

**AN EXPLORATION OF FACTORS WHICH INFLUENCE MATERNAL SELF-
EFFICACY IN PRIMIPAROUS WOMEN IN CHINA DURING THE INITIAL
POSTNATAL PERIOD –
A LONGITUDINAL STUDY**

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Abstract

Background: There are many problems of parenting during infancy for Chinese primiparous women. As an important determinant of good parenting, maternal self-efficacy (MSE) should be paid more attention by researchers. At present, the limitations of previous research examining MSE during infancy are that most studies were related to a homogeneous sample (approximately 90% white) and lacked the consideration of cultural effect; the influencing factors remained poorly explored; and there were few studies related to Chinese women. Therefore, it is necessary to assess MSE and to thoroughly explore the factors influencing MSE among Chinese primiparous women in consideration of the Chinese postnatal culture of "Doing the month" to fill the research gap.

Aim: The aim of this study was to describe MSE and to explore factors which may influence MSE in primiparous women in China in the first three months postnatally.

Methods: A quantitative longitudinal study using questionnaires was conducted. In total, 420 primiparous women were recruited in obstetric wards at three hospitals in Xiamen City, China. Initial baseline questionnaires to measure socio-demographic and clinical characteristics at three days postnatally were distributed to participants face-to-face by the researcher on the postnatal ward. Participants' contact details were also collected. Follow-up questionnaires at six and 12 weeks were sent via email by the researcher to participants, including the Self-efficacy in Infant Care Scale (SICS), the Edinburgh Postnatal Depression Scale (EPDS) and the Postpartum Social Support Scale (PSSS) to measure MSE, postnatal depression symptoms and social support, respectively. These were returned by participants via email. Quantitative data were analysed using SPSS.

Results: The mean MSE score at six weeks postnatally was 74.92 (SD=11.05), and increased to 77.78 (SD=11.13) at 12 weeks postnatally. The mean social support scores at six and 12 weeks postnatally were 40.99 (SD=9.31) and 43.00 (SD=9.55). The mean EPDS scores decreased from 9.09 (SD=4.33) at six weeks postnatally to 8.63 (SD=4.40) at 12 weeks postnatally; the proportion of women with an EPDS score of ten or more at the two time points declined from 47.4% to 38.3%. The mean score of how satisfied women were with "Doing the month" was 68.73 (SD=17.65) at six weeks postnatally, with most women (91.4%) thinking that "Doing the month" after childbirth was necessary. In the multivariate analysis, the variables: social support scores, women's satisfaction with "Doing the month" scores, EPDS scores, maternal education, maternal occupation, baby health scores, and baby fussiness scores affected MSE scores during the initial postnatal period.

Conclusions: In this study, Chinese primiparous women had a moderate level of MSE and received a moderate level of social support at six and 12 weeks postnatally, and a higher proportion of Chinese women had postnatal depression symptoms than did women in Western countries. From six to 12 weeks postnatally, the mean MSE scores and social support scores had a statistically significant increase; the mean EPDS scores had a statistically significant decrease. "Doing the month" was still popular in Chinese modern society and almost half of the women felt satisfied about their experience of "Doing the month". Obstetric nurses and women's family members need to be aware of the significant contribution of social support, women's satisfaction level with "Doing the month" in positively influencing primiparous women's MSE, and the significant effect of postnatal depression symptoms in negatively impacting on first-time mothers' MSE; they should pay more attention to primiparous women with less education, unemployed mothers, women with unskilled occupations, women with an unhealthy baby, and women with a baby with a difficult temperament to improve their comparatively lower MSE levels during the initial postnatal period.

List of Outputs

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List of Abbreviations

ANOVA	Analysis of Variance
CI	Confidence Interval
CVI	Content Validity Index
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders-4th edition
EPDS	Edinburgh Postnatal Depression Scale
ICD-10	International Classification of Diseases and Related Health Problems-10th edition
ICN	International Council of Nurses
ICS	Infant Care Scale
IMR	Infant Mortality Rate
KPCS	Karitane Parenting Confidence Scale
MMR	Maternal Mortality Rate
MSE	Maternal Self-efficacy
MEQ	Maternal Efficacy Questionnaire
MHI-5	Mental Health Inventory-5
NHS	National Health Service in the UK
OECD	Organisation for Economic Cooperation and Development
OR	Odds Ratio
PES	Parent Expectation Survey
PMP S-E	Perceived Maternal Parental Self-Efficacy Scale
PND	Postnatal Depression
PSAM	Parenting Self-Agency Measure
PSE	Parenting Self-Efficacy Scale
PSI	Parenting Stress Index
PSSS	Postpartum Social Support Scale
PSOC-E	Parenting Sense of Competence Scale-Efficacy Subscale
SD	Standard Deviation
SICS	Self-efficacy in Infant Care Scale
SNRS	Self-efficacy in the Nurturing Role Scale
SPSS	Statistical Package for Social Sciences
TOPSE	Tool to Measure Parenting Self-efficacy
UK	United Kingdom
UN	United Nations
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations International Children's Emergency Fund
USA	United States of America
VIF	Variance Inflation Factor
WHO	World Health Organisation

Chapter One Introduction and Overview

1.1 Significance of the study

The World Health Organisation (WHO) states that “the future of human societies depends on children being able to achieve their optimal physical growth and psychological development” (WHO, 2002a, p.1). Competent parenting is extremely important for infants during this early stage of childhood. If appropriate and positive parenting cannot be provided during infancy, children may experience emotional, intellectual and behavioural problems, which may negatively affect their wellbeing in the future (Tilokskulchai et al., 2002; Çalışır & Karaçam, 2011).

With its huge total population, 1.39 billion (WHO, 2012b), China has 860 million women and children, which is the largest number in the world. Since the implementation of the one-child policy, more than half of Chinese parturient women are primiparous and lack previous parenting experience; thus, providing good parenting for infants is really a stressful and difficult task for some first-time mothers (Gao et al., 2010). Researchers have found that parenting during infancy was highly problematic for Chinese primiparous women, including negative mother–infant interactions and unsuccessful parenting tasks, such as unsuccessful feeding and inappropriate health care (Geng et al., 2006; Pan & Bao, 2006).

Maternal self-efficacy (MSE) is the belief a mother holds about her capabilities to organise and execute a set of tasks related to parenting a child (Montigny & Lacharite, 2005). There is strong evidence (Jones & Prinz, 2005; Haslam et al., 2006) which highlights that MSE is a significant predictor of parenting, and is associated with a variety of outcomes for mothers’ wellbeing and their children’s development. Therefore, to provide their infants with optimal care, mothers

need to have adequate MSE in parenting (Prasopkittikun & Tilokskulchai, 2010). In consideration of the important effects of MSE, an increasing number of researchers have focused on this domain, and related studies have been undertaken in some countries of the world, such as the UK (Kendall & Bloomfield, 2005; Bloomfield & Kendall, 2007), the USA (Fulton et al., 2012), Finland (Tarkka, 2003), Canada (Piercea et al., 2010), Australia (Haslam et al., 2006), Ireland (Leahy-Warren et al., 2009) and Thailand (Prasopkittikun & Tilokskulchai, 2010).

However, the most critical limitations of previous research on MSE are that most studies were related to a homogeneous sample (approximately 90% white), and the lack of consideration for the different cultural effect. Furthermore, the influencing factors of MSE have still been poorly explored (Salonen et al., 2009). For example, some research had a small sample size (Porter & Hsu, 2003; Kohlhoff & Barnett, 2013), only focused on one time point (Leerkes & Burney, 2007; Shorey et al., 2014b) and only related to a few characteristics of mothers or their children (Biehle & Mickelson, 2011; Shorey et al., 2014b).

There was one paper published in Chinese which related to MSE and its influencing factors for Chinese women in the mainland. However, its sample only focused on well-educated, high-income women in Beijing, and the influencing factors of MSE were not explored thoroughly. Furthermore, it did not refer to the Chinese postnatal culture of "Doing the month" with potential effects on Chinese primiparous women's MSE (Ngai et al., 2011). In consideration of the discrepancy in social and cultural background, the research findings of Western countries could not be extrapolated to Chinese primiparous women. Therefore, this quantitative longitudinal study was conducted to assess MSE and to thoroughly explore the influencing factors of MSE among Chinese primiparous

women in the mainland in consideration of "Doing the month" during the first three months postnatally to fill the research gap.

The results from this study not only generated information about what factors influenced MSE in Chinese primiparous women in the first three months postnatally, but also provided insights into the content and process of further intervention designed and implemented by health professionals, and the implications for future clinical practice in the context of health care in China to improve Chinese primiparous women's parenting.

1.2 Conventions and terminology used in the thesis

Where the term "developed countries" is used in the thesis, it refers to those regions or areas which are more economically developed, such as Europe, Canada and the United States in Northern America, Japan in Asia, and Australia and New Zealand in Oceania (United Nations Statistics Division, 2011). The term "Western countries" used in this study refers to a list of developed countries by the westernmost point on land, such as Europe, Canada and the United States, Australia and New Zealand. China is widely regarded as a "developing Eastern country", though it became the world's second largest economy in 2010 and increasingly, is playing an important and influential role in the global economy. According to the World Bank Report (World Bank, 2011), China is classified as an upper middle-income country and ranks 120th in the world with a per capita gross national income of about \$4,260 in 2010, compared with the UK's \$38,560 (ranking 31st) and the US' \$47,240 (16th).

The term "Global Time" is used in the thesis, which is an English-language Chinese newspaper under the People's Daily and is regarded as a high authority as "the English Voice for Government of China". The term "the researcher" is used in the thesis to make it clear to the reader where I was responsible for

taking particular actions in conducting the study. This has avoided the use of first-person pronouns in the academic writing, which could improve its persuasive power. The term "this study" refers to this thesis, which distinguishes it from other studies. Choosing such a style has added clarity and kept consistency to my writing.

It is emphasised that midwives in China only work in the labour and delivery rooms, which is different from midwives in the UK (introduced in Chapter Two Literature Review, Page 15), so postnatal nursing care, health education and parenting training during women's hospitalisation are conducted by obstetric nurses in China.

1.3 Structure of the thesis

The purpose of this thesis is to present this study which set out to describe MSE and to explore factors which may influence MSE in primiparous women in China in the first three months postnatally. To help orientate the reader, the structure of the thesis is described here.

Chapter One acts as an introduction to the rationale for this study, some of the key terms and conventions used in the thesis, and the structure of this thesis. It also provides an overview of health care for women and children in the context of China, including the maternal and child health services system; the related legislation; antenatal, intrapartum and postnatal care; the outcomes and challenges of maternal and child health care in China; and a comparison of maternal and child health statistics between China and the UK.

In Chapter Two, the related literature is reviewed to understand the context of this study. It is concerned with parenting during infancy; maternal parenting versus paternal parenting; the significance of maternal parenting for infants; what represents good parenting; and the problems of maternal parenting during

infancy in China. Furthermore, an introduction of maternal self-efficacy (MSE) is conducted, such as the theoretical framework of MSE; the important measurements of MSE; the previous studies of MSE during infancy in different countries in terms of research design, sample and main findings; and the potential influencing factors on MSE. Finally, Chapter Two ends with the introduction of a theoretical framework, and the research aim and objectives for this study.

Chapter Three describes the methodology and methods of this study. Rationale for the research design is discussed. Setting, participants, instruments, pilot study, data collection, data analysis are presented. Chapter Three also discusses the ethical considerations in connection to the design and implementation of this study.

In Chapter Four, The findings of the research are reported. Recruitment and participant flow is shown; the baseline data of participants, the participants' MSE and the potential influencing factors on MSE are described; and the results of univariate analysis and multivariate analysis of MSE are presented in Chapter Four.

In Chapter Five, the findings from this study are critically assessed and discussed in comparison with those from previous research; and the results and methodological strengths and limitations of this study are discussed.

Chapter Six, the final Chapter of the thesis, brings the conclusions from the research together to examine the implications for clinical practice. Based on the lessons learned from carrying out this study, this chapter also provides recommendations for the possible directions of future research.

1.4 Introduction of the maternal and child health services in China

Maternal and child health is the precondition of continued human development. It is the most elementary well-being indicator, as well as the crucial indicator of measurement of socioeconomic development (Ministry of Health, China, 2011a). With a huge total population of 1.39 billion (WHO, 2012b), China has 860 million women and children, which is the largest group in the world. Consequently, the Chinese government has been confronted with the tremendous challenge of improving maternal and child health. During the past six decades (1949—2012), China has made great progress in enhancing the maternal and child health services (Ministry of Health, China, 2011a). These achievements are attributed to the improvement of maternal health services resources, the implementation of legislation for women and children, and the provision of systematic maternal health care.

1.4.1 Maternal and child health services system in China

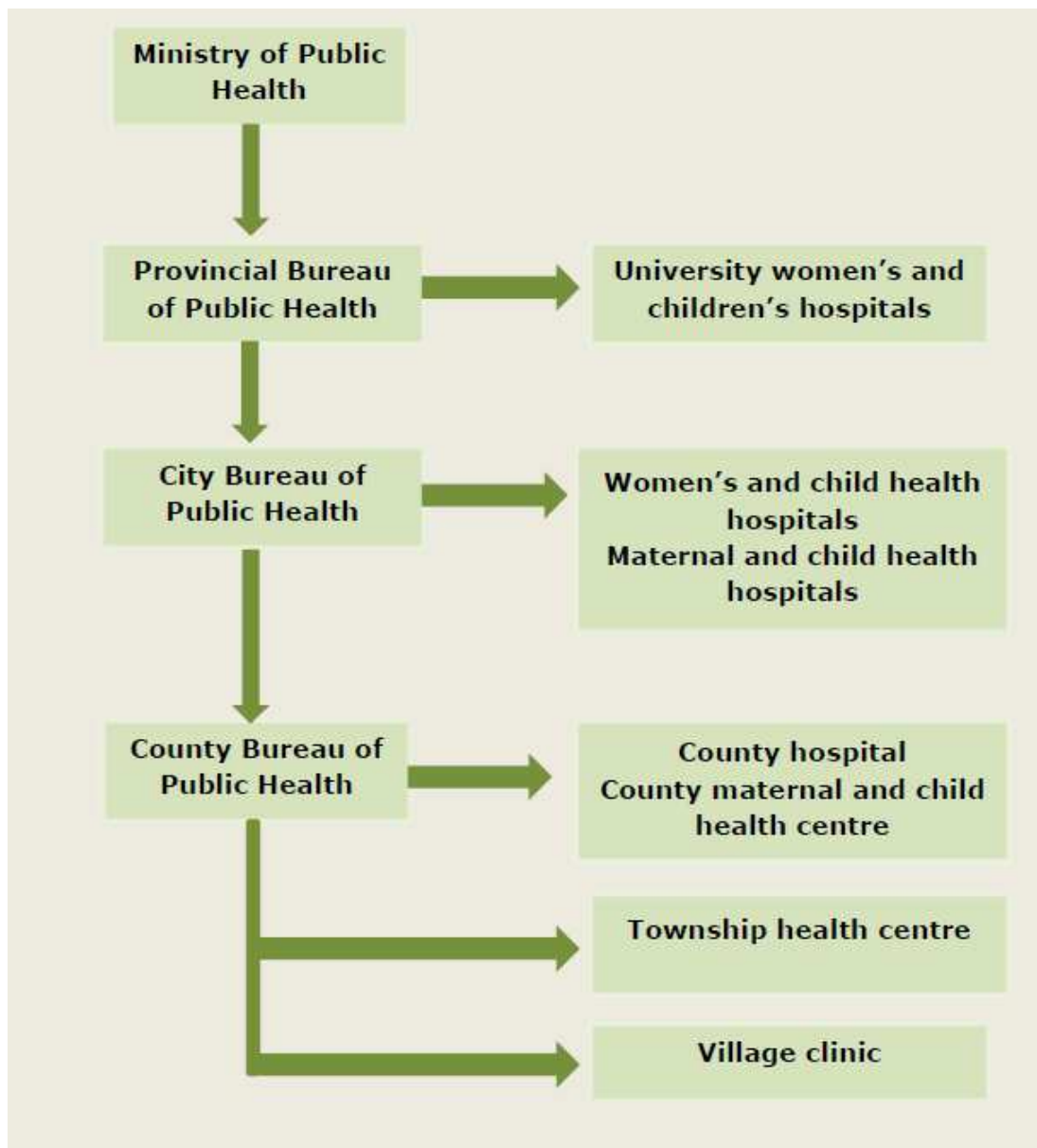
Since the 1980s, the Chinese government has dedicated more financial input and other resources to the sustained enhancement of maternal and child health services. As of 2010, this system included 3,025 maternal and child health institutions, 398 gynaecological and obstetric hospitals, 72 children's hospitals, 33,000 community health service centres (stations), 38,000 township hospitals, and 648,000 village clinics (Ministry of Health, China, 2011a). Around 500,000 employees worked in the maternal and child health services system, 245,000 of whom worked in health institutions, where there were 134,000 beds and 160 million annual visits from users of the services (Ministry of Health, China, 2011a).

This system is directed by the Maternal and Child Health Department at the Ministry of Public Health, and its instructions are translated by the provincial departments into implementation at city, county, township and village levels

(Ministry of Health, China, 2006), with each level taking a supervisory and guiding role for the level below. There are obvious variations at each level in terms of health service quality, depending upon the location and available health service resources. The maternal and child health services hierarchy in China is described in Figure 1.1 (Hesketha & Wei, 1997).

Figure 1.1 Maternal and child health services hierarchy in China

(Hesketha & Wei, 1997, p.1899)



1.4.2 Legislation related to maternal and child health in China

In the 1990s, the United Nations (UN) increased its attention to the promotion of worldwide maternal and child health (United Nations International Children's Emergency Fund (UNICEF), 1990). Therefore, some important agreements were embraced during this period, such as the World Declaration on the Survival, Protection and Development of Children in the 1990s (UNICEF, 1990) and Millennium Development Goals (UN, 2000). Taking the requirements from the above agreements into account, such as a reduction in the maternal mortality rate by three quarters between 1990 and 2015, the achievement of universal access to reproductive health by 2015, and the enhancement of children's health and nutrition, the Chinese government enacted a series of laws and policies related to maternal and child health (Table 1.1).

Table 1.1 Important legislation related to maternal and child health in China (Guo et al., 2008, Ministry of Health, China, 2011a)

Name of Legislation	Date Issued
The one-child policy	1979
Planning for Child Development in the 1990s	1992
The law on Maternal and Infant Health Care	1995
Planning for Women's Development, 1995-2000 and 2001-2010	1995, 2001
Planning for Children's Development, 1995-2000 and 2001-2010	1995, 2001
The Measures for Implementation of the law on Maternal and Infant Health Care	2001
Law on the Protection of Women's Rights and Interests	2005
Law on the Protection of Minors (revised)	2006

These laws and policies give priority to the enhancement of maternal and child health by reinforcing the co-operation of clinic services and primary health care, and strengthening the focus on the woman's health and the child's development (Fan, 2004). There is no doubt that the most significant legislation specific to China is the one-child policy. Another important legislation is the Law of the People's Republic of China on Maternal and Infant Health Care. The two legislations are introduced in the following sections.

1.4.2.1 The one-child policy

The one-child policy, officially translated as the family planning policy, is the basic national target and policy in China. In order to alleviate social, economic and environmental problems resulting from the huge population base and large annual increase in population, the policy was created by the Chinese government in 1979 (Information Office of the State Council of China, 1995). The guidelines of the policy are followed in such a way that it officially restricts married, urban couples to having only one child and rural couples are allowed to have a second child if the first child is a girl.

The policy is controversial both within and outside China because of the manner in which it has been implemented, and the positive and negative social consequences. On the one hand, the one-child policy is generally believed to improve maternal and child health, which is attributed to providing a better health source for women and children, and a reduction in the risks of mortality and morbidity associated with pregnancy (World Bank, 1993; Wu & Li, 2012). On the other hand, the policy may induce an excess in female infant mortality and an increase in sex ratio disparity, owing to some parents choosing to abort a female foetus (Chen et al., 2007). This is because China has a long tradition of son preference with the belief that only a male can carry on the family line

(Chen et al., 2007). Furthermore, this policy, combined with improving life expectancy, has led to an increasing proportion of elderly people in the population and an increase in the ratio between elderly parents and adult children (Hesketh et al., 2005). In China, the percentage of the population over the age of 65 years was 5% in 1982 and now stands at 9%, but is expected to rise to more than 15% by 2025 (World Bank, 2012). The first children born under the one-child policy are facing the heavy burden of caring for their parents and parents-in-law (Hesketh et al., 2005). Therefore, in recent years, an ending of the policy has been considered by the Chinese government. In 2013, China announced the decision to relax the one-child policy from 2014. Under the new policy, families can have two children if one parent is an only child (Government of China, 2013).

1.4.2.2 The Law of the People's Republic of China on Maternal and Infant Health Care

The law on maternal and infant health care became effective on 1st June 1995 and its measures for implementation of the law were promulgated on 20th June 2001 (Tolhurst et al., 2004). The aim of the law was to promote maternal and infant health and to improve the quality of health of the population. The legislation, including seven chapters and 39 articles, referred to pre-marital, pregnancy, perinatal and infant health care; instructions on techniques for implementation (e.g. antenatal diagnosis and genetic disease diagnosis); and legal liability of health professionals. In addition, the law enforced that the local government should assume the responsibility of giving priority to resources for antenatal and neonatal care, of guaranteeing that health employees be appropriately qualified, and of focusing on improving the available service in impoverished areas (State Council of China, 2001).

1.4.3 Overview of maternal service in China

The provision of adequate maternal care is a significant measure to prevent detrimental pregnancy outcomes and reduce morbidity and mortality among mothers and infants (Frisbie et al., 2004; Parkhurst et al., 2005). In China, systematic maternal health care started to be implemented in 1978. So far, there has been a complete set of services provided, including antenatal care, intrapartum care and postnatal care (Ministry of Health, China, 2011a).

1.4.3.1 Antenatal (prenatal) care in China

A national guideline issued by the Chinese Ministry of Health recommended that women should start antenatal visits with a doctor in hospital within the first trimester of pregnancy (up to 12 weeks gestation) and have no less than five appointments throughout the whole pregnancy (Long et al., 2010). The recommended schedule for antenatal visits is about once each month during the first 28 weeks of pregnancy, once every two weeks during 28–36 weeks gestation, and then once every week until the delivery date. During antenatal visits, tests are performed on both the mother and the foetus to assess any potential risks, to treat any maternal or foetal complications, and to monitor the growth and development of the foetus. The antenatal tests, undertaken by health professionals, are comprised of height and weight measurement, blood pressure measurement, measurement of the uterus to check for proper growth of the foetus, physical examination of the mother to identify problems or discomforts (e.g. swollen hands and feet), blood examination, urine examination, ultrasound examination, electrocardiogram (ECG) test, foetal heart rate measurement, and antenatal screening tests for Down's syndrome and gestational diabetes (Guidelines of Pregnancy Care and Service, China, 2011). In

addition, the doctors give the mother some advice and instructions with reference to various aspects of pregnancy, such as nutrition and hygiene.

Between 2000 and 2012, national antenatal care in China has been increasing in geographical coverage and antenatal visit frequency. According to a UNICEF report, between 2007 and 2012, the antenatal care rate in China was 94% of women receiving at least one antenatal visit, which was more than the average for developing countries (77%) (UNICEF, 2011a). The coverage of antenatal care of five or more visits increased from 43% in 2003 to 63% in 2011 (UNICEF, 2014). However, some surveys of utilisation of antenatal care in Western regions of China (relatively impoverished in comparison to the Eastern regions) (Figure 1.2) are contradictory. For example, Liu et al. (2011), while investigating 14,112 women from 45 counties in 10 Western provinces of China, showed that the percentage of women who had antenatal care (at least one time) was 95%, similar to the average national rate (94%), and the average number of antenatal visits was 4.94. Liu et al. (2011) concluded that antenatal care in Western regions of China had made progress. By contrast, Wang et al. (2012), while surveying 1,474 women from 12 towns and five villages in three Western provinces, described that the proportion of women receiving first trimester visits was 53.6% and only 1.8% of Western province women received completely correct antenatal tests according to the national guideline, and the average number of antenatal visits was three. As a consequence, Wang et al. (2012) claimed that the utilisation of antenatal care among women in Western poverty areas of China was not ideal and the severe situation really demanded urgent improvement.

Figure 1.2 Geographic regions of China (Sources from UNICEF, 2014, p.15)



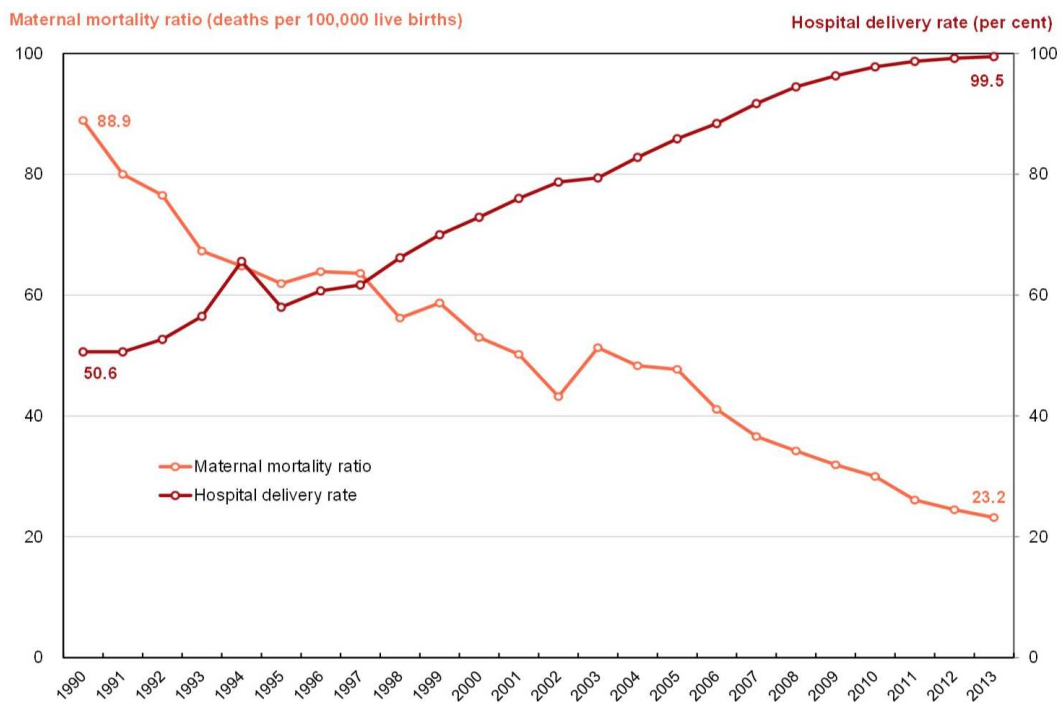
Administratively, China is divided into provinces, autonomous regions (Guangxi, Inner Mongolia, Ningxia, Tibet, Xinjiang), municipalities (Beijing, Chongqing, Shanghai, Tianjin) and special administrative regions (Hong Kong, Macao). China is also classified into different geographic areas, specifically Eastern, Central and Western regions. Many economic and human development indicators are highest in the Eastern regions and lowest in the Western regions.

1.4.3.2 Intrapartum care in China

Since the 1980s, the Chinese government has strongly recommended hospital delivery rather than home birth and has taken measures to improve hospital delivery service, covering areas such as reinforcement of infrastructure, health worker training, administration of township and low-level hospitals, establishment of referral channels to tertiary hospitals to deal with emergency obstetric care, and provision of subsidies to families and hospitals to encourage

hospital delivery (Feng et al., 2011). In 2010, the national hospital delivery rate soared to 97.8% (Ministry of Health, China, 2011a), from 53.5% in 1993 (Sufang et al., 2007), in both urban and rural areas. There is an inverse relationship between China's maternal mortality ratio and hospital delivery rate (Gao et al., 2009a; Feng et al., 2010, 2011; Ministry of Health, China, 2011a). From 1990 to 2013, the hospital delivery rate increased from 50.6% to 99.5%. During the same period, the maternal mortality ratio decreased from 88.9 per 100,000 live births to 23.2 per 100,000 live births (Figure 1.3).

Figure 1.3 Hospital delivery rate and maternal mortality ratio from 1990 to 2013 in China (UNICEF, 2014, p.53)



Intrapartum care in hospitals includes the following: affording continuous support and guidance to women before and during labour; coping with pain; dealing with complications; and providing care for the woman and the neonate after labour (Guidelines of Pregnancy Care and Service, China, 2011). In China, there are two systems of intrapartum care in hospitals, one of which is the

midwife-led unit, providing care for women having a vaginal birth (including an assisted vaginal birth which requires the use of special instruments such as forceps and ventouse to deliver a baby vaginally), while the other is the medical unit which is responsible for women having a caesarean section. Although a caesarean section is usually performed when a vaginal birth would put the baby's or mother's life or health at risk, an increasing number of women in China request the operation instead of a normal vaginal birth, because they trust doctors more than midwives or want to avoid pain of childbirth (Gu et al., 2013). The WHO reported the rate of caesarean sections in China as increasing from 11% in 1993 (Sufang et al., 2007) to 46% in 2008, 25% of which were not a medical necessity (Lumbiganon et al., 2010), which is almost twice the reported proportion in the UK (26%) (UNICEF, 2011b). The rate has evoked attention from the Chinese government and all over the world (Lumbiganon et al., 2010). In 2011, the Ministry of Health in China and the UNFPA (the United Nations Fund for Population Activities) cooperatively launched two programmes of "the Promotion of Natural Childbirth" and "the Strengthening Midwifery Education to Promote Maternal and Child Health" to diminish the rate of caesarean sections in China (Ministry of Health, China, 2011b).

Midwives in China only work in the labour (pre-delivery) room and birthing (delivery) room, and they do not provide care during antenatal and postnatal periods, whereas international midwives such as in the UK are involved in the continuity of care throughout the entire pregnancy, labour and postnatal periods (Gu et al., 2013). In China, there is almost no possibility of gaining a university degree in midwifery, but midwives can gain university qualifications or higher in nursing major (Harris et al., 2009). Chinese midwives are nurses who work in the labour and birthing room, and most of them gain skills of a midwife in the clinical area through an apprenticeship qualification system in hospitals (Cheung et al., 2009). Another difference from the UK is that parturient women in the

first stage of labour are in the pre-delivery room, and then are transferred promptly to the delivery room when fully dilated. Positioning for delivery in China is flat on the back in the traditional lithotomy position with legs in stirrups, instead of upright or squatting positions, as midwives think that by using this position they can protect the perineum of women to diminish the rates of any severe perineal lacerations (Frank, 2008). If a third-degree perineal tear occurs, the midwife will be penalised for medical negligence. Due to the fear of such censure, many midwives would consider conducting a defensive practice, such as the routine use of episiotomy (Cheung et al., 2011). According to Cheung et al. (2011), that is an important factor behind the high rate of episiotomy (77.9%) in midwife-led normal birth in China. Other factors, such as macrosomia and instrumental delivery, also contribute to the use of episiotomy.

1.4.3.3 Postnatal (postpartum) care in China

During the postnatal period, a woman experiences a crucial transition in terms of physiological and psychological aspects to adapt to her baby, her new motherhood role and her family (Tao et al., 2011). Therefore, good postnatal care is of importance for the health of a woman and her baby (Liu et al., 2009).

(1) The continuum of care from the Chinese health services

The Guidelines of Pregnancy Care and Service in China (2011) state that postnatal care comprises assessment of the mother and the infant to check whether there are postnatal complications, and supply information on breastfeeding, maternal nutrition, infant immunisation, and family planning to promote maternal and infant wellbeing. In general, the parturient woman and her infant have a postnatal examination in hospital by the obstetrician and paediatrician, respectively, on the 42nd postnatal day. Home visits are conducted by community doctors of the maternity and childcare institution on the 3rd, 7th,

14th and 28th days postnatally (Guidelines of Pregnancy Care and Service, China, 2011). The Guidelines recommend that at least 70% of urban women and 60% of rural women should have three home visits by community doctors (Guidelines of Pregnancy Care and Service, China, 2011). However, they are not adhered to well, only being done as recommended in the big cities of China, such as Beijing, Shanghai and Guangzhou. As found in the third National Health Services Survey in 2003, the percentages of women who have at least one postnatal visit in the urban areas, the rural areas, and the poorest rural areas were only 60%, 52%, and 37%, respectively (Ministry of Health, China, 2004). Another study undertaken in Chongqing showed that the percentage of women having one postnatal visit was 70%, while the number having three postnatal visits was only 29% (Li et al., 2008). A recent survey in rural areas of Zhejiang province found that 25% of primiparous women and 55% of multiparous women had not received any postnatal visits (You et al., 2013).

Compared to antenatal and intrapartum care, postnatal care is always the relatively neglected component of maternal health services both in China (Ministry of Health, China, 2004; You et al., 2013) and internationally (Smith, 2011), which is regarded as a "Cinderella service" and should be given more attention. Furthermore, cultural values and beliefs are very important influences on the medical attendance of postnatal mothers and their relatives during the postnatal period (Abuidail & Fleming, 2007). Therefore, it is important to explain that Chinese women have a distinct experience in the first month after childbirth, which is known as "Doing the month".

(2) "Doing the month"

In China, there is a traditional postnatal practice that women follow for one full month after giving birth called "Zuoyuezi", literally translated as "Doing the

month” or “Sitting the month”. It has been practised by Chinese women for more than 1000 years, passed down from one generation to the next (Pillsbury, 1978; Chin et al., 2010).

“Doing the month” derives from Chinese Traditional Medicine beliefs of the Yin-Yang principle. If Yin and Yang are in balance, one will be in good health; otherwise an imbalance will result in poor health. During the postnatal period, it is acknowledged that a woman is in a state of extreme imbalance towards Yin, a weakened condition (Chu, 2005). Therefore, she should avoid adding more Yin into her body, such as contact with cold water, wind and eating cold food. By contrast, she needs to eat more Yang-related, hot protein-rich foods that help to strengthen her body, such as sesame oil chicken and soup. Apart from dietary measures, in order to recover energy lost from the childbirth, to prevent further fatigue, and to reduce the likelihood of developing illness, women must have complete rest at home, avoid any physical work and are usually accompanied by their mother or mother-in-law for support (Chu, 1993; Gao et al., 2009b). In terms of baby feeding, “Doing the month” emphasises that supplementary feeding is necessary to give an infant more nutrition instead of provision of exclusive breastfeeding (Raven et al., 2007). The practices of “Doing the month” and their potential effects on health, according to the judgement of Chinese health workers and traditional medicine practitioners, are shown in Table 1.2 (Pillsbury, 1978; Raven et al., 2007; Chin et al., 2010).

Recently, “Doing the month” has aroused much debate. Some researchers insist that it can be beneficial to a new mother adapting to the maternal role because of the associated family support, such as helping women to get some rest, cope with a newborn and strengthening family ties (Lee et al., 1998; Hung, 2004). However, some investigators argue that it may induce the stress for new mothers as some practices of “Doing the month” can be a burden and source of

unhappiness, such as asking women to follow taboos and dealing with the sensitive relationship with the mother-in-law (Leung et al., 2005; Wong & Fisher, 2009; Gao et al., 2010).

Table 1.2 The practices of “Doing the month” followed currently and their effects on health (Pillsbury, 1978; Raven et al., 2007, p.9; Chin et al., 2010)

The recommended practices of “Doing the month”	Effects on health
● Do not have a bath or wash your hair	No obvious health effect
● Do not eat cold food	No obvious health effect
● Do not go outside for one month	No obvious health effect
● Do not get sick (Do keep healthy)	Beneficial
● Do not read or cry	No obvious health effect
● Avoid wind, fans, air conditioning and cold water	No obvious health effect
● Do eat hot food with rich nutrition	Beneficial
● Do rest and avoid housework	Beneficial
● Do stay inside the home and keep company with the mother-in-law and/or mother	No obvious health effect
● Limiting visitors	No obvious health effect
● Do abstain from sex	No obvious health effect
● Do supplementary feeding	Harmful

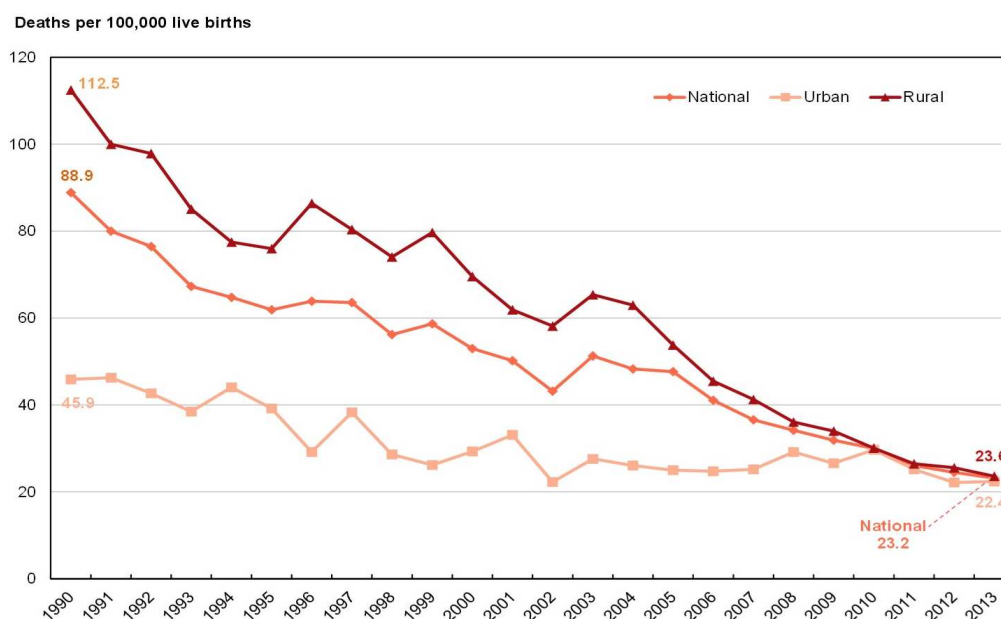
1.4.4 Outcomes of the maternal and child health care in China

The maternal and child health care has made a tremendous achievement in the two main areas including the decrease in maternal mortality rate and infant mortality rate since the founding of the People's Republic of China in 1949 (Ministry of Health, China, 2011a).

1.4.4.1 The decrease in maternal mortality rate

During the two decades, from 1990 to 2013, there was an obvious decline in the maternal mortality rate (MMR, maternal deaths per 100,000 live births) in China (Figure 1.4). In 1990, the MMR was 88.9 per 100,000 live births and fell to 58.0 per 100,000 live births in 2000 and 23.2 per 100,000 live births in 2013. The gap between urban MMR and rural MMR has been narrowing gradually. For instance, rural MMR was approximately 112.5 per 100,000 live births in 1990, much higher than urban MMR (45.9 per 100,000). Fortunately, after 23 years, the rural MMR has markedly reduced to 23.6 per 100,000 live births, almost the same as the urban MMR, at 22.4 per 100,000 live births in 2013 (UNICEF, 2014).

Figure 1.4 National, urban and rural maternal mortality rate in China from 1990 to 2013 (UNICEF, 2014, p.50)



Although the MMR rate in China has been falling dramatically, it is still higher than the rates in other developed countries, in spite of the gap gradually narrowing (Table 1.3).

Table 1.3 Some countries' MMR comparisons in 1990 and 2008

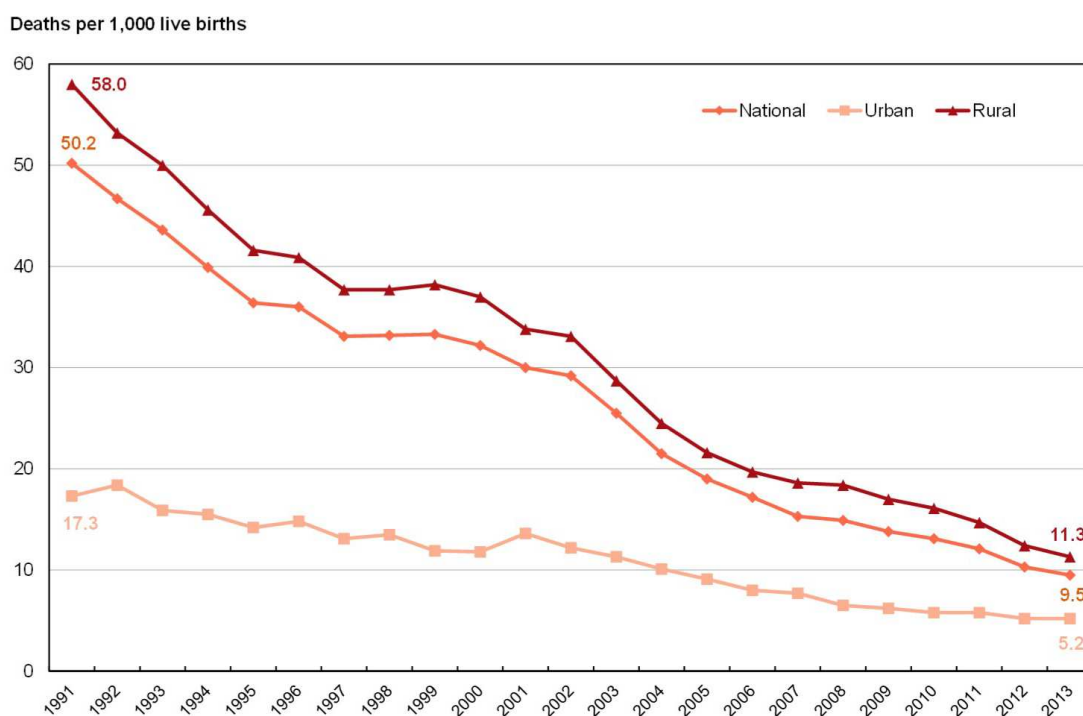
(Sources from UNICEF)

MMR Global Rank	Country	MMR in 2008	MMR in 1990	Annual% Change 90-08
1	Italy	3.9	7.4	-3.5
9	Canada	6.6	5.7	0.9
11	Japan	6.8	11.7	-3.0
23	United Kingdom	8.2	8.4	-0.1
32	South Korea	11.4	18.3	-2.6
39	United States	16.6	11.5	2.1
62	Russia	34.1	48.3	-1.9
74	China	40.1	88.9	-4.2
127	India	253.8	523.3	-3.9

1.4.4.2 The decline in infant mortality rate and under-five mortality rate

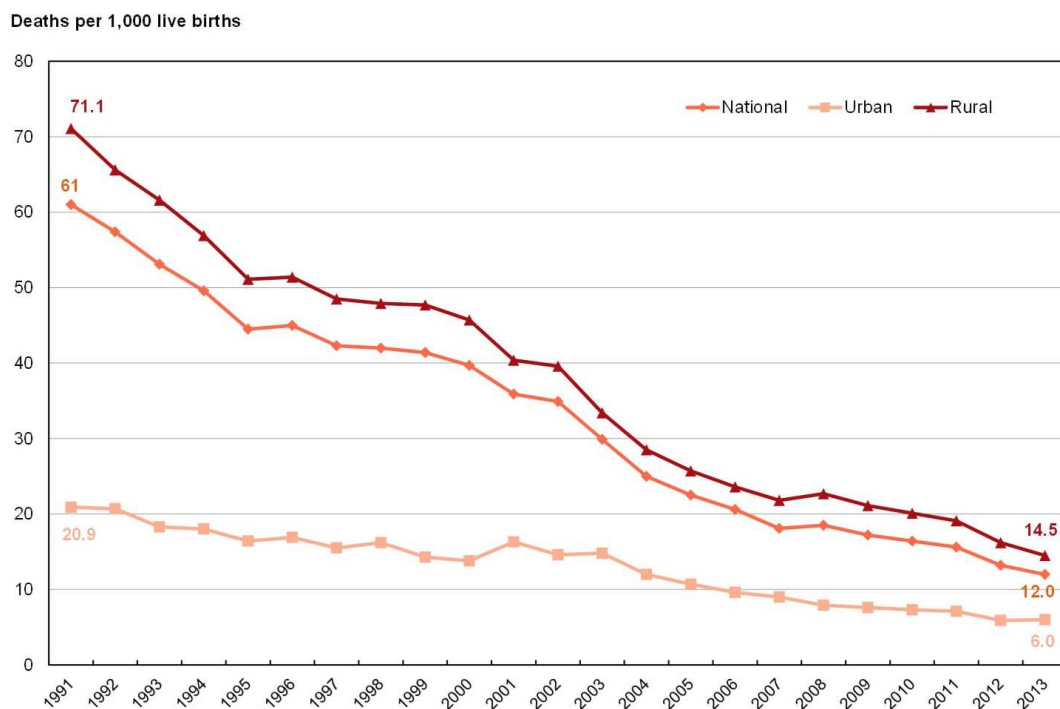
The infant mortality rate (IMR, child deaths under one year of age per 1,000 live births) was 9.5 per 1,000 live births in 2013, falling from 50.2 per 1,000 live births in 1991. Between 1991 and 2013, the IMR dropped by 70 percent in urban areas and 81 percent in rural areas (Figure 1.5). However, the difference between urban IMR rate (5.2 per 1,000 live births) and rural IMR rate (11.3 per 1,000 live births) still was obvious in 2013.

