported to SKMC assigned co-supervisor: Dr. () Contact number ()

Will my taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence.

Who is organising the research?

This study is organised by the Division of Social Research in Medicines and Health at the school of pharmacy in the University of Nottingham and the researcher for a PhD degree.

Contact details for further information:

If you have any questions or need further information, either now or at any time during the research, please contact me at the contact details given below:

Miss Naseeba Al Ozaibi BSC/MSc
Division of Social Research in Medicines and Health
School of Pharmacy
University of Nottingham
NG7 2RD
Email: paxna@nottingham.ac.uk
Tel UK: ()
Tel UAE: ()

Thank you for taking the time to read this information sheet

Appendix 4: Health care professionals' consent form

Centre number:
Study number:
Health care professional identification number:



PROFESSIONAL CONSENT FORM

Title of the Study:

Patient and professional perceptions of metabolic syndrome and its management in the UAE

Name of the researcher: Naseeba Al Ozaibi

Please initial Box

1. I confirm that I have read and understand the information sheet dates () for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐
3. I understand that relevant data collected during the study may be looked at by responsible individuals from the University of Nottingham where it is relevant to my taking part in this research. I give permission for these individuals to have access to this data. ☐
4. I give my consent for the audio-taping of the interview that will take place between me and the researcher. ☐
5. I give my consent for anonymised direct quotes to be used in reports and publications. ☐
6. I agree to take part in the above study. ☐

Name of health professional

Date

Signature

Name of person taking consent
(if different from researcher)

Date

Signature

Researcher

Date

Signature

When completed, 1 for professional; 1 researcher site file

Appendix 5: Patients' consent form

Centre number:
Study number:
Patients' number:



PATIENT CONSENT FORM

Title of the Study:

Patient and professional perceptions of metabolic syndrome and its management in the UAE

Name of the researcher: Naseeba Al Ozaibi

Please initial Box

1. I confirm that I have read and understand the information sheet dates () for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐
3. I understand that relevant data collected during the study may be looked at by responsible individuals from the University of Nottingham where it is relevant to my taking part in this research. I give permission for these individuals to have access to this data. ☐
4. I give my consent for the audio-taping of the interview that will take place between me and the researcher. ☐
5. I give my consent for anonymised direct quotes to be used in reports and publications. ☐
6. I agree to take part in the above study. ☐

_____ Name of patient	_____ Date	_____ Signature
_____ Name of person taking consent (if different from researcher)	_____ Date	_____ Signature
_____ Researcher	_____ Date	_____ Signature

When completed, 1 for patient; 1 researcher site file

Appendix 6: Patients' interview guide

Awareness of metabolic syndrome

1. Can you remember when you were first diagnosed with (MetS features)?
2. What other health problems do you have if any?
3. Do you have any symptoms? Can you describe to me what it feels like having these health problems?
4. How serious do you feel your condition is?

Patient's feelings towards their health condition

1. Did being a patient with MetS (CRFs) change your life? If so how?
2. Do you know anyone else who has a similar health condition? How does their condition compare to yours?

Patient's knowledge about their treatment plan

1. Can you tell me what drugs you are taking now?
2. How long have you been on these medications?
3. Can you tell me what each is used for and how you're taking them?

Patient's feelings towards their treatment plan

1. How do you feel towards your current treatment plan?
2. Did your treatment plan go through many changes?
3. If yes, what were they? How did that make you feel?
4. Do you agree with everything your prescriber suggests/prescribes? (yes/ no) Why?
5. Do you think this treatment is working for you? / How successful this treatment plan is?
6. How do you feel you should be treated?

Factors affecting management

1. Can you tell me what you do to look after your health condition?
2. Do you face similar difficulty with your drug regimen?
3. How hard is it for you to keep taking your drugs as prescribed?
4. What do you think will happen if you do not take your medication as prescribed?
5. Are there other factors that make this worse?
6. How do you think this should be solved?
7. Did you talk to your doctor about it? Why? (yes) How did they feel about it?
8. How hard was it for you to adjust your lifestyle?
9. Why do you think it is hard?
10. How do you think this could be made easier?
11. How important or necessary do you feel it is to improve your lifestyle?
12. What do you think will happen if you do not change your lifestyle?