Figure 1.5 National, urban and rural infant mortality rate in China from 1991 to 2013 (UNICEF, 2014, p.48)



The under-five mortality rate (probability of death between birth and five years per 1,000 live births) also showed a marked decrease from 61.0 per 1,000 live births in 1991 to 12.0 per 1,000 live births in 2013. During this period, the difference between urban and rural under-five mortality rate was reducing, but still evidence. In 1991, the rate in rural areas was 71.1 per 1000 live births and reduced significantly to 14.5 per 1000 live births in 2013. By contrast, the rate in the urban areas was 20.9 per 1000 live births in 1991 and decreased to 6.0 per 1000 live birth in 2013 (Figure 1.6).

Figure 1.6 National, urban and rural under-five mortality rate in China from 1991 to 2013 (UNICEF, 2014, p.44)



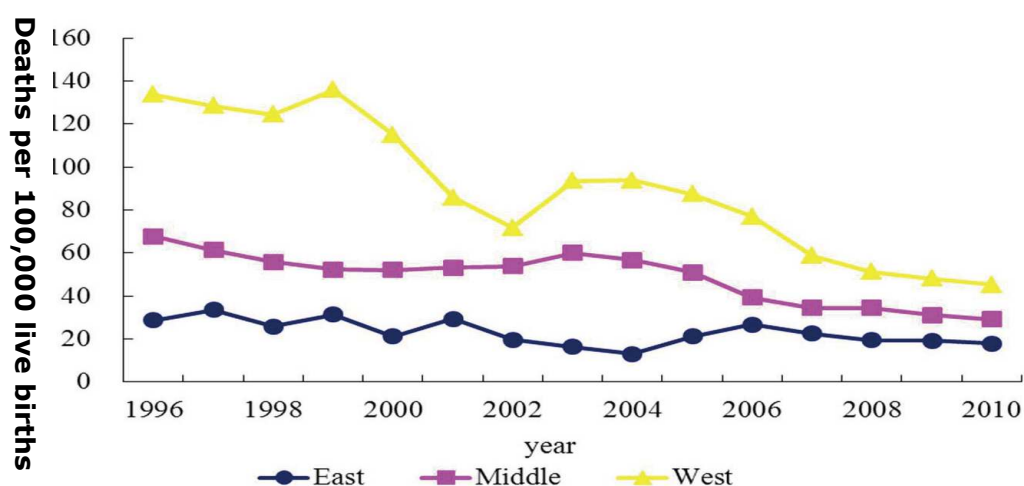
1.4.5 Challenges for the maternal and child health care in China

There are two main challenges to the maternal and child health care in China. One challenge is the regional disparity in maternal mortality and the under-five child mortality rates between the Eastern and Western regions of China, attributed to the socioeconomic and geographic inequalities; and the other is that birth defects are becoming increasingly severe (Ministry of Health, China, 2011a).

1.4.5.1 The distinct gaps in the maternal mortality rate between regions

Chinese official statistics indicated that the maternal mortality rate (MMR) in the impoverished Western regions of China has always been higher than Central and Eastern regions, even though the disparity has declined (Figure 1.7). In 1996, the MMR in Western regions was higher than 130.0 per 100,000 live births, approximately double and fourfold of those in Middle and Eastern regions, respectively. After 15 years, the MMR in Western regions was reduced by a big margin to about 45.1 per 100,000 per lives, but it was still 1.5 and 2.5 times higher than the rates in Middle and Eastern regions, respectively (Ministry of Health, China, 2011a).

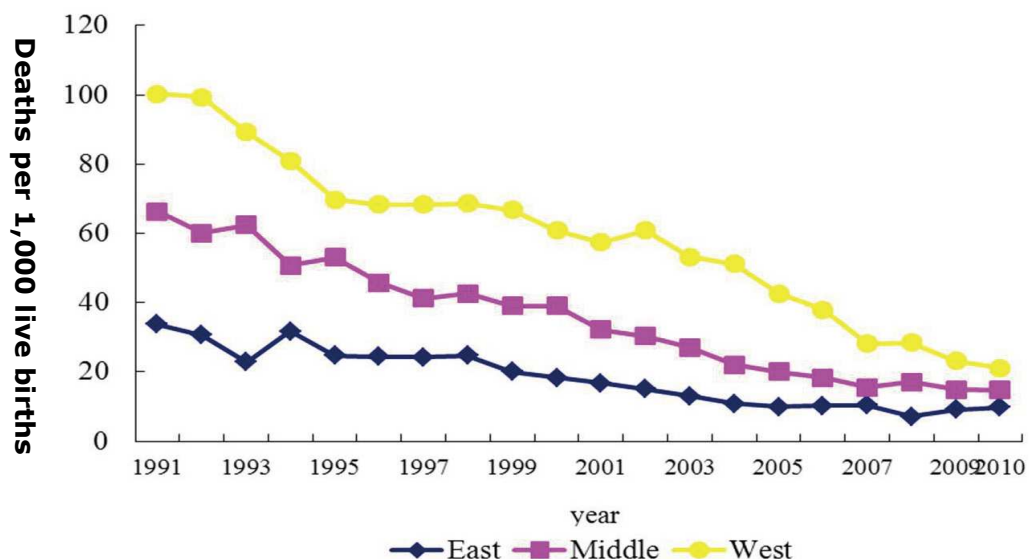
Figure 1.7 MMR in Eastern, Middle and Western regions in China from 1996 to 2010 (Ministry of Health, China, 2011a, p.6)



1.4.5.2 The differences in the under-five mortality rate between regions

In 1991, the under-five mortality rate in Western regions was almost 100.0 per 1,000 live births, much higher than the rates in Central regions (70.0 per 1,000 live births) and Eastern regions (38.0 per 1,000 live births) (Ministry of Health, China, 2011a). Although the regional gap has slowly reduced since 1991, it still has remained (Figure 1.8). For instance, in 2010, the under-five mortality rate in Western regions fell to 21.1 per 1,000 live births, but it was still more than twice the Eastern rate (9.7 per 1,000 live births) (Ministry of Health, China, 2011a).

Figure 1.8 Under-five mortality rates in Eastern, Middle and Western regions in China from 1990 to 2010 (Ministry of Health, China, 2011a, p.10)



1.4.5.3 Increasing birth defects

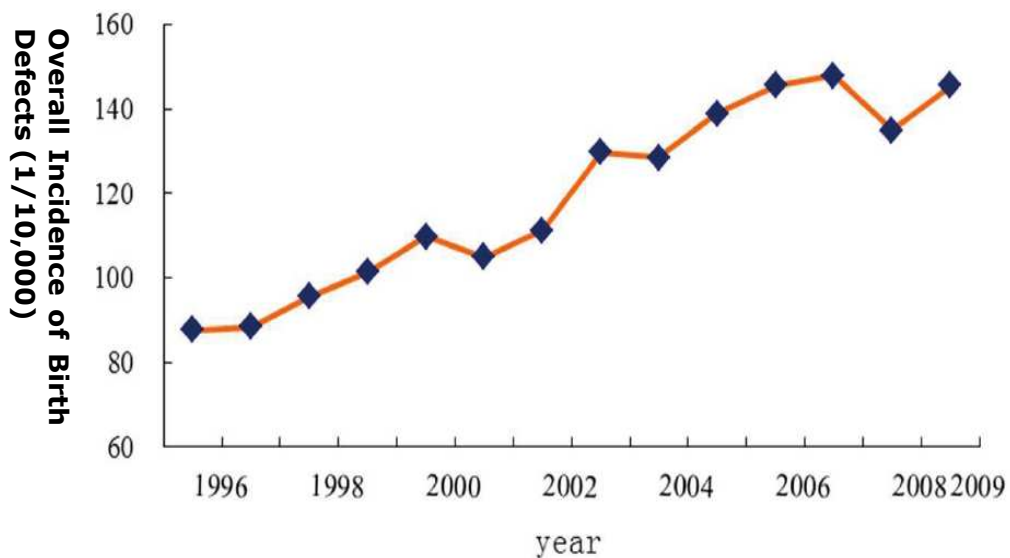
The incidence of birth defects has been rising in China. In 1996, the overall rate of birth defects was 87.7/10,000. This rate was from nation-wide hospital surveillance data. However, in 1996, the hospital delivery rate was about 60 percent (Figure 1.3). The remaining of 40 percent homebirth data could be not recorded in hospital surveillance. Therefore, the researcher think that the real rate of birth infects in 1996 would be higher. In 2010, the overall incidence increased remarkably to 149.9/10,000, up by 71 percent (Figure 1.9), but lower

than the average rate of birth defect internationally (303.0/10,000) (WHO, 2014a).

In 2010, the top five types of hospital-monitored birth defects in China were “congenital heart disease (32.7/10,000), polydactylism (16.4/10,000), cleft lip with or without cleft palate (12.8/10,000), congenital hydrocephalus (6.0/10,000) and neural tube defects (5.7/10,000), altogether accounting for 49.1% of all birth defects” (Ministry of Health, China, 2011a p11). The problem may results from multiple-factors, including inadequate nutrition such as maternal obesity and lack of folic acid, infectious diseases such as syphilis and rubella, environmental factors such as air pollution, and genetic factors (UNICEF, 2013a).

Figure 1.9 The incidence of birth defects in China from 1995 to 2009

(Ministry of Health, China, 2011a, p.11)



1.4.6 Comparison of maternal and child health statistics between the UK and China

Some maternal and child health statistics between the UK and China are compared in Table 1.4.

Table 1.4 Comparison of maternal and child health statistics between the UK and China (UNICEF, 2009; 2011a, b; 2014; Ministry of Health, China, 2011a)

Items	UK	China
Total population (1000s), 2011	62417	1347565
Annual birth numbers (1000s), 2011	761	16364
Maternal mortality rate (per 100,000 live births), 2010	12	48
Infant mortality rate (per 100,000 live births), 2011	4	13
Under-5 mortality rate (per 1,000 live births), 2011	5	15
Neonatal mortality rate (per 1,000 live births), 2011	3	9
Antenatal care coverage (%), At least one appointment, 2005-2009	99	91
Delivery care coverage (%), Skilled attendant at birth, 2013	99	99

Conclusion

With persistent endeavour, maternal and child health has been significantly promoted in China. However, the development of health care for Chinese women and children has still lagged behind developed countries, like the UK. The Chinese government need to further improve to achieve the goal of maternal and child wellbeing as indicated by the WHO targets. A review of parenting and maternal self-efficacy during infancy is introduced in Chapter Two.

Chapter Two Literature Review

2.1 Introduction

The aim of this chapter was to provide the necessary background and theoretical foundation for this study; to evaluate the existing knowledge of parenting and maternal self-efficacy; and to identify limitations in the existing research, by which to design a related study to fill the research gap.

2.2 Search strategy

A literature review, not a systematic review, was conducted in this study. The main reason is that a systematic review was not appropriate for the search of studies that were diverse in populations, methodology and methods; as a result, these did not lead themselves to comparison when adhering to a systematic review process (Jesson et al., 2011). In this study, all related previous research, including various research design and samples from different countries, was searched to provide an overview of the related topics, such as parenting and maternal self-efficacy.

Searches were limited to the age group of infants (0–12 months), English and Chinese languages, and the 1990–2014 period. Studies on infants with any disease or studies that could not be retrieved as full text were excluded. In order to minimise publication bias, published and unpublished related studies were searched in different electronic databases. The following databases were used in order to recover as many of the related studies as possible. For example, MEDLINE, EMBASE, Web of Science and PsycINFO embody the most up-to-date biomedical and social science studies; CINAHL includes all kinds of nursing studies; Cochrane Library and JBI Library record the systematic review literature. In terms of unpublished literature, MEDNAR (including Google Scholar), OpenGrey and Dissertation Abstracts International (DAI) were used, and the

related authors were contacted for specific publications from grey literature and thesis sources. The electronic searches were supplemented by hand searching, which involved a manual page-by-page examination of the entire contents of relevant journals, such as Midwifery. Hand searching is a valuable element of the literature review as some articles could not be found in the electronic databases because of the time delay in uploading to electronic databases or not all reports being included in electronic databases. The reference lists and bibliographies in identified papers also provided additional articles for inclusion in the review.

As Jones (2007, p.41) said: "Keyword searching may not retrieve results because different authors may assign different words for the same phenomena." For example, maternal self-efficacy has various other terms that have been used by authors, including "maternal parenting self-efficacy", "parenting self-efficacy", "maternal confidence", "maternal role competence", and "maternal self-esteem" (Jones & Prinz, 2005; Salonen et al., 2009). Therefore, it was important to identify adequate search terms and to make sure that all terms were included. The search terms used in this study are shown in Table 2.1.

Table 2.1 Search terms used in this study

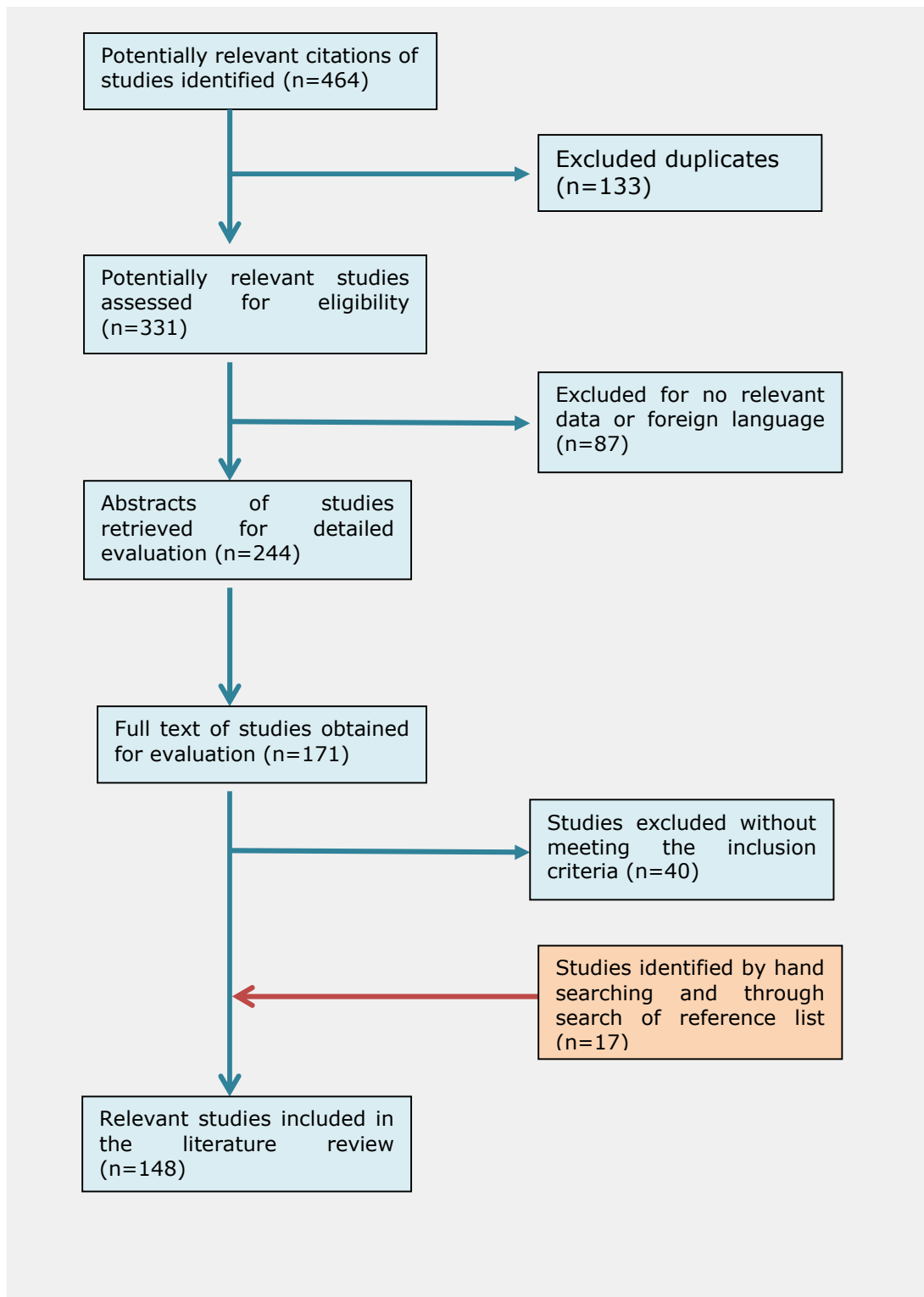
Key concepts	Keywords
Parenting	"maternal parenting", "paternal parenting", "parenting behaviour (behavior)", and "parental care"
Maternal self-efficacy	"maternal self-efficacy", "maternal parenting self-efficacy", "parenting self-efficacy", "parental self-efficacy", "maternal role competence", "maternal confidence", and "maternal self-esteem"

These terms were also combined with additional specific terms, such as “infancy”, “infant(s)”, “infant care”, “theory”, “measurement”, “tool”, “questionnaire”, and “China”.

2.3 Search results

In total, 464 possible citations were generated in the search, and after filtering out duplicate studies retrieved from the databases, 331 potentially relevant studies were assessed for eligibility. Excluded for no relevant data and foreign languages, 244 studies were assessed. Of these, the full texts of 171 studies (42 studies from an updated search between 2012 and 2014, eight Chinese studies) were obtained and reviewed in further detail, and 40 articles were excluded because they did not meet the inclusion criteria. By hand searching and through a search of reference lists, a further 17 studies were identified. Finally, 148 related studies were included in the literature review (Figure 2.1).

Figure 2.1 Flowchart of search strategy



2.4 Parenting during infancy

The arrival of a neonate will bring various changes to the lives of parents, who need to gain parenting knowledge and skills, adjust to the new household relationship, complete the transition to parenthood and fulfill self-expectations as parents (Nystrom & Ohrling, 2004; Ahlborg et al., 2009; Salonen et al., 2011). Therefore, how to prepare for parenting a baby effectively is probably the most challenging responsibility faced by new parents (Nystrom & Ohrling, 2004).

2.4.1 Introduction to parenting

It has been acknowledged that parenting is one of the most important public health issues in society, as good parenting can promote the wellbeing of children (Gage et al., 2006; Holden, 2010; McGilloway et al., 2012). Conversely, poor parenting can hamper children's physical and psychological development, leading to serious health and social problems in subsequent generations (Gage et al., 2006). For instance, poor parenting can be associated with children's behavioural problems (Tennant, 1998; Gage et al., 2006; Gardner et al., 2010; Barlow, 2011), such as delinquency and violence (Walther et al., 2012); oppositional behaviour (often characterised by negative, disobedient and hostile behaviour) (Meunier et al., 2012); drug and alcohol misused (Walther et al., 2012); and mental and physical health problems in adulthood (Bilsky et al., 2013). As a consequence, acquiring sufficient knowledge and skills of parenting is important, so that society, families and children can benefit from the effect of good parenting.

Researchers reviewing parenting research have found that there was no explicit definition of parenting, only implicit descriptions of the tasks and roles that parents may be expected to perform (Gage et al., 2006; Gamble et al., 2007). For example, Pridham et al. (1994) did not define parenting clearly but

described it in terms of a mother's assessment of her maternal role in dealing with tasks of infant care. Hastings & Coplan (1999) and Bugental & Johnston (2000) conceptualise parenting in terms of cognitive processes, as beliefs, expectations and goals of childrearing.

2.4.1.1 Parenting practices in different cultures

Parenting practices are guided by cultural customs and values, which can influence child development (Chuang & Su, 2009a). Many East Asian societies, such as China, believe in Confucianism, which has been the major belief system that still continues to influence individuals' perspectives on the structure and processes of family interactions and relationships, such as respect for elders and an emphasis on the family (Chao, 1994; Chuang & Su, 2009b). To be more specific, Confucius emphasises the desirability of interdependence and social harmony in interpersonal relationships, and parenting practices are characterised by clear lines of authority, respect for the status of others, and subordination of the self for the good of the family (Tang, 1992). In addition, "filial piety" is the cornerstone of Confucianism and serves as a guiding principle that governs general Chinese patterns of socialisation. "Filial piety" is defined as "the principle that one behaves in a manner that will bring honour and not disgrace to the family name" (Mancini & Roberto, 2009, p.195). Children are asked to be obedient to their parents; and parents are devoted to their children and sacrifice much to meet their children's needs (Xu et al., 2005). Specific rules of intergenerational conduct which are applicable throughout one's life are defined (Miller et al., 1997). Therefore, the notion of "filial piety" justifies adult authority over children and authority of elders over those of a junior rank.

In typifying cultures, Chinese cultures have been regarded as collectivist, promoting cultural values of human malleability, perseverance, self-improvement, emotion restraint, compliance to the group, parental authority,

and “filial piety” (Chao, 1994). Thus, behavioural inhibition and self-restraint are accepted by parents as a sign of social maturity and accomplishment (King & Bond, 1985), and children are asked to behave according to these standards. By contrast, Western cultures such as in the UK, Canada and the United States are seen as individualist, promoting cultural values of independence, self-expression, and individual uniqueness (Markus & Kitayama, 1991). Jose et al. (2000) explicitly examined parental values and goals, and the parenting style of Taiwanese, Chinese American and European American parents for their young children, and found that, while focusing respectively on prototypical collectivistic (obedience, respect, and politeness) and individualistic (independence, assertiveness, and creativity) traits, parents of Chinese origin were more likely to value collectivistic traits than were their European American counterparts.

2.4.1.2 Maternal and paternal parenting roles

The parenting role is expected to be one of the most satisfying and rewarding roles in life (Lee et al., 2012). Mothers and fathers are collectively responsible for bringing up children (Fagerskiold, 2008a). Maternal and paternal parenting behaviours are interdependent and influence each other to try to provide a harmonious and secure environment for their children (Barnett et al., 2008). Even though both maternal parenting and paternal parenting are important to the development of children, there are still obvious distinctions between them (Parke, 1996).

The main difference is that the maternal role is recognised as the primary caregiver role for children, whereas the paternal role is accepted as a support to the mother (Gage et al., 2006). According to Pancer et al. (2000) and Denham (2003), mothers all over the world tended to have a relatively prominent role in taking care of children, and fathers were subordinated, especially during infancy.

Another study also suggested that early parental parenting was contingent on maternal parenting (Bradford & Hawkins, 2006). Fathers in different countries have been found to spend less time with their children than mothers, and at this time they recognised themselves only as breadwinners or helpers rather than parents (Fagerskiold, 2008b). For instance, an international survey reported that time (per day) spent with children under three years old was seven hours longer for mothers than for fathers in South Korea and Japan (Goto et al., 2010). This difference was approximately four, three and two hours in the USA, France and Sweden, respectively (Goto et al., 2010). Barnett et al. (2008) also conducted a study in the USA estimating the relationship between observed maternal parenting and paternal parenting for infants, and confirmed that mothers demonstrated significantly higher levels of sensitive parenting than did fathers (with sensitive parenting reflecting that parenting behaviours are child-centred, engaged, warm, and stimulating).

In Asia, fathers' involvement in childrearing tends to be much less than that of mothers compared to that in Western countries (Goto et al., 2010). From the Chinese perspective, Confucius defined the paternal role in the family as "yi jia zhi zhu", which translates to "master of the family" (Chuang & Su, 2009a). Usually, fathers are assigned a relatively powerful position in the family compared with mothers, and make the important decisions about the family. Parental roles based on gender are established, such as men not speaking about issues inside the home and women not speaking about issues outside the home. Thus, fathers are expected to be distant in the family setting, and mothers are expected to be the main caregiver of infants (Shek, 2001). In consideration of these aspects, parenting in this study exclusively focuses on maternal parenting.

2.4.2 The significance of maternal parenting during infancy

Infancy (0–12 months of age), is an extremely critical period in the child's brain development, when the brain establishes the foundations for movement, communication, social and emotional capabilities, and intellectual functioning (Silver et al., 1999). While infancy occupies only a small part of the child's pre-adult development, it is disproportionately significant in ensuring optimal health and development across the entire lifespan (Borkowski & Weaver, 2006).

During infancy, maternal parenting has been identified as one of the most important influences on the development of a child (Schore, 1994; Levendosky et al., 2006; Martinez-Torteya et al., 2014). Barlow et al. (2010) conducted a Cochrane Review of group-based parent training programmes, and showed that infants are making emotional attachments and forming the first relationships with mothers, which lay many of the foundations for future mental health. Parenting provided during infancy plays a crucial role in the infants' evolving brain structures (Schore, 1994), their developing capacity to regulate their emotions (Sroufe et al., 2005), and their developing security of attachment (Barrett, 2006). Bakermans-Kranenburg et al. (2003) conducted a meta-analysis of randomised controlled trials (RCT) of parenting training programmes with infants and showed that they enhance maternal sensitive–responsive parenting (defined as parents' prompt and appropriate reactions to their children, combined with positive expressions of affection) ($d=0.33$, $p=0.001$), which, in turn, was related to enhanced infant attachment security ($d=0.39$, $p=0.01$). It has been found that attachment security appears to be one of the most consistent predictors of child functioning, particularly in terms of emotional and behavioural adjustment (Vondara et al., 2001), whereas insecure attachment has been shown to be associated with negative consequences for children,

including behavioural problems (Sroufe et al., 2005), anxiety (Warren et al., 1997) and delinquency (Garnier & Stein, 1998).

In addition, the ability to understand other people's thoughts and feelings is also associated with the quality of the early mother—infant relationship; and it is confirmed that poor parenting is related to increased levels of violence and criminality in children when they grow up (Egeland et al., 1993; Campbell, 1995; Levendosky et al., 2006; Graham et al., 2012). By contrast, positive parenting during infancy has been shown to be strongly associated with high child self-esteem, social and academic competence, and to be protective against later disruptive behaviour and substance misuse (Kumpfer & Bluth, 2004).

In summary, infant development is strongly related to positive parenting, such as a successful transition to parenthood (Halford & Petch, 2010) and good parenting behaviours (Fowles & Horowitz, 2006; Martinez-Torteya et al., 2014). If appropriate parenting cannot be provided during infancy, children may experience emotional, intellectual and behavioural problems, which may negatively affect their wellbeing in the future (Tilokskulchai et al., 2002; Çalışır & Karaçam, 2011; Martinez-Torteya et al., 2014). However, some studies in different countries reported that numerous first-time parents felt unprepared for and overwhelmed by the role of parenthood, especially during the first year of having a child (Condon et al., 2004; Nystrom & Ohrling, 2004; George, 2005). Infancy is a period when worldwide health professionals frequently contact mothers and their infants and have the opportunity to conduct timely assessments of potential maternal parenting problems, such as poor parenting skills and low self-esteem (Fowles & Horowitz, 2006). Barlow et al. (2010) and McGilloway et al. (2012) thought that early interventions designed to improve parenting practices are key to promoting the well-being of children.

Consequently, it is necessary to explore the quality of maternal parenting during infancy.

2.4.3 Good maternal parenting during infancy

As the main caregiver in daily life, a mother is the "first significant person" influencing an infant's survival and development (Gage et al., 2006). Indeed, the successful maternal role transition (Holditch-Davis et al., 2011) and positive maternal parenting behaviour (Gutman & Feinstein, 2007; Carr & Pike, 2012) will play a vital role in both the physical and the mental development of infants. Therefore, the two intertwined components of good maternal parenting, including the successful transition to motherhood and positive maternal parenting behaviour are explained in the following section.

2.4.3.1 Successful transition to motherhood

Having a baby is an event that irrevocably alters a woman's life (Fowles & Horowitz, 2006; Liu et al., 2012). Becoming a mother involves the development of maternal identity (Mercer, 2004; Husmillo, 2013). If the process of transition to motherhood goes well, a woman will develop an intimate relationship with her infant, which kindles a sense of confidence in her parenting role, attachment to her infant, and acceptance of her maternal role (Fowles & Horowitz, 2006; Holditch-Davis et al., 2011). For example, Holditch-Davis et al. (2011) examined whether maternal role attainment influenced the quality of parenting for 72 medically fragile infants, and found that a successful transition to motherhood (referring to good maternal identity, presence and competence) affected parenting quality for these infants more than did child illness severity.

The successful transition to motherhood is an interactional and developmental process occurring over a period of time, during which the mother becomes attached to her infant and acquires competence in her maternal role (Tarkka,

2003; Husmillo, 2013). In 1981, Mercer developed a theoretical framework of maternal role attachment based on the role theory, knowledge of an infant's traits, and a review of the literature. According to Mercer's theory (1981; 2004), four stages of this process of transition have been proposed. At the beginning, a woman begins to learn mothering expectations and makes commitment, attachment, and preparation for her infant during pregnancy in the anticipatory stage. Then, during the early weeks following childbirth, the new mother begins to enact her role to acquaint with and increase attachment to the infant, to learn how to care for the infant, but is generally influenced by the expectations of others. A further stage ensues as she adds unique elements to her role enactment and finally develops a role enactment in the first four months that is consistent with her individual style. The maternal role continues to evolve as the infant grows up, and the maternal identity appears to be complete for most mothers before the end of the first postnatal year. The stages are not discrete, but overlap, and maternal, infant, family and environmental variables influence the length of stages (Mercer, 2004; Husmillo, 2013). In the study by Mercer (1985), 85% of participants reported internalising the maternal role by eight months postnatally.

As the transition to motherhood requires extensive psychological, social, and physical work, mothers can experience heightened vulnerability and can face tremendous challenges to adapt to the maternal role (Mercer, 2006). Bloomfield et al. (2005) conducted a qualitative study to explore the experiences and views of mothers, health visitors and family support centre workers on the challenges of parenting, and found that being prepared for motherhood was one of the main challenges of parenting. For instance, one mother interviewed by Bloomfield et al. (2005, p.50) said: "*I got home with the baby and it was like, well, what do we do now?*" Another mother said, "*Nothing prepared me, it was a total shock; I just couldn't believe how much life had changed*" (Bloomfield et al.,

2005, p.50). The research findings (Nystrom & Ohrling, 2004; Giallo et al., 2011) showed that during this period, mothers' experiences of being primarily responsible for the infant were described predominantly as feelings of powerlessness, insufficiency, guilt, loss, exhaustion, ambivalence, resentment and anger. These experiences were overwhelming and caused role strain, as well as feelings of being fatigued and drained of physical and emotional energy (Nystrom & Ohrling, 2004; Giallo et al., 2011). Unfortunately, many mothers do not know how to cope with the fear, fatigue and powerlessness; therefore, this requires support for them from their family members, health professionals, and society.

2.4.3.2 Positive maternal parenting behaviour

Maternal parenting behaviour during infancy includes mother—infant interaction and infant caretaking tasks (Bryanton et al., 2009; Mckinney et al., 2009).

(1) Mother—infant interaction

Mother—infant interaction is observed during the first hours after the infant is born, suggesting that humans are biologically prepared to engage in coordinated interaction (Feldman, 2007). Maternal behaviour includes gazing at the infant's face, high-pitched vocalisations, positive expressions, and affectionate touch. The quality of maternal behaviour predicts infant—mother synchrony at three months and the infant's cognitive and neurobehavioural development during the first year (Feldman & Eidelman, 2007). At around three months, infants begin to engage in face-to-face interactions and display visual, facial, and vocal behaviours. During this period, mothers often verbalise to infants, make visual contact, and display a range of facial expressions. During the next months, the infants' time lag to responsivity decreases, while their shared attention to objects increases. At this time, infants increase the awareness of their mother (Feldman et al., 1999); and mothers can seek their infant's attention and

modulate their interaction in response to their infant's cues. From the first year onwards, "as infants begin to use symbols in word and gesture, sequential relations emerge between the parent's elaboration of the child's symbolic play and an increase in symbolic complexity" (Feldman, 2007, p.341). For example, the mother can elicit verbalisations and behaviours from the infant and make a positive response to the infant (Fowles & Horowitz, 2006).

During the process of mother—infant interaction, mothers benefit from the synchronous relationship as they learn to read and interpret their infant's cues, provide sensitive and responsive care, and ultimately develop competence in the role as a mother. Research findings (Feldman & Eidelman, 2007; Nicolaou et al., 2009) showed that mothers who experienced a poor interaction with infants were prone to developing depression, anxiety and negative-control parenting styles. Furthermore, the positive mother—infant interaction is related to infants' positive outcomes, including development of language, self-regulation, attachment, and the ability to develop future social relationships (Baker & McGrath, 2011). The positive indicators of mother-infant interaction during infancy are described in Table 2.2.

Table 2.2 Indicators of positive mother–infant interaction

(Fowles & Horowitz, 2006 p668)

Indicators of positive mother–infant interaction

The mother:

- Uses gentle touch with infant
 - Positions infant for face-to-face interaction
 - Seeks infant's attention, yet allows for pauses and interruptions
 - Verbalises to infant
 - Makes positive, affirming, loving comments to the infant
 - Directs gaze towards infant when interacting
 - Makes visual contact
 - Displays a range of facial expressions
 - Responds to infant distress
 - Modulates her interaction in response to infant's cues
 - Elicits verbalisations and behaviours from the infant and responds contingently
-

(2) Infant caretaking tasks

Infant caretaking tasks are required to satisfy infant needs for day-to-day care, such as cleaning, feeding and playing (Fowles & Horowitz, 2006). The indicators of positive maternal behaviours for infant caretaking tasks are described in Table 2.3.

Table 2.3 Indicators of positive maternal behaviours for infant caretaking tasks (Fowles & Horowitz, 2006 p668)

Indicators of positive maternal behaviours for infant caretaking tasks

The mother is able to:

- Feed the infant appropriately
 - Observe and monitor eating and elimination patterns
 - Clean, diaper, and dress infant appropriately
 - Provide safe environment
 - Play with infant appropriately
 - Follow recommended schedule for well-child health care visits and immunisations
 - Recognise signs of illness, describe infant symptoms clearly, and seek appropriate health care
 - Consult with health care provider and act on agreed-upon plan
-

Some researchers have conducted studies related to maternal parenting behaviour through observational or self-reported measurements, and found that maternal parenting behaviours for infant caretaking tasks have many problems, especially for first-time mothers, such as unsuccessful parenting feeding and inappropriate health care (Kochanska et al., 2001; Eisenberg et al., 2005). The parenting problems during infancy for Chinese women are introduced in the subsequent section.

2.4.4 The problems of maternal parenting during infancy in China

Primiparous women all over the world may be confronted with stress, fatigue, poor role transition, and emotional problems, which would be injurious to primiparous women's health, and create a negative perception for parenting quality (Dennis & Chung, 2006; Goto et al., 2010), negatively affect parent-child relationships, and lead to ineffective parenting behaviour (Nystrom & Ohrling, 2004). Since the implementation of the one-child policy in China, more than half of parturient women are primiparous (Ministry of Health, China, 2010). Because of the lack of previous parenting experience, many Chinese first-time mothers have been reported to suffer from lots of parenting problems, like some primiparous women in Western countries (Yang, 2003; Gao et al., 2010).

For instance, Ho & Holroyd (2002) described that Chinese mothers expressed a lack of confidence in infant care, such as being unable to perform a baby bath and manage common neonatal problems, e.g. baby feeding and the umbilical cord, even though they participated in childbirth education classes. Yang (2003) found that in a self-reporting study, only 44.9% of Chinese primiparous women thought that they successfully adapted to the maternal role, whereas 55.1% of participants felt unprepared for the demands of the maternal role. Other research conducted in China (Ho & Holroyd, 2002; Liu et al., 2003; Teng & Zhu, 2005; Geng et al., 2006; Pan & Bao, 2006) also showed that Chinese mothers experienced many problems involving parenting behaviours, such as unsuccessful breastfeeding, poor interaction, and emotional communication with infants, and some child-rearing behaviours being not conducive to children's healthy development. A qualitative study by Gao et al. (2012) found that many Chinese women felt unprepared for motherhood and lacked confidence in performing maternal tasks, and the maternal feelings of inadequacy and being

drained detrimentally affected women's control over their emotions and parenting behaviours.

Unlike postnatal women in Western countries, at present Chinese women still follow the traditional postnatal practice of "Doing the month" and this Chinese cultural specific may have significantly positive or negative influence on maternal parenting for Chinese primiparous women. In consideration of the poor maternal parenting for many primiparous women in China and its serious negative consequences for both mothers and infants, how to improve the quality of maternal parenting for first-time mothers in Chinese cultural background of "Doing the month" need to be explored in further research. However, it is difficult to assess parenting directly, because "parenting behaviour is comprised of multiple and complex behaviours across different cultural and social contexts" (Kendall & Bloomfield, 2005, p.176). As a variable that can be changed, maternal self-efficacy was a significant predictor of parenting (Ruchala & James, 1997; Teti et al., 1999; Jones & Prinz, 2005; Whittaker & Cowley, 2006; Pursell & While, 2011; Whittaker & Cowley, 2012). Therefore, it can be an effective method to improve maternal parenting for Chinese women through the variable of maternal self-efficacy.

Conclusion

Positive maternal parenting is important to the wellbeing of infants. However, many Chinese first-time mothers have suffered from many parenting problems when taking care of their infants. Therefore, it is necessary to improve the maternal parenting quality of Chinese primiparous women in Chinese cultural background. As an important predictor of parenting, maternal self-efficacy should be investigated by researchers. The related contents of maternal self-efficacy are introduced in the following section.

2.5 Maternal self-efficacy (MSE) during infancy

The WHO states that "the future of human societies depends on children being able to achieve their optimal physical growth and psychological development" (WHO, 2002a, p.1). As infants are defenceless, competent and skilful parenting is extremely important for them during this early stage of development. Women with a high level of MSE are identified to conduct positive parenting (Jones & Prinz, 2005; Bolten et al., 2012), which is closely related to the wellbeing of women (Holland et al., 2011; Dunninga & Giallo, 2012; Liu et al., 2012; Kohlhoff & Barnett, 2013) and children (Levendosky et al., 2006; Martinez-Torteya et al., 2014). Therefore, to supply infants with optimal care, mothers need to have great MSE to conduct successful parenting transition and behaviours (Zang & Shen, 2010).

2.5.1 Introduction to MSE

2.5.1.1 The theoretical framework of MSE

Self-efficacy was first described by Bandura as one of the major components of social cognitive theory (Bandura, 1977). Bandura (1997) defined self-efficacy as "beliefs in one's abilities to execute the course of action required to attain a goal or perform a certain task" (p3). The role of self-efficacy in human functioning is that "people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true" (Bandura, 1997, p.2). People's self-efficacy affects "almost everything they do: how they think, motivate themselves, and behave" (Bandura, 1997, p.53). Bandura (1997) thought that enhancement of one's self-efficacy is based on four major sources of information: (a) previous experience, (b) vicarious experience, (c) verbal persuasion, and (d) physiological and emotional states.

Bandura (1997) recognised the existence of MSE and emphasised that for parents to conduct parenting transition and behaviours successfully, they must believe that their actions will have the desired outcome and must have confidence in their capabilities to perform specific behaviours or skills. According to Bandura's self-efficacy theory, Montigny & Lacharite (2005) defined MSE as beliefs a mother holds of her "capabilities to organise and execute a set of tasks related to parenting a child" (p.387). A conceptual model of MSE was described by Ardelt & Eccles (2001), which was built on qualitative research by Furstenberg (1993) and the self-efficacy theory by Bandura (1997). In this model, mothers who had a high level of MSE were prone to being engaged in positive parenting, which improved the probability of their children's success in both academic and social-psychological domains (Ardelt & Eccles, 2001). The model also suggested that MSE could have a direct effect on children's success through modeling of attitudes and beliefs. By contrast, mothers with a low level of MSE may have given up easily when challenges arose, which, in turn, may have confirmed their beliefs of low self-efficacy. Likewise, parents faced with challenging child behaviour problems might find it difficult to maintain their high MSE levels (Ardelt & Eccles, 2001).

2.5.1.2 The effects of MSE

(1) The predictor of parenting

According to the self-efficacy theory of Bandura (1997) and the conceptual model of Ardelt & Eccles (2001), MSE was the main predictor of parenting quality. In addition, evidence from various studies has highlighted that MSE is the major indicator of parenting for different age groups of children. For instance, greater MSE has been linked to positive maternal parenting with infants (Bohlin & Hagekull, 1987; Goto et al., 2010), to good parenting control with toddlers

(Coleman, 1998; Coleman & Karraker, 2003), to positive parenting interaction of kindergarten children (Hill & Bush, 2001), to enacting healthy lifestyles of healthy diet and physical activity behaviours for preadolescent children (Decker, 2012), and to adolescent-reported good parenting responsiveness (Gondoli & Silverberg, 1997) and parental behaviours (Shumow & Lomax, 2002).

To be more specific, a study by Goto et al. (2010) with a sample of 392 Japanese and 294 Vietnamese mothers with infants aged 1–6 months showed that a higher proportion of mothers in the two countries who lacked maternal confidence reported negative parenting outcomes, such as children abuse and negative interaction with infants, than did confident mothers. In a study by Coleman (1998) undertaken in the USA, MSE was identified as predictors of parenting competence and the emotional, social, and cognitive development of toddlers. Hill & Bush (2001) recruited 54 African American and 49 European American mothers and their kindergarten children, and found that high MSE was positively correlated with positive parenting practices, such as good communication, and negatively related to negative parenting practices such as inconsistent discipline and love withdrawal. A study by Shumow & Lomax (2002) investigated parental self-efficacy, parental behaviours (e.g. monitoring, parental involvement, and parent–adolescent communication), and adolescent outcomes among a stratified random sample of 929 parents and their adolescent children, including European American (n=387), African American (n=259), and Latin American (n=283). The research findings showed that for the overall sample, parental self-efficacy predicted reported parental behaviours, including parental involvement and monitoring, both of which affected academic and social-emotional adjustment of adolescents (Shumow & Lomax, 2002). Therefore, as a significant predictor of parenting, MSE has been the main outcome to assess the effectiveness of parenting programmes in the UK (Whittaker & Cowley, 2006; Bloomfield & Kendall, 2007; Bloomfield & Kendall,

2012; Whittaker & Cowley, 2012). Moreover, MSE is associated with a variety of outcomes for mothers and their children.

(2) Maternal outcomes

In terms of maternal outcomes, mothers with a higher MSE level are likely to have fewer symptoms of postnatal depression (Cutrona & Troutman, 1986; Teti & Gelfand, 1991; Gross et al., 1999; Holland et al., 2011), less psychological distress and separation anxiety (Hsu & Sung, 2008; Kohlhoff & Barnett, 2013), less parenting stress (Erdwins et al., 2001; Bolten et al., 2012; Liu et al., 2012; Dunninga & Giallo, 2012; Kendall et al., 2013), and higher maternal satisfaction (Coleman & Karraker, 2000; Hudson et al., 2001; Dunninga & Giallo, 2012).

For example, Cutrona & Troutman (1986) found that MSE was inversely related to self-reported depressive symptoms and indicated a direct effect of MSE on postnatal depression for American women, which is consistent with the findings of other studies conducted in Australia (Haslam et al., 2006; Kohlhoff & Barnett, 2013). Erdwins et al. (2001) found in a sample of 129 middle- to upper-income American mothers that greater MSE was associated with less stress attributed to managing multiple role demands. Liu et al. (2012) conducted a prospective correlational study with a sample of 372 Taiwanese women and their infants (less than four months) in Central Taiwan, and found that after controlling for maternal parity and infant temperament, high MSE was associated with low maternal parenting stress. A study by Coleman & Karraker (2000) undertaken in the USA found a positive correlation between MSE and parenting satisfaction.

(3) Children's outcomes

In terms of child outcomes, MSE is positively associated with competent interaction with infants (Leerkes & Crockenberg, 2002; Hsu & Lavelli, 2005; Bolten et al., 2012) and toddlers' cognitive development (Coleman & Karraker, 2003; Weaver et al., 2008).

For instance, Sofronoff & Farbotko (2002) conducted an intervention study to target MSE and found that parents in the intervention group reported their child behaviour problems decreased, attributing it to the increase in their MSE levels. A study by Weaver et al. (2008) with a sample of 652 American mother-child dyads showed that lower levels of MSE when children were aged two years predicted higher levels of maternal-reported children's problem behaviour at age four. A longitudinal study with a sample of 110 American mother-infant dyads was conducted to explore whether infant temperament and MSE predict child weight outcomes (Anzman-Frasca et al., 2013). Mothers were English-speaking, primiparous women, and most were White (91%), and college-educated (65%), with a high family income. Dyads were assessed at infant birth and the age of three and 16 weeks (n=110), one year (n=110), and three years (n=75). Researchers found that infants with a difficult temperament whose mothers had a lower MSE level at three weeks, positively predicted obesity from one to three years. By contrast, infants with a different temperament and whose mothers had a higher MSE level at three weeks, negatively predicted obesity from one to three years. The results highlight that the potential early important risk factor of childhood obesity was that of infants' mothers with a lower MSE level (Anzman-Frasca et al., 2013).

Consequently, in consideration of its important effect, MSE should be worthy of being researched. In order to measure MSE adequately, a robust instrument is

required. The related measurements of MSE during infancy are introduced in the following section.

2.5.2 The measurements of MSE during infancy

There are various measurements of MSE. Coleman & Karraker (2000) identify four distinct types: general self-efficacy scales, task-specific scales, domain-specific scales, and domain-general scales.

One type of instrument, referred to as a general self-efficacy scale, focuses broadly on the extent to which a parent feels competent in the parenting role, without focusing on specific parenting tasks or a particular domain of parenting. The second type of measurement, a task-specific scale, is to measure a person's perceptions in their ability to complete a specified task within a specific parenting domain. Examples of these scales include the Breastfeeding Self-Efficacy Scale (Dennis & Faux, 1999) and the Childbirth Self-Efficacy Inventory (Lowe, 1993). The third type of measure is a domain-specific scale, which focuses on all of the tasks of different domains of parenting functioning, such as feeding, discipline, promotion of learning, or communication. For instance, the Tool to Measure Parenting Self-Efficacy (Kendall & Bloomfield, 2005) contains subscales (different domains) such as infant play, control and learning; these subscales are incorporated into one questionnaire as it allows investigators to establish whether there are specific domains of parenting where mothers doubt their ability. The last one is a domain-general self-efficacy scale, which measures self-efficacy beliefs in different domains of functioning, but does not specify the tasks or activities of every parenting domain (Bandura, 1997). The existing instruments of MSE during infancy are summarised in Table 2.4, with 11 scales being based on Bandura's self-efficacy theory.

Table 2.4 Measurements of MSE during infancy

(Sort by Scale)

Scales (By date)	Authors	Country	Type of scale	Infant age
<u>Based on Bandura's self-efficacy theory</u>				
Infant Care Survey	Froman & Owen (1989)	USA	Domain General	0–12 months
Parenting Self-Efficacy Scale	Wells-Parker et al. (1990)	USA	General Self-efficacy Scales	Any age
Maternal Efficacy Questionnaire	Teti & Gelfand (1991)	USA	Domain Specific	3–13 months
Parent Expectations Survey	Reece (1992)	USA	Domain Specific	1–3 months
Parenting Self-Agency Measure	Dumka et al. (1996)	Cross-culture (English, Spanish)	Domain General	Any age
Tool to Measure Parenting Self-Efficacy	Kendall & Bloomfield (2005)	UK	Domain Specific	0–6 years
Self-efficacy in Infant Care Scale	Prasopkittikun et al. (2006, 2010)	Thailand	Domain Specific	0–12 months
Perceived Maternal Parenting Self-Efficacy Tool	Barnes & Adamson-Macedo (2007)	UK	Domain Specific	0–1 month
Parental Evaluation Scale	Farkas-Klein (2008)	Chilean	Domain General	0–2 years
Karitane Parenting Confidence Scale	Crncec et al. (2008)	Australian	Domain Specific	0–12 months
Parenting Self-efficacy Scale	Salonen et al. (2008)	Finland	Domain Specific	0–12 months
<u>Not Based on Bandura's self-efficacy theory</u>				
Parenting Sense of Competence Scale-Efficacy Subscale	Gibaud & Wandersman (1978)	Canada	Domain General	Unclear
Parenting Stress Index	Abidin (1983)	USA	Domain General	Unclear
Maternal Confidence Questionnaire	Parker & Zahr (1985)	USA	Domain Specific	4–8 months
Maternal Self-efficacy Measure	Fish et al. (1991)	USA	Unclear	0–5 months

In terms of the types of MSE measurements, Bandura (1997, p.48) argues that general/domain-general scales suffer from a "...questionable relevance to the domain of functioning being explored", and should be avoided as they lack the predictiveness of domain-specific measures. As Bandura (1997) strongly recommends that adequate measurements of self-efficacy should be domain-specific rather than domain-general or general self-efficacy scales, the seven domain-specific scales based on the self-efficacy theory of Bandura are considered to be used in this study. In order to make sure of tools with sound psychometric properties, the indicators of psychometric properties (validity and reliability) of measurements are introduced firstly (Greco et al., 1987; Carter & Porter, 2000; Twycross & Shields, 2004; Kimberlin & Winterstein, 2008). Validity refers to whether a tool measures what it sets out to measure, and reliability refers to whether the tool performs consistently. There are several measures to assess validity and reliability of tools (Greco et al., 1987; Carter & Porter, 2000; Twycross & Shields L., 2004; Kimberlin & Winterstein, 2008). For instance,

Validity:

- ❖ *Content validity/logical validity (Whether a tool appears to others to be measuring what it says it does): A more rigorous way to assess content validity is to ask recognised experts in the area to give their opinion on the validity of the tool.*
- ❖ *Face validity: (Whether a tool "looks like" it is going to measure what it is supposed to measure): Researchers ask a few people, such as participants to check the tool's face validity.*
- ❖ *Criterion-related validity (Whether a tool measuring what it purports to measure): Concurrent validity uses an already existing and well-accepted measure against which the new measure can be compared. Predictive validity measures the extent to which a tool can predict a future event of interest. When the coefficient correlation is high, the tool can be considered*

valid.

- ❖ Construct validity (Whether a tool conforms to existing ideas or pre-defined hypotheses concerning the concepts [constructs] that are being measured). Convergent/discriminant validity and factor analysis are the two methods of construct validity. Convergent validity refers to the degree to which two measures of constructs that theoretically should be related, are in fact, related. By contrast discriminant validity tests whether concepts or measurements that are supposed to be unrelated, are in fact, unrelated. Factor analysis is used to uncover the latent structure (dimensions) of a set of variables. Exploratory factor analysis (EFA) seeks to uncover the underlying structure of a relatively large set of variables. Confirmatory factor analysis (CFA) seeks to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory.

Reliability:

- ❖ Test-retest reliability/external reliability (the ability of one measurement to yield similar results when administered to the same persons on two separate occasions): The higher the correlation between the results the more reliable the measurement.
- ❖ Internal consistency reliability (the degree to which different test items that probe the same construct produce similar results): Cronbach's alpha is the most common measure of scale internal consistency reliability. Reliability coefficients range from 0.00 to 1.00, with higher coefficients indicating higher levels of reliability. As a rough guide, a value of 0.8 is seen as an acceptable value for Cronbach's alpha.

The seven domain-specific MSE measurements for women with infants based on the self-efficacy theory of Bandura are introduced in Table 2.5.

Table 2.5 Domain-specific measurements of MSE for women with infants

(Sort by scale)

Scales (By date)	Country	No. items	Rating scale	Dimensions/sub- scales	Reliability	Validity
Maternal Efficacy Questionnaire (MEQ) (Teti & Gelfand, 1991)	USA	10	4-point Likert type: 1 (not good at all), 2 (not good enough), 3 (good enough) and 4 (very good). Higher total scores represent higher MSE levels (score range: 10–40).	Nine items address MSE in specific parenting tasks (feeding and bathing the baby; understanding cues; maintaining joint attention and identifying needs), and one item assesses overall feelings of self-efficacy in mothering.	The Cronbach's alpha coefficient was 0.70 (n=86).	The criterion-related validity was demonstrated by a significant negative correlation ($r = -0.75$, $p < 0.01$) with perceived lack of parenting competence as assessed by the Parenting Stress Index Sense of Competence Scale.
Parent Expectations Survey (PES) (Reece, 1992)	USA	25	10-point Likert type: from 0 (cannot do it), to 10 (certain do it). Higher mean scores represent higher MSE levels (score range: 0–10).	25 items assessing MSE in a mother's abilities in the dimensions of feed and soothe her infant, meet other non-feeding needs, and manage her lifestyle.	The Cronbach's alpha coefficient was 0.91 (n=82).	Content validity and concurrent criterion-related validity ($r = 0.46-0.64$) was established.
Tool to Measure Parenting Self-Efficacy (TOPSE) (Kendall & Bloomfield, 2005)	UK	82	11-point Likert type: 0 represents completely disagree and 10 represents completely agree. The scale contains positively and	TOPSE is a multi-dimensional tool within nine sub-scales, each representing a distinct dimension of parenting: emotion and affection (nine	The Cronbach's alpha coefficients for the subscales ranged from 0.80 to 0.89; the overall scale reliability was 0.94	Face validity, content validity and construct validity were conducted and reported to be good.

			negatively worded items. A lower mean score reflects a lower level of parenting self-efficacy (score range: 0–82).	items), play and enjoyment (seven items), empathy and understanding (nine items), routines (11 items), control (nine items), discipline and boundary setting (11 items), pressure (10 items), self-acceptance (nine items), Learning and knowledge (seven items).	(n=63). Test-retest reliability ranged from 0.58-0.88 (n=19).	
Self-efficacy in Infant Care Scale (SICS) (Prasopkittikun et al., 2006; Prasopkittikun & Tilokskulchai , 2010)	Thailand	46	0–100 continuum: from 0 (not confident at all), 50 (moderately confident I can do), to 100 (definitely confident I can do it). The scale is scored by summing the numerical ratings for each task and dividing by the number of tasks. The higher mean score a mother acquires; the higher MSE level she has (score range: 0–100).	SICS measures four dimensions of self-efficacy in infant care: developmental promotion (15 items), general health care (15 items), safety (six items), and diet (eight items). There are another two items at the end of the questionnaire, asking for a mother to judge how good a mother she is and how well she can seek information about infant care.	The Cronbach's alpha coefficient was 0.96 for the entire scale and coefficients ranged from 0.86–0.96 for its four dimensions (n=235). Test-retest reliability was 0.93 (n=23).	Content validity, convergent validity and factor analysis were reported to be good.

Perceived Maternal Parenting Self-Efficacy tool (PMP S-E) (Barnes & Adamson-Macedo, 2007)	UK	20	4-point Likert type: ranging from 'strongly disagree' (score 1) to 'strongly agree' (score 4). The responses are summed to create a total score. A low total score on this scale indicates a low MSE level (score range: 20–80).	PMP S-E is tested for mothers with hospitalised preterm neonates, including four sub-scales (1) care taking procedure (four items), (2) evoking behaviours (seven items), (3) reading behaviours or signaling (six items), and (4) situational beliefs (three items).	The Cronbach's alpha coefficient was 0.91. Test-retest reliability was 0.96 (n=160).	Face validity, content validity and factor analysis was conducted and reported to be good.
Parenting Self-Efficacy Scale (PSE) (Salonen et al., 2008)	Finland	27	6-point Likert type, from 1=strongly disagree to 6=strongly agree. The scale is scored by summing the numerical ratings for each task and dividing by the number of tasks. A higher mean score indicates a greater MSE (score range: 1–6).	PSE measures three dimensions of MSE: (1) the level which refers to task difficulty; (2) the generality which refers to the modalities of different tasks (cognitive, affective and behavioural); (3) the strength which refers to the person's degree of confidence.	The Cronbach's alpha coefficient of this tool was 0.96 (n=1388)	Concurrent criterion-related validity, face validity and factor analysis was reported to be good.

<p>Karitane Parenting Confidence Scale (KPCS) (Crncec et al., 2008)</p>	<p>Australian</p>	<p>15</p>	<p>4-point Likert type: Item responses: 0 (no, hardly ever); 1 (no, not very often); 2 (yes, some of the time); 3 (yes, most of the time). The scale contains positively and negatively worded items. A higher total score indicating a higher level of MSE (score range: 0–45).</p>	<p>KPCS assesses MSE with three subscales of parenting, support and child development.</p>	<p>The Cronbach's alpha coefficient for the scale was 0.81, for three subscales were 0.80, 0.64 and 0.44 (n=187). Test-retest reliability was 0.88 (n=27).</p>	<p>Factor analysis was conducted. Discriminant and convergent validity were reported to be acceptable.</p>
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Conclusion

All of the seven scales reported the measured internal consistency reliability, but Cronbach's alpha coefficient of MEQ (0.7) and KPCS (one subscale: 0.44) were not very good. Only four scales (TOPSE, PMP S-E, SICS and KPCS) reported the test-retest/external reliability. All of the scales conducted criterion-related validity or factor analysis, and only four scales reported its content validity (PES, TOPSE, PMPS-E and SICS). By comparison, there were three scales (TOPSE, PMP S-E and SICS) with sound psychometric properties. In terms of a sample, PMP S-E was excluded as it is specific for mothers with hospitalised preterm neonates, and TOPSE and SICS are appropriate to measure MSE for mothers with healthy babies. Moreover, most instruments were developed in Western countries (such as USA, UK, Canada, Australia and Finland). For instance, TOPSE was developed with British mothers, which is sensitive to parenting in the UK, and it was also used to measure MSE among Japanese mothers (Kendall et al., 2013). So far, no tool for measuring MSE has been generated for special use with Chinese women, and only one scale (SICS) was developed with Thai mothers of Asia.

In consideration of cultural sensitivity, the SICS was chosen to measure MSE in Chinese women. There are some factors attributed to that. Firstly, "the Thai cultural inventory has always had many points in common with that of the South-east Chinese" (Chan, 2009, p.22). Both China and Thailand are Asian countries that have a relatively similar context of culture and customs for family relations. "Like most other Asian cultures, Thai values are more or less influenced by Confucianism. They are chiefly: filial piety, respect for age, seniority and hierarchy, face, deference, dignity ..." (Nguyen, n.d. p.3). Family ties and filial piety play an important role in Thai society, likely in Chinese society. Secondly, "women in several Asian countries such as China, Korea, Thailand and Singapore are known to perform a traditional postnatal practice"

(Gluckman et al., 2015, p.251). Kaewsaran et al. (2003) surveyed 500 Thai women and found that most of the Thai women adhered to traditional postnatal practices related to the notion of regaining "heat". These included food restrictions, taking hot baths and consuming hot drinks, not shampooing the hair, avoiding the wind and sexual abstinence. A Thai woman's mother or mother-in-law may stay with the family to assist with care of the baby and home, so the new mother can rest and recover. These traditional practices followed currently by Thai women are extremely similar to the Chinese traditional practices of "Doing the month". Therefore, owing to the similar cultural context between China and Thailand, the SICS was used in this study to measure Chinese primiparous women's MSE. The related studies of MSE conducted in different counties are introduced in the subsequent section.

2.5.3 Studies of MSE during infancy in different countries

The importance of MSE for positive parenting (Bohlin & Hagekull, 1987; Bandura, 1997; Goto et al., 2010), improved maternal (Coleman & Karraker, 2000; Liu et al., 2012; Dunninga & Giallo, 2012) and child outcomes (Sofronoff & Farbotko, 2002; Hsu & Lavelli, 2005; Bolten et al., 2012) has been well documented. Therefore, an increasing number of researchers from different countries have focused on this domain. Studies related to MSE for differently aged children were presented in the literature (Appendix 1). In this section, the related studies measuring MSE during infancy which were undertaken in different countries between 2000 and 2014 are described in detail. Studies related to the report of the development of MSE scales (Kendall & Bloomfield, 2005; Prasopkittikun et al., 2006, 2010; Barnes & Adamson-Macedo, 2007; Crncec et al., 2008, Farkas-Klein, 2008) and studies related to the literature review of MSE (Jones & Prinz, 2005) are not included in this section.

2.5.3.1 United Kingdom (UK) perspective

In recent years, the UK government has dedicated more resources, both human and financial, to supporting parents and promoting better outcomes for children through education, health and social services in the community (Department for Education and Skills, 2001, 2003). For example, the "Children Act 2004" and "Every Child Matters" (Department for Education and Skills, 2003) were the government-funded programmes which emphasised professional interventions by supporting parents, to improve the health and development of young children. The "123 Magic" was a group-based parenting programme which encouraged parents to explore, discuss and practise strategies to manage child behaviour (Bloomfield & Kendall, 2010). In 2011, the Department of Health in the UK indicated that families should be able to access different levels of support

including help with parenting from health visiting services in convenient local settings as well as the home (Department of Health, UK, 2011). This “health visitor practice” described in a “new service model” involved engaging with informal community networks, which can provide a foundation of support for all parents, and simultaneously building the universally available Healthy Child Programmes (Department of Health of UK, 2009). In this context, as a predictor of parenting, MSE was regarded as an important outcome to measure these programmes’ effectiveness in the UK, such as for parents with infants (Bloomfield & Kendall, 2007; Whittaker & Cowley, 2012), with toddlers, and pre- and school-age children (Whittaker & Cowley, 2006; Bloomfield & Kendall, 2007; Bloomfield & Kendall, 2010; Bloomfield & Kendall, 2012; Whittaker & Cowley, 2012).

2.5.3.2 United States of America (USA) perspective

Most research on MSE during infancy has been conducted in the USA (Cutrona & Troutman, 1986; Froman & Owen, 1990; Reece, 1992; Reece & Harldess, 1998; Hudson et al., 2001; Leerkes & Crockenberg, 2002; Porter & Hsu, 2003; Biehle & Mickelson, 2011; Holland et al., 2011; Fulton et al., 2012; Troutman et al., 2012). However, many studies were designed for a homogeneous sample (typically white parents). The related studies during infancy which were undertaken in the UK and USA are described in Table 2.6.

2.5.3.3 Other countries’ perspective

The related studies conducted in other countries are described in Table 2.7.

Table 2.6 Studies examining MSE during infancy conducted in the UK and USA

Country/ Authors	Research design	Sample	Measurements	Main Findings	Conclusions
UK, Bloomfield & Kendall (2007)	A before-after design to measure changes in MSE after attending parenting programmes	212 parents with children from six months to ten years; of which most were female (95%, n=201), married or living with a partner (71%,n=151), White (85%, n=180)	Using the Tool to Measure Parenting Self-Efficacy (TOPSE) to measure MSE at a pre- and post-course and at 4-month follow-up	Parenting self-efficacy increased at the end of the parenting programmes for all nine scales of TOPSE; and the increased mean scores in the nine scales ranged from 3.9-14.0 (P<0.001). The increase from baseline to end of course was maintained for all scales at four months follow-up. There was a further statistically increase for two scales of Emotion (mean change: 2.3, P=0.03) and Routine (mean change: 2.6, P=0.05) from the end of course to four months follow-up.	Increases in parenting self-efficacy were found across a range of programmes. The tool of TOPSE can be used to assess the outcomes of different parenting programmes on parenting self-efficacy and in research into this topic.
UK, Whittaker & Cowley (2012)	A descriptive survey to assess MSE to examine how parenting support programmes worked	168 parents with infants (n=59), toddler (n=75), and school-aged children (n=34); most were women, not in paid employment and half were ethnic minority origin aged between 21–30 years	The Parenting Self-Agency Measure (PSAM) was used to measure general self-efficacy for all participants. The Self-Efficacy for Parenting Tasks Indexes (SEPTI) of toddler and school children versions were used to measure task-specific MSE for women with a toddler and for women with a school child.	There was no significant difference in PSAM scores (score range of PSAM: 5–25) between the baby (20±0.35), toddler (20±0.29) and school groups (21±0.45) (F=0.628, P=0.535). The mean PSAM scores suggest a good level of MSE across all participants of the main users of the programmes. However, the task-specific SEPTI scales suggested that parents with toddlers and school children were less self-efficacious in disciplining children. Lower self-efficacy scores correlated with high ratings for 'feeling tired', 'receiving negative comments' and	The domain general and task-specific measures provide different, but helpful, insights into parental self-efficacy experiences. By identifying factors associated with the levels of general and task-specific parental self-efficacy, health

				'giving-in to a child's demands	visitors can gain a fuller appreciation of support needs.
USA, Hudson et al. (2001)	A repeated-measures design to measure MSE at four, eight, 12 and 16 weeks postnatally	44 first-time parents (most of Caucasian, well-educated and married with middle class incomes) in a Midwestern state of the USA	Using the Infant Care Scale (ICS) to measure parenting self-efficacy	Fathers' reports of paternal self-efficacy increased linearly during the first four months postnatally while mothers' reports of MSE increased linearly during the first three months, and then remained stable from three months to four months. At all data collection times, fathers reported significantly lower infant care self-efficacy than mothers. Moreover, MSE was significantly related to maternal parenting satisfaction at eight, 12 and 16 weeks postnatally.	It was necessary to assess MSE routinely in early motherhood to facilitate appropriate interventions such as maternal role training during the early postnatal period.
USA, Leerkes & Crockenber (2002)	A correlated study to test the model of MSE and its impact of MSE in conjunction with infant distress on maternal sensitivity (referring to the appropriateness, timing and quality of the response to the infant's cue)	92 primiparous mothers (94% were White, and 99% were married or living with their partner) and their 6-month-old infants (60% of infants were boys)	Maternal Efficacy Questionnaires (MEQ) and Social Support Questionnaire (SSQ) were used to assess MSE and social support, respectively. At five months postnatally, a maternal report of infant temperament was administered by phone. At six months postnatally, mothers and infants visited the research playroom for a videotaped observation of maternal sensitivity.	The MSE score of 3.63 (SD=0.25) was relatively high (range of MSQ score: 1-4). It also reported that high infant distress was associated with less sensitive parenting when self-efficacy was low and positively associated with sensitive parenting when self-efficacy was moderately high. MSE interacted with distress to limits to predict maternal sensitivity during emotionally arousing activities.	Efforts should be made to identify the sources of support that do improve MSE in families with easily distressed infants.

USA, Porter & Hsu (2003)	A short-term longitudinal study to assess the change trajectory of MSE in the last trimester of pregnancy, at four and 12 weeks postnatally in Midwestern states of the USA	The convenience sample (n=60 antenatal, n=52 at one month postnatally and n=50 at three months postnatally), were mainly Caucasian, middle-class, well educated, and married first-time mothers	Self-designed scale (the self-efficacy in the nurturing role scale) by researchers was used to measure MSE. This scale contained 16 items and rated on 7-point Likert type (0-6) that pertained to mothers' perceptions of their competence on basic skills required in caring for an infant.	There was a statistically significant increase in the MSE scores from one month (92.3±10.5) to three months (95.0±11.3) postnatally (score range of scale: 16–96) and a statistically significant decrease in maternal perceptions of negative emotion. The MSE scores suggest that these women had a relatively high level of MSE. Moreover, MSE was negatively associated with concurrent measures of depression, anxiety, marital conflict; and positively related to levels of previous child care experiences at one month; only infant temperament was negatively associated with MSE at three months.	Researchers concluded that assessing MSE in the postnatal period could be used to facilitate individualised nursing interventions specifically around infant behaviour.
USA, Leerkes & Burney (2007)	A survey to explore the predictors of parenting self-efficacy	115 primiparous mothers and 73 fathers with infants, 71% of mothers had a college degree, 77% were White. 70% of fathers had a college degree, 86% were White.	The Parenting Efficacy Scale (PES), The Infant Behavior Questionnaire-Revised (IBQ-R), the Child Care Activities Scale, Social Support Questionnaire, Center for Epidemiologic Studies-Depression Scale (CES-D) were used to measure parenting self-efficacy, infant temperament, parental involvement, social support and depressive symptoms.	Mothers' self-efficacy was predicted by antenatal experiences, perceived infant temperament and maternal age. In contrast, fathers' efficacy beliefs were primarily a function of involvement in child-care tasks, social support for parenting and paternal age.	The further efforts should be made in samples that are larger and more diverse with respect to race, culture, and risk factors than the sample in the study.

USA, Biehle & Mickelson (2011)	A qualitative study to examine the influence of personal and co-parent predictors on parenting self-efficacy.	104 primiparous couples, most were White	By interviewing 104 participants during the third trimester, one month postnatally and four months postnatally	Predictors of parenting self-efficacy were examined in the domains of performance accomplishment, emotional arousal, and verbal persuasion. MSE remained stable from the third trimester to one-month postnatally and showed a significant increase at four months postnatally.	The importance of examining co-parent effects in the development of parenting self-efficacy across the transition to parenthood was concluded by Researchers.
USA, Holland et al. (2011)	An correlation study to examine the role of MSE as a potential mediator between maternal depression and child hospitalisations in low-income families	432 primiparous women with low-income from the Nurse-Family Partnership trial in Memphis, 92% of them were Black	Mothers' depressive symptoms were measured by the Mental Health Inventory-5 (MHI-5) at both 12 and 24 months postnatally and the higher score indicated more severe depression symptoms. MSE was measured only at 12 months postnatally by the parenting self-efficacy scale (ten questions focusing on parenting-specific tasks) which created by this NFP trials. Their child's medical records were collected from birth to 24 months.	The MSE score was relatively high (mean score of 4.24 on scale range from 1.0 to 5.0); and 124 (28.8%) of the mothers had elevated depressive symptoms (60 or more on MHI-5) at 12 months and of these women, 58 (46.5%) had elevated depressive symptoms again at 24 months. Elevated depressive symptoms (OR: 1.70; 90% CI: 1.05-2.74) and lower MSE (OR: 0.674; 90% CI: 0.469-0.970) were each associated with increased child hospitalisations from birth to one year old. When both MSE and depressive symptoms were included in a single model, the depressive symptoms coefficient decreased significantly (OR decreased by 0.13, P=0.069), supporting the hypothesis that self-efficacy serves as a mediator. A non-linear, inverse-U shaped relationship between MSE and child hospitalisations was supported: lower compared to higher MSE was associated with more child	MSE appeared to be a mediator between maternal depression and child hospitalisations. Further research is needed to determine if interventions specifically targeting MSE in depressed mothers might decrease child hospitalisations.

				hospitalisations (P=0.039). Furthermore, the research findings showed that greater MSE was associated with children with higher birth weight; and mothers who did not have consistently high depressive symptoms, were on-track for finishing high school, and were employed.	
USA, Fulton et al. (2012)	A cross-sectional survey to examine the associations between maternal perceptions of their own infants relative to other infants and MSE in a group of ethnically diverse, low-income, primiparous women during the first six weeks postnatally	170 first time mothers (50% Hispanic, 29% White, 20% African American, 1% Asian)	Using the Maternal Efficacy Questionnaire (MEQ) to measure MSE	The MSE score was 34.31 (SD=3.63) (score range of MEQ: 10–40), which meant a high level of MSE among participants. Furthermore, the research findings showed that changes in maternal perceptions of their own infants significantly contributed to self-reported levels of MSE. Maternal perceptions of her infant as less difficult than the average infant predicted increased levels of self-reported MSE at six weeks postnatally.	The study supported the further exploration of the first six weeks postnatally as a sensitive period for targeting intervention and support, particularly for mothers and infants at highest risk.
USA, Troutman et al. (2012)	A longitudinal study to examine the development of MSE in mothers whose infants with high negative emotionality (NE) at eight and 16 weeks postnatally	111 married women; most (83%) were from professional households, and 58% were primiparous women; 85% of infants were White, 7.5% were Black, and 7.5% were Hispanic.	The Neonatal Behavioral Assessment Scale was administered to 111 infants at three and four weeks postnatally to select a sample of irritable (n=24) and non-irritable (n=29) infants for a prospective study comparing the development of MSE in mothers with infants differing in neonatal NE. The	The exactly scores of MSE were not shown in the study. At eight weeks postnatally, mothers with irritable infants have significantly lower domain-specific MSE than do mothers with non-irritable infants. Mothers with non-irritable infants exhibited a statistically significant increase in domain-specific MSE between eight and 16 weeks postnatally; and mothers with irritable infants exhibited a statistically significant increase in domain-general and domain-specific	Infant mental health screening, infant mental health intervention, and research on self-efficacy theory need to be discussed.

			Parenting Sense of Competence (PSOC) Scale and The Maternal Efficacy Questionnaire (MEQ) were used to assess domain-general and domain-special MSE, respectively at eight and 16 weeks postnatally.	MSE.	
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Table 2.7 Studies examining MSE during infancy conducted in other countries

Country/ Authors	Research design	Sample	Measurements	Main Findings	Conclusions
Australia, Haslam et al. (2006)	A survey to explore the relationship between MSE, postnatal depression and social support	247 primiparous women, mainly married or in a stable relationships and educated to a university level	The EPDS and the Beck Depression Inventory (BDI) were used to measure postnatal depression during their last trimester (n=247) and then again at four weeks postnatally (n=192). MSE and social support were measured using the Efficacy subscale of Parenting Sense of Competence Scale (PSOC-E), and the parent and partner support subscales, respectively only at four weeks postnatally.	MSE score at four weeks postnatally was 4.33 ± 0.78 (scale range: 1-8), indicating that women had a moderate level of MSE. EPDS scores at last trimester and four weeks postnatally were 8.35 (SD=4.50) and 6.80 (SD=4.28). Higher MSE level was significantly associated with higher parental support and lower level of postnatal depression ($P < 0.01$); and results from the path analysis indicated that MSE mediated the effect of social support on postnatal depression.	Parental support lowered depressive symptoms by the enhancement of MSE.
Australia, Dunning & Giallo (2012)	A correlation study to explore the associations between fatigue, MSE and parenting satisfaction, where parenting stress mediates this relationship	1022 women with children aged 0-6 years, most were Australian-born, partnered, tertiary educated, and not in full-time employment	Fatigue Assessment Scale (FAS), Parenting Stress Index-Short Form (PSI), Depression Anxiety Stress Scale-21 (DASS-21), and PSOC-E were used to measure maternal fatigue, parenting stress, and maternal symptoms of depression, anxiety and stress, and MSE, respectively.	MSE score was 29.76 ± 5.48 (scale range: 8-48), indicating that women had a moderate level of MSE. Path analysis revealed that the relationship between fatigue and MSE was fully mediated by parenting stress, while the relationship between fatigue and parenting satisfaction was partially mediated by parenting stress. Child gender, employment status, family structure and socio-economic status did not moderate these relationships.	Fatigue was a serious health concern for mothers that potential had to adversely affect their level of parenting stress, beliefs and behaviour.

Australia, Kohlhoff & Barnett (2013)	A cross-sectional study to examine predictors of MSE and evaluated the effect of a brief, intensive, mother-infant residential intervention on MSE and infant behaviour	83 primiparous women with infants aged 0–12 months	The Karitane Parenting Confidence Scale (KPCS), the Mini International Neuropsychiatric Interview (MINI), the Measure of Parental Style (MOPS), the Attachment Style Questionnaire (ASQ) and EPDS were used to measure MSE; maternal psychiatric disorders; perceived parenting styles; attachment style in adults and postnatal depression, respectively.	MSE score was 33.70 (SD=5.92) (score range of KPCS: 0–45); and EPDS score was 6.12 (SD=3.62). MSE was inversely correlated with maternal depression ($r=-0.452$), maternal anxiety ($r=-0.327$) and attachment insecurity ($r=-0.248$) ($P<0.05$). Low levels of parental abuse during childhood, avoidant attachment, male infant gender and depressive symptom severity were found to predict low MSE according to the multiple regression results. After the intervention, there was a significant improvement in MSE ($F=41.07$, $df(1, 81)$, $P<0.001$), with abusive parenting during childhood and depressive symptom severity being predictive of decrease.	The study highlighted the links between maternal psychopathology and maternal background factors such as childhood parenting experiences and attachment style in the development of MSE.
Canada, Pierce et al. (2010)	A longitudinal study to examine the relationship between MSE and hostile-reactive parenting (HRP) from infancy to toddlerhood	A community sample of 1836 mothers	Questionnaires of The Parental Cognitions and Conduct Toward the Infant Scale including scales of parental self-efficacy (not specific measurements of MSE) and hostile-reactive behaviour were used to measure MSE and HRP	MSE scores were 8.76 ± 1.14 , 8.36 ± 1.27 , 8.25 ± 1.45 (the range of scale score: 0-10) at 4.5, 16.6 and 28.5 months postnatally, indicating a high level of MSE in these women. In contrast to the overall portrait of stability of MSE from 4.5 to 28.5 months, 12.6% of mothers followed a trajectory of declining MSE. Moreover, the finding of study showed that MSE and HRP trajectories were modestly negative associated ($r=-0.23$, $P<0.001$).	It highlighted that MSE and HRP are related, particularly during infancy.

Finland, Tarkka (2003)	A cross-sectional survey to explore the factors that affected MSE of primiparous women when their infants were eight months old	248 first-time mothers, more than half with a university degree and employed	Parenting Stress Index (PSI), Norbeck's Social Support Questionnaire (NSSQ) measure MSE and social network, respectively.	MSE score was 42.77 (SD=4.87, score range of PSI: 25–50) at eight months postnatally. According to the multiple linear regression results, nine predictors remained in the model to explain MSE, such as state of mind, coping with child care, acceptability of the child, maternal age, health, and aid from support network.	The findings suggested important factors that contributed to MSE of first-time mothers, such as maternal resources, health status, ease of caring for the child, and social support received from those close to them.
Finland, Salonen et al. (2009)	A cross-sectional study to measure MSE during the first postnatal week	863 women, of which most were first-time mothers, living with the partner and well educated	MSE, postnatal depression and social support were measured by the Parenting Self-Efficacy Scale (PSE), EPDS, the Family Functioning Health and Social Support Scale, respectively.	MSE score was 5.0 (SD=0.6) (score range of PSE: 1–6), which indicated that the MSE level was high in this sample; and parity, self-concept, depressive symptoms and state of mind on discharge contributed to MSE.	Assessments of MSE were recommended to identify at-risk groups and at-risk parents.
Finland, Salonen et al. (2011)	A quasi-experimental design to evaluate the effectiveness of an internet-based intervention to support maternal satisfaction and MSE	500 mothers (284 in intervention group and 216 in control group), highly educated	PSE, Subscale of the revised What Being the Parent of a New Baby is Like-Revised (WPL-R), and EPDS were used to measure MSE, parenting satisfaction and postnatal depression.	The intervention offered online support for parenting, breastfeeding and infant care beginning from the middle of pregnancy. It comprised an information database, a peer discussion forum and expert advice. Both intervention and control mothers' MSE increased from a mean score of 4.91 (SD=0.6) after child birth to 5.20 (SD=0.6) at six to eight weeks postnatally and different groups of mothers showed an almost equally positive change in parenting satisfaction and MSE.	Both intervention and control mothers' parenting satisfaction and MSE became more positive during the postnatal period. However, no intervention effects were found.

France, Denis et al. (2012)	A cross-sectional study to evaluate the link between infant temperament, maternal cognitions and postnatal blues	69 women aged 19 to 41 years	EPDS, the Maternal Self-Report Inventory (MSI) and the Mother and Baby Scale (MABS) measuring post-partum blues symptoms, MSE and perceptions of competency, and infant temperament, respectively	Correlation analyses showed a correlation between postnatal blues intensity and low MSE ($r=-0.32$, $P<0.05$). A multiple regression analysis showed that the perception of the infant as difficult was predictive of postnatal blues intensity.	Variables influencing postnatal blues, such as MSE, may provide insight into how to better organise both prevention and intervention strategies in this population.
Ireland, Leahy-Warren et al. (2012)	A descriptive correlational study to examine the relationships between social support, MSE and postnatal depression in primiparous women at six weeks postnatally	410 first-time mothers (White Caucasian and 72% with a university level)	The Perceived Maternal Parenting Self-Efficacy Tool (PMP S-E), EPDS, and social support questionnaire were used to measure MSE, postnatal depression and social support.	MSE was 65.9 ± 8.2 (score range of PMP S-E: 20–80) at six weeks postnatally. Significant relationships were found between functional social support and postnatal depression symptoms; informal social support and postnatal depression symptoms; MSE and postnatal depression symptoms; and informal social support and MSE at six weeks postnatally.	The authors concluded that nurses and midwives need to be aware of the significant contribution of social support, particularly from family and friends in positively influencing first-time mothers' MSE, mental health and well-being in the postnatal period.
Singapore, Shorey et al. (2014a)	A correlational design to examine the relationship between MSE and social support as well as predictors of MSE during the early postnatal period (1-3	204 primiparous and multiparous women, most were married; more than half had a university degree or above and employed	PMP S-E and Perinatal Infant Care Social Support Scale (PICSS) were used to measure MSE and social support of women on an average of one to three days postnatally.	MSE score was 46.4 ± 9.3 on first and third days postnatally (score range of PMP S-E: 20–80); indicating a moderate level of MSE of these women. Informal support from husbands, parents and parents-in-law were the main source of support. A significant positive correlation was found between MSE and total social support	Health professionals could provide more information and instrumental support and involve family members to enhance MSE.

	days postnatally)			($r=0.37$, $p<0.01$) in addition to the informational ($r=0.50$, $p<0.01$), instrumental ($r=0.30$, $p<0.01$) and appraisal subscales ($r=0.20$, $p<0.05$) of functional support. The predictors of MSE were parity, social support and maternal age.	
Singapore, Shorey et al. (2014b)	A correlational study to examine the predictors of MSE and its relationship with social support, postnatal depression, and socio-demographic variables of primiparous women during the early postnatal period (1-3 days postnatally)	122 primiparous women, most were married, at least a university degree, employed	PMP S-E, PICSS and EPDS were used to measure MSE, social support and postnatal depression.	MSE score was 31.60 (SD=7.0) (score range of PMP S-E: 20–80) on first and third days postnatally, indicating these women had a low level of MSE. There were significant correlations among MSE, social support, and postnatal depression. The main predictors of MSE were social support, ethnicity, maternal age, and family income.	MSE, social support, and postnatal depression should be routinely assessed to provide necessary support to needy mothers.
Spain, Perez-Blasco et al. (2013)	A randomised controlled trial (RCT) to assess the outcomes of a mindfulness-based intervention on maternal psychological distress, wellbeing, and MSE in breast-feeding mothers	Treatment group (n=13) and control groups (n=13); mean age was 34.33 years, 57.1% were first-time mothers	The Parental Evaluation Scale was used to measure MSE.	The intervention was carried out over the meditation course of eight weeks at a rate of one 2-hour session per week. Compared to the control group, mothers in the treatment group had significantly higher MSE scores ($F=10.83$, $P=0.004$) from pretest of 78.85 (SD=9.00) to posttest of 88.92 (SD=6.71). Moreover, mothers who received the treatment exhibited significantly less anxiety, stress, and psychological distress.	The results supported previous research findings about the benefits of mindfulness-based intervention in women from the perinatal and postnatal periods through the early parenting period.

South Korean, Choi et al. (2012)	A survey to compare postnatal depression and MSE between married immigrant women from Vietnam and native Korean mothers	72 native Korean mothers and 69 immigrant Vietnamese mothers; all mothers within 12 weeks of giving birth, and more than half were employed	The Parent Expectation Survey (PES) and EPDS to measure MSE and postnatal depression	MSE and EPDS scores among native Korean mothers were 7.30 (SD=1.52) (score range: 0–10) and 8.50 (SD=4.59); while the corresponding scores among immigrant Vietnamese mothers were 5.50 (SD=2.00) and 11.10 (SD=4.30). Immigrant Vietnamese mothers experienced a higher level of postnatal depression symptoms ($t=-3.466$, $P=0.001$) and had a lower MSE level ($t=5.607$, $P<0.001$) than native Korea mothers. Postnatal depression was negatively correlated with MSE in native Korean mothers ($r=-0.349$, $P=0.003$), but no significant correlation in the immigrant Vietnamese mothers ($r=0.011$, $P=0.936$). The mothers' country of origin, whether immigrant or Korean, was a significant factor in postnatal depression ($P=0.040$; $R^2=0.091$), but had no effect on MSE ($P=0.957$).	The problems of low level of MSE and postnatal depression were more prevalent among married immigrant women from Vietnam than among native Korean mothers. Accordingly, the related intervention programmes for married immigrant women should be developed and implemented.
Switzerland, Bolten et al. (2012)	A cross-section survey to determine whether antenatal stress is associated with infants crying/fussing) in infants; and investigated the stress-buffering effect of MSE	120 women, most were Swiss and German, married and highly educated	The subscale "self-efficacy" of the Competence and Control Questionnaire (not specific measurements of MSE) was used to measure MSE. Crying/fussing data were obtained with a parental diary. The Depression, Anxiety and Stress Scale (DASS) was used to assess frequency and severity of maternal stress.	MSE score at six weeks postnatally was 66.76 (SD=11.00) (score range of the scale: 16–96), indicating a moderate level of MSE of these women; and antenatal stress score was 15.93 (SD=10.31). After controlling for confounding variables, multiple regression analyses showed that antenatal stress and MSE accounted for 20% of the variance in infant's fussing and crying behaviour. Results suggested a mediating role of MSE.	Health professionals need special education about the effects of antenatal stress and interventions that promote MSE to foster the development of well-adapted parent-infant relationships and to reduce infant crying.

Conclusion

The research findings highlighted the importance of assessing MSE routinely during the postnatal period, especially in initial motherhood (Hudson et al., 2001; Porter & Hsu, 2003; Salonen et al., 2009; Fulton et al., 2012; Shorey et al., 2014b).

There were 24 international studies that measuring MSE during infancy in the period of 2000-2014, one of which was a qualitative study (Biehle & Mickelson, 2011). Most of studies (n=21) were conducted in Western countries, such as in the USA, UK, Australia and Finland. Of which, most studies (n=19/21, 90%) were related to a homogeneous sample (White people); and only two studies (Holland et al., 2011; Fulton et al., 2012) in Western countries focused on ethnic minorities. The other three studies conducted in the Singapore (Shorey et al., 2014a, b) and South Korean (Choi et al., 2012), lacked the consideration for the effect of Asian culture on MSE.

In the longitudinal quantitative studies (Hudson et al., 2001; Porter & Hsu, 2003; Piercea et al., 2010; Troutman et al., 2012), researchers described MSE scores at different postnatal time points, such as four weeks, eight weeks, 12 weeks, 16 weeks and 28.5 months postnatally; and found that the levels of MSE were changeable at the first three months postnatally (Hudson et al., 2001; Porter & Hsu, 2003), and then almost remained stable from three months to two years postnatally (Hudson et al., 2001; Troutman et al., 2012).

There were six quantitative studies (Porter & Hsu, 2003; Tarkka, 2003; Leerkes & Burney, 2007; Kohlhoff & Barnett, 2013; Salonen et al., 2009; Shorey et al., 2014b) and one qualitative study (Biehle & Mickelson, 2011) that explored the predictors of MSE; however, the influencing factors of MSE have been poorly explored. Some of which had a small sample size (Porter & Hsu, 2003; Kohlhoff

& Barnett, 2013); only focused at one time point (Tarkka, 2003; Leerkes & Burney, 2007; Salonen et al., 2009; Kohlhoff & Barnett, 2013; Shorey et al., 2014b) and only related to a few characteristics of mothers or their children (Salonen et al., 2009; Biehle & Mickelson, 2011; Shorey et al., 2014b).

In summary, the limitations of the previous international studies were that: firstly, most studies were related to a homogeneous sample (approximately 90% White), and the lack of consideration for the effect of different cultures. Secondly, the change trajectory of MSE during the first three postnatal months needed to be researched. Thirdly, the factors which influence MSE still remained poorly explored.

2.5.3.4 MSE in China

The related studies examining MSE during infancy conducted in China are described in Table 2.8.