Is there anything else that you want to add about your health condition or medicines?

Is there anything you expected me to ask you about and I did not?

Thank you for taking part in this interview.

Appendix 7: Health care professionals' interview guide

Awareness of MetS

1. What do you think of the MetS?
2. Do you use MetS to identify patients at risk of diabetes or CVDs?
3. What definition of MetS do you use in the clinical setting?
4. Do you think that the MetS concept is useful within the clinical setting?
5. From your experience, how significant is the MetS in the UAE/ Abu Dhabi
6. What do you think the reasons are behind the high prevalence of MetS in the UAE?
7. What do you think patients' with MetS in the UAE need?

Existing strategies for the management of MetS in the UAE

1. How are patients usually identified?
2. Do you inform patients of their MetS diagnosis?
3. Can you describe for me the steps followed in managing patients with MetS?
 - ✓ Health education
 - ✓ Referrals
 - ✓ Assessing adherence
 - ✓ Patients' adherence

Barriers to MetS management in the UAE

1. What do you think influences the management of MetS in the UAE
2. What do you think influences patients' attitudes towards their condition?
3. What do you think influences patients' attitudes towards their treatment plans?
4. In your opinion, what are the barriers to MetS management in the UAE?
 - ✓ Health care related barriers
 - ✓ Health care professionals related barriers
 - ✓ Patients related barriers
 - ✓ Cultural related barriers

Facilitators to MetS management in the UAE

1. In your opinion what will facilitate the management of patients with MetS?
2. How can patients' therapeutic outcomes be improved?
3. How can we prevent the metabolic syndrome?
4. Do you think existing strategies are sufficient to improve MetS management and prevention?
 - ✓ Public health policy
 - ✓ Prevention strategies
 - ✓ Health promotion strategies
 - ✓ Special health service for patients with MetS

Appendix 8: Pharmacist focus group interview guide

Awareness of MetS

1. What is MetS?
2. Did you hear about it before this focus group? Where?
3. How do you identify patients with MetS?
4. Do you have the tools to identify patients with MetS?
5. How different is a patient with MetS from that of other patients with other conditions? Do they need special attention? Do they have special health needs?

Barriers & facilitators to MetS management

1. What are the barriers and facilitators the management of patients with MetS?
 - ✓ Patient-related barriers
 - ✓ Pharmacists-related barriers
 - ✓ System-related barriers
 - ✓ Culture-related barriers
2. Are there any specific issues related to medicine-taking?
 - ✓ Adherence
 - ✓ Refills
 - ✓ Side effects
3. What are the most frequent issues reported by patients regarding their medicine?
4. How do you usually resolve patients' health issues when reported or identified?
5. In your opinion what will help improve the management of patients with MetS?

Pharmacists' role in managing patients with the metabolic syndrome

1. From your experience what is pharmacists' role in MetS?
2. What are the things you do with patients other than dispensing their medicines?
3. Do you assess patients' adherence/ review medicine use?
4. Do you do any kind of medicine use reviews? Do you investigate ADR?
5. Do you give advice on lifestyle? Why?
6. Do doctors welcome your recommendations?
7. When patients say they don't use certain medicines but they will still collect it, what do you do?
8. How often do you give advice on medicine or get asked about a drug-related issue?
9. What are the most common concerns of patients with MetS when they ask for the pharmacists' assistance?
10. Do you want to be involved in MetS management? (if yes) How would you like to be involved? (if No) Why?
11. Who do you think is better suited for the task: clinical or dispensing pharmacists?
12. What are the limitations in contributing as clinical pharmacists? How do you think they can be resolved?

Future work

1. Do you think you want to have a role in managing patients with MetS?
2. How can pharmacists contribution to the managing of patients with MetS be improved?

Appendix 9: Information of HCPS taking part in the interviews

This table also illustrates interview duration, language with which the interview was conducted and location of the interview.