Table 2.8 Studies examining MSE during infancy conducted in China

Country/ Authors	Research design	Sample	Measurements	Findings	Evaluation
Mainland of China, Zang & Shen (2010)	A longitudinal design to measure MSE among Chinese primiparous women at three days, six weeks and 12 weeks postnatally (published in Chinese)	147 primiparous women, most (90%) women were well-educated, with higher incomes in Beijing	The Self-efficacy in Infant Care Scale (SICS) and EPDS were used to measure MSE and postnatal depression at the three different time points	MSE scores at three days, six weeks and 12 weeks postnatally were 78.73 (SD=11.45), 80.44 (SD=11.76), 83.86 (SD=10.45), respectively (score range of SICS: 0 to 100). The MSE score at 12 weeks postnatally was higher than scores at three days and six weeks postnatally. Postnatal depression and social support were the influencing factors of MSE for primiparous women	The Chinese version of SICS was tested to have good reliability and validity. The strength of the study was the longitudinal nature of the data. However, its sample only focused on well-educated, high income women in affluent area of Beijing; and the influencing factors of MSE was not explored thoroughly, which was only related to a few variables. Furthermore, it did not refer to the potential cultural effect of "Doing the month" on women's MSE.
Mainland of China, Gao et al. (2012, 2014)	A randomised controlled trial (RCT) to examine the effects of an interpersonal psychotherapy oriented childbirth education programme; then a secondary analysis with in the study group	Study group (n=96) and control group (n=98), primiparous women, 85% well-educated, all employed and higher income	Perceived Social Support Scale, the Efficacy subscale of Parenting Sense of Competence Scale (PSOC-E), EPDS and General Health Questionnaire to measure social support, MSE, postnatal depression and psychological well-being,	The study group had a significantly higher level of social support (65.92±8.10) (t=2.33, P=0.021), MSE (37.00±5.13) (score range of PSOC-E: 8–48) (t=2.43, P=0.016) and less depressive symptoms (5.61±3.33) (t=2.39, P=0.018) at three months postnatally when compared with the control group (their corresponding	The interpersonal psychotherapy oriented childbirth education programme could facilitate the participants' enhance their perceived social support and MSE. But, the study was not related the influencing factors of MSE, except social support. Moreover, the generalisation was limited as the

	to examine the relationship between perceived social support and MSE.		respectively.	scores were 63.11±8.67; 35.21±5.14; 6.87±3.97). In the study group, perceived social support positively correlated with MSE during pregnancy, at six weeks and three months postnatally, the corresponding correlation coefficients were 0.22, 0.25 and 0.46 (P<0.01).	research sample was small and most participants were mothers with a higher educational level and with a single, normal pregnancy. Furthermore, the measurement of MSE was a domain-general scale, which only measured efficacy beliefs in one domain of functioning, but did not specify the tasks or activities of parenting.
Hong Kong, China, Ngai et al. (2009, 2010)	A quasi-experimental design to determine the impact of a childbirth psycho-education programme on MSE and depressive symptoms in Chinese childbearing women; then a secondary analysis of the data to determine the associations of variables, such as MSE, social support, depression and satisfaction	Study group (n=92) and control group (n=92), primiparous women, most were employed	The Efficacy subscale of Parenting Sense of Competence Scale (PSOC-E), Self-control Schedule, Medical Outcomes Study Social Support Survey, Social Readjustment Rating Scale, and EPDS were used to assess MSE and satisfaction, social support, stress, and depressive symptoms, respectively at before and after intervention, at six weeks and six months postnatally.	The scores of MSE in experimental group were 34.6 (SD=4.7) (Score range of PSOC-E: 8–48), 35.4 (SD=4.0), 33.5 (SD=4.7) and 35.1 (SD=4.6) at before intervention during pregnancy, after intervention during pregnancy, at six weeks and six months postnatally; while the scores of MSE in comparison group at the four time points were 34.1 (SD=4.9), 34.8 (SD=4.0), 31.9 (SD=4.7) and 33.9 (SD=4.7). After intervention, women had a significant overall reduction in depressive symptoms (P=0.01), but no significant group difference in MSE. Social support had a weak correlation (r=0.20, P<0.01) with MSE at six weeks postnatally.	The childbirth psycho-education programme appeared to be an intervention for minimising the risk of perinatal depression but have no effect on MSE in first-time Chinese childbearing women. Furthermore, the measure of MSE used in the research was a domain-general tool, and the influencing factors of MSE were not related, except social support and postnatal depression.

Hong Kong, China, Ngai et al. (2011)	A qualitative approach to explore primiparous women's perceptions of MSE and factors contributing to MSE	26 primiparous women, most were well-educated	By interview at six weeks postnatally	The findings showed that women perceived a competent mother as being able to make a commitment to caring for the physical and emotional well-being of child, while cultivating appropriate values for childhood. New mothers needed information on child care, positive parenting experience, success in breastfeeding, infant's well-being, social support and consistent information to enhance their MSE.	The research highlighted the importance of understanding Chinese cultural attitudes to childrearing and MSE. But it was limited by representing only a small stratum of well-educated primiparous women in Hong Kong. Another limitation was that MSE was only assessed at six weeks postnatally. The authors suggested that it was important to assess MSE at multiple time points in the postnatal period as MSE evolved over time.
Hong Kong, China, Ngai & Chan (2012)	A prospective correlational design to examine the changes in and relationships among stress, MSE and satisfaction in the perinatal period	78 first-time mothers, all well-educated	PSOC-E and the Social Readjustment Rating Scale (SRRS) to measure MSE and satisfaction, and stress at six weeks and six months postnatally	MSE scores declined from pregnancy (33.9±5.1) to six weeks postnatally (31.7±4.5) (F=12.14, P<0.001), followed by improvement at six months (33.5±5.5) (F=13.43, P<0.001). The change in MSE scores between pregnancy and six months postnatally was not significant (F=0.47, P>0.50). However, both stressful life events and stress intensity increased from pregnancy to six months postnatally (F=5.95, P<0.05 and F=13.10, P<0.001, respectively). Maternal stress increased and MSE declined during early	The strength of the study was the longitudinal nature of the data, which allowed a clearer understanding of the changes and relationships between stress and MSE in the perinatal period. However, generalisability was limited by the very small sample size and homogeneity of the sample, composed solely of well-educated primiparous women in Hong Kong. Furthermore, it did not refer to the influencing factors of MSE either, and the measure of

				motherhood, which highlighted the potential negatively influence of stress on MSE and satisfaction in the perinatal period.	MSE was a domain-general scale, which did not specify the different parenting tasks
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Conclusion

A literature search (until 2014) yielded that there were two papers related to MSE and its influencing factors for Chinese women. One qualitative study (Ngai et al., 2011) was conducted in Hong Kong to explore factors attributing to MSE. However, one limiting factor of the study was a small sample size only including well-educated primiparous women in Hong Kong. Another limitation was that MSE was only assessed at six weeks postnatally. Ngai et al. (2011) suggested that it was important to assess MSE at different time points in the postnatal period as MSE changed over time; and highlighted the importance of cultural effect on childrearing and MSE.

Another quantitative study (Zang & Shen, 2010) published in Chinese was related to MSE and its influencing factors for Chinese women in the mainland. However, its sample only focused on well-educated, high income women in an affluent area of Beijing; and the influencing factors of MSE was not explored thoroughly, only related to a few variables. Furthermore, it did not refer to the potential Chinese cultural effect of "Doing the month" on primiparous women's MSE, as Ngai et al. (2011) recommended. Therefore, it is necessary to assess MSE and to thoroughly explore the influencing factors for MSE among Chinese primiparous women in the mainland in consideration of Chinese culture during the first three months postnatally to fill the research gap. The potential factors that had influenced MSE in the previous studies are introduced in the following section.

2.5.4 The potential factors influencing MSE

MSE has been acknowledged to be a complex, multifaceted construct that is determined by multiple variables (Teti & Gelfand, 1991; Reece, 1992; Ardelt & Eccles, 2001; Porter & Hsu, 2003; Leahy-Warren & McCarthy, 2011). According to Belsky's (1984) process model of parenting, the potential influencing factors for MSE can be divided into maternal variables, infant variables and social contextual variables.

2.5.4.1 Maternal variables

(1) Maternal Age

Conflicting evidence has been presented in terms of maternal age affecting MSE. The study findings of Ngai & Chan (2012) showed that the younger mothers in Hong Kong had a lower level of MSE as they may have suffered from a lack of confidence ($r=0.26$, $p<0.05$). This result also supported by Shorey et al. (2014a) ($r=0.22$, $p<0.05$). By contrast, the research by Tarkka (2003) conducted in the USA and by Shorey et al. (2014b) conducted in Singapore found that maternal age was one of the important factors in explaining MSE according to multivariate analysis; and demonstrated that the younger the mother, the greater her perceived MSE. Perhaps younger mothers are more likely to overestimate their competence, whereas older mothers may expect more of themselves and be prone to feel tired. Furthermore, there were some studies conducted in the USA (Porter & Hsu, 2003) and Finland (Salonen et al., 2009) that did not find any correlation between maternal age and MSE.

(2) Educational level

Some studies have identified that maternal educational level can influence MSE; however, these results were inconsistent. For example, it has been reported that

a highly educated mother in Singapore scored lower in MSE (Shorey et al., 2014a). In contrast, Cutrona & Troutman (1986) showed that educational level correlated positively with MSE ($r=0.27$, $p<0.05$). The studies by Jackson (2000) and Green & Rodgers (2001) also found that American mothers with a higher educational level had a higher MSE level. In other research, the results indicated that maternal education did not correlate with MSE (Porter & Hsu, 2003; Zang & Shen, 2010; Ngai & Chan, 2012; Gao et al., 2014; Shorey et al., 2014b). Thus, the conflicting results between maternal educational level and MSE need to be discussed in this study.

(3) Employment status

A study that assessing MSE in single American mothers reported that employed mothers had greater MSE than unemployed mothers as they may have acquired more support from society (Jackson, 2000). Koniak-Griffin et al. (2006) found that mothers in Western countries with casual work were particularly challenged in being the mother they want to be, in comparison with mothers with professional work, because they could lack knowledge and skills in parenting; and feel more stress and anxiety on their mother role. By contrast, some research indicated that the employment status of mothers did not impact on MSE (Salonen et al., 2009; Ngai & Chan 2012; Gao et al., 2014; Shorey et al., 2014b). Additionally, the study by Shorey et al. (2014a) showed that unemployed mothers in Singapore had a higher level of MSE than those being employed. As employed mothers might spend less time in looking after their babies and have less hands-on experience in newborn care which could have decreased their MSE levels in performing various newborn-care tasks. As a consequence, whether maternal employment status affects MSE should be researched in this study.

(4) Mode of birth

According to the theory of Bandura (1997b), different modes of birth may have an influence on MSE by affecting maternal physiological and emotional states after childbirth. For example, caesarean section in 115 Nigerian primiparous women predicted mothers' poor parenting self-efficacy in the postnatal period (Loto et al., 2010); because mothers with caesarean section were prone to have a worse emotional and physical state owing to the pain of operation wounds and activity restrictions. However, the research by Salonen et al. (2009) undertaken in Finland, and by Zang & Shen (2010) and Gao et al. (2014) conducted in China found that the MSE scores of mothers with different modes of birth had no statistically significant difference. Thus, whether mode of birth predicts MSE needs to be researched in this study.

(5) Postnatal depression

Postnatal depression (PND), also known as postpartum depression (PPD), defined as a non-psychotic depressive episode beginning in or extending to the postnatal period (Cox et al., 1993), has become a serious public health problem across cultures owing to its high incidence and several detrimental consequences for the mother, infant and family as a whole (Dennis & Creedy, 2004; Daley et al., 2009). Gaynes et al. (2005) identified 30 studies of prevalence in developed countries, and found that for major and minor depression, estimates of the point prevalence ranged from 6.5% to 12.9% during the first year postnatally. A meta-analysis of 59 studies (including 12,810 women, mainly from developed countries) reported that the average prevalence of PND was 13% (O'Hara et al., 1996). Research findings showed that from 2000 to 2012, PND affects 15-30% of Chinese women following childbirth (Zhao, 2012).

Researchers found that PND has been a significant factor affecting MSE. For instance, studies undertaken in different countries by Tarkka (2003), Haslam et al. (2006), Sevigny & Loutzenhiser (2009), Davey et al. (2011), Holland et al. (2011), Ngai et al. (2011), Choi et al. (2012), Gao et al. (2012) and Shorey et al. (2014b), found that there was a negative association between PND and MSE. Mothers with a lower PND score were prone to have a higher MSE score. Moreover, the results of multivariate regression analysis identified PND as an important influencing factor contributing to MSE (Salonen et al., 2009; Zang & Shen, 2010; Kohlhoff & Barnett, 2013). In contrast, Porter & Hsu (2003) did not find any correlation between PND and MSE for American women at three months postnatally; but find a negative correlation at one month postnatally. The inconsistent results about the relationship between MSE and PNT from the previous research need to be identified in this study.

In terms of measurement, the Edinburgh Postnatal Depression Scale (EPDS), developed by Cox et al. (1987), is the most frequently used instrument to identify symptoms of PND worldwide (Hewitt et al., 2009), and has been validated by standardised psychiatric interviews with large samples and has well-documented reliability and validity in over 11 languages (Dennis & Hodnett, 2007). Therefore, EPDS is used in this study and its psychometric properties are introduced in methods section of Chapter Three.

(6) Parenting experience

Studies by Froma & Owen (1989, 1990) showed that American women who reported more experience in providing infant care such as attending parenting training and caring for younger siblings would report greater MSE than women with no or little infant care experience. The reason was that women who had more experience in performing child-care routines may also have had more

opportunities to receive positive performance feedback from family members and health professionals. Gross et al. (1989) also found that American women having prior parenting experience before their toddler's birth could have a high level of MSE. Qualitative research findings of Ngai et al. (2011) supported this result, and found that childrearing experiences was important factors that affected maternal confidence for Hong Kong first-time mothers. One woman (Ngai et al., 2011) said that *"I believe I am a competent mother because I had experiences with children. When I was 10-year-old, I assisted my mother in taking care of my younger brothers and sisters. Because of my experiences in infant care, I was not so worried or nervous with my child. I knew how to hold him to make him feel comfortable even he seemed quite fragile and small."* (p1485). However, the research by Porter & Hsu (2003) conducted in the USA reported that there was no correlation between parenting experience and MSE at one and three months postnatally, which was probably because parenting experience may be dramatically reshaped by the immediacy of intimate care given with the woman's own infant, supplanting the more distant vicarious parenting experiences and performance feedback associated with caring for another child.

(7) Number of children

Number of children may be an influencing factor of MSE. For example, Green & Rodgers (2001) found that number of children had a negative correlation with MSE for American mothers. The study by Shorey et al. (2014a) conducted in Singapore showed that multiparous mothers had greater MSE in newborn care than primiparous women. Bloomfield et al. (2005) conducted a qualitative study in the UK and found that mothers generally agreed that parenting a second baby was easier. One mother (Bloomfield et al., 2005) said that *"When I had the second baby, it was much easier because, I think, I handled him much better."*

(p50). However, research conducted in the USA (Hess et al., 2004) and Japan (Holloway et al., 2006) indicated that there was no statistically significant relationship between MSE and number of children.

2.5.4.2 Infant variables

(1) Infant gender

Conflicting evidence has been published about the impact of baby gender on MSE. For instance, the findings of Malatesta et al. (1989) and Maniadaki et al. (2005) in Western countries reported that mothers with a daughter acquired a higher MSE level than mothers with a son. The research by Kohlhoff & Barnett (2013) undertaken in Australia also confirmed that women with a male infant was found to predict a low MSE level according to multiple regression results. It was probably because mothers showed more expression and positive emotion towards daughters than towards sons (Malatesta et al., 1989; Donovan et al., 2007). By contrast, some studies conducted in Western countries (Hudson et al., 2001; Port & Hsu, 2003; Salonen et al., 2009) and China (Zang & Shen, 2010; Gao et al., 2014) found that infant gender did not correlate with MSE. Consequently, the inconsistent results should be verified in this study.

(2) Infant health

Infant health may impact on MSE. Salonen et al. (2009) found that Finnish mothers with infants who had health problems had a lower MSE score than mothers with healthy infants. Some Hong Kong mothers in the research by Ngai et al. (2011) expressed that witnessing their infant's growth and well-being increased their maternal role competence. One mother said: "*I was quite competent in mothering because my child was healthy and did not have any*

problem. He gained several pounds, around five pounds since his birth.” (Ngai et al., 2011, p1485).

(3) Infant temperament

Temperament is considered to be the biological or physiological component of personality, which appears early in life, usually thought to be biological in origin and difficult to change (Kagan, 2005). Infant characteristics such as fussiness, irritability, and frequent intense crying with low soothability and manageability are typical expressions of a difficult temperament. By contrast, other infants are regarded as having an easy temperament (Rothbart & Bates, 1998).

Research conducted in Western countries has reported that mothers who described their infants as having a difficult temperament had a significantly lower MSE level than mothers with infants having an easy temperament (Porter & Hsu, 2003; Tarkka, 2003; Denis et al., 2012; Fulton et al., 2012; Troutman et al., 2012). The relationship between infant temperament and MSE is likely to be explained in the context of what Bandura (1982) referred to as perceived task difficulty, as well as outcome expectancy associated with self-perceived successes or failures in parenting. That is when women taking care of an infant with a difficult temperament were prone to increase difficulty degree of parenting tasks, and lead to challenges in achievement of maternal role expectancy and unsuccessful parenting. If a new mother's parenting is repeatedly unsuccessful, she may begin to feel less confidence about her parenting abilities (Stifter & Bono, 1998) and more maternal parenting stress (Liu et al., 2012). Therefore, whether infant temperament influences MSE for women in Eastern countries, such as Chinese women, needs to be addressed in this study.

2.5.4.3 Social contextual variables

(1) Social support

In the literature, social support has been defined in various ways, and the frequently cited definitions of social support refer to the social exchange theory (Cobb, 1976; Khan & Antonucci, 1980; House, 1981; Schumaker & Brownell, 1984; Keeling et al., 1996). For example, social support is defined by Cobb (1976) as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations." (p.300). The other definition of social support proposed by House (1981) was "a flow of emotional concern, instrumental aid, information, and/or appraisal (information relevant to self-evaluation) between people" (p.26), which is chosen for use in this study.

Social support involves both the perception of available assistance and satisfaction with received support (Tietjen & Bradley, 1985); and could be conceptualised by structural and functional components. The structural social support has been conceived as social network, which may be informal (family members, friends) or formal (health professionals), depending on the relationship with its recipient (Schumaker & Brownell, 1984). The functional social support has been conceived as informational, instrumental, emotional and appraisal support (House, 1981). For instance, Informational support is related to information exchanged between individuals or a group which has a positive effect on the recipient, such as advice from health professionals and family members (Cobb, 1976). Instrumental support means transactions in which direct aid or assistance is given, such as money and time (Khan & Antonucci, 1980). Emotional support means emotional concern for the recipient, such as encourage and trust (House, 1981). Appraisal support is related to confirmation

or expressions of agreement or rightness of some actions or views, such as assessment and feedback (House, 1981).

Cobb (1976) said that "Social support can protect people in crisis." (p.300). There are two different models may explain that social support has a beneficial effect on well-being (Cohen & Wills, 1985). According to the buffering model, "support protects persons from the potentially pathogenic influence of stressful events" (Cohen & Wills, 1985, p.310); by contrast, in terms of the main effect model, social support has "a beneficial effect irrespectively of whether persons are under stress." (p.310). Cohen & Wills (1985) thought that there was no need to ask which model is correct, as both models contributed to understanding the relation between social support and health. Having a variety of support providers to supply various support is important for new mothers, especially for primiparous women (Leahy-Warren, 2005; Leahy-Warren & Rphn, 2007). In the research by Leahy-Warren (2007), most of Irish women reported informal social networks as their primary source of support in caring for their infants; and identified the woman's husband/partner and mother as being the most important and available sources of support following childbirth. This result was supported by Haslam et al. (2006).

Research findings showed that social support may be an important influencing factor for MSE. For instance, Leahy-Warren et al. (2012) demonstrated the significance of social support in enhancing MSE and positively influencing mental health for Irish first-time mothers at six weeks postnatally. The studies by Tarkka (2003), Haslam et al. (2006), Zang & Shen (2010), Ngai et al. (2011), Shorey et al. (2014a) and Gao et al. (2014) conducted in different countries also confirmed the positive association between social support and MSE. Moreover, the research results of multiple regression analysis (Eaton, 2007; Shorey et al., 2014b) showed that social support was the most important influencing factor for

MSE. Sriyasak et al. (2013) interviewed ten teenage Thai mothers with a first baby younger than six months old, and found that previous childrearing experiences and social support were important factors in determining how teenage mothers adapted to being a mother and how they practised infant care. Especially, instruction and assistance with infant care from their families and health-care providers improved their self-confidence in the maternal role and in childrearing. However, in the study by Salonen et al. (2009), there was no statistically significant correlation between social support and MSE for Finnish women during the first postnatal week. Therefore, it is necessary to research whether social support affects MSE for Chinese women in this study.

In China, there is a specific instrument of Postpartum Social Support Scale (PSSS) (Lu & Zheng, 2001). It is used in this study because of its sound psychometric properties and its specificity to postnatal Chinese women; and is introduced in the methods section of Chapter Three.

(2) Family income

When considering familial social context, there is evidence to suggest that family income may influence MSE. For instance, Coleman & Karraker (2000) found that greater MSE was associated with higher income in a sample of American mothers with school-age children. This result was consistent with the research findings in Japan (Holloway et al., 2006) and Singapore (Shorey et al., 2014b), because mothers with a lower family income may have been prone to face some financial problems, which negatively affected maternal confidence of performing parenting tasks. However, some research showed that family income did not correlate with MSE (Porter & Hsu, 2003; Zang & Shen, 2010; Ngai & Chan, 2012; Gao et al., 2014). Therefore, it is necessary to research whether family income influences MSE for Chinese women in this study.

Conclusion

The following factors may affect MSE including maternal variables (maternal age, educational level, employment status, postnatal depression, parenting experience, number of children), infant variables (infant gender, infant health, infant temperament) and social contextual variables (social support, family income). However, conflicting evidence of whether these factors affecting MSE or how affecting MSE has been presented in the literature. As a consequence, the factors that potentially have predicted MSE need to be further explored in this study.

2.6 Summary of literature review

Since the implementation of the one-child policy in China, more than half of Chinese parturient women are primiparous and lack previous parenting experience. Confronted with a series of changes in pregnancy and childbirth, it is stressful for primiparous women to adapt to the role of a mother and assume the responsibilities of parenting a baby. Researchers have found that there were many parenting problems during infancy for Chinese first-time mothers. Therefore, as an important predictor of parenting, MSE should be paid more attention by researchers.

At present, the limitations of the previous international studies related to MSE were as follows: firstly, most studies were related to a homogeneous sample (approximately 90% White), and there was a lack of consideration for the effect of different cultures. Secondly, the change trajectory of MSE during the first three postnatal months needed to be researched. Thirdly, the factors which influence MSE still remained poorly explored. For example, some studies had a small sample size, or only focused on one time point, or only related to a few characteristics of mothers or their children; furthermore, conflicting evidence of

whether these factors affected MSE or how they affected MSE has been presented in the literature.

In China, there was one paper published in Chinese which related to MSE and its influencing factors for Chinese women in the mainland. However, its sample only focused on well-educated, high-income women in an affluent area of Beijing, and the influencing factors of MSE were not explored thoroughly. Furthermore, it did not refer to the Chinese postnatal culture of "Doing the month" which had potential effects on Chinese primiparous women's MSE. Therefore, it is necessary to assess MSE and to thoroughly explore the influencing factors for MSE among Chinese primiparous women in the mainland in consideration of Chinese postnatal culture of "Doing the month" during the first three months postnatally to fill the research gap.

2.7 Theoretical framework

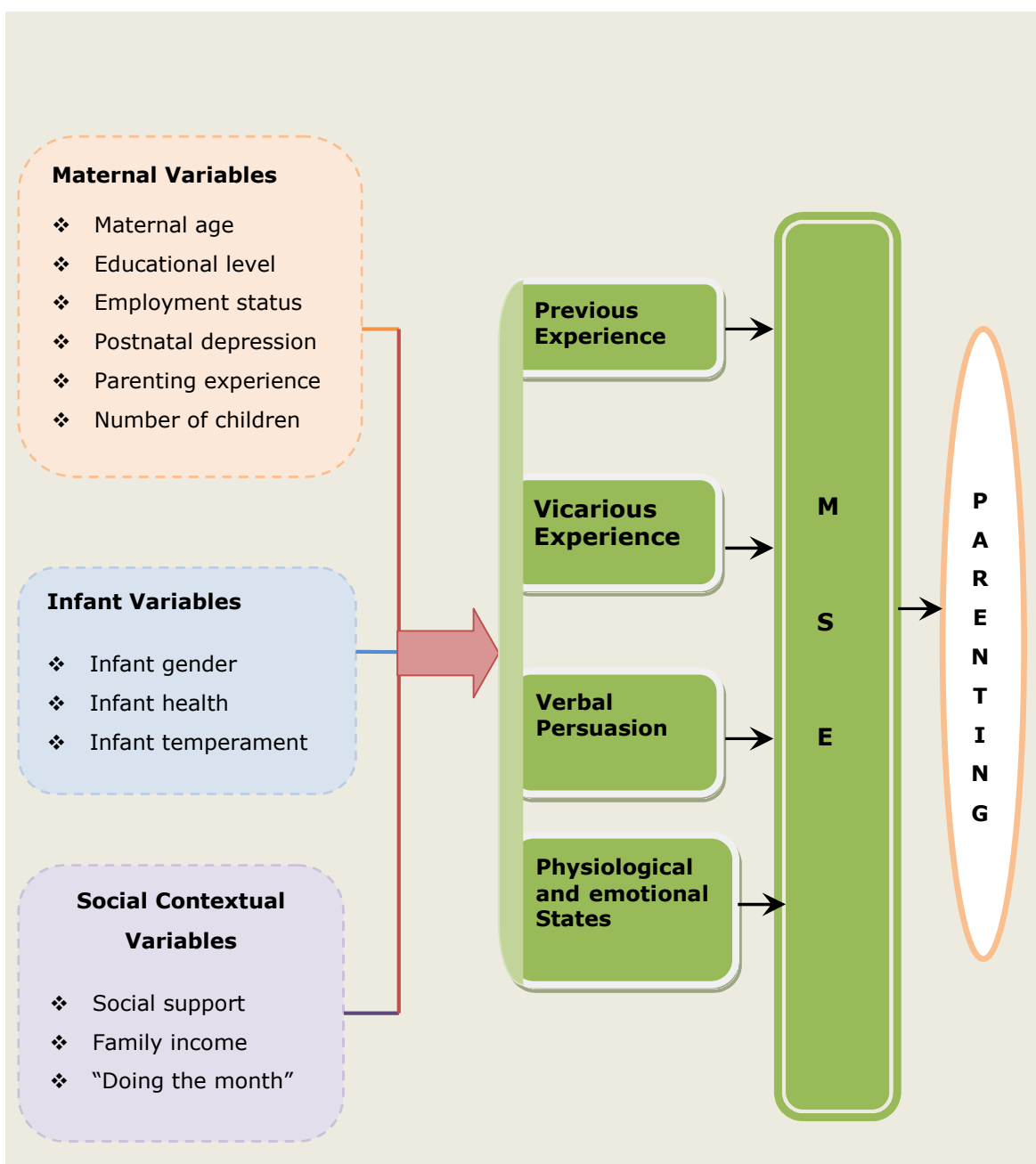
Based on the self-efficacy theory described by Bandura and other related literature, the following theoretical framework of this study has been developed (Figure 2.2). Bandura (1997a, p.3) defined self-efficacy as "a belief in one's abilities to organise and execute the course of action required to attain a goal or perform a certain task", and believed that self-efficacy affected the regulation and maintenance of behaviour. Bandura identified four major elements that affected self-efficacy: (a) *previous experience*, (b) *vicarious experience*, (c) *verbal persuasion*, and (d) *physiological and emotional states*. According to Bandura's self-efficacy theory, Montigny & Lacharite (2005) define maternal self-efficacy (MSE) as beliefs a mother holds of her capabilities to organise and execute a set of tasks related to parenting a child. Sound evidence has highlighted that MSE is the major indicator of parenting (Bandura, 1997; Ardelt & Eccles, 2001; Goto et al., 2010; Shumow & Lomax, 2002).

According to the process model of parenting by Belsky (1984), the potential influencing factors for MSE could be divided into maternal variables, infant variables and social contextual variables. The maternal variables which may influence MSE included maternal age (Tarkka, 2003), educational level (Jackson, 2002), employment status (Koniak-Griffin et al., 2006), mode of birth (Loto et al., 2010), postnatal depression (Tarkka, 2003; Salonen et al., 2009), parenting experience (Ngai et al., 2011), and the number of children (Shorey et al., 2014a). Infant variables included infant gender (Kohlhoff & Barnett, 2013), infant health (Salonen et al., 2009) and infant temperament (Porter & Hsu, 2003; Denis et al., 2012). Social contextual variables included social support (Haslam et al., 2006; Leahy-Warren et al., 2012) and family income (Shorey et al., 2014b). Furthermore, Ngai et al. (2011) recommended that it was necessary to consider the effect of culture on MSE, such as the traditional practice of "Doing the month" in China.

These factors may impact on MSE through four elements according to Bandura's theory (1997): (a) *previous experience*, (b) *vicarious experience*, (c) *verbal persuasion*, and (d) *physiological and emotional states*. For example, factors of maternal age, mode of birth, postnatal depression, infant gender, infant health, infant temperament, social support, family income, and experience of "Doing the month" could have an influence on MSE by affecting (d) *maternal physiological and emotional states*. These kinds of women (young women, women with a vaginal birth, women with fewer postnatal depression symptoms, women with a boy, women with a healthy baby, women with a baby with an easy temperament, women who perceived more social support, women with a higher income, and women having a good experience of "doing the month") were prone to having a higher level of MSE because they were more likely to have better maternal physiological and emotional states when taking care of babies (Tarkka, 2003; Loto et al., 2010; Salonen et al., 2009; Denis et al., 2012; Shorey et al., 2014b).

The factor of the number of children could have an effect on MSE because it was related to *(a) previous experience*. First-time mothers tended to have a lower MSE level than multiparous women, as primiparous women did not have any previous experience of parenting a baby (Shorey et al., 2014a). Factors of parenting experience, such as taking care of siblings and attending parenting training/programmes, could predict MSE because of the effect of *(b) vicarious experience*. Women who had more vicarious experience could have greater MSE in performing childcare routines (Ngai et al., 2011). Factors of maternal educational level and employment status could impact on MSE through the influence of *(c) verbal persuasion*. Women with a university degree or higher or with a professional job were predisposed to hearing, learning and seeking more knowledge and information about infant care during the pregnancy and postnatal period to make better decisions about many baby parenting tasks (Jackson, 2002; Koniak-Griffin et al., 2006).

Figure 2.2 Theoretical framework of this study



MSE=Maternal self-efficacy

Self-efficacy theory (Bandura, 1997) (the section with green colour); Potential factors influencing MSE (Porter & Hsu, 2003; Tarkka, 2003; Koniak-Griffin et al., 2006; Salonen et al., 2009; Loto et al., 2010; Ngai et al., 2011; Denis et al., 2012; Kohlhoff & Barnett, 2013; Shorey et al., 2014a, b)

2.8 Research aim and objectives

The aim of this study was to describe MSE and to explore factors which may influence MSE in primiparous women in China in the first three months postnatally.

The objectives of this study were to:

1. describe the mean MSE score at six weeks postnatally and monitor change over time to 12 weeks postnatally in primiparous women in China;
2. describe the mean postnatal depression symptoms score at six weeks postnatally and monitor change over time to 12 weeks postnatally in primiparous women in China;
3. describe the mean social support score at six weeks postnatally and monitor change over time to 12 weeks postnatally in primiparous women in China;
4. explore the factors which influence MSE in primiparous women at six and 12 weeks postnatally in China;
5. explore primiparous women's attitudes towards "Doing the month" in China, and explore the reasons why women felt satisfied or dissatisfied with the experience of "Doing the month".

Chapter Three Research Methods

3.1 Introduction

Chapter Three sets out the methodological underpinning of this study. This was a quantitative longitudinal study which used questionnaires to describe Chinese women's maternal self-efficacy (MSE) and to explore the potential factors which influence MSE during the initial postnatal period. Research design, setting, participants, instruments, pilot study, data collection, data analysis, and ethical consideration are introduced in the following sections.

3.2 Research design

Justifications for the underpinning philosophical assumptions of positivism are introduced in the section and the rationale for the choice of methodology is also outlined below.

3.2.1 Philosophical assumptions of positivism

Researchers need to acknowledge the philosophical worldview that they bring to a research project and identify the components of the philosophy (Creswell & Clark, 2010). Therefore, the researcher conducts an argument between positivism and interpretivism, which are the two main streams of philosophy in social science (Creswell & Clark, 2010), and gives a justification for choosing positivism as philosophy in this study.

3.2.1.1 Positivism

The positivist paradigm is based on the philosophical ideas of Auguste Comte (1798–1857), the French philosopher who thought that reality exists out in the world and can be observed (Lather, 2006). Cohen et al. (2007) believed that "Comte's position is to lead to a general doctrine of positivism which held that all genuine knowledge is based on sense experience and can be advanced only by

means of observation and experiment” (p.9). Therefore, positivist research usually emphasises the scientific method, strict statistical analysis, and generalisable findings to obtain “true” knowledge. Positivists assert a deterministic and empiricist philosophy in which effects have determinable causes and actions have predictable outcomes (Giddings & Grant, 2007). Thus, the research questions conducted by positivists reflect the need to assess the causes that affect outcomes (Creswell, 2009). Positivists also advocate reductionism in which the purpose is to reduce the experience into a small, discrete set of ideas that can be described and tested (Giddings & Grant, 2007; Creswell, 2009). Furthermore, scientific objectivity rests on a clear separation of facts from value judgements, and researchers are value-neutral and objective (Benton & Craib, 2001). Moreover, in this method for acquiring knowledge, positivists think that positivism should operate for all scientific endeavours, including social science (Benton & Craib, 2001).

Positivism has been dominant within the philosophy of social science since the first half of the twentieth century and has made use of quantitative measurement and analysis (Benton & Craib, 2001). Some researchers believe that positivism is still a dynamic concept, and the knowledge acquired from the above principles can be used to improve health care in practice (Delanty & Strydom, 2003). For example, the research within positivism can test and validate already constructed theories about how phenomena occur; can generalise research findings when it has been replicated in many different populations; and can eliminate the confounding influence of many variables and assess more credible cause-and-effect relationships (Johnson & Onwuegbuzie, 2004).

3.2.1.2 Interpretivism

The social world is formed of human beings with self-consciousness and social groups, which is fundamentally different from the natural world (Benton & Craib, 2001). Consequently, interpretivists argue that the positivist principle used in natural science is not applicable to social science. For instance, Wilhelm Dilthey (1833–1911) and Edmund Husserl (1859–1938) argued that the scientific method was inappropriate for studying human phenomena: "What [life] is cannot be expressed in a simple formula or explanation. Thought cannot fully go behind life, for it is the expression of life" (Polkinghorne, 1983, p.25). They believe that social phenomena can only be understood through studying the ways in which humans negotiate and construct under the philosophy of interpretivism. There is a broad range of theoretical approaches within the interpretive tradition, with varying ontological and epistemological positions.

Interpretivists refute the ontology of a singular objective reality in positivism, and accept multiple realities from different perspectives (Delanty & Strydom, 2003). They deny that knowledge is a direct perception of reality, and the investigation of knowledge by a process of interpretation offers an indirect explanation of phenomenon. Subjectivity, instead of objectivity, is emphasised as all participants including researchers, bring their unique interpretations of the world or construction of the situation to the research (Benton & Craib, 2001). The significance of "social meaning of accounts and discourses" lead logically to the utilisation of qualitative methods (Burr, 2003, p.24), including phenomenology, ethnology, and grounded theory, among other things. However, the strongest criticism of interpretivism is that it cannot allow for generalisations as it encourages the study with a small number of sample sizes and abandons the scientific procedures of verification (Mack, 2010).

Conclusion

In order to answer the research questions posed by this study, the worldview of positivism was chosen by the researcher as the philosophical underpinning, because according to the positivism philosophy, the researcher can acquire "true knowledge" of maternal self-efficacy through scientific and strict methods and can generalise the research results to the larger population.

3.2.2 The choice of a quantitative approach

Certain types of research questions call for a specific approach. A quantitative approach is best adopted if the questions are related to "(a) the identification of factors that influence an outcome, (b) the utility of an intervention, (c) understanding the best predictor of outcomes or (d) the test of a theory or explanation" (Creswell, 2009, p.18). The goal of quantitative research is to identify generalisable laws through the identification of statistical relationships between dependent and independent variables (Ackroyd, 2004). These variables can be measured, typically on instruments, and participants are selected using sampling techniques that are designed to eliminate potential sources of bias. The data is analysed using statistical procedures and hypothesis testing, and generalisation is made from the sample to a wider population (Creswell, 2009). Therefore, a quantitative approach can "provide us with the clearest possible ideal knowledge" (Cohen et al., 2007, p.11). However, the main limitation of a quantitative approach is that measurement typically detaches information from its original world context (Moghaddam et al., 2003).

By contrast, a qualitative approach conducts an in-depth analysis of complex human, family systems, and cultural experiences in a manner that cannot be fully acquired by using measurement scales and multivariate models (Plano Clark et al., 2008). The strengths of this approach are "(a) the capacity for generating rich detailed accounts of human experiences (emotions, beliefs, and

behaviours) and (b) narrative accounts that are examined within the original context in which observations occur" (Castro et al., 2010, p.343). However, a qualitative approach has no capacity for drawing a definitive conclusion, because of the lack of well-defined prescriptive procedures (Morse, 1994). Furthermore, it is difficult for this approach to assess the associations that occur between observations or cases (Kirk & Miller, 1986). Moreover, one major limitation of a qualitative approach is that it cannot produce generalised findings, owing to its small or unrepresentative samples, even though some qualitative researchers have argued that the generalisability, replication, reliability, and validity are not relevant for qualitative research (Denzin & Lincoln, 1994).

For the research questions posted in this study, a quantitative approach was an optimum choice compared with a qualitative approach. The rationale was that the factors affecting MSE can be obtained, and the research findings can be generalised to the larger population of Chinese primiparous women through scientific quantitative methods, such as the use of sound instruments, a predetermined, sufficiently large sample size, and strict statistical analysis.

3.2.3 The adoption of a longitudinal design

Quantitative strategies involve experimental research and non-experimental research. Experimental research is able to manipulate the predictor variable to identify a cause-and-effect relationship, including the randomised controlled trial (RCT) and quasi experiments using non-randomised designs (Creswell, 2009). In contrast, non-experimental research cannot control, manipulate or alter the predictor variable, but use observation, interpretation or interaction to draw a conclusion with little or no interference from researchers, such as surveys or correlation studies (Davis & Buskist, 2008). In consideration of the research aim, non-experimental research was adjudged more appropriate for this study, as

there was the dependent variable of MSE, and other independent variables that cannot be manipulated by the researcher.

In terms of non-experimental research, surveys are considered to be the optimal way to describe MSE and to explore the factors which influence MSE for Chinese primiparous women, because surveys provide a numeric description of trends, attitudes, or opinions of a population by studying a sample of that population, with the intent of generalising from a sample to a whole population (Creswell, 2009). Surveys include cross-sectional and longitudinal research and can use questionnaires or structured interviews for data collection (Creswell, 2009).

The cross-sectional surveys are confined to a specific point in time to survey a population. The advantages of cross-sectional studies are quick completion and ease of administration (Fink, 2002). However, the main weakness of this design is to only provide researchers with a snapshot of a sample of a population at a single point in time (Fink, 2002). By contrast, in longitudinal studies, (a) data are collected at two or more different points in time; (b) the same sample is surveyed at distinct points in time; and (c) data from the participants are compared across these time points in order to monitor patterns of change and promote understanding. Therefore, the most distinct advantage of longitudinal studies is that they enable researchers to capture any changes in variables. This advantage has been increasingly recognised and appreciated in recent years (Lynn, 2009). However, the major weaknesses of longitudinal surveys are the higher sample attrition; and the increased expense for both financial and time resources, compared with cross-sectional surveys (Lynn, 2009).

Given the focus of this study, it was important to describe the change trajectory of MSE, postnatal depression symptoms and social support; and to explore the factors that influenced MSE at different time points in the first three months postnatally. In consideration of the research aim and the availability of time and cost in this study, the quantitative longitudinal design was conducted to describe

MSE and explore factors which may have influenced MSE in Chinese primiparous women in the first three months postnatally.

3.3 Ethical consideration

Alderson (2007) argued that “before undertaking any research it is important to consider the ethical implications of the proposed research as this is an integral aspect of the methodology” (p.285). Although ethical considerations could be complex in research, three ethical issues, including protecting confidentiality/anonymity, informed consent, and no harm for primiparous women, have been considered when conducting this study, according to the ethical principles in the Declaration of Helsinki, 1996 (NHS, 2011); the principles of Good Clinical Practice (NHS, 2011); and the Department of Health Research Governance Framework for Health and Social Care, 2005 (Department of Health, UK, 2005).

Ethical approval for this study from the Faculty of Medicine and Health Sciences at the University of Nottingham was granted in April 2013. Ethical approvals for this study from the Affiliated Zhongshan Hospital, the First Affiliated Hospital of Xiamen University, and Xiamen Maternity Hospital in China were granted in April and May 2013. Firstly, informed consent from participants is fundamental in carrying out an ethical health study (Taljaard et al., 2011). In this study, the purpose of the study, the procedures for data collection, and how the data would be used were explained by the researcher to all participants before obtaining participants’ informed consent. All participants took part in this study voluntarily. Before data collection began, written informed consent from all participants was obtained.

Secondly, precautions were taken to maintain participants’ confidentiality/anonymity and the security of data information. All collected information about participants during the course of this study was kept strictly

confidential, stored in a secure and locked office, and on a password-protected database, and could be accessed to the researcher and her supervisors. All data was anonymised and a unique code for every questionnaire was used so that the participants could not be recognised from it.

Thirdly, this study did not involve any intervention in the technical sense, and no risk of harm was anticipated for participants to take part in this study. Participants had the right to withdraw from the study whenever they wished. Moreover, when anything was disclosed by the participants that the researcher felt put the participants or anyone else at any risk, the researcher may have reported this to the appropriate persons. The reasons were that the researcher as a nurse had "the responsibility to promote health, prevent illness, restore health and alleviate suffering" (ICN, 2000, p.2) and the ethical principle was clearly stated in the Helsinki Declaration: "Health and well-being of patients must have priority over any scientific result or benefit" (Elciogu et al., 2004, p.51). The researcher explained this principle in the participant information sheet that was distributed to every participant in the recruitment.

According to the Third Version of the Chinese Classification and Diagnostic Criteria of Mental Disorders (CCMD-3) (2010), the clinical diagnosis of women with postnatal depression (PND) in China is only made by a qualified psychiatrist. In consideration of the several detrimental consequences of PND for Chinese women and infants, women with symptoms of PND who had a higher score (20 or more) on the EPDS (the Edinburgh Postnatal Depression Scale), or revealed self-harm thoughts in the last question of the EPDS, should be advised by health professionals to consult a psychiatrist for further clinical diagnosis, according to the routine referral pathways in Chinese hospitals (Zang & Shen, 2010). Therefore, in this study, if a participant had an EPDS score of 20 or more, or revealed self-harm thoughts in the last question of the EPDS, the researcher was obliged to give the information to psychiatrists by telephone according to the

established referral pathways in China. Then the psychiatrist acted immediately undertaking further clinical assessment and possible treatment to protect these women, their infants and others potentially at risk. The researcher also informed the participant by telephone about the psychiatrist's service; however, the decision to accept or refuse the psychiatrists' services through the routine referral pathways in hospitals was left to the Chinese women.

3.4 Setting

3.4.1 The selection of the setting

In 2013, the national hospital birth rate in China was 99.5% (UNICEF, 2014). Therefore, hospitals were the chosen setting for identification of the population and recruitment for this study. Pragmatic reasons contributed to the choice of the three sites. This study took place in the obstetric wards of the Affiliated Zhongshan Hospital, the First Affiliated Hospital of Xiamen University and the Xiamen Maternity Hospital, located in Xiamen City, Fujian Province in China (Appendix 2). These settings were accessible to the researcher, due to an established professional relationship between the researcher and managers of the chosen sites, because of the sites all being affiliated hospitals of Xiamen University, which is the workplace of the researcher.

Xiamen is a major city on the southeast coast of China, administered as a sub-provincial city of Fujian Province, with an area of 1,699.39 square kilometres and a population of 3,531,347 inhabitants (urban population of 1,861,289) in the 2010 Census (National Bureau of Statistics of China, 2011). In 2006, Xiamen was ranked as China's second "most suitable city for living", as well as China's "most romantic leisure city" in 2011 (National Bureau of Statistics of China, 2011).

In terms of public health, at the end of 2011, there were a total of 1,262 medical and healthcare centres equipped with 11,533 beds and staffed with

26,105 medical professionals and technicians, 8554 of whom were doctors and 8105 nurses in Xiamen City. Of which, there were 25 general hospitals with obstetric wards, and seven maternal and child health hospitals (National Bureau of Statistics of China, 2011). The three study hospitals are located close to the Xiamen city centre and provide comprehensive health care services mainly for the residents of Xiamen. There are 90–100 beds and approximate 2,000 annual live births in the obstetric wards in each study hospital.

3.4.2 Access to the study sites

The setting selection was made while considering the feasibility of access to the hospitals and to data resources. The head nurses were considered as the appropriate contact person within these settings, because of their seniority and position within the hospitals. In this study, the head nurses in the obstetric wards of the three hospitals were contacted before data collection in order to: 1. explain to them the importance of the research; 2. ask for their permission to undertake the research on their wards; 3. ask their opinion on the willingness of women to participate; 4. ask them to help identify obstacles to the research taking place on their wards; and 5. ask them to identify ways in which to minimise or overcome the obstacles of the research. By communication with the head nurses, the researcher gained positive information about ways in which to obtain cooperation from potential participants and nurses. The head nurses thought that most parturient women were likely to respect health professionals and research work. To minimise the obstacles for the researcher, the head nurses as well as nurses briefly introduced the researcher to women and their family members when they were admitted to the hospitals.

3.5 Participants

3.5.1 Sample selection

All women were invited to participate in this study if they met the inclusion criteria (as stated below), while still an inpatient on the obstetric wards.

Inclusion criteria:

1. Being postnatal women, aged 18 years or more;
2. Having a healthy full-term infant (live birth, 37 to 42 weeks at birth, weight 2500g or more, Apgar score >7, without any deformity and disease);
3. Living in the Xiamen area during the study period;
4. Having the ability to understand, speak, read and write in Mandarin;
5. Being able to give informed consent.

Exclusion criteria:

1. Women with an infant having a serious physical illness or dying during the data collection period;
2. Primiparous women with a severe physical or mental illness during pregnancy, childbirth or during the data collection period.

3.5.2 Sample size

It is recommended that five to 10 participants per independent variable would be a suitable size to ensure stable test parameters in a multivariate analysis (Wang, 2003). This study used multivariate analysis, and the numbers of the independent variables that potentially influence MSE were estimated up to 20 (such as maternal age, educational level, employment status, marital status, mode of birth, family income, parenting experience, infant gender, infant health, infant temperament, "Doing the month", postnatal depression, and social support). Therefore, the sample size could be 100 to 200 (which was five and 10 times the numbers of independent variables, respectively). This study aimed to

recruit the maximum sample size: 200 primiparous women. Evidence from previous studies undertaken in China showed that an average attrition rate at one time point was approximately 27% when using email or mail (Zhao & Jiang, 2008; Zang & Shen, 2010). Since at six weeks and 12 weeks postnatally, collecting data was by e-mail or mail in this study, it was conservatively estimated to be at a 30% loss to the follow up at every time point (70% response rate at the first time point of follow up and 49% response rate at the second time point of follow up), so the predetermined recruited sample size was $200/49\%=410$ (assuming 287 at six weeks and 201 at 12 weeks postnatally).

Compared to studies in Western countries, research undertaken on Chinese people (Zhao & Jiang, 2008; Jiao & Liu, 2009; Zheng & Liu, 2009; Zang & Shen, 2010) had a higher response rate (about 70% by mail or email at one time point) and a higher recruitment rate (about 80%). In the main, these higher rates are attributed to the cultural influence. Chinese people believe in Confucianism, which influences individuals' attitudes and actions (Chuang & Su, 2009b). To be more specific, Confucius emphasises the respect for the status of others, and subordination of the self to authority (Tang, 1992). Focusing respectively on collectivistic cultures in China (obedience, respect, and politeness) and individualistic cultures in Western countries (independence, assertiveness, and creativity), participants in China would be more likely to take part in and follow up research than their European and American counterparts.

The average numbers of live births per year in each of the three hospitals were approximately 2,000; therefore, the average numbers of live births per month in total were about 500 in the three hospitals. It was estimated that 11% of women would be ineligible because 1.4% of women are multiparous women (Statistic Office in Xiamen City of China, 2011a), 7.1% have a premature birth (WHO, 2010) and 2.5% are illiterate (Statistic Office in Xiamen City of China, 2011b) in Xiamen City. Moreover, it was conservatively estimated that 20% of

women would decline to take part in the study (Zhao & Jiang, 2008; Zang & Shen, 2010).

Therefore, the potential recruitment number per month in total at the three hospitals would be $500 - 500 \times 11\%$ (ineligible women) $- 500 \times 20\%$ (declined to participate) = 345. From June to July 2013, the potential recruitment number in total at the three hospitals would be as high as $345 \times 2 = 690$. As the predetermined recruited sample size for the given data collection period was in excess, this ensured adequate recruitment for this study.

3.6 Instruments

The questionnaires used in this study comprised three pretested instruments to measure MSE, postnatal depression symptoms, and social support, and a specially designed baseline questionnaire to measure some socio-demographic and clinical variables. The types of questions in one questionnaire included mainly closed questions with a choice of fixed answers, and one open question. These instruments are introduced in the section below.

3.6.1 The baseline questionnaire

A baseline questionnaire was included to gather participants' socio-demographic and clinical data on maternal age, educational level, occupation, marital status, family income, mode of birth, whether women attended parenting training, sources of parenting training, and sources of parenting information, and to gather baby gender, baby health, baby fussiness, and maternal experience of "Doing the month" (including how satisfied women were with the experience of "Doing the month", women's attitudes towards "Doing the month", and the open question of "why women felt satisfied or dissatisfied with the experience of 'Doing the month'?").

The "Doing the month" questionnaire was developed on the basis of the literature review. To be more specific, Chinese women have a special cultural experience of "Doing the month" during the first postnatal month, and as Ngai et al. (2011) recommended, the cultural effect of "Doing the month" on MSE needed to be researched. Consequently, the "Doing the month" questionnaire was developed to explore Chinese women's traditional postnatal experience. Conflicting evidence of Chinese women's satisfaction levels with "Doing the month" has been presented (Hung, 2004; Gao et al., 2010), with no research being conducted to explore why women were satisfied or dissatisfied with the practice. Therefore, how satisfied Chinese women were with the experience of "Doing the month", and why Chinese women felt satisfied or dissatisfied with "Doing the month" were worthy of being researched in this study to fill the gap in evidence. Furthermore, whether the modernisation of China affected women's attitudes towards "Doing the month" was an additional issue (Raven et al., 2007; Zang & Shen, 2010). Some Chinese women thought that the experience of "Doing the month" was still necessary in modern Chinese society (Raven et al., 2007); conversely, some women thought that it was unnecessary to follow the practice as it was outdated (Zang & Shen, 2010). Moreover, some women had no clear attitude towards "Doing the month", but their mothers-in-law or mothers had asked them to follow the practice (Matthey et al., 2002). Therefore, the questionnaire of "Doing the month" was developed in this study to gather data about how satisfied Chinese women were with the experience of "Doing the month", Chinese women's attitudes towards "Doing the month", and why Chinese women felt satisfied or dissatisfied with the experience of "Doing the month".

3.6.2 The Self-efficacy in Infant Care Scale (SICS)

MSE was measured using the Self-efficacy in Infant Care Scale (SICS), which was developed by Prasopkittikun et al. (2006). SICS was a self-administered measure to assess MSE during the baby's first year of life. The revised version of SICS was composed of 46 items and measures four dimensions of self-efficacy in infant care: developmental promotion (15 items), general health care (15 items), safety (six items), and diet (eight items). There were two further items at the end of the questionnaire, asking a mother to provide her opinion on how good a mother she is and how well she can seek knowledge about infant care. The response scale representing the strength of self-efficacy used the 0–100 confidence continuum. In each statement, mothers were asked to indicate the degree of belief in their ability to perform a designated task on a range from 0 (not confident at all), 50 (moderately confident), to 100 (definitely confident). The scale was scored by summing the numerical ratings for each task and dividing by the number of tasks. The higher the score a mother acquired, the higher the level of MSE she had (Prasopkittikun & Tilokskulchai, 2010).

In 2010, Prasopkittikun & Tilokskulchai conducted a study with a sample of 235 Thai mothers to revise the scale items and examine the further psychometric properties of SICS. Cronbach's alpha coefficients were 0.96 for the entire scale, and were 0.92, 0.93, 0.88 and 0.86 for its four dimensions ($n=235$), indicating good internal consistency reliability of SICS. The test-retest reliability coefficient for the total scale was 0.93 ($P<0.001$) ($n=23$), which suggested good stability of SICS in eliciting consistent responses from the respondents. In terms of validity, a confirmatory factor analysis was conducted and the factor loadings of four dimensions to the total SICS were 0.88, 0.91, 0.90 and 0.96, indicating that the four subscales appropriately constituted the entire scale of SICS. Furthermore, the scale was found to be correlated with a measure of a theoretically related construct, that was, the Parenting Stress Index/Short Form (PSI/SF). The

hypothesised relationship was supported, as SICS was negatively correlated with the PSI/SF ($r=-0.36$, $P<0.001$), indicating a good construct validity of SICS (Prasopkittikun & Tilokskulchai, 2010).

The Chinese version of SICS was translated and back-translated from the English version by Chinese researchers of Zang & Shen (2010), and the translation process was rigorously conducted to ensure that equivalence was established. The psychometric properties of the Chinese version of SICS were examined with a sample of 147 Chinese primiparous women (Zang & Shen, 2010). Cronbach's alpha coefficients of the Chinese version were 0.95 for the scale, and were 0.86, 0.93, 0.85 and 0.80 for its four dimensions. The content validity of the Chinese version scale was measured by five Chinese experts, and was confirmed by an agreement with a high content validity index (CVI) of 0.98 (Zang & Shen, 2010).

3.6.3 The Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) was used to measure the postnatal depression symptoms of Chinese primiparous women. This scale was developed by Cox and colleagues (Cox et al., 1987), and was widely used to screen postnatal depression symptoms in the world (Hewitt et al., 2009). It included a total of 10 items, with a 4-point Likert type scale (0 to 3 points); items one, two and four were scored in the order of 0, 1, 2, 3 points, and the remaining seven items were scored by 3, 2, 1, 0 points. The total score ranged from 0 to 30 points (0 indicating better health).

The Chinese version of EPDS was reported to be a sensitive and brief instrument with good psychometric properties for Chinese Hong Kong women (Lee et al., 1998) and Chinese women in the mainland (Zheng et al., 1996; Qiu et al., 2001). For example, Lau et al. (2010) investigated the psychometric characteristics of the Mainland Chinese version of EPDS among 300 Chinese postnatal women in the Mainland. The Cronbach's alpha of Mainland Chinese version of EPDS was

0.78 (n=300), Guttman's split-half coefficient was 0.74 (n=300), and test-retest reliability was 0.90 (n=30). The results showed that Mainland Chinese version of EPDS had good reliability.

The content validity of the Mainland Chinese version of EPDS was measured by an expert panel; and a content validity index (CVI) was 0.93 (Lau et al., 2010). The Beck Depression Inventory (BDI), Dyadic Adjustment Scale (DAS) and standard SF-12 Health Survey (SF-12) were used to investigate the construct validity of the scale. For example, using Spearman's correlation coefficient, a significant negative correlation was found between the EPDS and BDS scores ($r=0.349$; $p<0.01$); between the EPDS and DAS ($r=-0.203$; $p<0.01$); between the EPDS and SF-12 scores ($r=-0.332$; $P<0.001$), which indicating a good convergent validity of this scale. Moreover, the Mainland Chinese version of EPDS discriminated well among the sub-groups as defined by the DAS, which meant that, as expected, the depression score was significantly higher among women who experienced a higher level of couple conflict, which also meant a good construct validity of the scale (7.46 versus 5.91; $P=0.001$). In addition, an exploratory and confirmatory factor analysis was used to investigate the structural validity that confirmed the global good functioning of the scale. The results indicated that Mainland Chinese version of EPDS had good validity (Lau et al., 2010).

The EPDS cut-off scores to detect postnatal depression symptoms varied for different cultures; and different cut-off scores of EPDS have been recommended in specific populations to improve the instrument's sensitivity and/or specificity (Su et al., 2007). Cox pointed out that, for a total score of 13 or more, 10 or more indicating that a woman was prone to have severe and slight postnatal depression symptoms, respectively. The validated score of 13 or more was recommended to be used when reporting on probable major depression in postnatal English-speaking women (Matthey et al., 2006).

In consideration of the cultural background in China, Chinese researchers (Zheng et al., 1996; Lee et al., 1998; Wang et al., 2009) recommended that the cut off score of 9/10 (ten or more) was appropriate for reporting on minor postnatal depression symptoms in Chinese women in the Mainland. For instance, Wang et al. (2009) established the sensitivity, specificity and the optimal cut-off score of the Mainland Chinese version of EPDS according to the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition) criteria using the structured clinical interview. According to the results, a cut off score of 9.5 was recommended "when screening for clinical depression for Chinese women, with a sensitivity of 80.0% and specificity of 83.0%" (Wang et al., 2009 p219). Therefore, in this study, the EPDS scores of ten and 13 were the threshold scores for the symptoms of minor postnatal depression and major postnatal depression, respectively.

3.6.4. The Postpartum Social Support Scale (PSSS)

Primiparous women's postnatal social support was measured using the Postpartum Social Support Scale (PSSS). PSSS was developed by the Chinese researchers of Lu & Zheng (2001), specifically for Chinese women to measure their perceived social support after childbirth. The scale comprised 20 items, measuring four dimensions of social support: emotional support (five items), informational support (five items), material support (five items) and evaluation of support (five items). It was a 4-point Likert type scale (0-3) and a total score of 0-60 was calculated. A higher score indicated that a mother perceived receiving more social support.

In 2001, Lu and Zheng conducted a study with a sample of 200 Chinese primiparous women to examine the psychometric characteristics of the Chinese version of PSSS. The Cronbach's alpha coefficients were 0.89 for the scale, and were 0.86, 0.92, 0.84 and 0.90 for the four dimensions (n=200); indicating

good internal consistency reliability of PSSS. The content validity of the Chinese version of PSSS was measured by a Chinese expert panel; and a content validity index (CVI) was 0.90 for the tool. Furthermore, a confirmatory factor analysis was conducted and the factor loadings of four dimensions (higher than 0.80) to the entire scale of PSSS indicated that the four dimensions appropriately constituted the PSSS (Lu & Zheng, 2001). Thus, these results indicated that the Chinese version of PSSS had good reliability and validity.

The Chinese version of questionnaires (including all data collection tools) used in this study were checked by ten participants in the pilot study. In order to evaluate the feasibility of recruitment and the suitability of data collection tools, a pilot study was conducted firstly in this study.

3.7 Pilot study

In May 2013, a pilot study was conducted before the main study began to test the recruitment process and the questionnaires which would be amended if required. Ten postnatal women were recruited firstly in the obstetric wards at the three study sites when they had a routine postnatal examination in hospital on the 42nd postnatal day (Guidelines of Pregnancy Care and Service, China, 2011).

The questionnaires were checked in the pilot study and the key points included were as follows: 1. Were all of the words understood? 2. Did all of the respondents interpret the question in the same way? 3. Were all response choices and the ordering of questions appropriate? 4. Did respondents correctly follow the directions? 5. How long did the questionnaire take to complete? 6. Did the questionnaire collect the information required? The researcher asked the participants to complete the questionnaire in the researcher's presence and acquired their individual feedback face-to-face. For example, whether questions could be read easily and understood. When the respondent appeared confused

or hesitant to answer, or skipped questions, the researcher identified the reasons for this.

The pilot participants' feedback indicated, in relation to the ordering of questions in the six-week and 12-week questionnaires, that the most important questions for participants should be put at the beginning of the questionnaire, including questions about the baby's health and the baby's fussiness. As the baby-related questions were more likely to articulate some of the most basic concerns of first-time mothers, placing these questions at the beginning of the survey could: increase the respondents' interests and motivate them to continue to participate in the survey; help to establish a rapport between the researcher and respondents; and make the survey sequence seem more logical and polite for participants. It was suggested that the open question concerning "Why women felt satisfied or dissatisfied with the experience of 'Doing the month'?" was placed before the validated questionnaires (such as SICS, EPDS and PSSS). One reason was that this would help the researcher to obtain the most valuable information in relation to the open question from respondents who could not complete the entire survey. Another consideration was that if the validated questionnaires were placed before the open-ended questions, respondents would be more likely to mention concepts or considerations raised in earlier questions when responding to the open-ended question, which could bias their subsequent answers. With regard to the wording of questions, the pilot participants suggested, some Chinese words should be changed from special term words to plain words in order to help participants to understand them easily. For example, the Chinese word for "primiparous women" was replaced by "first-time mothers", and the Chinese word for "delivery" was replaced by "childbirth". All the recommendations from the pilot participants were adopted and the questionnaire was revised accordingly.

The average time of completion of the overall questionnaires for participants was approximately 25 minutes; the longest time was 32 minutes and the shortest time was 15 minutes. From the pilot study, the researcher had first-hand experience of contact and communication with primiparous women, and gained great confidence in conduction of the main study. Moreover, the questionnaires were assessed and positive feedback on questionnaires, such as its accuracy and understandability, were gained from participants.

3.8 Main study

3.8.1 Recruitment and informed consent

Recruitment was conducted from June to July 2013. After obtaining all of the research permissions, an introductory presentation of this study was offered to all nurses in the settings, who helped the researcher to smooth the recruitment process and assisted the researcher with approaching the prospective participants. Posters and leaflets were strategically distributed within the obstetric wards to inform all postnatal women and their family members (e.g, what data was to be collected and how women could be involved voluntarily) after they were admitted to the three hospitals. All potentially eligible women were invited to participate (if they fulfilled the inclusion criteria).

The researcher contacted and approached eligible postnatal women as early as possible (after childbirth), distributed an information sheet (Appendix 3) to them, and answered their questions about the research. In this approach, women were not asked to give consent as it was considered important to make sure that patients had enough time (at least one day) to read the information sheet, think about participation, and discuss it with their family members or friends if they wished before providing their written consent to take part. When the researcher was not in one study site (recruiting in other sites), nurses helped the researcher to distribute leaflets and information sheets to the potential

participants, and the researcher visited these women to obtain their consent on the next day. The researcher acquired participants' written informed consent (Appendix 4) before data collection.

3.8.2 Data collection process

The baseline questionnaires (Appendix 5) to measure participants' socio-demographic and clinical characteristics were distributed to participants face-to-face by the researcher in the obstetric wards on the three days postnatally, and contact details of participants, such as e-mail, address and phone number, were also collected. The baseline questionnaires and participants' contact details were completed and returned to the researcher by participants on the same day.

Then the 6-week questionnaires (including SICS, EPDS, PSSS, the experience of "Doing the month", baby health, and baby fussiness) (Appendix 5) were sent by e-mail or mail (depending on the participant's choice) to participants at six weeks postnatally. In order to improve the response rate, a text or telephone call reminder (depending on the participant's choice) was given to participants at five and seven weeks postnatally during the 6-week questionnaire distribution.

The 12-week questionnaires (including SICS, EPDS, PSSS, baby health, and baby fussiness) (Appendix 5) were sent by e-mail or mail (depending on the participant's choice) to participants at 12 weeks postnatally. Likewise, in order to improve the response rate, a text or telephone call reminder (depending on the participant's choice) was given to participants at 11 and 13 weeks postnatally during the 12-week questionnaire distribution. The data collection process of this study is summarised in Table 3.1.

Table 3.1 Summary of data collection process

Questionnaires	Components	Time points	Approaches
Baseline questionnaires	* Socio-demographic and clinical data	Three days postnatally	Face-to-face
6-week questionnaires	SICS, EPDS, PSSS, **Maternal experience of "Doing the month", baby health, and baby fussiness	Six weeks postnatally	By e-mail or mail
12-week questionnaires	SICS, EPDS, PSSS, baby health, and baby fussiness	12 weeks postnatally	By e-mail or mail

**Socio-demographic and clinical data includes maternal age, educational level, occupation, marital status, family income, mode of birth, whether parenting training was received, sources of parenting training, sources of parenting information, baby gender, baby health, and baby fussiness;*

***Maternal experience of "Doing the month" includes how satisfied women were with the experience of "Doing the month", women's attitudes towards "Doing the month", and the open question of why women felt satisfied or dissatisfied with the experience of "Doing the month".*

3.9 Statistical analysis

3.9.1 Data management

All data was collected by the researcher to maintain high uniformity. The researcher established a data collection log, including the contacts of participants, childbirth date, recruitment date, and data collection date. The researcher encouraged every participant to fill in every item of questionnaires carefully, because any missing data of the questionnaires would affect the accuracy of the research results. When questionnaires were received, the

researcher examined each questionnaire for missing responses. Questionnaires were planned to be excluded where more than 20% of data was missing. This problem did not occur during the data collection in this study.

3.9.2 Data analysis

Before data analysis, data was entered, checked and cleaned by the researcher for the development of the dataset. After the dataset was closed, quantitatively statistical analysis (Field, 2009) was completed using SPSS (Statistical Package for Social Sciences) Statistics 21.0.

3.9.2.1 Descriptive statistics

Descriptive statistics can simplify large amounts of quantitative data by summarising and organising information. Typical descriptive statistics include measures of central tendency (mean, median, and mode) and measures of variability or spread (range, standard deviation, and variance) (Li & He, 2013). In this study, descriptive statistics were used to summarise baseline characteristics of participants including socio-demographic and clinical information (Rugg, 2007). To be more specific, categorical variables such as maternal educational level and occupation were described using frequencies and proportions, and continuous variables such as maternal age and baby health scores were shown using means and standard deviations (SD) (the mean for parametric data and the median for nonparametric data) (Rugg, 2007).

3.9.2.2 Inferential statistics

Inferential statistics allow researchers to draw conclusions or inferences from the quantitative data. In this study, for normally distributed data, independent-sample and paired sample t-tests were used to test the differences between two independent groups and paired groups, respectively; and analysis of variance (ANOVA) was used to test the differences among groups (≥ 3) (Li & He, 2013).

For example, whether baby gender (boys or girls) affecting MSE scores was measured by the independent-sample t test; whether different mode of birth (normal vaginal birth, assisted birth, caesarean section) influencing MSE scores was measured by the ANOVA. If initial associations were identified by the ANOVA, post-hoc multiple comparisons were made. For non-normally distributed data, non-parametric tests of Chi-square were used to examine the differences with categorical variables (Rugg, 2007).

Correlation was used to show whether and how strongly pairs of variables were related, and was computed as the correlation coefficient to describe both the strength and the direction of the relationship, which ranges between -1 and +1 (Li & He, 2013). There were various criteria to judge the strength of the correlation. In this study, the values of correlation coefficients of 0.5 or higher, 0.3-0.5, and 0.3 or lower were regarded as the strong, moderate and weak correlation of the two variables, respectively (Li & He, 2013). For instance, whether maternal age related to and how related to MSE scores in this study was assessed by the correlation analysis. The Pearson correlation evaluated the linear relationship between two continuous variables (bivariate normally distributed data); however, the Spearman correlation evaluated the monotonic relationship between two continuous or ordinal variables (non-bivariate normally distributed data) (Li & He, 2013).

In order to identify the potential variables that can predict MSE, multivariate analysis of MSE (regression) was conducted, as regression analysis can estimate the relationships among variables when focusing on the relationship between a dependent variable and one or more independent variables (Li & He, 2013). More specifically, regression analysis helps researchers understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are fixed. It includes many techniques for modeling and analysing several variables, such

as the linear regression and the logistic regression. In the linear regression model, the dependent variable is considered continuous, whereas in logistic regression the dependent variable is dichotomous or categorical (Polit & Beck, 2008; Li & He, 2013).

In this study, the MSE scores (continuous data) as the dependent variable, the other variables as independent variables were entered into the multiple linear regression model ($a_{\text{entry}} = 0.05$, $a_{\text{removal}} = 0.10$) to identify the factors which influenced MSE at six ($n=304$) and 12 ($n=214$) weeks postnatally. Diagnostic tests for assumptions including linearity, normality, homoscedasticity, independence and model specification were completed and these assumptions were met for the multiple linear regression models in the analysis.

According to requirements of coding the independent variables in multiple regression models (Li & He, 2013), the polytomous independent variables (more than two categories) were established as dummy variables to represent different comparison groups. To create the set of dummy variables, a reference group or category was firstly decided. Then dummy variables were created for the remaining groups (excluded the reference group) and coded 1 for participants who were in that group and all others were coded 0 (Li & He, 2013). Therefore, there are $(k-1)$ dummy variables needed for k categories (Altman, 1991). The continuous independent variables were maintained with the original numerical value as an assigned coding in the model. In terms of the dichotomous (binary) variables, one variable was coded as 1 and the other was code as 0.

The forward stepwise method of the multiple linear regression analysis was used in this study, involved several stages in computing regression (Altman, 1991; Li & He, 2013):

- The first independent variable that best correlated with the dependent variable was entered in the model (entered criteria: P value ≤ 0.05 ; removed criteria: P value ≥ 0.10).
- The remaining independent variables with the highest correlation with the dependent variable, controlling for the first independent variable, were entered into the model according to variable entered/removed criteria.
- This process was repeated, at each stage, until the addition of a remaining independent variable did not increase R-squared by a significant amount (or until all variables were entered).
- Alternatively, the process can work backward, starting with all variables and eliminating independents one at a time until the elimination of one makes a significant difference in R-squared.

In terms of the multivariate analysis results, the multiple linear regression equation was conducted to interpret the results. It is as follows: $Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n$; where Y is the predicted value of the dependent variable, X_1 to X_n are distinct independent variables, b_0 (constant) is the value of Y when all of the independent variables (X_1 to X_n) are equal to zero, and b_1 to b_n are the estimated unstandardised regression coefficients. Each unstandardised regression coefficient (B) represents the change in Y relative to one unit change in the respective independent variable. In the equation, b_1 , for example, is the change in Y relative to one unit change in X_1 , holding all other independent variables constant (when the remaining independent variables are held at the same value or are fixed). In terms of dummy variables, the regression coefficients were interpreted as the expected difference in the independent variable as compared to the reference group, holding all other predictors constant (Li & He, 2013). In contrast, standardised regression (beta) coefficients are preferred to answer the question of which of the independent variables has a greater effect on the dependent variable in a multiple regression

analysis, when the variables are measured in different units of measurement.

The fit of the multiple regression model was assessed using the R square, adjusted R square and ANOVA (Li & He, 2013). R square indicates the degree to which the amount of variance in the dependent variable explained by the independent variables. When there are many independent variables (more than one), the adjusted R square is used to replace R square. The higher the adjusted R square value is, the better the fit of the model is. The ANOVA was used to test whether or not the model significantly predicted the outcome variable.

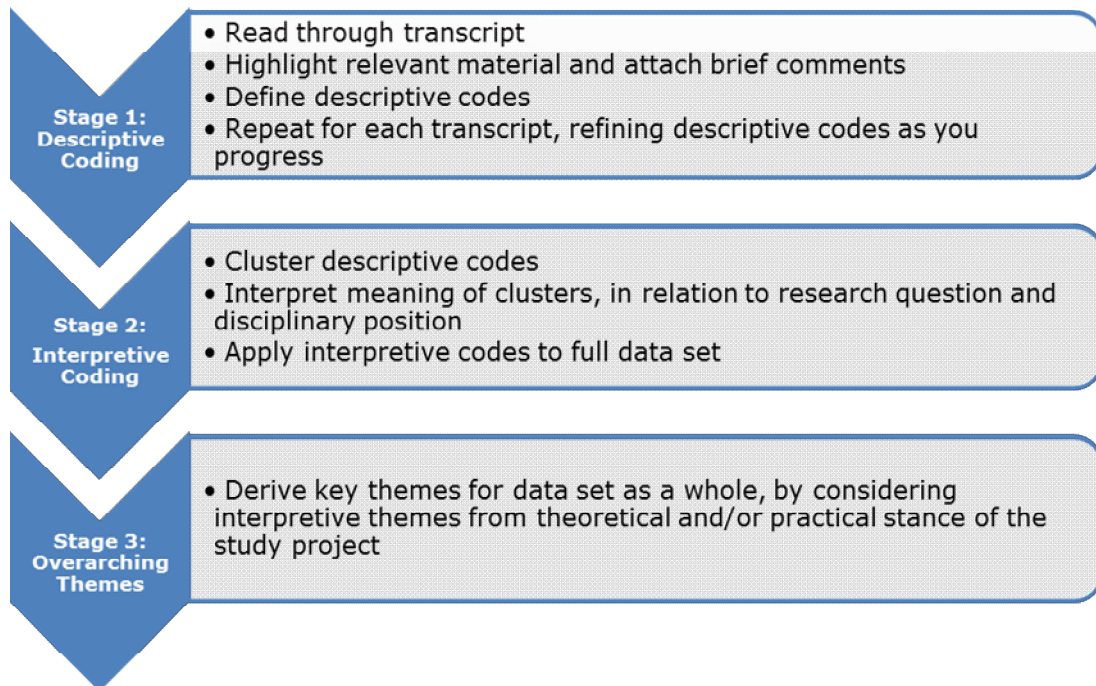
All reported P values in this thesis were two-tailed, with $P < 0.05$ considered as statistically significant (Li & He, 2013). The Central Limit Theorem was used as the foundation for many statistical techniques. The theorem proposes that the larger the sample size ($n > 30$), the more closely the sampling distribution of the mean will approach a normal distribution, irrespective of whether the sample distribution approaches the normal or not (Li & He, 2013).

3.9.2.3 Thematic text analysis

The questionnaire contained an open question from which qualitative data were generated for analysis. In terms of the open question of "why women felt satisfied or dissatisfied with the experience of 'Doing the month'", the thematic text analysis by manual coding (Green & Thorogood, 2004; King & Horrocks, 2012) was conducted by the researcher. Analysing the open question data in Chinese occurred simultaneously as the data collection was proceeding.

The process of thematic text analysis in this study incorporated the following stages and steps (King & Horrocks, 2012), as shown in Figure 3.1.

Figure 3.1 Stages in the process of thematic analysis
(King & Horrocks, 2012, p.153)



In stage one, the first step was to transfer all of the women’s open question responses to one document; and to read and re-read the document by the researcher in order to become immersed in the data. The next step was to highlight anything in the responses that might help the researcher to understand the participants’ views concerning why women felt satisfied or dissatisfied with “doing the month”, and to write a brief comment indicating what factors were of interest in the highlighted text by using coloured highlighter pens. The final step in stage one was to use the preliminary comments to define descriptive codes that were relatively close to the data. The descriptive codes were defined by single words or short phrases, ensuring that these were as self-explanatory as possible. Once the descriptive codes had been identified in the entire open question response, the researcher read through them again to see whether some codes could be merged together.

In stage two, the researcher tried to define codes that focused more on the interpretation of the respondents' meanings. In general the researcher did this by grouping together the descriptive codes that seemed to share common meanings and subsequently creating an interpretative code that captured the meanings suggested by the text. At this point, it was important for the researcher to revisit the research question, and to avoid spending large amounts of time refining interpretations for some data that were tangential. In the final stage, a number of overarching themes were identified by the researcher, and these were built upon for the interpretative themes. The clusters of themes were integrated into the explicit description of why women felt satisfied or dissatisfied with "Doing the month".

For the data analysis results of the open questions, the translations from Chinese to English were undertaken by the researcher, which had the advantage of translation consistency and improved conceptual congruency. Positivism argued that "research is language free and that the same meaning in the source language can be found in the target languages" (Larkin et al., 2007, p.469). In the translation process, maintaining conceptual equivalence of participants' opinions was the most important consideration by the researcher, because the translation quality could considerably influence data analysis and findings (Squires, 2009). Owing to time and financial constraints, the back-translation of the data analysis results of the open questions was not conducted. In addition, Squires (2008) argued that back-translation could not improve the trustworthiness of reported findings any more than an independently critical review by a bilingual competent individual. The data analysis methods in this study are described explicitly in Table 3.2–3.4.

Table 3.2 Data analysis of the baseline questionnaire

Items	Statistics
<i>Data components of the baseline questionnaire</i>	
Socio-demographic and clinical characteristics of women: categorical data (maternal educational level, occupation, family income, mode of birth, whether attending parenting training, and baby gender)	Frequency, Percentage
Socio-demographic and clinical characteristics of women: continuous data (maternal age)	Mean, Standard Deviation (SD)
Continuous data: maternal age compared between respondents and non-respondents at six and 12 weeks postnatally, respectively	Independent sample t test
Categorical data: maternal educational level, occupation, family income, mode of birth, baby gender, compared between respondents and non-respondents at six and 12 weeks postnatally, respectively	Chi-square test

Note: all women were married. So the variables of marital state of women were excluded.

Table 3.3 Data analysis of the 6-week questionnaire

Items	Statistics
<i>Data components of the 6-week questionnaire</i>	
Women’s satisfaction with “Doing the month” scores, baby health scores, baby fussiness scores at six weeks postnatally	Mean, SD
Women’s attitudes towards “Doing the month”	Frequency, Percentage
The open question: why women felt satisfied or dissatisfied with the experience of “Doing the month”?	Thematic text analysis by manual coding
MSE scores, social support scores and EPDS scores at six weeks postnatally	Mean, SD
The proportions of women with an EPDS score ≥ 10 points and less than 10 points; ≥ 12 points and less than 12 points; ≥ 13 points and less than 13 points at six weeks postnatally	Frequency, Percentage
<p>The univariate analysis of MSE:</p> <p>Continuous independent variables (maternal age, baby health scores , baby fussiness scores , how satisfied women were with “Doing the month”, EPDS scores and PSSS scores at six weeks postnatally) VS MSE scores:</p> <ul style="list-style-type: none"> • Bivariate normal distributed data • Non-bivariate normal distributed data 	<ul style="list-style-type: none"> • Pearson correlation • Spearman correlation

<p>The univariate analysis of MSE:</p> <p>Categorical independent variables (educational level, occupation, family income, mode of birth, whether the woman attending parenting training, baby gender at six weeks postnatally)</p> <p>VS MSE scores:</p> <ul style="list-style-type: none"> • Between two group • Among groups (≥ 3) • Non-normally distributed data 	<ul style="list-style-type: none"> • Independent sample t test • Analysis of variance • Chi-square test
<p>The multivariate analysis of MSE:</p> <p>MSE scores as the dependent variable; EPDS scores, PSSS scores, maternal age, educational level, occupation, family income, mode of birth, whether the woman attending parenting training, baby gender, baby health scores, baby fussiness scores and how satisfied women were with "Doing the month" at six weeks postnatally as independent variables</p>	<p>Multiple linear regression</p>

Table 3.4 Data analysis of the 12-week questionnaire

Items	Statistics
<i>Data components of the 12-week questionnaire</i>	
Baby health scores, baby fussiness scores at 12 weeks postnatally	Mean, SD
MSE scores, social support scores and EPDS scores at 12 weeks postnatally	Mean, SD
The proportions of women with an EPDS score ≥ 10 points and less than 10 points; ≥ 12 points and less than 12 points; ≥ 13 points and less than 13 points at 12 weeks postnatally	Frequency, Percentage
MSE scores, social support scores and EPDS scores compared at six and 12 weeks postnatally	Paired sample t test
The proportion of women with EPDS score ≥ 10 , ≥ 12 , ≥ 13 points compared at six and 12 weeks postnatally	Chi-square test
<p>The univariate analysis of MSE:</p> <p>Continuous independent variables (maternal age, baby health scores, baby fussiness scores, how women were satisfied with "Doing the month", EPDS scores and PSSS scores at 12 weeks postnatally) VS MSE scores:</p> <ul style="list-style-type: none"> • Bivariate normal distributed data • Non-bivariate normal distributed data 	<ul style="list-style-type: none"> • Pearson correlation • Spearman correlation

<p>The univariate analysis of MSE:</p> <p>Categorical independent variables (educational level, occupation, family income, mode of birth, whether the woman attending parenting training, baby gender at 12 weeks postnatally) VS MSE scores:</p> <ul style="list-style-type: none"> • Between two groups • Among groups (≥ 3) • Non-normally distributed data 	<ul style="list-style-type: none"> • Independent sample t test • Analysis of variance • Chi-square test
<p>The multivariate analysis of MSE:</p> <p>MSE scores as the dependent variable; EPDS scores, PSSS scores, maternal age, educational level, occupation, family income, mode of birth, whether the woman attending parenting training, baby gender, baby health scores, baby fussiness scores and how satisfied women were with "Doing the month" at 12 weeks postnatally as independent variables</p>	<p>Multiple linear regression</p>

3.10 Summary

A quantitative longitudinal study using questionnaires was conducted to describe MSE and to explore the factors which influence MSE in primiparous women in China in the first three months postnatally. The questionnaires comprised the instruments of SICS, EPDS, and PSSS with high validity and reliability to measure MSE, postnatal depression symptoms and social support, respectively; and a specially designed baseline questionnaire to measure some socio-demographic and clinical variables for participants. Pragmatic reasons contributed to the choice of the three sites in this study: the obstetric wards of the Affiliated Zhongshan Hospital, the First Affiliated Hospital of Xiamen University, and the Xiamen Maternity Hospital, located in Xiamen City, Fujian Province in China.

Before data collection, a pilot study was conducted firstly to evaluate the feasibility of recruitment and the suitability of data collection tools. In total ten pilot participants were recruited when they had a routine examination at the six weeks postnatally in the three hospitals. Then, 410 primiparous women (the predetermined sample) in the main study that met inclusion criteria were recruited in the obstetric wards at the three hospitals. Initial baseline questionnaires were distributed to participants face-to-face by the researcher on the postnatal wards on the three days postnatally, and contact details of participants were also collected. The baseline questionnaires and participants' contact details were completed and returned to the researcher by participants on the same day.

Follow-up questionnaires at six and 12 weeks were sent via email or mail by the researcher to participants, including SICS, EPDS, PSSS, the experience of "Doing the month", baby health, and baby fussiness. In order to improve response rate, a text or telephone call reminder was given to participants at five and seven weeks postnatally during the 6-week questionnaire distribution, and at 11 and

13 weeks postnatally during the 12-week questionnaire distribution. These questionnaires were returned by participants to the researcher via email or mail. Quantitative data were analysed using SPSS, such as t-test, analysis of variance, Chi-square test, correlation and multiple linear regression. Open question responses were used thematic text analysis by manual coding.

Chapter Four Research Results

4.1 Introduction

This chapter shows the findings of the research. Recruitment and participant flow are described in the next section. Section 4.3 focuses on the baseline data of participants. Section 4.4 reports participants' maternal self-efficacy (MSE). The potential influencing factors of MSE, such as postnatal depression symptoms and social support, are described in section 4.5. The results of univariate analysis and multivariate analysis of MSE are shown in sections 4.6 and 4.7.

4.2 Recruitment and participant flow

During the period of recruitment, 510 participants were approached with 420 women recruited to this study. Of the remaining 90 women, 49 women were ineligible as 14 women were multiparous and 35 women had premature births; and 41 women declined to take part in this study. The 420 participants were recruited in the three hospitals on the second and third postnatal days between the 1st June and the 4th July 2013. In total 420 baseline questionnaires were distributed and 416 with usable data were returned (response rate: 99.0%, 416/420) at three days postnatally. The time taken for participants to complete the baseline questionnaire was approximately seven minutes according to participants' self-report.

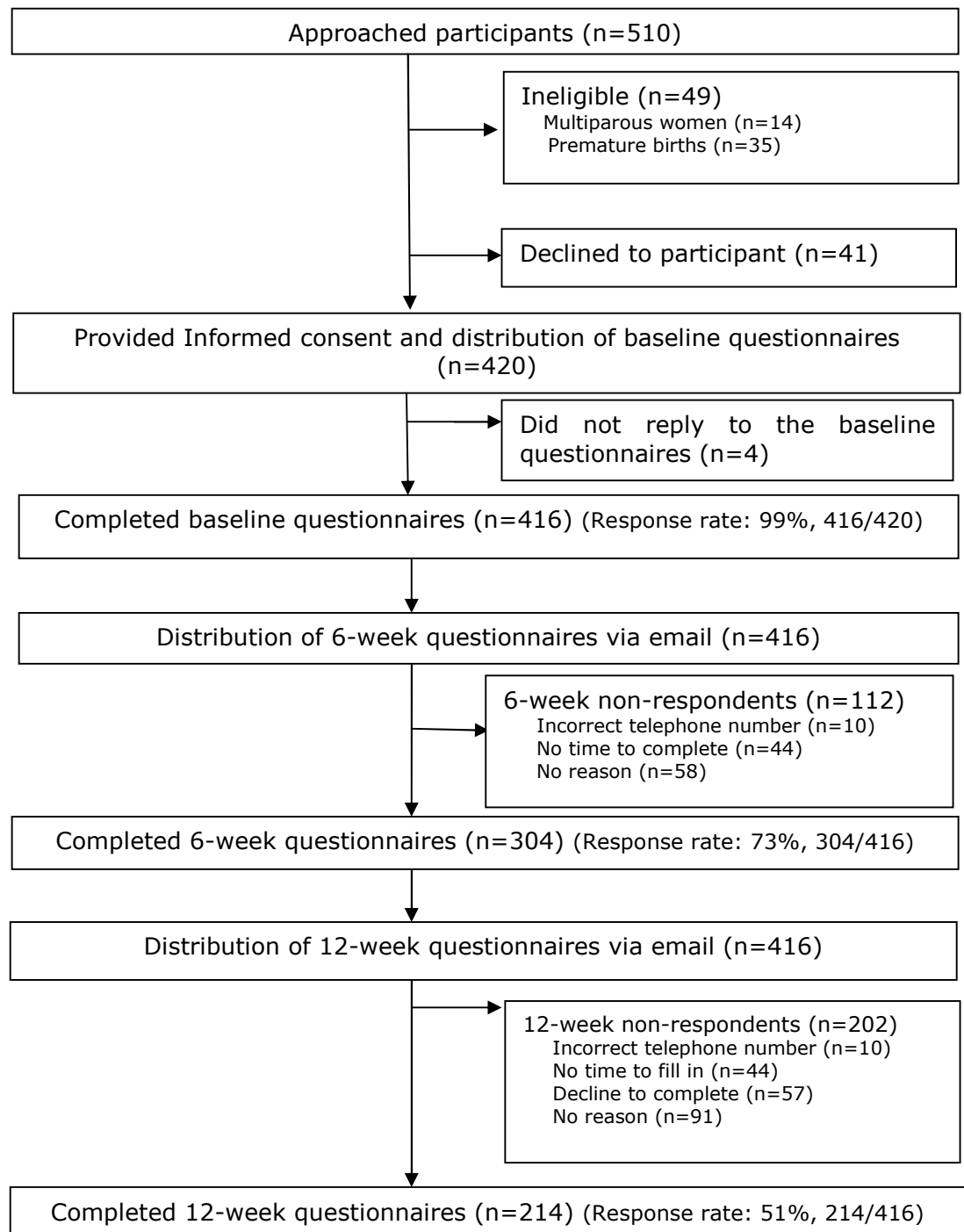
After socio-demographic and clinical data were collected, 416 6-week questionnaires were distributed by email to participants at six weeks postnatally and 304 completed 6-week questionnaires were returned by email (response rate: 73.1%, 304/416). In order to improve the response rate, a text reminder was sent to participants by telephone at five and seven weeks postnatally. The non-response rate was 26.9% (112/416), and reasons for non-response were the incorrect telephone number leading to the text reminders not being received

(8.9%, 10/112); participants reported having no time to complete questionnaires when they replied to the researcher via text message (39.3%, 44/112); non-response with no reason (51.8%, 58/112). The time taken for participants to complete the 6-week questionnaire was approximately 20 minutes according to participants' self-report.