Professional	Gender	Nationality	Language	Location	Duration
Doctor-1	Male	Palestinian	Arabic	FMC	00:37:49
Doctor-2	Male	Sudanese	English	SKMC	00:57:33
Doctor-3	Female	Emirati	English	DC	00:36:42
Doctor-4	Female	Jordanian	English	OPC	00:58:21
Doctor-5	Female	Jordanian	English	DC	00:35:11
Doctor-6	Male	Egyptian	English	OPC	00:32:06
Doctor-7	Female	Egyptian	English	OPC	00:37:01
Doctor-8	Male	Iraqi	English	OPC	00:28:30
Doctor-9	Male	Palestinian	English	OPC	00:28:30
Doctor-10	Female	British	English	FMC	00:26:35
Pharmacist 1	Female	Canadian	English	DC	01:40:49
Pharmacist 2	Female	Emirati	Arabic	FMC	00:32:16
Pharmacist 3	Female	Sudanese	English	FMC	00:47:56
Pharmacist 4	Female	Lebanese	Arabic	Coffee Shop	00:33.31
Pharmacist 5	Female	Jordanian	English	OPC	00:32:26
Pharmacist 6	Female	British	English	OPC	00:58:31
Pharmacist 7	Female	Emirati	Arabic	OPC	00:74:46
Pharmacist 8	Female	Emirati	English	OPC	00:48:18
Pharmacist 9	Female	Singapore	English	OPC	00:38:56
Pharmacist 10	Female	Emirati	English	FMC	00:52:16
Pharmacist 11	Female	Jordanian	English	OPC	00:34:31
Educator 1	Female	Bahraini	Arabic	DC	00:51:30
Educator 2	Female	Jordanian	Arabic	DC	00:21:06
Dietician 1	Female	Jordanian	Arabic	DC	00:43:09
Dietician 2	Female	Emirati	Arabic	DC	00:28:37
Dietician 3	Female	Emirati	Arabic	FMC	00:30:00
Dietician 4	Female	Emirati	Arabic	OPC	00:17.14

Duration units: (hours: minutes: seconds)

Abbreviations:

DC: Diabetes Centre

FMC: Family Medicine Clinic

OPC: Outpatient clinic

Appendix 10: Information of pharmacists taking part in the focus group

Focus group took place a meeting room at the of SKMC.

Duration of focus group was 01hr: 30m: 35s

Professional	Gender	Nationality	Pharmacy
Pharmacist 12	Male	Syrian	FMC
Pharmacist 13	Male	American/Palestinian	OPC
Pharmacist 14	Female	Egyptian	OPC
Pharmacist 15	Male	Jordanian	FMC
Pharmacist 16	Female	Egyptian	FMC
Pharmacist 17	Female	Egyptian	OPC
Pharmacist 18	Female	Egyptian	OPC
Pharmacist 19	Female	Jordanian	FMC
Pharmacist 20	Female	Egyptian	FMC

All participants in the focus group did not participate in the previous interviews

Abbreviation:

FMC: pharmacist working in a pharmacy located in one of the Family Medicine Clinics