At 12 weeks postnatally, 416 questionnaires were distributed by email to participants and 214 completed 12-week questionnaires were returned by email (response rate: 51.4%, 214/416). In order to improve the response rate, a text reminder was sent to participants by telephone at 11 and 13 weeks postnatally. The non-response rate was 48.6% (202/416, 112 of the 202 non-respondents did not respond at 6 weeks). Reasons for non-response were the incorrect telephone number leading to the text reminders not being received (5.0%, 10/202); participants reported having no time to complete questionnaires when they replied the researcher via text message (21.8%, 44/202); participants reported to the researcher that they declined to follow up by text message (28.2%, 57/202); and non-response with no reason (45.0%, 91/202). The time taken for participants to complete the 12-week questionnaire was approximately 15 minutes according to participants' self-report. The recruitment and participant flow through this study is illustrated in Figure 4.1.

In summary, 416 participants responded to the baseline questionnaire; 304 participants responded to the 6-week questionnaire; 214 of which also responded at the 12-week data collection. After data collection, data were entered into SPSS, and were checked and cleaned by the researcher between December 2013 and February 2014. The database was closed on the 7th February 2014 and statistical analysis was completed using SPSS Statistics 21.0. The research findings in this study are described in the next section.

Figure 4.1 Recruitment and participant flow in this study



4.3 Baseline data of participants

4.3.1 Socio-demographic and clinical characteristics of participants

In total 416 baseline questionnaires with usable data were collected. The socio-demographic and clinical characteristics of these participants are summarised in Table 4.1.

Table 4.1 Socio-demographic and clinical characteristics of participants (n=416)

Variables	Mean (SD)	Frequency	Percentage (%)
Age when giving birth	27.28 (3.22)		
Education level			
Middle school or lower		54	13.0
High school		93	22.4
University or College		255	61.3
Master degree or higher		14	3.3
Occupation ^a			
Professional		29	7.0
Skilled		291	70.0
Unskilled		20	4.8
Unemployed		76	18.2
Family income (RMB ^b /Per month, person)			
<3000yuan		76	18.2
3001–5000yuan		165	39.7
>5000yuan		175	42.1
Mode of birth			
Normal vaginal birth		207	49.8
Assisted birth		89	21.4
Caesarean section		120	28.8
Whether attended parenting training			
Yes		260	62.5
No		156	37.5
Infant gender			
Boy		230	55.3
Girl		186	44.7

^a Professional occupation including teacher and health professional; skilled occupation including government officer, company employee and self-employed; unskilled occupation including factory worker and farmer;

^b The RMB (renminbi) is the official currency of China; the yuan (sign: ¥) is the basic unit of the RMB; 10 yuan is approximately equal to one English pound

The maximum age for women completing the baseline questionnaires was 42 years, and the minimum age was 20 years, with a mean age of 27.28 (SD=3.22). Over half (61.3%, 255/416) of women had university or college educations; 70.0% (291/416) of participants had a skilled occupation; 42.1% (175/416) of women had a family income of more than 5000yuan/per month/per person. When examining birth outcomes, almost half (49.8%, 207/416) of participants had a normal vaginal birth; with 62.5% (260/416) of women stated they had attended parenting training and 55.3% (230/416) of women have had a boy baby.

The comparisons of socio-demographic and clinical characteristics between respondents and non-respondents at six and 12 weeks postnatally are described in Table 4.2 and Table 4.3, respectively. As shown in Table 4.2 and 4.3, there were no statistically significant differences in socio-demographic and clinical characteristics between respondents and non-respondents at six and 12 weeks postnatally.

Table 4.2 Comparison of socio-demographic and clinical characteristics between 6-week respondents and 6 week non-respondents

Variables	Respondent (n=304)	Non-respondents (n=112)	t/X² value	P value
Mean (SD) age when giving birth ^a	27.08 (2.99)	27.82 (3.74)	-1.882	0.062
Education level ^b	Number (%)	Number (%)	4.226	0.238
Middle school or lower	34 (11.2)	20 (17.9)		
High school	70 (23.0)	23 (20.5)		
University or College	188 (61.8)	67 (59.8)		
Master degree or higher	12 (3.9)	2 (1.8)		
Occupation			1.401	0.705
Professional	20 (6.6)	9 (8.0)		
Skilled	217 (71.4)	74 (66.1)		
Unskilled	13 (4.3)	7 (6.3)		
Unemployed	54 (17.8)	22 (19.6)		
Family income (RMB/Per month, person)			1.890	0.389
<3000yuan	54 (17.8)	22 (19.6)		
3001–5000yuan	116 (38.2)	49 (43.8)		
>5000yuan	134 (44.1)	41 (36.6)		
Mode of birth			0.810	0.667
Normal vaginal birth	151 (49.7)	56 (50.0)		
Assisted birth	68 (22.4)	21 (18.8)		
Caesarean section	85 (28.0)	35 (31.3)		
Infant gender			0.422	0.516
Boy	171 (56.3)	59 (52.7)		
Girl	133 (43.7)	53 (47.3)		

^a Maternal age using independent sample t-test (t value), df=166, mean difference (95% CI): -0.74 (-1.52 to 0.04). Other variables using Chi-square test (X² value).

^b1 cell in education level (12.5%) has expected count less than 5; 0 cells (0%) have expected count less than 5 in others using Chi-square test.

Table 4.3 Comparison of socio-demographic and clinical characteristics between 12-week respondents and 12-week non-respondents

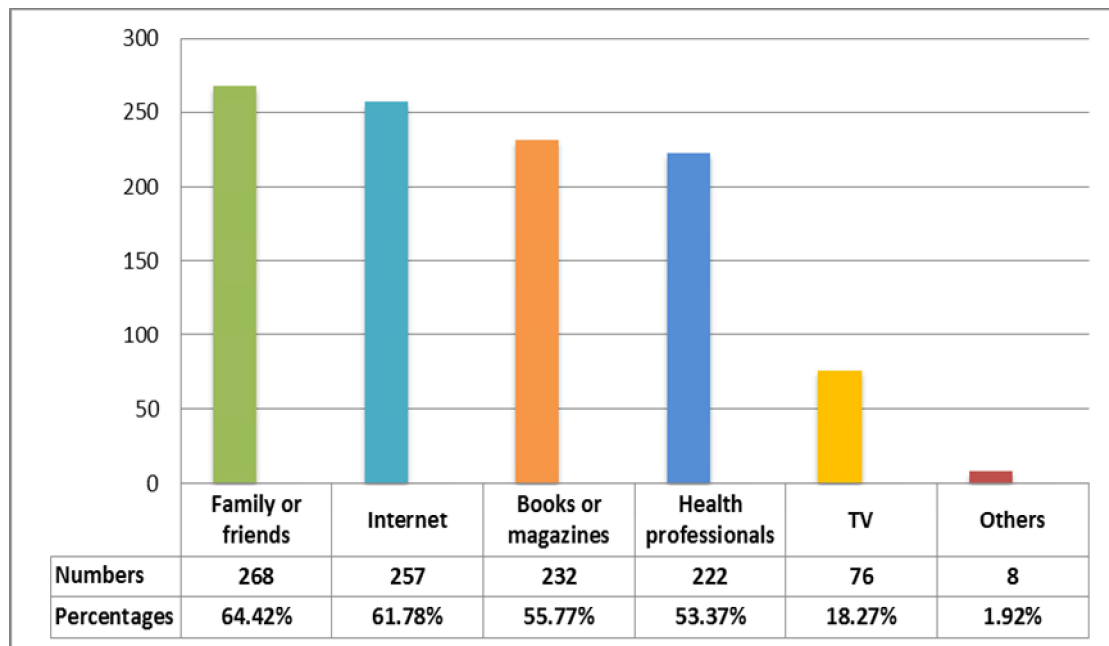
Variables	Respondent (n=214)	Non-respondents (n=202)	t/X² value	P value
Mean (SD) age when giving birth ^a	27.11 (3.08)	27.47 (3.37)	-1.132	0.258
Education level	Number (%)	Number (%)	3.134	0.371
Middle school or lower	27 (12.6)	27 (13.4)		
High school	51 (23.8)	42 (20.8)		
University or College	126 (58.9)	129 (63.9)		
Master degree or higher	10 (4.7)	4 (2.0)		
Occupation			2.218	0.528
Professional	18 (8.4)	11 (5.4)		
Skilled	144 (67.3)	147 (72.8)		
Unskilled	10 (4.7)	10 (5.0)		
Unemployed	42 (19.6)	34 (16.8)		
Family income (RMB/Per month, person)			0.085	0.958
<3000yuan	38 (17.8)	38 (18.8)		
3001–5000yuan	85 (39.7)	80 (39.6)		
>5000yuan	91 (42.5)	84 (41.6)		
Mode of birth			0.283	0.868
Normal vaginal birth	109 (50.9)	98 (48.5)		
Assisted birth	44 (20.6)	45 (22.3)		
Caesarean section	61 (28.5)	59 (29.2)		
Infant gender			0.018	0.893
Boy	119 (55.6)	111 (55.0)		
Girl	95 (44.4)	91 (45.0)		

^a Maternal age using independent sample t-test (t value), df=414, mean difference (95% CI): -0.36 (-1.00 to 0.26). Other variables using Chi-square test (X² value) and 0 cells (0%) have expected count less than 5.

4.3.2 Sources of parenting information and training

The parenting information sources and parenting training sources for the 416 participants that responded to the baseline questionnaires are summarised in Figure 4.2 and 4.3.

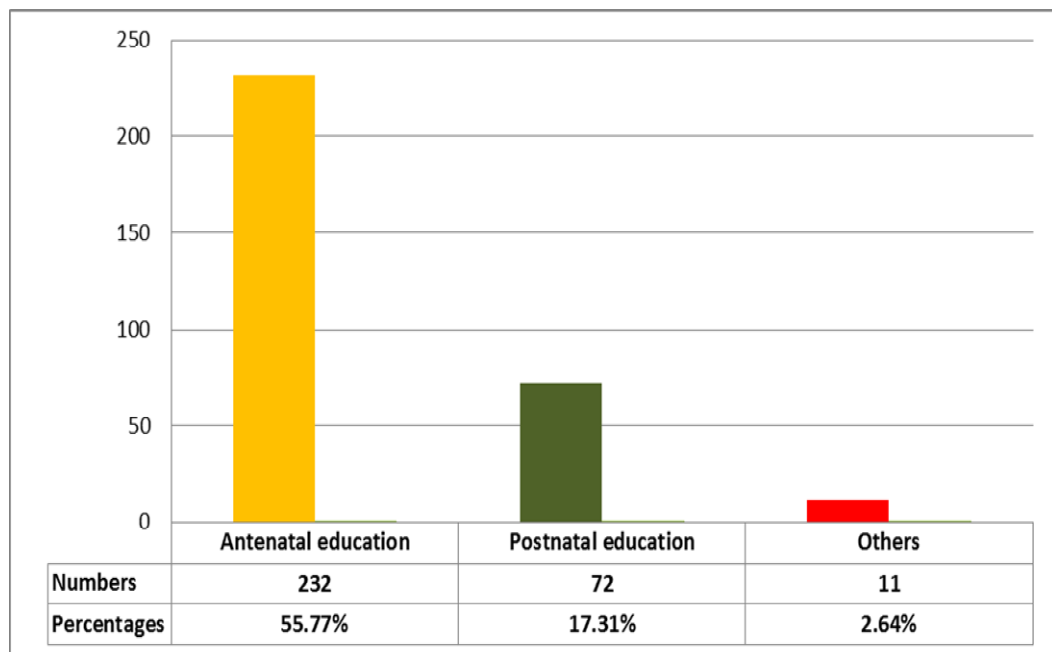
Figure 4.2 Parenting information sources that women reported in this study (n=416)



Note: It was a multiple-choice question. Women could use multiple sources of parenting information.

In Figure 4.2, family or friends (64.4%, 268/416) were the most frequent source of parenting information for Chinese primiparous women in this study; other sources were the internet (61.8%, 257/416), and books or magazines (55.8%, 232/416). From the recorded responses, 53.4% (222/416) of women stated “health professionals” were a source of parenting information; 18.3% (76/416) of women cited the television (TV) and 1.9% (8/416) of women cited others (prior parenting experience such as taking care of siblings) as one parenting information source.

Figure 4.3 Parenting training sources that women reported in this study (n=416)



Note: It was a multiple-choice question. Women could access multiple sources of parenting training/education. Parenting training including antenatal and postnatal education was conducted by obstetric nurses as the routine health care service in hospitals in the mainland of China. Other parenting training/education that was conducted by other organisations such as companies also had access to women.

From Figure 4.3, 55.8% (232/416) of women had attended antenatal education at the hospital; while 17.3% (72/416) of women had attended postnatally; and 2.6% (11/416) of women had attended some parenting seminars or lectures provided from baby product companies.

4.4 Description of maternal self-efficacy (MSE)

4.4.1 The mean MSE score and the mean scores of its four dimensions at six and 12 weeks postnatally

MSE was measured by the Self-efficacy in Infant Care Scale (SICS), which included four dimensions: developmental promotion; general health care; safety and diet. The mean MSE score and the mean four dimensions scores at six and 12 weeks postnatally are shown in Table 4.4.

Table 4.4 The mean MSE score and the mean scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Time points	Mean (SD)	Minimum	Maximum
Mean MSE score (0–100)	6-week	74.92 (11.06)	37.17	98.91
	12-week	77.78 (11.13)	37.39	99.57
Developmental Promotion (0–100)	6-week	79.87 (10.37)	32.67	100.00
	12-week	83.20 (9.92)	45.33	100.00
General Health Care (0–100)	6-week	59.02 (17.32)	10.67	98.67
	12-week	64.04 (16.79)	13.33	99.33
Safety (0–100)	6-week	90.52 (9.37)	51.67	100.00
	12-week	90.49 (10.12)	50.00	100.00
Diet (0–100)	6-week	82.05 (10.96)	38.80	100.00
	12-week	82.18 (12.38)	17.50	100.00

* A higher score indicates a higher level of MSE.

The mean MSE score at six weeks postnatally was 74.92 (SD=11.06); and increased to 77.78 (SD=11.13) at 12 weeks postnatally. In the four dimensions of MSE, the mean general health care scores were lowest (59.02±17.32; 64.04±16.79) and the mean safety scores (90.52±9.37; 90.49±10.12) were highest at the two time points.

4.4.2 The five SICS items with the highest scores and the five SICS items with the lowest scores at six and 12 weeks postnatally

The mean score rank of all 46 items in SICS at six and 12 weeks postnatally are shown in Appendix 6 and 7. The five items with the highest scores and the five items with the lowest scores in SICS at the two time points are summarised in Table 4.5 and Table 4.6, respectively.

Table 4.5 The five SICS items with the highest scores at six (n=304) and 12 weeks postnatally (n=214)

Time points	Order The five items with highest scores in rank	Mean (SD)
		Descending
6-week	35. hold my baby firmly while bathing or feeding him/her	91.58 (11.16)
	33. gently refuse my baby when s/he insists on playing a harmful toy or staying in a dangerous place	90.92 (11.57)
	39. manage a regular meal for my baby when s/he is 6 months old	90.89 (11.21)
	40. manage three regular meals for my baby when s/he is 12 months old	90.72 (11.41)
	31. protect my baby from cigarette smoke	90.56 (13.54)
12-week	33. gently refuse my baby when s/he insists on playing a harmful toy or staying in a dangerous place	91.53 (11.10)
	35. hold my baby firmly while bathing or feeding him/her	90.91 (13.39)
	36. provide safe toys for my baby	90.69 (10.85)
	34. make the home environment safe for my baby	90.56 (11.29)
	32. protect my baby from getting close to a person having a cold	89.84 (12.95)

* A higher score indicates a higher level of MSE.

Table 4.6 The five SICS items with the lowest scores at six (n=304) and 12 weeks postnatally (n=214)

Time points	Order The five items with lowest scores in rank	Mean (SD) Ascending
6-week	29. give first aid to my baby when there is an object blocking her/his throat or nostrils	38.26 (27.87)
	28. give proper care when my baby has a seizure	38.57 (28.06)
	30. give proper care to prevent suffocation when my baby is vomiting	45.12 (28.15)
	17. use a suction bulb correctly when my baby has phlegm	48.13 (25.22)
	16. give mouth care to my baby every day	51.21 (25.85)
12-week	29. give first aid to my baby when there is an object blocking her/his throat or nostrils	47.14 (27.30)
	28. give proper care when my baby has a seizure	49.77 (28.39)
	17. use a suction bulb correctly when my baby has phlegm	53.90 (23.86)
	30. give proper care to prevent suffocation when my baby is vomiting	54.59 (27.24)
	22. relieve my baby's gas pain	56.71 (24.13)

* A Higher score indicates a higher level of MSE.

As shown in Table 4.5 and 4.6, the scores on question 33 and 35 were consistently higher at the two time points, relating to the safety dimension; the scores on question 17, 28, 29, and 30 were consistently lower, relating to the general health care dimension, especially in emergency care tasks. Compared with other items' scores, mothers had the lower MSE scores in general health care items.

4.4.3 Comparison of MSE scores at six and 12 weeks postnatally

There were 214 participants (51.4%) who had completed both 6-week questionnaires and 12-week questionnaires in this study. Therefore, to monitor change in MSE scores, this subset (n=214) of participants' MSE scores were selected and compared at the two time points by paired-sample t test and the results are summarised in Table 4.7.

Table 4.7 Comparison of mean MSE score and scores of its four dimensions at six and 12 weeks postnatally (n=214)

Variables	Time points	Mean (SD)	Paired Differences Mean (95%CI)	t value	P value ^a
Mean MSE score (0–100)	6-week	74.60 (12.09)	3.18 (2.31, 4.05)	7.214	0.000
	12-week	77.78 (11.13)			
Developmental Promotion	6-week	79.36 (11.38)	3.84 (2.78, 4.89)	7.164	0.000
	12-week	83.20 (9.92)			
General Health Care	6-week	58.69 (18.96)	5.36 (3.75, 6.96)	6.588	0.000
	12-week	64.04 (16.79)			
Safety	6-week	90.19 (10.22)	0.30 (-0.61, 1.22)	0.655	0.513
	12-week	90.49 (10.12)			
Diet	6-week	81.95 (11.83)	0.24 (-0.71, 1.18)	0.490	0.625
	12-week	82.18 (12.38)			

^a Paired-sample t test, df=213; a higher score indicates a higher level of MSE.

In Table 4.7, the mean MSE score increased from six weeks postnatally to 12 weeks postnatally, and the increase was statistically significant ($P < 0.001$). The mean scores of developmental promotion and general health care also rose between the two time points and the difference was statistically significant ($P < 0.001$). The mean scores of safety and diet increased slightly but there was no statistically significant difference between the two time points ($P > 0.05$). Whether the statistically significant difference in MSE scores having a clinical significance/health effect also needs to be considered and will be discussed in Chapter Discussion.

4.5 Description of the potential factors influencing MSE scores

In addition to maternal socio-demographic and clinical characteristics, the other factors: women's satisfaction with "Doing the month" scores, baby health scores (Ngai et al., 2011), baby fussiness scores (Denis et al., 2012), postnatal depression symptoms scores (Tarkka. 2003) and social support scores (Shorey et al., 2014a) that may impact on MSE scores, are described in this section.

4.5.1 "Doing the month"

Women's satisfaction levels with the experience of "Doing the month" and their attitudes towards "Doing the month" were surveyed by the 6-week questionnaire ($n = 304$). The mean scores of how satisfied women were with "Doing the month" are shown in Table 4.8.

Table 4.8 Women’s satisfaction with the experience of “Doing the month” scores (n=304)

Variables	Mean (SD)	Frequency	Percentage (%)
How satisfied women were with “Doing the month” (0–100)	68.73 (17.65)		
0–30		11	3.6
31–50		59	19.4
51–70		90	28.6
71–100		144	47.4

* A higher score indicates more satisfaction with “Doing the month”.

The mean score of how satisfied women were with “Doing the month” was 68.73 (SD=17.65), (0=strongly dissatisfied, 100=strongly satisfied). Of which, 23.0% (70/304, scored less than 50) of women felt dissatisfied or strongly dissatisfied with their experience of “Doing the month” and 47.4% (144/304, scored higher than 70) of women felt satisfied or strongly satisfied with their experience of “Doing the month”.

Women’s attitudes towards “Doing the month” are shown in Table 4.9.

Table 4.9 Women’s attitudes towards “Doing the month” (n=304)

Variables	Frequency	Percentage (%)
What attitudes of women towards “Doing the month”		
Necessary	278	91.4
Unnecessary	0	0.0
Does not matter	26	8.6

Table 4.9 illustrates that most women (91.4%, 278/304) thought “Doing the month” after childbirth was necessary and followed it on their own initiative, only 8.6% (26/304) of women chose the option that they thought “Doing the month” did not matter, but their mother-in-law or mother thought it was necessary and they had to follow it.

4.5.2 Baby Health and baby fussiness

Table 4.10 describes the baby health scores and baby fussiness scores that women rated at three days, six weeks and 12 weeks postnatally.

Table 4.10 The baby health scores and baby fussiness scores that women rated at three days (n=416), six weeks (n=304) and 12 weeks (n=214) postnatally

Variables	Time points	Mean (SD)	Minimum	Maximum
Mean baby health score (0–100)				
	3-day	82.63 (15.72)	0.00	100.00
	6-week	85.37 (12.45)	40.00	100.00
	12-week	86.68 (12.48)	50.00	100.00
Mean baby fussiness score (0–100)				
	3-day	71.55 (19.93)	0.00	100.00
	6-week	77.06 (17.59)	0.00	100.00
	12-week	79.03 (14.66)	40.00	100.00

* A higher baby health score indicates a higher level of baby health;

* A **higher** baby fussiness score indicates a **lower** level of baby fussiness.

The mean baby health scores and the mean baby fussiness scores that mothers reported improved over time.

4.5.3 Postnatal depression symptoms

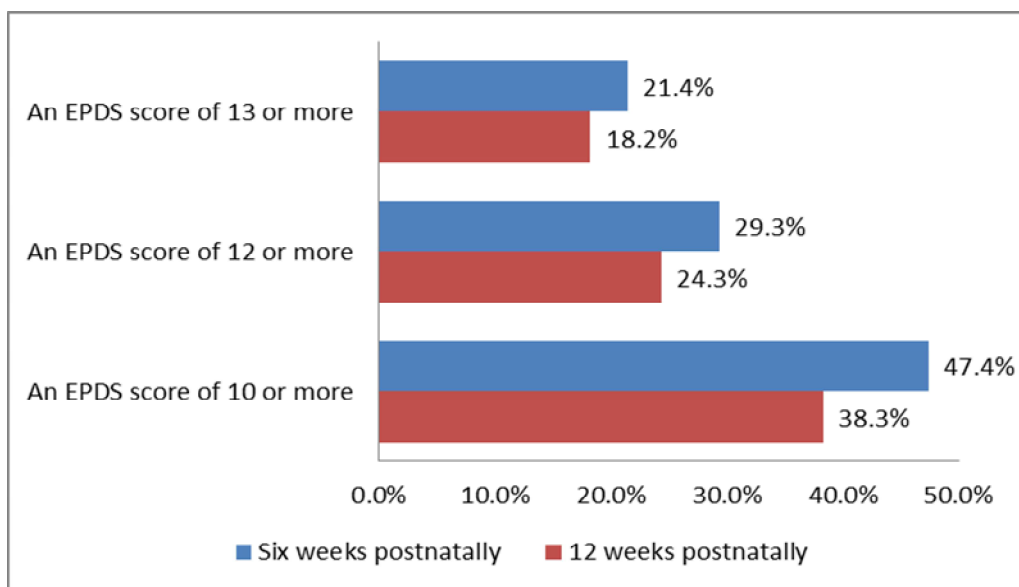
Using the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987), the symptoms of postnatal depression for women in this study were measured. The current literature recommended that the threshold score of 10 was appropriate for reporting on minor postnatal depression symptoms for Chinese women in primary care (Zheng et al., 1996; Lee et al., 1998; Wang et al., 2009b). In addition to the threshold score of 10, the threshold scores of 12 and 13 were usually used in other related EPDS research with different ethnic populations (Klainin & Arthur, 2009). Therefore, the mean EPDS score; and the proportions of women with an EPDS score of 10 or more, 12 or more, 13 or more at six weeks and 12 weeks postnatally are all shown in Table 4.11 and 4.12, enabling the researcher to compare research findings across studies.

Table 4.11 The mean EPDS scores and the proportions of women with an EPDS score of 10 or more, 12 or more, 13 or more at six weeks (n=304) and 12 weeks (n=214) postnatally

Variables	Time points	Mean (SD)	Frequency	Percentage (%)
Mean EPDS score				
	6-week	9.09 (4.33)		
	12-week	8.63 (4.41)		
The proportions of women with an EPDS score				
10 or more				
	6-week		144	47.4
	12-week		82	38.3
12 or more				
	6-week		89	29.3
	12-week		52	24.3
13 or more				
	6-week		65	21.4
	12-week		39	18.2

In Table 4.11, the mean EPDS scores decreased from 9.09 (SD=4.33) at six weeks postnatally to 8.63 (SD=4.41) at 12 weeks postnatally; the proportions of women with an EPDS score of ten or more, 12 or more and 13 or more points consistently reduced from six weeks postnatally to 12 weeks postnatally (see Figure 4.4).

Figure 4.4 Proportions of women with an EPDS score of 10 or more, 12 or more and 13 or more at six weeks postnatally (n=304) and at 12 weeks postnatally (n=214)



Respondents (n=214) at both six and 12 weeks postnatally were compared. To monitor change in postnatal depression symptoms, the mean EPDS score of the 214 participants and proportions of the 214 participants with an EPDS score of 10 or more, 12 or more, 13 or more were compared at the two time points and results are illustrated in Table 4.12 and Figure 4.5.

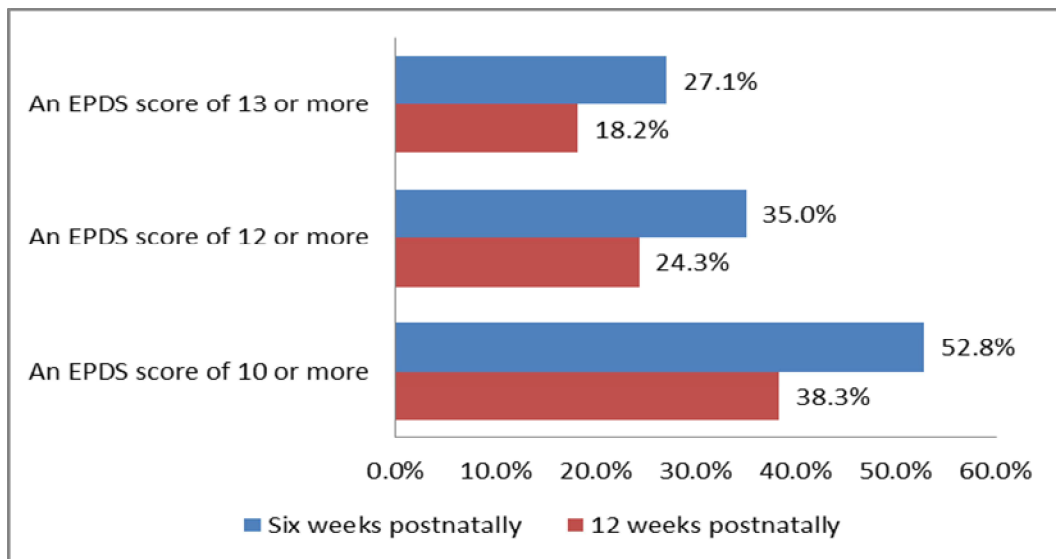
Table 4.12 Comparison of the mean EPDS scores and proportions of women with an EPDS score of 10 or more, 12 or more, 13 or more at six weeks and 12 weeks postnatally (n=214)

EPDS	6w	12w	t/X² value	P value
Mean (SD)^a	9.59 (4.57)	8.63 (4.41)	5.204	0.000
Threshold^b N (%)				
≥10	113 (52.8)	82 (38.3)	—	0.000
<10	101 (47.2)	132 (61.7)		
≥12	75 (35.0)	52 (24.3)	—	0.000
<12	139 (65.0)	162 (75.7)		
≥13	58 (27.1)	39 (18.2)	—	0.003
<13	156 (72.9)	175 (81.7)		

^a Mean EPDS scores using paired sample t-test (t value), df=213, paired difference mean (95% CI): 0.96 (0.60-1.33); ^b others using paired sample Chi-square test (McNemar Test)

In Table 4.12, the decreases in the mean EPDS scores; and proportions of the 214 participants with an EPDS score of 10 or more, 12 or more, 13 or more compared at the two time points were all statistically significant (P<0.01). This indicated that the postnatal depression symptoms of the 214 participants reduced overall from six weeks postnatally to 12 weeks postnatally (see Figure 4.5). But whether the statistically significant difference in EPDS scores having a clinical significance needs to be considered and will be assessed in Chapter Discussion.

Figure 4.5 Comparison of proportions of women with an EPDS score of 10 or more, 12 or more and 13 or more at six and at 12 weeks postnatally (n=214)



4.5.4 Social support

Postnatal social support in primiparous women's perceptions was measured by the Postpartum Social Support Scale (PSSS), including four dimensions of social support: emotional support; material support; informational support; and evaluation of support. The mean social support scores and scores of its four dimensions at six (n=304) and 12 weeks postnatally (n=214) are described in Table 4.13.

Table 4.13 The mean social support scores and scores of its four dimensions at six (n=304) and 12 weeks postnatally (n=214)

Variables	Time points	Mean (SD)	Minimum	Maximum
Mean social support score (0–60)	6-week	40.99 (9.31)	15	60
	12-week	43.00 (9.55)	11	60
Emotional Support (0–20)	6-week	11.61 (2.36)	4	15
	12-week	12.03 (2.22)	4	15
Material support (0–20)	6-week	11.39 (2.75)	2	15
	12-week	11.37 (2.78)	2	15
Informational support (0–20)	6-week	7.86 (3.18)	0	15
	12-week	8.83 (3.34)	2	15
Evaluation of support (0–20)	6-week	10.13 (2.93)	2	15
	12-week	10.78 (2.93)	2	15

* A higher score indicates that a mother who perceives she receives more social support.

As shown in Table 4.13, the mean social support scores at six and 12 weeks postnatally were 40.99 (SD=9.31) and 43.00 (SD=9.55), respectively. In the four dimensions of social support, the mean informational support scores were lowest (7.86±3.18; 8.83±3.34) and the mean emotional support scores were highest (11.61±2.36; 12.03±2.22) at the two time points.

Of the 214 participants who had completed both 6-week and 12-week questionnaires, the mean social support scores and scores of its four dimensions were compared at the two time points to monitor changes in social support by paired-sample t test and the results are summarised in Table 4.14.

Table 4.14 Comparison of social support score and scores of its four dimensions at six and 12 weeks postnatally (n=214)

Variables	Time points	Mean (SD)	Paired Differences Mean(95%CI)	t value	P value
Mean social support score	6-week	40.43 (9.94)	2.58 (1.70, 3.46)	5.800	0.000
	12-week	43.00 (9.55)			
Emotional Support	6-week	11.46 (2.51)	0.58 (0.29, 0.86)	3.964	0.000
	12-week	12.03 (2.22)			
Material support	6-week	11.11 (2.81)	0.26 (-0.04, 0.55)	1.714	0.088
	12-week	11.37 (2.78)			
Informational support	6-week	8.03 (3.46)	0.79 (0.43, 1.16)	4.340	0.000
	12-week	8.83 (3.34)			
Evaluation of support	6-week	9.82 (3.13)	0.95 (0.63, 1.28)	5.842	0.000
	12-week	10.78 (2.93)			

* Paired-sample t test, $df=213$; a higher score indicates that a mother who perceives she receives more social support.

In Table 4.14, from six to 12 weeks postnatally, the mean social support score had a statistically significant increase ($P<0.001$). The mean scores of emotional support, informational support and evaluation of support also had a statistically significant increase ($P<0.001$) between six weeks and 12 weeks postnatally; the mean material support scores rose slightly, but the difference was not statistically significant ($P>0.05$).

4.5.5 Comparison of 6-week characteristics between 12-week respondents (n=214) and 12-week non-respondents (n=90)

Table 4.15 compares the 6-week characteristics between the 204 women who returned both a 6-week questionnaire and a 12-week questionnaire (12-week responders), and the 90 women who only returned a 6-week questionnaire (12-week non-responders). By comparing the characteristics of the two groups, whether the loss to follow up would lead to a potential bias in the results was tested by the researcher. In addition, what kinds of women were more likely to be lost in follow up could be summarised.

Table 4.15 Comparison of 6-week characteristics between 12-week's respondents (n=214) and 12-week's non-respondents (n=90)

Variables	Respondent (n=214)	Non-respondents (n=90)	Mean difference (95% CI)	t value	P value
Mean (SD) MSE score	74.60 (12.09)	75.66 (8.13)	-1.06 (-3.40, 1.29)	-0.889	0.375
Mean EPDS score	9.59 (4.57)	7.90 (3.46)	-1.69 (0.75, 2.64)	3.527	0.001
Mean social support score	40.43 (9.94)	42.33 (7.48)	-1.91 (-3.96, 0.14)	-1.834	0.068
Mean baby health score	85.20 (12.84)	85.78 (11.51)	-0.58 (-3.66, 2.51)	-0.368	0.713
Mean baby fussiness score	76.82 (17.86)	77.61 (17.01)	-0.79 (-5.14, 3.57)	-0.356	0.722
Mean score of how satisfied with "Doing the month"	67.48 (19.12)	71.71 (13.16)	-4.25 (-8.00, -0.49)	-2.228	0.027

* Using Independent Samples T-test; scores expressed by Mean (SD)

As shown in Table 4.15, apart from the mean EPDS score and mean satisfaction with "Doing the month" score, there were no statistically significant differences in 6-week characteristics between the 204 women who responded at the 12-

week point and the 90 women who did not respond at the final time points of 12-week postnatally. This indicated that non-respondent participants at 12 weeks postnatally did not possibly lead to response bias in MSE scores, social support scores, baby health and baby fussiness scores. Participants with lower EPDS scores and higher satisfaction with "Doing the month" scores were more likely to loss to follow-up.

In this section, the potential influencing factors of MSE scores such as women's satisfaction with "Doing the month" scores, postnatal depression symptoms scores and social support scores are described. The association between these predictive variables and MSE are examined in the subsequent section.

4.6 Exploring the association between predictive variables and MSE scores

As shown in Chapter Two of this thesis, independent variables, such as maternal age, educational level, occupation, family income, mode of birth, whether the woman attended parenting training, baby gender, baby health, baby fussiness, women's satisfaction levels with "Doing the month", postnatal depression symptoms and social support may have affected MSE levels. Whether these predictive variables actually influenced MSE needs to be examined in this section using the Spearman correlation (non-normal distributed data), analysis of variance (ANOVA) (among three groups or more), independent-sample t test (between two groups) and multiple linear regressions.

4.6.1 Maternal age

The relationship between maternal age and MSE scores was tested in this study and the results are shown in Table 4.16.

Table 4.16 Examination of the relationship between maternal age and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Maternal age	
	Correlation coefficient	P value
MSE scores at six weeks postnatally (n=304)		
Mean MSE score	0.090	0.117
Developmental promotion	0.133	0.021
General health care	0.089	0.122
Safety	0.067	0.243
Diet	-0.033	0.566
MSE scores at 12 weeks postnatally (n=214)		
Mean MSE score	0.040	0.563
Developmental promotion	0.096	0.163
General health care	0.041	0.555
Safety	0.028	0.681
Diet	-0.036	0.601

* Spearman correlation, maternal age is not normally distributed data; a higher score indicates a higher level of MSE.

There was no statistically significant relationship between maternal age and mean MSE scores at the two time points ($P > 0.05$). With the exception of maternal age which was weakly positively related to the developmental promotion score at six weeks postnatally (correlation coefficient: 0.133, $P < 0.05$), there was no statistically significant relationship between maternal age and the other three dimensions' scores at six and 12 weeks postnatally ($P > 0.05$).

4.6.2 Educational level

Conflicting evidence has been presented in terms of the relationship between maternal education levels and MSE. Therefore, whether different maternal education levels influenced MSE scores was tested in this study and the results are described in Table 4.17.

Table 4.17 Examination of the relationship between different education levels and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Different Educational Levels				F	P
	Middle school/or lower	High school	University	Master/or higher		
MSE-6w	(n=34)	(n=70)	(n=188)	(n=12)	df (3,300)	
MSE score	70.98 (10.66)	71.32 (10.77)	76.83 (10.81)	77.08 (10.76)	6.228	0.000
Developmental promotion	76.27 (8.31)	76.43 (10.67)	81.64 (10.07)	82.39 (11.83)	6.289	0.000
General health care	54.07 (17.90)	54.71 (16.50)	61.28 (17.37)	62.83 (13.04)	3.730	0.012
Safety	86.13 (10.59)	88.92 (8.49)	91.87 (9.04)	91.11 (11.47)	4.658	0.003
Diet	79.65 (10.85)	78.21 (11.97)	83.94 (10.06)	81.56 (12.63)	5.510	0.001
MSE-12w	(n=27)	(n=51)	(n=126)	(n=10)	df (3,210)	
MSE score	75.02 (9.50)	75.07 (12.63)	79.33 (10.60)	79.46 (11.01)	2.514	0.059
Developmental promotion	79.80 (7.47)	79.86 (11.39)	85.07 (9.30)	85.80 (9.57)	4.969	0.002
General health care	60.98 (14.33)	62.01 (18.11)	65.27 (16.97)	67.27 (13.23)	0.897	0.444
Safety	88.02 (10.14)	89.40 (10.11)	91.40 (10.00)	91.33 (11.49)	1.094	0.353
Diet	80.51 (11.05)	78.66 (15.85)	84.15 (10.59)	79.75 (13.56)	2.799	0.041

* ANOVA (F value), equal variance tested, df=degree of freedom; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

The maternal educational level appeared to have had an influence on MSE scores at six weeks postnatally (P<0.01). Mothers with a higher educational level had a higher mean MSE score and scores on the four dimensions at six weeks postnatally. For example, women with a Master degree or higher had the highest

MSE score of 77.08 (SD=10.76) and mothers with a middle school educational level or lower had the lowest score of 70.98 (SD=10.66) at six weeks postnatally. In the further *post hoc* tests, mothers with a university degree had significantly higher scores than those with a middle school or lower education (Mean difference=5.84, 95% CI: 1.89—9.80, $P<0.01$) and women with a high school educational level (Mean difference=5.50, 95% CI: 2.53—8.48, $P<0.01$). At 12 weeks postnatally, women with a higher educational level still had significantly higher scores on the dimensions of developmental promotion and diet ($P<0.05$); however, the differences in the mean MSE score and dimensions scores for general health care and safety were not statistically significant ($P>0.05$).

4.6.3 Maternal Occupation

Whether different maternal occupations influenced MSE scores was tested in this study and the results are summarised in Table 4.18.

Table 4.18 Examination of the relationship between maternal occupation and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Different Occupation				F	P
	Professional occupation	Skilled occupation	Unskilled occupation	Unemployed status		
MSE-6w	(n=20)	(n=217)	(n=13)	(n=54)	df (3,30)	
MSE score	83.32 (6.26)	75.34 (10.87)	70.97 (11.32)	71.04 (11.31)	7.118	0.000
Developmental promotion	87.13 (7.37)	80.39 (10.03)	73.33 (8.79)	76.66 (11.25)	7.323	0.000
General health care	69.10 (11.00)	59.88 (16.77)	55.59 (20.72)	52.67 (18.55)	5.230	0.002
Safety	96.67 (3.79)	90.83 (9.24)	85.77 (11.30)	88.15 (9.69)	5.447	0.001
Diet	91.25 (7.06)	81.63 (11.02)	80.06 (8.72)	82.54 (10.96)	5.409	0.001
MSE-12w	(n=18)	(n=144)	(n=10)	(n=42)	df (3,20)	
MSE score	84.44 (6.07)	77.84 (11.73)	75.96 (6.87)	75.18 (10.53)	3.095	0.028
Developmental promotion	90.48 (5.24)	83.26 (10.55)	79.13 (5.36)	80.82 (8.49)	4.853	0.003
General health care	71.11 (14.02)	64.02 (17.08)	62.60 (12.57)	61.44 (17.38)	1.433	0.234
Safety	95.93 (5.52)	90.64 (10.35)	87.83 (10.22)	88.29 (10.15)	2.694	0.047
Diet	88.19 (6.78)	82.35 (13.25)	83.50 (9.14)	78.72 (10.88)	2.613	0.052

* ANOVA (F value), equal variance tested, df=degree of freedom; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

As shown in Table 4.18, different maternal occupations affected the mean MSE score and scores on the four dimensions at six weeks postnatally ($P < 0.01$). For instance, mothers with a professional occupation had the highest mean MSE score (83.32 ± 6.26) and mothers with an unskilled occupation had the lowest score (70.97 ± 11.32). In the further *post hoc* tests, mothers with professional work had a significantly higher mean MSE score than mothers with a skilled job

(Mean difference=7.97, 95% CI: 3.03–12.91, $P<0.01$); or unemployed mothers (Mean difference=12.27, 95% CI: 6.74–17.80, $P<0.01$); or mothers with an unskilled occupation (Mean difference=12.35, 95% CI: 4.82–19.87, $P<0.01$). Furthermore, mothers with a skilled occupation had a significantly higher mean MSE score than unemployed women (Mean difference=4.30, 95% CI: 1.08–7.51, $P<0.01$). At 12 weeks postnatally, different maternal occupations still had an influence on the mean MSE score and scores on the two dimensions of developmental promotion and safety ($P<0.05$). Following multiple comparisons (*post hoc* tests), scores were higher by 6.61 points (95% CI: 1.20–12.01, $P<0.01$) and 9.27 points (95% CI: 3.17–15.36, $P<0.01$) for mothers having a professional occupation compared with mothers with a skilled occupation and unemployed mothers, respectively.

4.6.4 Family income

Table 4.19 shows the relationship between family income and MSE scores in this study.

Table 4.19 Examination of the relationship between family income and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Different Family Income (RMB/Per year/ Per person)			F	P value
	<3000	3001-5000	>5000		
MSE-6w	(n=54)	(n=116)	(n=134)	df (2, 301)	
MSE score	75.29 (10.62)	73.58 (11.37)	75.92 (10.92)	1.428	0.241
Developmental promotion	79.21 (9.84)	78.52 (10.57)	81.31 (10.30)	2.399	0.093
General health care	60.87 (16.01)	57.27 (17.96)	59.80 (17.26)	1.038	0.355
Safety	91.36 (8.31)	89.94 (10.09)	90.68 (9.15)	0.461	0.631
Diet	81.29 (11.75)	81.15 (11.30)	83.13 (10.29)	1.174	0.310
MSE-12w	(n=38)	(n=85)	(n=91)	df (2, 211)	
MSE score	78.78 (11.34)	76.64 (11.62)	78.43 (10.59)	0.749	0.474
Developmental promotion	82.67(10.62)	82.20 (9.81)	84.35 (9.71)	1.096	0.336
General health care	66.64 (14.38)	62.24 (18.20)	64.64 (16.33)	1.001	0.369
Safety	91.32 (10.24)	90.07 (10.45)	90.54 (9.84)	0.200	0.819
Diet	83.31 (13.12)	81.42 (13.05)	82.42 (11.49)	0.333	0.717

* ANOVA (F value), equal variance tested, df=degree of freedom; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

There was no statistically significant relationship between different family incomes and MSE scores (P>0.05).

4.6.5 Mode of birth

Whether mode of birth influenced MSE scores in this study was examined and the results are shown in Table 4.20.

Table 4.20 Examination of the relationship between mode of birth and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Different Mode of birth			F	P value
	Normal birth	Assisted birth	Caesarean section		
MSE-6w	(n=151)	(n=68)	(n=85)	df (2, 301)	
MSE score	73.69 (11.70)	76.17 (10.52)	76.09 (10.16)	1.862	0.157
Developmental promotion	78.93 (10.72)	81.54 (9.46)	80.21 (10.36)	1.559	0.212
General health care	56.73 (18.33)	60.50 (16.23)	61.92 (15.91)	2.792	0.063
Safety	90.25 (9.57)	91.16 (9.27)	90.48 (9.17)	0.224	0.799
Diet	81.57 (11.99)	82.61 (10.01)	82.43 (9.77)	0.281	0.755
MSE-12w	(n=109)	(n=44)	(n=61)	df (2, 211)	
MSE score	76.31 (11.88)	77.88 (10.88)	80.33 (9.51)	2.588	0.078
Developmental promotion	81.72(10.40)	83.61 (10.94)	85.53 (7.69)	2.991	0.052
General health care	61.74 (17.64)	63.94 (15.10)	68.24 (15.81)	2.979	0.053
Safety	90.03 (10.25)	90.00 (10.13)	91.67 (9.95)	0.574	0.564
Diet	81.51 (13.99)	82.60 (11.06)	83.07 (10.14)	0.341	0.711

* ANOVA (F value), equal variance tested; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

In Table 4.20, there were no statistically significant difference in MSE scores when comparing different mode of birth (P>0.05).

4.6.6 Whether women have attended parenting training

Whether women attended parenting training influenced MSE scores was tested in this study and the results are described in Table 4.21.

Table 4.21 Examination of the relationship between parenting training and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Whether attended parenting training		Mean difference (95% CI)	t value	P value
	Yes	No			
MSE-6w	(n=201)	(n=103)			
MSE score	76.36 (10.07)	72.10 (12.34)	4.26 (1.48-7.04)	3.028	0.003
Developmental promotion	81.08 (9.29)	77.51 (11.92)	3.56 (0.91-6.22)	2.650	0.009
General health care	60.83 (16.44)	55.50 (18.50)	5.33 (1.24-9.43)	2.564	0.011
Safety	91.54 (9.07)	88.52 (9.64)	3.02 (0.81-5.23)	2.691	0.008
Diet	83.61 (10.22)	79.00 (11.73)	4.60 (2.04-7.17)	3.533	0.000
MSE-12w	(n=139)	(n=75)			
MSE score	79.32 (10.21)	74.93 (12.21)	4.38 (1.29-7.48)	2.793	0.006
Developmental promotion	84.70 (8.95)	80.40 (11.03)	4.30 (1.56-7.05)	3.089	0.002
General health care	65.59 (16.02)	61.18 (17.89)	4.41 (0.30-9.13)	1.845	0.066
Safety	91.50 (9.67)	88.62 (10.73)	2.88 (0.04-5.71)	1.998	0.047
Diet	84.13 (10.64)	78.57 (14.49)	5.56 (1.80-9.33)	2.926	0.004

* Independent-sample t Test; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

At six weeks postnatally, the mean MSE score of mothers who had attended parenting training was 76.36 (SD=10.07), statistically significantly higher than the score of mothers without training (72.10 ± 12.34 , $P < 0.01$). In terms of the four dimensions at six weeks postnatally, the scores of mothers who had attended training were significantly higher than those who had not attend training ($P < 0.05$). At 12 weeks postnatally, the mean MSE score of mothers who had attended training rose to 79.31 (SD=10.21) and the mean MSE score of mothers who had not attended training was 74.93 (SD=12.21); the difference between the two scores was statistically significant ($P < 0.01$). Mothers who had attended training had higher scores on the three dimensions (developmental promotion, safety and diet) than mothers without training at 12 weeks postnatally ($P < 0.05$), and not on the general health care dimension.

4.6.7 Baby gender

Whether baby gender affected MSE scores was tested in this study and the results are shown in Table 4.22.

Table 4.22 Examination of the relationship between baby gender and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Baby	Gender	Mean difference (95% CI)	t value	P value
	Girl	Boy			
MSE-6w	(n=133)	(n=171)			
MSE score	74.23 (11.30)	75.44 (10.87)	-1.21 (-3.73, 1.31)	-0.946	0.345
Developmental promotion	78.96 (10.41)	80.58 (10.31)	-1.62 (-3.97, 0.74)	-1.351	0.178
General health care	58.37 (17.73)	59.53 (17.04)	-1.17 (-5.13, 2.80)	-0.579	0.563
Safety	89.96 (9.66)	90.96 (9.13)	-1.00 (-3.13, 1.13)	-0.922	0.357
Diet	81.65 (11.11)	82.36 (10.86)	-0.72 (-3.21, 1.78)	-0.564	0.573
MSE-12w	(n=95)	(n=119)			
MSE score	77.20 (11.55)	78.25 (10.81)	-1.05 (-4.07, 1.97)	-0.685	0.494
Developmental promotion	82.72 (9.95)	83.58 (9.92)	-0.86 (-3.55, 1.84)	-0.627	0.531
General health care	63.07 (17.15)	64.83 (16.53)	-1.76 (-6.32, 2.80)	-0.761	0.448
Safety	89.93 (10.72)	90.94 (9.63)	-1.01 (-3.76, 1.74)	-0.724	0.470
Diet	81.93 (12.14)	82.38 (12.62)	-0.44 (-3.81, 2.92)	-0.259	0.796

* Independent-sample t test; scores expressed by Mean (SD); a higher score indicates a higher level of MSE.

Mothers who had a boy had a consistently slightly higher mean MSE score and

scores on the four dimensions than mothers who had a girl, but the differences in scores were not statistically significant ($P>0.05$).

4.6.8 Baby health

The relationship between baby health scores and MSE scores was tested in this study and the results are shown in Table 4.23.

Table 4.23 Examination of the relationship between baby health scores and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Baby Health	
	Correlation coefficient	P value
MSE at six weeks postnatally (n=304)		
Mean MSE score	0.312	0.000
Developmental promotion	0.333	0.000
General health care	0.235	0.000
Safety	0.284	0.000
Diet	0.314	0.000
MSE at 12 weeks postnatally (n=214)		
Mean MSE score	0.397	0.000
Developmental promotion	0.369	0.000
General health care	0.365	0.000
Safety	0.345	0.000
Diet	0.305	0.000

* Spearman correlation (baby health scores are not normally distributed data); a higher MSE score indicates a higher level of MSE; a higher baby health score indicates a higher level of baby health that the mother rates.

As demonstrated in Table 4.23, baby health scores that mothers rated at the two time points were moderately or weakly positively related to the mean MSE score and scores on the four dimensions at both six weeks (range of correlation coefficient: 0.235–0.333, $P<0.001$) and 12 weeks postnatally (range of correlation coefficient: 0.305–0.397, $P<0.001$). That is, mothers who reported they had a healthier baby were more likely to have a higher mean MSE score and scores on all four dimensions.

4.6.9 Baby fussiness

Table 4.24 shows the relationship between baby fussiness scores and MSE scores.

Table 4.24 Examination of the relationship between baby fussiness scores and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	Baby Fussiness	
	Correlation coefficient	P value
MSE at six weeks postnatally (n=304)		
Mean MSE score	0.256	0.000
Developmental promotion	0.285	0.000
General health care	0.208	0.000
Safety	0.190	0.001
Diet	0.212	0.000
MSE at 12 weeks postnatally (n=214)		
Mean MSE score	0.329	0.000
Developmental promotion	0.352	0.000
General health care	0.280	0.000
Safety	0.222	0.001
Diet	0.266	0.000

* Spearman correlation (baby fussiness scores are not normally distributed data); a higher MSE score indicates a higher level of MSE; a **higher** baby fussiness score indicates a **lower** level of baby fussiness as rated by the mother.

In Table 4.24, baby fussiness scores at the two time points was weakly or moderately related to mean MSE score and scores on the four dimensions at both six weeks (range of correlation coefficient: 0.190–0.285, $P < 0.01$) and 12 weeks postnatally (range of correlation coefficient: 0.222–0.352, $P < 0.01$). That is, mothers who reported they had a less fussy baby tended to have a higher mean MSE score and scores on all four dimensions.

4.6.10 Women’s satisfaction with “Doing the month” scores

The relationship between women’s satisfaction with “Doing the month” scores and MSE scores is shown in Table 4.25.

Table 4.25 Examination of the relationship between women’s satisfaction with “Doing the month” scores and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	How satisfied with “Doing the month”	
	Correlation coefficient	P value
MSE at six weeks postnatally (n=304)		
Mean MSE score	0.590	0.000
Developmental promotion	0.525	0.000
General health care	0.548	0.000
Safety	0.398	0.000
Diet	0.518	0.000
MSE at 12 weeks postnatally (n=214)		
Mean MSE score	0.471	0.000
Developmental promotion	0.419	0.000
General health care	0.430	0.000
Safety	0.389	0.000
Diet	0.445	0.000

* Spearman correlation (satisfaction with “Doing the month” scores are not normally distributed data); a higher MSE score indicates a higher level of MSE; a higher satisfaction with “Doing the month” score indicates more satisfaction with “Doing the month”.

Mothers who had expressed a higher satisfaction with “Doing the month” were more likely to have a higher mean MSE score and scores on the four dimensions at the two time points. For instance, women’s satisfaction with “Doing the month” scores were strongly or moderately positively correlated with the mean MSE score and scores on all four dimensions at six weeks (range of correlation coefficient: 0.398–0.590, $P < 0.001$); and at 12 weeks (range of correlation coefficient: 0.389–0.471, $P < 0.001$).

4.6.11 Postnatal depression symptoms

Table 4.26 shows the relationship between postnatal depression symptoms and MSE scores.

Table 4.26 Examination of the relationship between EPDS scores and MSE scores, including mean MSE score and scores of its four dimensions at six (n=304) and 12 (n=214) weeks postnatally

Variables	EPDS Score	
	Correlation coefficient	P value
MSE at six weeks postnatally (n=304)		
Mean MSE score	-0.443	0.000
Developmental promotion	-0.428	0.000
General health care	-0.413	0.000
Safety	-0.371	0.000
Diet	-0.341	0.000
MSE at 12 weeks postnatally (n=214)		
Mean MSE score	-0.483	0.000
Developmental promotion	-0.399	0.000
General health care	-0.490	0.000
Safety	-0.351	0.000
Diet	-0.369	0.000

* Spearman correlation (EPDS scores are not normally distributed data); a higher MSE score indicates a higher level of MSE; a higher EPDS score indicates more severe postnatal depression symptoms.

Mothers with a lower EPDS score at the two time points were more likely to have a higher mean MSE score and higher scores on all four dimensions at six and 12 weeks postnatally. Maternal postnatal depression symptoms were moderately negatively related to the mean MSE score and scores on the four dimensions at both six weeks (range of correlation coefficient: from -0.341 to -0.443, $P < 0.001$) and 12 weeks postnatally (range of correlation coefficient: from -0.351 to -0.490, $P < 0.001$).

4.6.12 Social support

The relationship between social support scores and MSE scores was tested in this study and the results are shown in Table 4.27.

Table 4.27 Examination of the relationship between PSSS scores (mean PSSS score and scores of its four dimensions) and MSE scores (mean MSE score and scores of its four dimensions) at six (n=304) and 12 (n=214) weeks

Variables	Social support	Emotional support	Material support	Information-al support	Evaluation of support
MSE-6w					
(n=304)					
Mean MSE score	0.623	0.525	0.469	0.509	0.583
Developmental promotion	0.554	0.493	0.398	0.451	0.499
General health care	0.567	0.468	0.416	0.459	0.562
Safety	0.492	0.447	0.366	0.447	0.408
Diet	0.544	0.444	0.448	0.467	0.477
MSE-12w					
(n=214)					
Mean MSE score	0.529	0.428	0.372	0.484	0.507
Developmental promotion	0.510	0.436	0.372	0.441	0.495
General health care	0.450	0.357	0.282	0.431	0.424
Safety	0.447	0.341	0.399	0.364	0.428
Diet	0.453	0.357	0.339	0.459	0.410

* Variables are correlation coefficients, all P value: **0.000**; Spearman correlation (social support scores are not normally distributed data); a higher MSE score indicates a higher level of MSE; a higher PSSS score indicates that a mother who perceives she receives more social support.

Mean social support scores and scores on the four dimensions at the two time points were strongly or moderately positively correlated with the mean MSE score (range of correlation coefficient: 0.469–0.623, $P < 0.001$) and scores on the four dimensions at six weeks postnatally (range of correlation coefficient: 0.366–0.567, $P < 0.001$); and were strongly or moderately positively correlated with the mean MSE score (range of correlation coefficient: 0.372–0.529, $P < 0.001$) and scores on the four dimensions (range of correlation coefficient: 0.282–0.510, $P < 0.001$) at 12 weeks postnatally. That is, a mother who perceived she receiving more social support was more likely to have a higher MSE score.

4.7 The multivariate analysis of MSE scores

4.7.1 The multiple linear regression model

In this study, dependent and independent variables in the multiple linear regression model are described in Table 4.28. In terms of the choice of independent variables, Zhang (2004) argued that if only these variables, which were statistically significant in the univariate analysis such as correlation and ANOVA, were entered into multiple regression models; more than a third variables which may affect outcomes would be omitted in the multivariate analysis results. Therefore, in this study, all potentially predictive variables were chosen as independent variables and entered into the multiple regression model; even though some variables such as family income, baby gender, mode of birth were not statistically significant in the univariate analysis undertaken on MSE scores (section 4.6). Data were checked to ensure that they met the assumptions required for linear regression analysis.

Table 4.28 Dependent and independent variables in multiple linear regression model for multiple analysis of MSE scores

Dependent variable	Independent variables
<ul style="list-style-type: none">• Mean MSE scores	<ul style="list-style-type: none">• Maternal age• Maternal educational level• Maternal occupation• Family income• Mode of birth• Whether women attended parenting training• Baby gender• Baby health scores• Baby fussiness scores• Women's satisfaction with "Doing the month" scores• Postnatal depression symptoms (EPDS scores)• Social support (PSSS scores)

4.7.2 The coding of independent variables entered in the multiple linear regression model

The polytomous independent variables (more than two categories) including educational level, occupation, family income and mode of birth were established as dummy variables in this study (Li & He, 2013). These dummy variables were coded 1 for participants who are in the remaining groups (excluded the reference group) and all others were coded 0 (see Section 3.9.2.2, Page 123) (Li & He, 2013). The continuous independent variables including maternal age, baby health scores, baby fussiness scores, EPDS scores and PSSS scores were maintained with the original numerical value as an assigned coding in the model. In terms of the dichotomous (binary) variables including baby gender and whether women attended parenting training, a boy baby was coded as 1 and a girl baby was code as 0; and attended parenting training was coded as 1 and not attending parenting training was coded as 0. The coding of independent variables (n=8) and dummy variables (n=10) in this study are showed in Table 4.29.

Table 4.29 The coding of independent variables and dummy variable entered in multiple linear regression model

Independent variables	Methods of coding
Maternal age	Original numerical value
Education level (* middle school or lower)	
Education level 1	Middle school or lower=0, High school=0, University/College=0, Master degree or higher=1
Education level 2	Middle school or lower=0, High school=0, University/College=1, Master degree or higher=0
Education level 3	Middle school or lower=0, High school=1, University/College=0, Master degree or higher=0
Occupation (* unemployed status)	
Occupation 1	Unemployed status=0, Professional occupation=0, Skilled occupation=0, Unskilled occupation=1
Occupation 2	Unemployed status=0, Professional occupation=0, Skilled occupation=1, Unskilled occupation=0
Occupation 3	Unemployed status=0, Professional occupation=1, Skilled occupation=0, Unskilled occupation=0
Family income (* <3000)	
Family income 1	<3000=0, 3001–5000=0, >5000=1
Family income 2	<3000=0, 3001–5000=1, >5000=0
Mode of birth (* normal vaginal birth)	
Mode of birth 1	Normal vaginal birth=0, Assisted deliver=0, Caesarean section=1
Mode of birth 2	Normal vaginal birth=0, Assisted deliver=1, Caesarean section=0
Whether women attended parenting training	No=0, Yes=1
Baby gender	Girl=0, Boy=1
Baby health scores	Original numerical value
Baby fussiness scores	Original numerical value
Women’s satisfaction with “Doing the month” scores	Original numerical value
Postnatal depression symptoms (EPDS scores)	Original numerical value
Social support (PSSS scores)	Original numerical value

* Reference group

4.7.3 Collinearity diagnostics

Multicollinearity has been highlighted by statisticians (Friendly & Kwan, 2009; Li & He, 2013) as a problem when undertaking regression models. Multicollinearity is the term used to describe the presence of highly inter-correlated predictor variables which have been entered into the same regression models, and its effect is to invalidate some of the basic assumptions underlying their mathematical estimation (Li & He, 2013). Collinearity diagnostics measure how much predictor variables are related to other predictor variables and how this affects the stability and variance of the regression estimates.

It is said that condition indices of 30 to 100 combined with at least 2 high numbers (greater than 0.5) in a variance proportion row or VIF (the Variance Inflation Factor, $1/\text{Tolerance}=1/1-R^2$) greater than 10 are a sign of multicollinearity (Friendly & Kwan, 2009; Manual of Collinearity diagnostics, 2010). The higher the condition indices are, the more severe the multicollinearity problem is; or the higher the value of VIF is, the more severe the problem is (Manual of Collinearity diagnostics, 2010). In this study, there was no condition index more than 30 and no two variance proportions higher than 0.5; and no VIF value greater than 5 (Appendix 8). This suggested that there was no problem of collinearity in this study.

4.7.4 The multivariate analysis results of MSE scores at six weeks postnatally

In this study, the multivariate analysis results of MSE scores at six weeks postnatally are shown in Table 4.30.

Table 4.30 The multiple linear regression analysis results of MSE scores at six weeks postnatally (n=304)

Variables	Unstandardised Coefficients		Standardised Coefficients	t	P
	B	Std. Error	Beta (Descending)		
Constant	36.530	4.372		8.355	0.000
Social support (PSSS) scores	0.406	0.062	0.342	6.508	0.000
Satisfaction with "Doing the month" scores	0.147	0.031	0.235	4.701	0.000
EPDS scores	-0.356	0.124	-0.139	-2.871	0.004
Education 2	3.101	0.931	0.136	3.331	0.001
Baby health scores	0.101	0.041	0.114	2.484	0.014
Occupation 3	4.242	1.853	0.095	2.289	0.023
Baby fussiness scores	0.052	0.028	0.083	1.843	0.066

* **F=46.084, P=0.000, Adjusted R²=0.510.**

** *Unstandardised coefficient (B) is the degree to which each independent variable impacts the dependent variable; standardised coefficient (Beta) indicates the amount of variance of the dependent variable which is explained by each independent variable individually; the t-statistic and significance indicate whether or not each predictor is significant; an adjusted R Square test tells the percentage of variance in the dependent variable which was explained by the independent variables.*

In total seven independent variables were entered into the multiple linear regression model, including social support scores, women's satisfaction with "Doing the month" scores, EPDS scores, maternal education, baby health scores, maternal occupation and baby fussiness scores. Apart from baby fussiness

scores (t test, $P > 0.05$), the other six variables were statistically significant predictors of MSE scores (t test, $P < 0.05$); and these six variables explained 51.0% of variance in MSE scores (Adjusted $R^2 = 0.510$, $F = 46.084$, $P < 0.001$). Of which, social support scores and women's satisfaction with "Doing the month" scores were the two major influencing factors on mean MSE scores.

The multiple linear regression equation at six weeks postnatally was: MSE scores = $36.530 + 0.406$ PSSS scores + 0.147 Women's satisfaction with "Doing the month" scores - 0.356 EPDS scores + 3.101 Educational level + 0.101 Baby health scores + 4.242 Occupation. This regression model showed that controlling for the remaining independent variables, as the PSSS scores increased, the MSE scores also increased ($B = 0.406$, $P < 0.05$); as women's satisfaction with "Doing the month" scores increased, the MSE score also increased ($B = 0.147$, $P < 0.05$); as the baby health scores increased, the MSE scores also increased ($B = 0.101$, $P < 0.05$); as the EPDS scores decreased, the MSE scores increased ($B = -0.356$, $P < 0.05$). In addition, mothers who had a university education level (compared to women who had a middle school education level or lower) was associated with an increase in MSE scores ($B = 3.101$, $P < 0.05$); and mothers who had a professional occupation (comparison with unemployed mothers) was associated with an increase in MSE scores ($B = 4.242$, $P < 0.05$), holding all other predictors constant.

Therefore, the conclusion was drawn that social support scores, women's satisfaction with "Doing the month" scores, baby health scores had a positive influencing on MSE scores (B coefficients > 0 , $P < 0.05$); postpartum depression symptoms scores negatively affected MSE scores at six weeks postnatally (B coefficient < 0 , $P < 0.05$). Mothers who had a university education level and mothers with a professional occupation tended to have a higher MSE score at six weeks postnatally compared to those that had a middle school education level or lower, and unemployed mothers, respectively (B coefficients > 0 , $P < 0.05$).

4.7.5 The multivariate analysis results of MSE scores at 12 weeks postnatally

The multivariate analysis results of MSE scores at 12 weeks postnatally are shown in Table 4.31.

Table 4.31 The multiple linear regression analysis results of MSE scores at 12 weeks postnatally (n=204)

Variables	Unstandardised Coefficients		Standardised Coefficients	t	P
	B	Std. Error	Beta (Descending)		
Constant	42.510	5.342		7.958	0.000
EPDS scores	-0.725	0.141	-0.287	-5.128	0.000
PSSS scores	0.303	0.068	0.260	4.444	0.000
Baby health scores	0.168	0.048	0.188	3.470	0.001
Satisfaction with "Doing the month" scores	0.105	0.033	0.180	3.145	0.002
Baby fussiness scores	0.087	0.040	0.115	2.177	0.031

* **F=41.082, P=0.000, Adjusted R²=0.485.**

** *Unstandardised coefficient (B) is the degree to which each independent variable impacts the dependent variable; standardised coefficient (Beta) indicates the amount of variance of the dependent variable which is explained by each independent variable individually; the t-statistic and significance indicate whether or not each predictor is significant; an adjusted R Square test tells the percentage of variance in the dependent variable which was explained by the independent variables.*

In Table 4.31, five independent variables were entered into the multiple linear regression model, including postnatal depression symptoms, social support scores, baby health scores, women's satisfaction with "Doing the month" scores and baby fussiness scores. The five variables were statistically significant predictors of MSE scores (t test, P<0.05); and explained 48.5% of variance in MSE scores at 12 weeks postnatally (Adjusted R²=0.485, F=41.082, P<0.001).

Postnatal depression symptoms became the main influencing factor of MSE scores at this time point.

The multiple linear regression equation at 12 weeks postnatally was: MSE scores = 42.510 - 0.725 EPDS scores + 0.303 PSSS scores + 0.168 Baby health scores + 0.105 Women's satisfaction with "Doing the month" scores + 0.087 Baby fussiness scores. This regression equation showed that when the remaining independent variables were fixed, as the EPDS scores decreased, the MSE scores increased (B=-0.725, P<0.05); as the PSSS scores increased, the MSE scores also increased (B=0.303, P<0.05); as the baby health scores increased, the MSE scores also increased (B=0.168, P<0.05); as women's satisfaction with "Doing the month" scores increased, the MSE score also increased (B=0.105, P<0.05); and as the baby fussiness scores increased (a higher baby fussiness score indicates a lower level of baby fussiness that the mother reports), the MSE scores also increased (B=0.087, P<0.05).

Thus, the conclusion was drawn that social support scores and women's satisfaction with "Doing the month" scores positively influenced MSE scores (B coefficients>0, P<0.05); postpartum depression symptoms scores negatively affected MSE scores at 12 weeks postnatally (B coefficient<0, P<0.05). Mothers who reported that they had a healthier baby tended to have a higher MSE score; and mothers who reported to have a less fussy baby were more likely to have a higher MSE score at 12 weeks postnatally (P<0.05).

4.8 The open question findings

In total, 61.2% (186/304) of women briefly answered the open question of why women felt satisfied or dissatisfied with the experience of "Doing the month", and 96.4% (179/186) of women described that they were extraordinarily tired, physically and mentally, regardless of whether they were satisfied or dissatisfied with the experience of "Doing the month". This demonstrated that parenting an infant was an extremely difficult task for first-time mothers, which was consistent with previous research findings undertaken in various countries in which fatigue and exhaustion were common experiences reported by many parents with infants (Nystrom & Ohrling, 2004; Ahlborg et al., 2009; Salonen et al., 2011; Dunning & Giallo, 2012). The socio-demographic and clinical characteristics of these respondents and the categories and themes of the open question are reported in the subsequent sections.

4.8.1 Socio-demographic and clinical characteristics of respondents of the open question

Table 4.32 shows a summary of the open question respondents' socio-demographic and clinical characteristics. These respondents were demonstrated to capture variation in age when giving birth, educational level, occupation, family income, mode of delivery, whether parenting training was attended, and baby gender (see Table 4.32). Variation sampling was beneficial to gain greater insights into a phenomenon by looking at it from all angles and helped the researcher to identify common themes of the open question that were evident across the sample.

Table 4.32 Socio-demographic and clinical characteristics of the open question respondents (n=186)

Variables	Frequency	Percentage (%)
Age when giving birth		
20—25	56	30.1
26—30	113	60.8
31—40	17	9.1
Educational level		
Middle school or lower	18	9.7
High school	45	24.2
University/College or higher	123	66.1
Occupation		
Professional	13	7.0
Skilled	136	73.1
Unskilled	8	4.3
Unemployed	29	15.6
Family income (RMB per month, per person)		
<3000yuan	30	16.1
3001—5000yuan	74	39.8
>5000yuan	82	44.1
Mode of birth		
Normal vaginal birth	90	48.4
Assisted birth	44	23.7
Caesarean section	52	27.9
Whether attended parenting training		
Yes	119	64.0
No	67	36.0
Infant gender		
Boy	102	54.8
Girl	84	45.2

4.8.2 Categories and themes of the open question on why women felt satisfied or dissatisfied with the experience of “Doing the month”

A total of two categories and eight main themes were generated from the related codes of the open question responses. Table 4.32 provides an overview of the categories and themes that were elicited from the open questions.

Table 4.33 Categories and themes of participants’ open question responses (n=186)

Categories	Themes
1. Why women felt satisfied with “doing the month”	<ol style="list-style-type: none"> 1. Support and rest 2. Sense of achievement 3. Positive thinking 4. Appreciative attitudes
2. Why women felt dissatisfied with “doing the month”	<ol style="list-style-type: none"> 1. Being tired of taboos 2. Conflicts with mother-in-law 3. Lack of family help and care 4. Undue expectation

Examples of the data such as direct quotes to illustrate the themes are described in the following sections.

4.8.2.1 The quotes of some women suggested why women felt satisfied with “Doing the month” in this study

Firstly, 26.3% (49/186) of women thought that their family was giving them a lot of support and they could have a good rest, which enabled them to recover after childbirth, and 13 (7.0%) of them noted that they felt happy because their mother accompanied them.

For example, one woman said:

“I was very happy during the period of ‘Doing the month’. Every day, there were some people that looked after me and gave me encouragement. My husband loved me and often told me, ‘well done’. My

mother-in-law loved my baby and helped me take care of her. I felt happy.” (W337)

Another woman described:

“My mum loved me most. She did all the housework and was very protective towards me. I thought that I have had a really sheltered life during this period. I was filled with happiness every day, which had not happened before.” (W11)

Secondly, 11.3% (21/186) of women stated that they gained a great sense of achievement when taking the initiative in taking care of their baby. For instance, one woman said:

“I took the initiative in taking care of my baby and did not want to depend on my mum too much. No pains, no gains. Now, my baby was healthy and sweet. He grew every day. I was so proud of him and felt a strong sense of accomplishment and happiness, even though I was tired.” (W370)

Another woman described:

“I made great progress in parenting my baby and I felt so happy. I was a good mother and I thought my child was the most beautiful and cute baby in the world. You could not imagine how exciting being a new mother was and how happy in the face of new life I was.” (W300)

Thirdly, some women (n=18) described their feeling that they thought thinking positively was of importance for the better experience of “Doing the month”.

One mother answered:

“Happiness and exhaustion mixed with each other when experiencing ‘Doing the month’. Things had two sides. My family members looked after

me and my baby; however, I had to deal with potential and real conflict with them. It was life. I needed to modify my mood and always thought positively for everything.” (W16)

Fourthly, some women (n=13) referred to how having an appreciative attitude helped them to get along with older generations and made them feel more satisfied with the practice.

One mother (W16) said:

“In my opinion, women should be extremely thankful and thoughtful for their mother or mother-in-law because it was really not easy for them to help new mothers take care of babies and do housework at their elder age. Honestly speaking, I was really appreciated what my mother-in-law had done for me and my baby, that made us have a good relationship, even though some conflicts between my mother-in-law and me did exist.”

4.8.2.2 The quotes of some women suggested why women felt dissatisfied with the traditional practice in this study

First of all, women were tired of taboos. 38.2% (71/186) of women complained about being forbidden to wash their hair or bathe, and detested eating too much protein-rich food.

One woman said:

“The experience of ‘Doing the month’ was more uncomfortable than I expected; for example, I cannot wash my hair in summer during the one month period. However, I had to persist as it was beneficial to my wellbeing in the future. Fortunately, it ended after one month.” (W330)

Another mother described:

"I drank fish soup in three meals every day. I hoped to get rid of it. But if I did not drink, my mum would keep complaining and make me crazy. Now, when I imagine this soup, I still feel sick." (W214)

Secondly, 22.0% (41/186) of women stated that they were in conflict with their mother-in-law in terms of beliefs about taking care of the baby. In Chinese culture, maintaining family harmony by respecting elders' wishes is expected of all young adults (Tang, 1992). This expectation became problematic for many participants during the postnatal period, as their elders' advice and guidance were usually inconsistent with their own desires (Tarrant et al., 2004).

This was illustrated in the following quote:

"I prefer to exclusively breastfeed, but my mother-in-law thought supplementary feeding was better. When I fed my baby, she always complained that I could not feed the baby up only by my breast milk and said that I was stubborn." (W377)

This theme was reinforced by another participant:

"The relationship between my mother-in-law and me was destroyed during the period of 'Doing the month' because of lots of conflicts in terms of rearing the baby and our generation gap on life habits. For example, I preferred to clean utensils by an automatic washer. But my mother-in-law thought this method wasted too much water and electricity; and asked me to clean them by hand. Lots of similarly unhappy things happened. I cried many times and could not deal with our problems. I thought I would never forgive her." (W20)

Thirdly, 11.3% (21/186) of women thought that the family did not give them enough or any support during this period.

For instance, one woman said:

"Our Chinese people pay more attention to 'Doing the month', and thought it was extremely significant for women. But most of the time, I felt very depressed and disappointed. At my mother-in-law's home, no one helped me and cared for me, and I had to deal with everything".
(W411)

Another woman complained:

"My husband did not look after me and our baby, and he was not thoughtful. He trusted his mother rather than me." (W39)

The other woman described:

"I felt unhappy because of my husband. I thought he was indifferent. Before the day that I was admitted to hospital, he quarrelled with me. After childbirth, he accompanied me, but with no care, no greeting. When I asked him to do me a favour, he was impatient about it. Before having the baby, we loved each other so much, so I am extremely disappointed with him now. I knew he was dissatisfied with having a girl. I thought it was the main reason of his indifference." (W64)

In addition, 10.8% (20/186) of women stated that they had high expectations for "Doing the month" and excessively relied on other family members for parenting babies. This undue expectation on "Doing the month" led to their negative feeling with the experience of "Doing the month".

This was illustrated in the following quote:

"In recent days, I always thought why I was unhappy during the period of 'Doing the month'. I did not think that should be happening as my husband and my mum always accompanied me and took care of me and

my baby. Now I got it. The main reason was that I had unrealistic expectation towards 'Doing the month'. I thought I should be the queen during the period of one month, but actually I was not. I lost myself. I was excessively depending on my family members to take care of the baby and overlooked my own responsibility as a mum." (W414)

Another woman complained:

"My mother-in-law supported me to take care of my baby. But I did not think it was enough. She should take care of the baby by herself as I needed to have a complete rest during one month to make sure of a good recovery from childbirth. My friend did not do anything in her 'Doing the month'. Why could I not?" (W27)

4.9 Summary

Chinese mothers in this study experienced an increase in MSE scores and social support scores, and a decline in postnatal depression scores during the first three months postnatally. The mean MSE score at six weeks postnatally was 74.92 (SD=11.05) (range of score: 0–100, with a higher score indicating a higher level of MSE), and increased to 77.78 (SD=11.13) at 12 weeks postnatally. The mean social support scores at six and 12 weeks postnatally were 40.99 (SD=9.31) and 43.00 (SD=9.55) (range of score: 0–60, with a higher score indicating that a mother perceived that she received more social support). The mean EPDS scores decreased from 9.09 (SD=4.33) (range of score: 0–30, with a higher score indicating women having more severe postnatal depression symptoms) at six weeks postnatally to 8.63 (SD=4.40) at 12 weeks postnatally. The proportions of women with an EPDS score of ten or more at the two time points diminished from 47.4% to 38.3%; the proportions of women with an EPDS score of 12 or more and 13 or more at the two time points decreased from 29.3% to 24.3% and from 21.4% to 18.2%, respectively. At the two time points, the mean MSE scores and social support scores had a statistically significant increase from six weeks to 12 weeks postnatally ($P<0.05$); by contrast, the EPDS scores had a statistically significant decrease from six weeks to 12 weeks postnatally ($P<0.05$).

Women's satisfaction with "Doing the month" score was 68.73 (SD=17.65) (range of score: 0–100, with a higher score indicating more satisfaction with "Doing the month"), and most women (91.4%) thought that "Doing the month" after childbirth was necessary. In this study, some women (47.4%) felt satisfied or strongly satisfied with their experience of "Doing the month", because their family gave them a large amount of support and helped them to have a good rest, women felt a sense of achievement when taking care of their baby, thinking positively and having an appreciative attitude towards old generations,

as the open question response indicated. By contrast, some women (23.0%) felt dissatisfied or strongly dissatisfied with the experience of "Doing the month", due to being tired of taboos, conflicts with their mother-in-law, the lack of family help and care, and undue expectation on "Doing the month".

In the multivariate analysis of MSE scores, the variables: social support scores, women's satisfaction with "Doing the month" scores, postnatal depression scores, maternal education, baby health scores, and maternal occupation had an influence on MSE scores at six weeks postnatally (Adjusted $R^2=0.510$, $F=46.084$, $P<0.01$); and the variables: postnatal depression scores, social support scores, baby health scores, women's satisfaction with "Doing the month" scores, and baby fussiness scores were the influencing factors of MSE scores at 12 weeks postnatally (Adjusted $R^2=0.485$, $F=41.082$, $P<0.01$).

Of these predictors, social support scores and women's satisfaction with "Doing the month" scores had a positive influence on MSE scores, and postpartum depression symptoms scores negatively affected MSE scores. Mothers who reported that they had a healthier baby tended to have a higher MSE score, and mothers who reported having a less fussy baby were more likely to have a higher MSE score. Mothers who had a university education level had a higher MSE score than those who had a middle school education level or lower, and mothers with a professional occupation had a higher MSE score than unemployed mothers. Other variables, including maternal age, family income, mode of birth and baby gender, were tested and found to have no statistically significant correlation with MSE scores in the results of the univariate and the multivariate analysis of MSE at six and 12 weeks postnatally.

Chapter Five Discussion Outline

5.1 Introduction

The aim of this study was to describe maternal self-efficacy (MSE) and to explore factors which may influence MSE in Chinese primiparous women in the first three months postnatally. The quantitative longitudinal study using questionnaires for data collection was carried out in Xiamen City, the South-eastern region of China, to answer the research questions. In Chapter Five, the findings from this study are critically assessed and discussed in comparison with those from other studies, and the theoretical framework, the results and methodological strengths and limitations of this study are also discussed.

5.2 Main findings discussion and comparison with other studies

In section 5.2.1, the generalisability of the sample in this study is discussed according to the comparison of the socio-demographic and clinical characteristics between the sample in this study and Chinese women. The kinds of parenting information and training sources that women reported and the factors which contributed to the participants still following the traditional practice of "Doing the month" and the effects of "Doing the month" are discussed in sections 5.2.2 and 5.2.3. In section 5.2.4, the mean MSE scores are compared with those from other studies, and some parenting tasks with higher MSE scores and some parenting tasks with lower MSE scores in this study are discussed. In section 5.2.5, the relationship between the predictive factors and MSE are analysed and discussed by comparison of the univariate and multivariate analysis results of MSE scores in this study with other related research findings.

5.2.1 Socio-demographic and clinical characteristics of participants

5.2.1.1 Maternal age

The mean age of women at the birth of their first child in this study was 27.28 years ($SD=3.22$), which was approximately one year older than the average maternal age (26.24 years) of Chinese first-time mothers on the sixth census in 2010 (Fu et al., 2013). It has been suggested that there is an increasing tendency for Chinese women to delay motherhood, because they are more likely to go to university and pursue a career. For instance, Chinese women tend to wait approximately an extra two years to have their first child compared with those one decade earlier, when the average age was 24.83 years (Fu et al., 2013). This phenomenon of later motherhood also happens in industrialised nations; for example, in 2012, the mean age of first-time mothers in the UK and Germany was 30.0 years (OECD, 2012). In this study, the maternal age varied significantly from 20 years to 42 years, and all participants were married women. According to the Marriage Law in China (2001), Article 6, "No marriage may be contracted before the man has reached 22 years of age and the woman 20 years of age. Late marriage and late childbirth shall be encouraged." Therefore, there was no woman younger than 20 years old in this study, and as a result, the findings in this study were not directly relevant to adolescent mothers.

5.2.1.2 Maternal educational level

In terms of the maternal educational level, the educational system in China is firstly introduced. Education in China is a state-run system of public education run by the Ministry of Education (Ministry of Education, China, 2013). All citizens must attend school for at least nine years, which is known as the nine-year compulsory education, completely funded by the government. It includes six years of primary education, starting at age six or seven, and three years of middle school for ages 12 to 15. After middle school, there are three years of

high school (academic secondary education) or vocational school (training for intermediate technical personnel), which then completes the secondary education. Higher education at the undergraduate level includes three or five years of college or university. Many colleges and universities also offer graduate programmes leading to either a Master's degree or a Ph.D. degree. Today, China has 2,790 universities and colleges, with over 33 million students enrolled in higher education (Ministry of Education, China, 2013). In this study, 61.3% of mothers had university or college education, which was consistent with the number of more than 60% of high school graduates in China who now attend a university or college; up from 20% in the 1980s (The New York Times—"The China Boom", 2010).

5.2.1.3 Employment and family income

In this study, approximately 80% of women were employed, which was slightly higher than the female nationwide employment rate of 74% for working age women (20—59) in China (ATTANÉ, 2012), 79% in the UK and 75% in the USA (The New York Times "China's Entrenched Gender Gap", 2013). The reason was possibly that the age of women in this study was 20 to 42 years, a larger proportion of which were employed than women in other working age groups (Population Census Office and National Bureau of Statistics of China, 2010). It is suggested that China also has experienced a high employment rate for the female labour force in comparison to the UK and USA (World Bank, 2006). There were 42.1% of women who had a family income of more than 5000 yuan/per month/per person; higher than the average family income of 4377 yuan/per month/per person in Xiamen City in 2012 (Statistic Office in Xiamen City of China, 2013). This may be attributed to the higher employment rate among women in this study.

5.2.1.4 Mode of birth

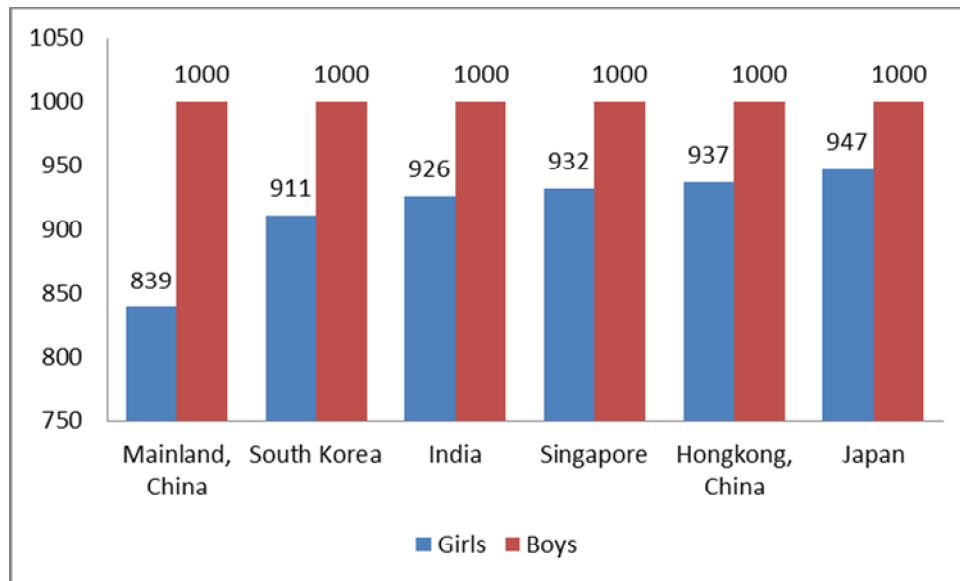
The average caesarean section rate in the three hospitals in this study was 28.8%, similar to the reported proportion in the UK (26%) (UNICEF, 2011b), but was lower than the average national rate of 36.0% in China in 2011 (UNICEF, 2014). China has experienced a dramatic increase in caesarean section rates in recent years. The caesarean "culture" in China began in the 1990s and rapidly spread from the wealthier to the poorer segments of society, particularly over the last decade (WHO, 2012a). Pregnant women's reluctance to have a normal vaginal birth was said to be influenced by wanting to avoid pain, having more trust in doctors rather than midwives, being older pregnant women or women with co-morbid illnesses and/or fertility problems (Gu et al., 2013). With a national rate of about 36% and a rapid rise in the country, cesarean section was described as a "national epidemic" in China, which provoked attention by the Chinese government (Lumbiganon et al., 2010; WHO, 2012a). As a result, the Chinese government asked hospitals to intervene to decrease the rate (Feng et al., 2014). For instance, in the three hospitals in this study, normal vaginal births were recommended by health professionals, and obstetricians took responsibility for avoiding unnecessary caesarean sections (those which are done without there being a medical indication). Although the caesarean section rate was still higher than the threshold of 15%, as the WHO (2009) suggested, the three hospitals did achieve an obviously lower caesarean section rate than the average national rate in China.

5.2.1.5 Baby gender

In this study, 55.3% of women had a baby boy, and the sex ratio at birth was 123.7 (the sex ratio at birth usually is represented by the number of boys per 100 girl babies or refers to the number of female live births per 1,000 male live births), which was slightly higher than the national sex ratio of 117.7 (54.0%

with a baby boy) at birth on the sixth census in 2010 in China (Population Census Office and National Bureau of Statistics of China, 2010). The sex ratio gap towards more boys than girls at birth is common in Asia, but this phenomenon is serious in China (Figure 5.1) (World Bank, 2010).

Figure 5.1 Sex ratio at birth: females per 1,000 males in some Asian countries (HelgiLibrary, 2010; World Bank, 2010)



Contemporarily, Chinese researchers do not have sufficient data to ascertain exactly the reasons for “missing girls”. However, the most likely cause of the skewed sex ratios at birth was the increasing use of antenatal sex determination and subsequent sex selective abortion in China (Chen et al., 2007). Evidence for sex selective abortions has been incomplete in China (Riley, 2004). Parents’ ability to determine the sex of a foetus was bolstered by the increasing availability of ultrasound B machines (Chen et al., 2007). Even though detection of the sex of a foetus using ultrasound was prohibited by the Chinese government, many parents tried to escape the government’s regulations because of the strong desire for a boy within the “one-child policy” (Chen et al., 2007).

Preference for a son has a long history in China and is tied to the social and economic roles of males in Chinese families. Family lineage is traced through

males, and sons are responsible for caring for their parents in old age (Chen et al., 2007). Marriage practices reflect these traditions. When daughters marry, they leave their birth families to join their husbands' families (Riley, 2004). In rural areas, aging parents depend on their children for support as few of them have retirement pensions. Traditionally, daughters have married out of the family, and a couple who have no son may result in having neither any financial nor any personal support (Riley, 2004). Therefore, the "one-child policy" stipulates that rural couples are allowed to have a second child if the first child is a girl, but married, urban couples only have one child. Many Chinese citizens want at least one son owing to the preference for sons (Riley, 2004). That is the main reason for the skewed sex ratio gap in this study and in China.

5.2.1.6 Summary

The 416 participants in this study recruited from various backgrounds, had much more similar socio-demographic and clinical characteristics to Chinese women, compared with other studies' samples in the mainland of China that focused on well-educated, employed women (Zang & Shen, 2010; Gao et al., 2012, 2014) (Table 5.1).