OPC: pharmacist working in the Outpatient Clinic Pharmacy

Appendix 11: Information of patients taking part in the interviews

Patient	Gender		Age (yrs)	Nationality	Educational BG	Location	Duration
	Male	Female					
Patient 1	✓		45	British	High-school	OPC	42:21
Patient 2	✓		33	Emirati	University	DC	44:01
Patient 3		✓	69	Yemeni	Read and write	Patient home	21:16
Patient 4	✓		60	Yemeni	University	DC	33:00
Patient 5	✓		50	Indian	University	Patient work	23:43
Patient 6	✓		65	Yemeni	University	Telephone	19:56
Patient 7		✓	70	Emirati	Illiterate	Patient home	08:41
Patient 8		✓	52	Iranian	Primary-school	Patient home	07:36
Patient 9		✓	43	Palestinian	High-school	FMC	13:52
Patient 10		✓	50	Palestinian	Primary-school	FMC	17:07
Patient 11		✓	67	Emirati	Illiterate	Telephone	07:10
Patient 12		✓	43	Palestinian	High-school	Telephone	26:54
Patient 13	✓		49	Bangladeshi	University	DC	32:39
Patient 14	✓		73	Sudanese	University	DC	24:21
Patient 15		✓	55	Yemeni	Read and write	DC	20:44
Patient 16	✓		57	Palestinian	High-school	FMC	10:27
Patient 17	✓		60	Jordanian	High-school	Telephone	12:10
Patient 18		✓	54	Sudanese	Primary-school	Patient home	13:44
Patient 19	✓		67	Emirati	University	Telephone	28:37
Patient 20	✓		37	Emirati	High-school	Telephone	10:34
Patient 21		✓	49	Emirati	Illiterate	Patient home	16:50
Patient 22		✓	52	Yemeni	Primary-school	OPC	08:04
Patient 23		✓	55	Emirati	Read and write	Patient home	07:26
Patient 24		✓	46	Emirati	Primary-school	FMC	06:50
Patient 25	✓		60	Egyptian	Primary-school	FMC	05:59
Patient 26		✓	53	Iranian	Illiterate	OPC	18:32
Patient 27	✓		55	Emirati	High-school	OPC	11:06
Patient 28		✓	45	Yemeni	University	Patient home	16:28
Patient 29		✓	34	Emirati	University	Telephone	33:21

Abbreviations:

BG: Background

DC: Diabetic Centre

FMC: Family Medicine Clinic

OPC: Outpatient Clinic

Appendix 12: Publications and presentations from this study

CONFERENCE PAPERS

Alozaibi N, Anderson C, Boyd M. How culture and modernity limit successful management of the metabolic syndrome in the United Arab Emirates (UAE): a qualitative study with health care professionals and patients. East Midlands University Association 2010; available online: <http://www.emua.org.uk/article/postgraduate>

ABSTRACTS PUBLISHED

- Alozaibi N, Anderson C, Boyd M. Health professionals talking about cultural influences in managing patients with the metabolic syndrome: a qualitative study in the United Arab Emirates (UAE). International Journal of Pharmacy Practice 2010; 8(Suppl.1):83
- Alozaibi N, Anderson C, Boyd M. Hospital pharmacists' role in the management of metabolic syndrome in the United Arab Emirates (UAE): a qualitative study. International Journal of Pharmacy Practice 2010; 8(Suppl.1):83
- Alozaibi N, Anderson C, Boyd A. Why don't patients with metabolic syndrome achieve recommended blood pressure targets? A pilot study in the United Arab Emirates. International Journal of Pharmacy Practice 2010; 18(Suppl. 1): 32-33

PRESENTATIONS

Oral presentations

- How culture and modernity limit successful management of the metabolic syndrome in the United Arab Emirates (UAE): a qualitative study with health care professionals and patients. East Midlands University Association Conference 2010. Nottingham, United Kingdom
- Metabolic syndrome in the UAE. What are the health issues? A qualitative research. School of Pharmacy Post Graduate Seminar Series. The University of Nottingham July 2010
- A closer look at metabolic syndrome management in the UAE. Division of Social Research in Medicines and Health Research Group Presentation. The University of Nottingham July 2009
- Identifying factors that influence BP control in patients with the metabolic syndrome. A mixed method research in the UAE. Division of Social Research in Medicines and Health Research Group Presentation. The University of Nottingham May 2008

Poster presentations

- Health professionals talking about cultural influences in managing patients with the metabolic syndrome: a qualitative study in the United Arab Emirates (UAE). International Social Pharmacy Workshop 2010. Lisbon, Portugal
- Hospital pharmacists' role in the management of metabolic syndrome in the United Arab Emirates (UAE): a qualitative study. International Social Pharmacy Workshop 2010. Lisbon, Portugal
- Management of metabolic syndrome in the UAE: perceptions of patients and health care professionals. The University of Nottingham School of Pharmacy Research Day 2010
- Why don't patients with metabolic syndrome achieve recommended blood pressure targets? A pilot study in the United Arab Emirates. Health Service Research in Pharmacy Practice 2009