Table 5.1 Comparison of socio-demographic and clinical characteristics among groups of Chinese women, the sample in this study, and other studies' samples in the mainland of China

Variables	*Chinese women	Sample in this study	Zang & Shen (2010)	Gao et al. (2012,2014)
Maternal age (years) (Birth of the first child)	26	27	30	28
Well-educated women (%) (University level or higher)	60.0	61.3	89.8	84.5
Employed women (%)	74.0	80.0	90.5	100.0
Women with a boy (%)	54.0	55.3	52.4	53.6
Caesarean section (%)	36.0	28.8	48.3	51.5

** Numbers and percentages were from the average national rate of Chinese women.*

Although women in this study had a decreased caesarean section rate (28.8%), compared with the average rates of Chinese women (36.0%), it could not negatively affect the generalisation of the research results, because this study's results showed that the mode of delivery did not influence MSE scores at the two time points. Therefore, the sample in this study had a positive representativeness in the features of Chinese women.

5.2.2 Sources of parenting information and training

5.2.2.1 Family or friends

In this study, family or friends (64.4%) were reported as the most frequent parenting source for women. It was consistent with the findings of Berkule-Silberman et al. (2010) describing that family and friends were the most common important parenting source, followed by print media and health care-related sources. This result highlighted the benefit of support from family and friends to Chinese women's maternal role competence, adhering to Chinese family values.

Throughout 5,000 years of history, family has been considered the basis of Chinese society (Zang & Shen, 2010). Although Western lifestyles have been adopted more or less in recent years, the traditional family structure and values are reported to still hold a prominent position in contemporary China (China Daily, 2013). For instance, the elderly are respected and honoured, while young children are the focus of the family. When Chinese women were pregnant, they were willing to accept help from the other family members and their friends, especially from their mother and mother-in-law who had a wealth of experience in child-rearing (Zang & Shen, 2010). One survey in 2012 in China demonstrated that approximately a third of the Chinese population still lived in multi-generational families (Xu et al., 2013). Another study revealed that about 43%

of elderly persons aged 60 and above lived with their child, with the proportion being higher in rural areas than in urban areas of China (Lei et al., 2013). Obviously, this kind of extended family offers convenience for parturient women to obtain support. Therefore, as the most frequently used parenting source for parenting, women's family members or friends could play their important roles in the improvement of Chinese primiparous women's MSE levels.

5.2.2.2 Internet, books or magazines, and TV

Internet (61.8%) and books or magazines (55.8%) were also important sources for women to obtain parenting information in this study. It showed that the "mass media" played a role in parenting education. From the 1990s, there has been an increase in information and advice about child-rearing from books and magazines to television (TV) and the internet (Simpson, 1998). Many parents have a high level of interest in these information sources that are easily accessible for a broad range of parenting topics. However, a great deal of parenting information in the media was not consistent, and even contradictory to other sources, and may make parents confused (Simpson, 1998). For example, one mother interviewed by Ngai et al. (2011) explained that *"For my child's facial rash, I had searched the internet and asked many people for advice including my family members and health professionals. However, there was conflicting advice.... I did not have the confidence because I did not have the knowledge to solve the problem."* (p.1485). TV accounted for 18.3% in this study, which demonstrated that TV has been regarded as a source of influence on supporting and informing parents.

5.2.2.3 Health professionals

In this study, 53.4% of women stated health professionals as a source of parenting information, and indicated the important role of health professionals as "experts" in improving Chinese women's parenting confidence. Infant rearing

is a huge responsibility for women which is extremely difficult without some health professionals' professional advice at one point in time or the other (Zang & Shen, 2010). Therefore, parenting training such as antenatal education and postnatal education conducted by health professionals in the hospitals should be accessible to every Chinese parturient woman and provide them with important and professional parenting information (Zang & Shen, 2010). However, 17.3% of women had attended postnatal education at the hospital, and 55.8% of women had attended antenatal education. This result indicated that the parenting training in the three study settings was not frequently used as other sources. There were two main factors possibly contributing to this problem:

Firstly, limited time has been identified as the main impediment for parenting training being conducted principally by obstetric nurses during parturient women's hospitalisation (Zhu et al., 2012). Obstetric nurses gave their priority to clinical duties as their workload was extremely heavy, owing to nursing shortages. When faced with issues of time availability, a number of nursing tasks, such as health education, that were relevant to good nursing care were left undone (Zhu et al., 2012). In China, there was an average of 2.05 nurses per 1,000 people, and the ratio of nurses to doctors in hospitals was, on average, 0.99:1 in 2013 (UNICEF, 2014). By contrast, in the UK, there was an average of 9.70 nurses per 1,000 people, and the ratio of nurses to doctors in UK hospitals averages was, on average, 3.60:1 in 2010 (OECD, 2011).

Secondly, the most common method of parenting training carried out was oral explanations in the form of one-to-one consultation or group discussion in the three hospitals. However, evidence from other studies (Kenny et al., 1998) stated that this oral method of providing information was more likely to be forgotten or misunderstood. Kenny et al. (1998) demonstrated that adult patients forget about half of what they have been told within five minutes of leaving the consultation on average. Generally, people may only remember

approximately 20% of what they hear; and if there is additional visual or written input, the proportion may increase to 50% (Kenny et al., 1998). Thus, parenting education can be conducted in other various approaches to help deliver information in a potentially more efficient and interesting way, such as written materials, audio-visual media, or combinations of some or all of these (Roth-Isigkeit et al., 2002; Van Zuuren et al., 2006). Written information such as leaflets offered more advantages than other teaching media as it was reusable and readable at any time as well as easy to reproduce and distribute (Lewis & Newton, 2006). As an important source of education information, leaflets have had a long history in health care in Western countries, and have been the most cost-effective and time-efficient means of communicating health information for patients (Semple & McGowan, 2002).

The provision of leaflets, in combination with oral information to patients, may be one of the effective methods in health education (Stern & Lockwood, 2005). Therefore, in consideration of the heavy workload of clinical nurses and the single oral way used in the three hospitals, the introduction of using leaflets is strongly recommended by the researcher in these clinical settings in the future to improve the outcomes of parenting training.

5.2.2.4 Summary

As more than half of the participants reported, family or friends, internet, books or magazines, and health professionals were regarded as the important parenting information sources used by primiparous women in this study. Compared with the mass media, which is more likely to be managed difficultly, women's family members, friends and health professionals as the informal and formal social network of women (Schumaker & Brownell, 1984) could make a greater contribution to supplying women with various parenting information. Whilst, the utilisation of parenting training in this study was not as positive as expected, owing to the heavy workload of obstetric nurses and the single

training approach of oral explanation. Therefore, in consideration of feasibility, leaflets are recommended to be researched in further studies to examine whether they could increase the effects of parenting training by obstetric nurses for the increase of Chinese women's MSE levels.

5.2.3 "Doing the month"

5.2.3.1 Tradition vs modernisation of "Doing the month"

In this study, 91.4% of women thought that "Doing the month" was necessary after labour and followed it on their own initiative, and 8.6% of women described they had to follow "Doing the month" because their mother-in-law or mother thought that it was necessary. The results demonstrated that the traditional practice of "Doing the month" was still prevailing in modern society of China, which was consistent with the other research findings in China (Raven et al., 2007; Wang et al., 2009a). For example, Wang et al. (2009a) reported that most Chinese women in the mainland adhered to these practices. Among these women, 99% did not do any heavy work or exercise, 98% did not touch cold water, and more than 90% of the women didn't eat any "cold" food during the period of "Doing the month" (Wang et al., 2009a). Lee et al. (1998) found that 90% of Hong Kong Chinese followed the traditional practice of "Doing the month", which was the case in Taiwan. Even for immigrant Chinese women in Western countries, 90.2% of the women had followed some forms of practice and all of them interviewed believed in the necessity and health value of "Doing the month" (Matthey et al., 2002). Three factors have been identified that may explain why Chinese women still follow these traditional practices, despite China's modernisation.

Firstly, one reason is the respect for tradition and following the advice of elders (Raven et al., 2007). Previous research has suggested that a woman's mother or

mother-in-law was regarded as the person who “checked-up” on whether the new mother was adhering to these practices (Matthey et al., 2002). Older women, particularly mothers/mothers-in-law, have significant power and are a major influence on the postnatal care of new mothers, as Chinese people highly value harmony in family with deference to the older generation (Leung et al., 2005).

Secondly, because the woman and/or her husband desire “Doing the month”, regardless of whether they actually live with parents or in-laws (Matthey et al., 2002). There is widespread emphasis that “Doing the month” properly will safeguard women’s future health (Raven et al., 2007). As one husband explained that *“Some women have good health, but they do not do the postnatal period well, and their health becomes poor. Other women with poor health do the postnatal period well and their health becomes better. It is a period of great change, so we do not want to take any risk.”* (Raven et al., 2007, p.4)

Thirdly, “Doing the month” is well supported by modern society in China. Even though modern Chinese women receive formal scientific and modern education, they have been exposed to traditional cultural practices. In fact, lessons on the importance of “Doing the month” are commenced at a young age for all children through traditional Chinese medicine that teaches the idea of balancing the Yin-Yang elements in the body. This informal education is reinforced by information obtained through the media (Chin et al., 2010). Moreover, the Law of Special Provisions on Labour Protection of Female Employees states that Chinese women are given 98 days of paid maternity leave from their jobs (State Council of China, 2012), which provides enough time for Chinese women to carry out the practice of “Doing the month”. In contrast, it is much less than 52 weeks’ maternal leave (up to 39 weeks of having Statutory Maternity Pay) offered in the UK (Government of UK, 2014).

It is necessary to state that even though modern Chinese women follow the ritual of "Doing the month", they do adapt some of the practices with social development (Raven et al., 2007). For example, it was traditionally believed that brushing teeth during this period would make teeth loose and gums bleed. However, with the development of medicine, this practice was abandoned because it proved quite harmful to dental hygiene (Wang et al., 2009a). By contrast, women can use a soft brush with hot water to make it softer. Furthermore, another traditional belief is that mothers should lie in bed for the whole month, preventing future illnesses by keeping out of the wind. However, most women and husbands felt that this was not necessary, taking the modern environment into account (Raven et al., 2007).

5.2.3.2 Effects of the practices of "Doing the month"

According to health professionals' judgement in the previous studies (Raven et al., 2007), some practices of "Doing the month" are beneficial, such as eating protein-rich food, avoiding heavy housework, and having a good rest; some practices have no obvious effect on health, such as not having a bath or washing hair and staying inside the home (see Table 1.2, Page 19). However, the harmful practice of supplementary feeding of breastfed infants should be highlighted. As a dynamic process of balance governed by the natural law of Yin-Yang theory in China, breastfeeding practice is the action in harmony with healthy living for women and infants (Chen, 2010). Therefore, "Doing the month" emphasises breastfeeding is best; however, it also notes that giving infants supplementary feeds is necessary (Raven et al., 2007). The main reasons for supplementary breastfeeding were as follows: a perception of insufficient breast milk; an incorrect idea about giving the infant more nutrition by supplementary feeding; the family feeding the baby when the mother went out or returned to work; breast problems and breastfeeding for a prolonged period possibly making the mother too tired (Chan et al., 2000; Xu et al., 2009).

The introduction of supplementary feeding to infants in their first few months has had a long history in China and this tradition can be traced as far back as the Sui Dynasty (581–618 AD) of China (Hsiung, 1995). One report in the Sui Dynasty described that one month after a child is born, he should be given some foods in the amount of two dates, after 50 days, in the amount of a cherry or two (Hsiung, 1995). Medical authorities in the Tang Dynasty (618–907 AD) thought that an infant should be offered a rice drink after one week of birth. In addition, Sheng Chiching, a renowned scholar in the Song Dynasty (960–1276 AD), also recommended that foods should be given to an infant from 30 days after birth, such as sweet water and very runny rice stew (Hsiung, 1995).

Even contemporarily, these non-evidenced based traditional perceptions still adversely affect the rate and duration of exclusive breastfeeding (that is the infant only receives breast milk without any additional food or drink, not even water) in China (Raven et al., 2007), especially when the infant formula has been introduced (Chen & Hu, 1998; Raven et al., 2007). From 2008 to 2012 in China, the exclusive breastfeeding rate during the initial six months postnatally was only 27.7% (UNICEF, 2013b). Li et al. (2003) described that many women gave milk powder or water to their infant during the first three days and continued to supplement breastfeeding with formula throughout the postnatal period. One husband interviewed by Raven et al. (2007) said: *"I think mixed feeding is very good and can provide balanced nutrition for the baby. The baby may lack something if he is only breastfed. Milk powder has other nutrients. But the milk powder is not as fresh or natural as breast milk"* (p.8). Xu et al. (2009) stated that some Chinese parents thought that the baby should discontinue breastfeeding before 12 months. The 2012 National Nutrition and Health Survey in China demonstrated that the first food of 48.8% of babies (n=6858), 38.8% from urban areas and 53.1% from rural areas, was sugar water (Lai et al., 2006). In this study, 52.1% (134/257) and 44.6% (74/166) of women self-

reported through text message that their infants were fed by breast milk with some water, juice or infant formula at six and 12 weeks postnatally. These results highlighted the importance of understanding Chinese cultural effects on childrearing.

By contrast, the WHO (2002b, 2014b) describes breastfeeding as “one of the most effective ways” in which to ensure child health and survival, to aid involution of the uterus and promote a close relationship between a mother and her baby, recommending exclusive breastfeeding for a baby up to the age of six months. Likewise, exclusive breastfeeding is recommended for around the first six months (26 weeks) of a baby's life by the NHS (National Health Service) in the UK (NHS, 2014). According to the 2008 Lancet Nutrition Series (Black et al., 2008), exclusive breastfeeding for the first six months of life can have the single largest impact on child survival of all internationally preventive interventions, with the potential to prevent 12–13% of all under-5 deaths in the developing world, or 1.4 million lives. It also stated that an exclusively breastfed child was 14 times less likely to die in the first six months than a non-breastfed child, and exclusive breastfeeding drastically decreased deaths from acute respiratory infection and diarrhoea, two major child killers (Black et al., 2008). During the first six months, the infection rates were lower for exclusively breastfed infants than for partially breastfed babies (Arifeen et al., 2001).

Therefore, the traditional belief of “Doing the month” in supplementary feeding of breastfed infants needs to be challenged by health professionals; and health education by health professionals towards the correction of this incorrect traditional perception should be researched for postnatal women and their family members to effectively improve the exclusive breastfeeding rate in China.

5.2.3.3 Summary

It was shown in this study that “Doing the month” was still popular in modern Chinese society. Some practices of “Doing the month” were beneficial for the wellbeing of postnatal women. However, the practice in supplementary feeding of breastfed infants was harmful for the child health.

5.2.4 MSE

5.2.4.1 Comparison with other studies in terms of the mean MSE score and its four dimensions scores

In this study, the mean MSE score at six weeks postnatally was 74.92 (SD=11.05) (range of score: 0–100, with a higher score representing a higher level of MSE), and was 77.78 (SD=11.13) at 12 weeks postnatally, demonstrating that the sample of Chinese women had a moderate MSE level at the two time points. It was comparatively lower than the MSE score of 80.02 (SD=11.70) in a sample of Thai postnatal mothers (Prasopkittikun et al., 2006), and the MSE scores of 80.44 (SD=11.76) and 83.86 (SD=10.45) at the two time points in a sample of Chinese women in Beijing (Zang & Shen, 2010) when using the same MSE measurement of SICS (Self-efficacy in Infant Care Scale). This result implied that the Chinese mothers in this study had a lower level of MSE than mothers in Thailand and in Beijing, China.

This may be related to the different study samples of the three studies. For example, the sample in the research by Prasopkittikun et al. (2006) in Thailand included not only primiparous women but also multiparous women. Some researchers in various countries found that multiparous mothers had a higher MSE score in newborn care than primiparous women (Green & Rodgers, 2001; Shorey et al., 2014a). Another sample of Zang & Shen (2010) in Beijing was only limited to well-educated women, with higher incomes in affluent areas. For

instance, approximately 89.8% of the participants in Beijing had a University degree or higher (Zang & Shen, 2010); however, in this study, women from all backgrounds were included and only 64.6% of the participants had tertiary education. The previous studies found that mothers with a higher educational level had a higher MSE score (Jackson, 2000; Green & Rodgers, 2001), and this study results also concurred.

Other research in different countries used various tools to measure MSE, which definitely made comparison difficult and limited their generalisability (Tables 2.6, 2.7, Chapter Two Literature Review). In consideration of the MSE scores and its score range, the results in different countries suggested that women in some Western countries such as in the UK (Whittaker & Cowley, 2012), the USA (Leerkes & Crockenber, 2002; Porter & Hsu, 2003; Holland et al., 2011; Fulton et al., 2012), Finland (Salonen et al., 2009) and Canada (Pierce et al., 2010) had a high MSE level. By contrast, women in Singapore (Shorey et al., 2014a), Switzerland (Bolten et al., 2012) and Australia (Haslam et al., 2006; Dunning & Giallo, 2012) had a moderate MSE level, like the sample of Chinese women in this study.

By comparison at the two time points, the mean MSE scores and the dimension scores of developmental promotion and general health care in this study had a statistically significant increase from six to 12 weeks postnatally ($p < 0.001$) (Table 4.7). For instance, the scores on "question 9 understanding what my baby's different cries mean", "question 10 getting my baby to smile or laugh", "question 11 understanding what my baby likes or dislikes", and "question 13 reading my baby's gesture of what s/he wants or needs", relating to the developmental promotion dimension, raised from 63.62 to 71.61, from 82.61 to 86.64, from 68.50 to 76.23 and from 70.03 to 75.61, respectively, at the two time points. For the general health care dimension, the scores on "question 16 giving mouth care to my baby every day" and "question 23 understanding the

differences between vomiting and milk spitting" improved from 51.21 to 56.71 and from 70.76 to 76.14, respectively. These results were consistent with the research findings undertaken in Beijing, China (Zang & Shen, 2010). Despite using a different MSE tool, researchers also found that there was a statistically significant increase in MSE scores from six weeks to 12 weeks postnatally for Chinese women in Hong Kong (Ngai & Chan, 2012) and Guangzhou (Gao et al., 2012, 2014). The findings of Hudson et al. (2001) and Porter & Hsu (2003) likewise demonstrated that American women's MSE scores significantly increased from four weeks to 12 weeks postnatally.

Several factors may have contributed to the increase of MSE scores over time. Firstly, the increase in women's perception of MSE level was potentially tied to the increasing childcare experience supported by Bandura's theory (1997b), because first-time mothers were repeatedly engaged in the caregiving process as time went on, and these routines were possibly becoming more familiar to them. Therefore women may have had more opportunities to gain positive feedback and reinforcement, and then begin to feel more successful and confident in their abilities of taking care of a baby (Porter & Hsu, 2003). Secondly, it may be due to a mother feeling healthier and recovering physically from the birth process after the period of "Doing the month" (Fulton et al., 2012). Thirdly, it was possibly related to the increased sociability and manageability with the onset of social smiles and self-quieting abilities of babies from eight to 12 weeks postnatally (Zang & Shen, 2010). Fogel (1982) has shown that infants' social smiles increased fourfold from the second to the sixth month of life, which allowed mothers to become more sensitive and attached to their baby. With these infants' positive changes, coupled with the developing mother-infant relationship, women may have found it easier to read and respond to their infant's cues and possibly made positive assessments relative to

their sense of mothering effectiveness during the first few months postnatally (Fogel et al., 2000).

By contrast, the other dimension scores of safety and diet rose slightly; and there was no statistically significant difference between the two time points. A possible explanation for this may be that the two dimensions only related to the simple tasks of nurturing babies, such as cleaning utensils correctly. Mothers already had great capability and confidence in these simple parenting tasks and mastered these parenting skills at six weeks postnatally. For example, the safety score was 90.18 (SD=10.22) and the diet score was 81.98 (SD=11.83) at this time point. Therefore, with the passage of time, women still maintained the high level of MSE in the two dimensions at 12 weeks postnatally.

The above sections discussed the statistically significant increase ($t=7.214$, $P=0.000$) in mean MSE scores from 74.60 (SD=12.09) to 77.78 (SD=11.13) at the two time points. However, the statistically significant difference between the test scores sometimes could be obtained even when the actual difference between the scores was very small (Matthey, 2004). Therefore, the more important question is whether the improvement in MSE scores was large enough to have an important health effect. Unfortunately, so far, there has been no related information and evidence. It needs to be discussed through a consultation process by experts in the future or be researched by further studies to assess how many scores of MSE increased could be have an important clinical or health significance for primiparous women.

5.2.4.2 Some parenting tasks with higher MSE scores and some parenting tasks with lower MSE scores

In this study, the SICS (the domain-specific MSE tool focusing on all of the tasks of different domains of parenting function, see Table 2.4, Page 52) provided different, but helpful insights into the mothers' parenting self-efficacy. The

advantages of this tool are that it not only applies the experiences related to the general MSE, but also refers to the different self-efficacy on specific baby care tasks. For example, the mean MSE score in this study suggested that the sample of Chinese women had a moderate level of general parenting self-efficacy. Meanwhile the SICS items' scores (in Appendices 6 and 7) implied that these women had more confidence and ability in some parenting tasks, whilst being less sure of their capability in particular parenting areas. By using SICS to assess mothers' judgments of their capability of parenting infants, obstetric nurses could base on the effective evidence such as some parenting tasking with lower MSE scores to give women clear guidance on methods for developing their maternal role competence (Prasopkittikun & Tilokskulchai, 2010). These parenting tasks with higher MSE scores and lower MSE scores for Chinese women in this study are discussed in the following sections.

(1) Parenting tasks with higher MSE scores

At the two time points, the mean scores on "question 33 gently refusing my baby when s/he insists on playing a harmful toy or staying in a dangerous place" and "question 35 holding my baby firmly while bathing or feeding him/her" were approximately 91.00, the highest score in the SICS. The other scores on "question 31 protecting my baby from cigarette smoke", "question 32 protecting my baby from getting close to a person having a cold", "question 34 making the home environment safe for my baby", and "question 36 providing safe toys for my baby" were all higher than or almost equal to 90.00. The above six items with higher scores consisting of the safety dimension, demonstrated that women in this study had a comparatively greater self-efficacy in parenting tasks related to keeping a baby safe compared with other tasks. This result was consistent with the findings of Zang & Shen (2010), a study which was undertaken in Beijing (the scores of almost 90.00–91.00), and much higher than the related scores of Thai women (approximately 80.00) (Prasopkittikun et al., 2006;

Prasopkittikun & Tilokskulchai, 2010). This may be due to the "one-child policy" conducted in China, because the only child in one family is much more precious to Chinese mothers, and they are possibly extremely vigilant around the baby safety issues.

Furthermore, in the developmental promotion dimension, there were five items of "question 2 providing toys or singing a song to my baby", "question 6 playing with my baby every day though I am very busy", "question 8 allowing my baby to do what s/he is trying to do before offering a help", "question 12 showing affection to my baby every day", and "question 14 speaking to and making eye-to-eye contact with my baby during breast or bottle feeding", scored higher than 85.00 or approximately equal with 85.00 at six and 12 weeks postnatally. These five items with high MSE scores demonstrated that women in this study had good interaction with their infant, such as playing, verbalising and maintaining eye contact; and showed positive, affirming affection and great patience with their baby. In the diet dimension, scores on "question 37 selecting formula that is appropriate for my baby's age", "question 38 cleaning utensils correctly", "question 39 managing a regular meal for my baby when s/he is 6 months old", and "question 40 managing three regular meals for my baby when s/he is 12 months old", also were approximately 90.00. It implied that women mastered some food preparation skills and thought that they could have great confidence in supplying nutrition for babies when their children grew up. However, whether women had this greater self-efficacy in managing regular meals for their baby when s/he was six and 12 months old, as expected at these time points, would need to be researched in further studies, as this study only followed up with women to 12 weeks postnatally.

(2) Parenting tasks with lower MSE scores

There was one item in the diet dimension which had a relatively low MSE score for “giving the baby breast milk even I am not at home”. The item scores at the two time points were only 57.85 (SD=29.93) and 61.05 (SD=31.23), suggesting that women had low confidence in maintaining exclusive breastfeeding when they were outside or returning to work. It was consistent with the previous research findings conducted in China (Zang & Shen, 2010) and Thailand (Prasopkittikun & Tilokskulchai, 2010). This result was also supported by the low exclusive breastfeeding rate (28%) in China during the initial six months postnatally (UNICEF, 2013). Under Chinese legislation, employed mothers have the right to 98 days of paid maternity leave (State Council of China, 2012). However, when mothers returned to work, they would begin to initiate formula feeding and/or add complementary food, even though the technique of expressing breast-milk, for example by using a high-quality electric breast pump to express milk during the workday, had been taught before discharge from the hospital. Therefore, these women’s lower MSE levels in terms of maintaining exclusive breastfeeding when they were outside or returning to work need to be improved.

The items scores in the general health care dimension were comparatively lower in comparison with others, and the five SICS items with the lowest scores were all within this dimension. For instance, scores on “question 29 giving first aid to my baby when there is an object blocking her/his throat or nostrils” and “question 28 giving proper care when my baby has a seizure” were only approximately 38.00 at six weeks postnatally, and 49.00 at 12 weeks postnatally. About 25% of the women gave a score of zero in the two items at the two time points. The other items of “question 30 giving proper care to prevent suffocation when my baby is vomiting”, and “question 17 using a suction bulb correctly when my baby has phlegm” had scores of less than 55.00. These

results meant that mothers in this study had little or no confidence in emergency care tasks, such as first aid for choking, seizure and tracheal foreign body. Thus the lower MSE levels in emergency care tasks need to be increased for these primiparous women.

In addition, women also had low MSE scores in the other items of general health care. For example, scores on "question 16 giving mouth care to my baby every day", "question 21 deciding when I should give my baby a tepid sponge when s/he has a fever", "question 22 relieving my baby's gas pain", and "question 27 giving help when my baby is constipated" were 60.00 or less; and scores on "question 18 giving my baby medication without choking her/him", "question 24 understanding whether my baby's bowel movements are normal", "question 25 giving proper care when my baby gets mild diarrhoea", and "question 26 deciding whether my baby with diarrhoea should see a doctor" were less than or about 70.00 at the two time points. These results demonstrated that women were less sure of their capability in taking care of their baby when he/she suffered from some common diseases, such as diarrhoea, constipation and fever, and these lower MSE levels for recognition and management of some diseases need to be improved.

Compared to other dimensions in SICS, the general health care, including emergency care and some diseases care, needed more professional input from health professionals to allow women to conduct these parenting tasks successfully (Zang & Shen, 2010). Therefore, obstetric nurses could be the best resource for Chinese primiparous women to acquire this kind of professional parenting information, as health education and parenting training during women's hospitalisation are conducted by obstetric nurses in China (Zang & Shen, 2010). However, 46.6% of the women in this study did not state "health professionals" as a source of parenting information, which supported the findings of lower MSE scores in this dimension for these women. Moreover, parenting

training from the three hospitals in this study had little content on professional health care for baby common ailments, and did not include any emergency care knowledge, such as first aid for choking, seizure and tracheal foreign body. In aim of good insights into mothers' parenting self-efficacy, the researcher recommended that obstetric nurses could assess mothers' MSE levels in various parenting tasks by the tool of SICS, and then improve their maternal role competence in some parenting tasks with lower MSE scores through the provision of the related parenting information for Chinese women and their family members.

5.2.4.3 Summary

In this study, the mean MSE scores demonstrated that the sample of Chinese women had a moderate level of general parenting self-efficacy. Comparing the scores at the two time points, the mean MSE scores and its dimension scores of developmental promotion and general health care had a statistically significant increase from six weeks to 12 weeks postnatally. However, whether the improvement on MSE scores has health effect needs to be researched in the future prior to making recommendations for clinical practice. The SICS items' mean scores implied that these women had more confidence in some parenting tasks such as keeping baby safe, nutrition, and having good interaction with their infants. Whilst other items' mean scores suggested that women were not successful in continuing breastfeeding on return to work or when they were outside, and were less sure of their capability in particular parenting areas, such as some common ailments (diarrhoea, constipation and fever) and emergency care (first aid for choking, seizure and tracheal foreign body).

In consideration of these parenting tasks with a low MSE score for Chinese primiparous women in this study, there is an identified need for alterations of the current parenting training offered in hospital settings. New parenting training

by obstetric nurses should be ensured to include parenting information for management of baby common ailments, emergency care, and keeping exclusive breastfeeding when women return to work to improve the relatively low MSE levels for Chinese primiparous women. Furthermore, in consideration of the two impediments for conducting parenting training in the three hospitals, such as the heavy workload of clinical nurses and the single oral way used (section 5.2.2.3, Pages 200–202), leaflets are recommended to be researched in further studies to examine whether they could increase the effects of parenting training for the increase of Chinese women’s MSE levels.

5.2.5 Analysis of factors which potentially influenced MSE

5.2.5.1 Maternal age

In this study, there was no statistically significant relationship between maternal age and the mean MSE scores at the two time points, which was in agreement with the results of other studies undertaken in the USA (Porter & Hsu, 2003) and Finland (Salonen et al., 2009), demonstrating that whether mothers were younger or older did not affect their MSE levels on parenting the baby. However, these findings run somewhat contrary to previous research that has shown either a decreased (Ngai & Chan, 2012; Shorey et al., 2014a) or increased MSE score (Tarkka, 2003; Shorey et al., 2014b) among younger mothers compared to older mothers during the eight months postnatally. The discrepancy, though, is possibly accounted for by the use of differing MSE measurements or focusing on differing samples, such as primiparous women and/or multiparous women in these studies conducted in different countries, such as in the USA, Finland, and Singapore.

5.2.5.2 Educational level

Different educational levels of mothers in this study had an influence on MSE scores at six weeks postnatally, as shown in the univariate and multivariate analysis results. Mothers with a higher educational level had a higher mean MSE score and higher scores on its four dimensions, which was consistent with the results of previous studies undertaken in Western countries (Cutrona & Troutma, 1986; Jackson, 2000; Green & Rodgers, 2001). This may be due to higher education enhancing the acquisition and use of health knowledge (Mostafavi, 2009), so that women with a university degree or higher were predisposed to learning and seeking more knowledge and information about infant care than were women with a high or middle school degree during the period of pregnancy and postnatal period. Furthermore, the furtherance of education could be assumed to empower women to make better decisions about many baby parenting tasks such as basic hygiene and nutrition (Currie & Moretti, 2003).

By contrast, other research showed that maternal education was not associated with MSE scores for Singaporean mothers from the first to third days postnatally (Shorey et al., 2014b), and for Chinese women in Beijing (Zang & Shen, 2010) and Guangzhou (Gao et al., 2014) at six weeks postnatally. The probable reason for the inconsistent results was that these three studies only focused on well-educated women. For example, most of the three studies' samples (more than 82%) had at least a university educational level (Zang & Shen, 2010; Gao et al., 2014; Shorey et al., 2014b), which may have made it impossible to distinguish the difference of MSE scores among the imbalanced and skewed education level groups. In addition, another study conducted in Singapore reported that highly educated mothers had a lower MSE score on the first to third days postnatally compared with poorly educated women (Shorey et al., 2014a). It was explained by Shorey et al. (2014a) that most of the well-educated women were more likely to be employed; and these employed mothers might have spent less time on

taking care of their babies than did mothers who stayed at home. Having less first-hand experience of newborn-care could have decreased their MSE in performing various parenting tasks.

The interesting finding in this study was that as time went on, women with a higher educational level did not have statistically significantly higher scores on MSE and on the two dimensions of general health care and safety at 12 weeks postnatally. This result also was supported by the multivariate analysis result in which maternal education only remained in the multiple linear regression model at six weeks postnatally, but not in the regression model at 12 weeks postnatally. This demonstrated that maternal education did affect MSE, but only in the short term, not in the longer term. For instance, the advantages of women with a higher educational level on MSE (such as the better acquisition and use of parenting knowledge) would disappear as women with different educational levels acquired increasing childcare experiences and information with the passage of time. This was congruent with the research findings with a longer follow up, wherein maternal education had no statistically significant association with MSE at six months postnatally for women in Hong Kong (Ngai & Chan, 2012) and at eight months postnatally for women in Finland (Tarkka, 2003). In addition, in this study, 69.4% (236/340) of employed women were well-educated and 30.6% (104/340) were poorly educated, and the difference in employment rates between the two educational levels groups was statistically significant (X^2 test, $P < 0.001$). The results indicated that these well-educated mothers were more likely to be employed and needed to return to work at 12 weeks postnatally; thus they spent less time on parenting babies than poorly educated, unemployed women, which possibly impeded their maternal role competence (Shorey et al., 2014a). Thus, the conclusion could be drawn that the maternal educational level affected MSE at six weeks postnatally, but not in the long term, such as at 12 weeks postnatally.

5.2.5.3 Maternal occupation

The findings presented in this study demonstrated that different maternal occupations affected the mean MSE score and the scores on the four dimensions at six weeks postnatally. For example, mothers with professional work had a significantly higher mean MSE score than mothers with a skilled job, unemployed mothers, and mothers with an unskilled occupation. Other studies conducted in Western countries had similar findings, wherein mothers with professional work had a relatively high MSE level compared with mothers with casual work (Koniak-Griffin et al., 2006); and employed mothers had greater MSE than unemployed mothers (Jackson, 2000). There were two factors that may have contributed to this. Firstly, mothers with an unskilled job or unemployed mothers were more likely to lack parenting knowledge and skills because of their comparatively lower educational levels in comparison with women with professional work or a skilled job (X^2 test, $P < 0.001$). Secondly, unemployed mothers may have acquired less help than ones with professional or skilled work, such as supports from the workplace and colleagues, which affecting their perceived parenting competence (Jackson, 2000; Koniak-Griffin et al., 2006).

However, this result was in contrast with some previous research (Zang & Shen, 2010; Shorey et al., 2014 a; Gao et al., 2014). For example, a study by Shorey et al. (2014a) undertaken in Singapore found that employed mothers had a lower MSE score on new baby care compared with unemployed ones on the first to third days postnatally, as employed women might have had less previous experience in parenting, which negatively affected their MSE scores. In the study by Shorey et al. (2014a), not only primiparous women but also multiparous women were included. By contrast, in this study, only first-time women were recruited, so that these first-time mothers with different occupations had no differences in previous first-hand parenting experience either. Therefore, the

results discrepancy may be accounted for by the different samples of the two studies. Moreover, the research by Zang & Shen (2010) and Gao et al. (2014) conducted in Beijing and Guangzhou of China indicated that MSE was not associated with the maternal occupation at six weeks postnatally. The explanations for the inconsistent results with this study were possibly that the study conducted by Zang & Shen (2010) only focused on the differences in MSE scores between employed mothers and unemployed mothers, and only 9.5% of the participants were unemployed which made it difficult to distinguish MSE scores between the two imbalanced occupational groups. The study by Gao et al. (2014) had a small sample size (96), and all participants in that study were employed mothers.

The other interesting finding of this study was that although mothers having a professional occupation still had a statistically significantly higher mean MSE score compared with mothers with a skilled occupation and unemployed mothers at 12 weeks postnatally, the maternal occupation did not remain in the multiple linear regression model at this time point. This result implied that compared with other major influencing factors such as postnatal depression symptoms and social support, the maternal occupation did not have an important effect on MSE with the passage of time. A study by Ngai & Chan (2012) undertaken in Hong Kong also demonstrated that employment status was not associated with MSE at six months postnatally. Therefore, the conclusion could be drawn that the maternal occupation affected MSE at six weeks postnatally, but its influence on MSE decreased or even disappeared in the longer term, because women with different occupations had an increasing parenting experience and confidence in taking care of their baby with the passage of time.

5.2.5.4 Family income

Studies by Coleman & Karraker (2000) undertaken in the USA and by Holloway et al. (2006) undertaken in Japan found that higher income was associated with a higher MSE level for women with school age children. The research by Shorey et al. (2014b) conducted in Singapore demonstrated that a higher monthly household income was one predictor of higher MSE scores for first-time mothers with infants. Mothers with low family income often suffered from financial problems, which could have negatively affected their confidence and ability to perform parenting tasks. However, Shorey et al. (2014b) found that family income did not correlate with MSE scores; which was consistent with previous studies undertaken in various countries (Porter & Hsu, 2003; Zang & Shen, 2010; Ngai & Chan, 2012; Gao et al., 2014). According to the univariate and multivariate results in this study, family income did not affect MSE scores at the two time points, even though these women with a higher family income tended to have a higher educational level (X^2 test, $P < 0.001$) or be employed (X^2 test, $P < 0.05$).

These conflicting results could be attributed to the different familial social backgrounds. For example, the participants of the research by Holloway et al. (2006) had a heavy financial burden because they had at least two pre-school children and most of the mothers were unemployed. In contrast, almost 42.5% of the women in this study had a family income of more than 5,000 yuan per month, per person (the average family income level of 4,377 yuan per month, per person in Xiamen City) and all participants only had one child; so that they probably did not have any severe economic burden to suppress their maternal confidence. Therefore, family income did not affect MSE at six and 12 weeks postnatally in this study.

5.2.5.5 Mode of birth

The findings of this study suggested that the mode of birth did not impact on the mean MSE scores and the scores on its four dimensions at six and 12 weeks postnatally, which was consistent with the other studies undertaken in Finland (Salonen et al., 2009) and China (Zang & Shen, 2010; Gao et al., 2014). Mothers with a caesarean section were prone to having a worse emotional and physical state than women with a normal or assisted birth, possibly because of the operation wound pain and activity restrictions in few days after childbirth. These negative maternal physiological and emotional states may affect MSE postnatally during the short time (Bandura, 1997b).

However, in this study, mothers with a caesarean section could have made a recovery after the long period of six and 12 weeks postnatally, as indicated by Zang & Shen (2010). Or even though some women with a caesarean section did not recover very well and still experienced some uncomfortable physical feeling at the two time points, they were more likely to receive more support and care from their family members because of their operation than women with a normal birth, which could effectively eliminate the negative effect of an uncomfortable feeling on MSE levels (Zang & Shen, 2010). Thirdly, as described in section 5.2.1.4, many Chinese women preferred to have a caesarean section rather than a vaginal delivery (Gu et al., 2013); thus, they had good preparation and acceptability physically and mentally for the operation and its negative outcome, unlike some women in the UK who tended to have a caesarean section in emergency. Additionally, a study by Huang et al. (2012) demonstrated that there were no differences in women's quality of life in rural China between women with a normal vaginal birth and a caesarean section during the postnatal period. Thus, the mode of delivery was not an influencing factor of MSE for Chinese women in this study.

5.2.5.6 Whether women attended parenting training

In this study, women who had attended parenting training had a statistically significant higher mean MSE score and scores on its three dimensions than women without training at six and 12 weeks postnatally, which was consistent with the study findings of Zang & Shen (2010). These findings highlighted the importance of parenting training from hospitals for the sample of Chinese primiparous women to improve their MSE levels by teaching them some parenting skills and information. However, this variable did not enter the multiple linear regression model of MSE at the two time points; showing whether women had attended parenting training did not affect MSE scores so much in comparison with other important influencing factors of MSE, such as postnatal depression symptoms and social support. The multivariate analysis result indicated that the outcome of attending parenting training from hospitals was not as positive as expected to effectively improve women's MSE levels, possibly due to the limited amount of time for obstetric nurses and the single training method of oral explanation, which were discussed in section 5.2.2.3 above.

In the 1980s, parenting training was introduced into the mainland of China as routine health care in hospitals. However, local childbirth and parenting training/education in China mainly focused on providing simple information about labour and basic baby care skills, with very little content on professional health care for common baby conditions, emergency care, and psychosocial issues related to being a new mother, such as new role adaptation, communication skills, and skills in maintaining satisfied interpersonal relationships (Ge et al., 2009). It was supported by this study results that mothers who had attended training did not have a higher significant score in the general health care dimension (relating to the tasks about emergency care and some diseases care) than mothers who had not attended training at 12 weeks postnatally ($P < 0.05$). Furthermore, Mercer & Walker (2006) argued that many

parenting training programmes lacked a sound theoretical basis in their design. Therefore, fuller contents of parenting training programmes, including professional health care for baby and psychosocial issues for women, conducted by health professionals in various methods need to be researched to explore how to improve the outcome of parenting training in an effective increase of their MSE levels for Chinese primiparous women. This study results, such as the MSE levels of the sample of Chinese primiparous women and the explored influencing factors of MSE could make recommendations for the design of the parenting training programme in China.

5.2.5.7 Baby gender

Previous studies undertaken in Western countries found that baby gender had no statistically significant relationship with maternal confidence (Hudson et al., 2001; Port & Hsu, 2003; Salonen et al., 2009), or found that women with a daughter acquired a higher MSE level than mothers with a son (Maniadaki et al., 2005; Kohlhoff & Barnett, 2013). In contrast, there has been a long history of the preference for a son in China (Chen et al., 2007); therefore, Chinese women having a boy were more likely to acquire more support and affection from their family (Xie et al., 2011), which may have positively affected their sense of wellbeing and confidence, and then could improve their MSE levels. However, in this study, infant gender did not have a statistically significant influence on the mean MSE scores and the scores on its four dimensions at six and 12 weeks postnatally, being congruent with the research findings conducted in other areas of China (Zang & Shen, 2010; Gao et al., 2004).

Possible explanations for these findings are discussed in this section. Firstly, women's baby in this study was the first child and maybe the only child in their family, owing to the restrictions of the "one-child policy", who had a special significance for new parents and possibly received overwhelming care from his/her family. For instance, even though some families preferred a boy but had

a girl, this did not affect parents' and grandparents' affection for the new baby, because these new babies were the first child and maybe the only child in the family, their parents often shared a higher level of intimacy and would pay more attention to their needs while growing up (Chen, 2003). Secondly, some women with a girl baby in this study knew that they probably would have an opportunity to have a second child because during the time of data collection in this study, the Chinese government had announced the decision to relax the one-child policy since 2014 (Government of China, 2013). It means that not only rural couples are allowed to have a second child if the first one is a girl, but urban families can have two children if one parent is an only child, according to the new "relaxed one-child policy" (Government of China, 2013). Thirdly, even though the traditional belief of the preference for a son existed, there were still some Chinese couples who would rather have had a daughter because they hoped to have a little "princess" (Riley, 2004). Fourthly, some families, those extremely looking forward to having a boy maybe chose antenatal sex determination and subsequent sex selective abortion (Chen et al., 2007). This study showed that there was a skewed sex ratio at birth (girl/boy was 100/123.7) in these participants. Thus, according to the above four factors, even though the preference for a son has been exhibited in Chinese society, baby gender did not impact on Chinese women's maternal role competence in this study.

5.2.5.8 Baby health

In this study, it is firstly found that baby health was an influencing factor of MSE scores for the sample of Chinese primiparous women. The women with a baby of a perceived better health status scored higher on MSE and its four dimensions that were concurrently measured at the two time points. This result was consistent with other research findings undertaken in Finland (Salonen et al., 2009). The reasons were possibly that the baby health status deeply impacted on maternal physiological and emotional states, which affected MSE according to

Bandura's theory (1997b). Furthermore, babies' well-being also could have increased maternal confidence. For instance, first-time mothers were prone to being quite competent in mothering when their babies were very healthy and did not have any problems (Ngai et al., 2011). Therefore, from the third day to 12 weeks postnatally, mothers who had perceived the increasing infant health scores postnatally accounted for a significantly positive variance in reported MSE scores in this study.

5.2.5.9 Baby temperament

In consideration of baby fussiness scores that women rated on the third day, six weeks and 12 weeks postnatally, it demonstrated that infants' temperamental negativity declined as time went on. Consistent with this view, Troutman et al. (2012) also found that both irritable and non-irritable infants in their sample exhibited a decrease in fussing and crying according to maternal ratings from eight to 16 weeks postnatally. This positive change in infant temperament that mothers had perceived could be caused by some positive variations that were previously observed in infants' affectivity. For example, Zang & Shen (2010) showed that infants went through a period of general temperamental upset during the first month postnatally, and then followed a period of increased social smiles and self-quieting abilities in the second and third months. Barr (1990) also argued that around the second month postnatally, negative infant affectivity, such as fussiness and crying, had a marked decrease. Therefore, in this study, these positive changes in infants' emotionality were possibly associated with a decline in negativity in infant temperament that mothers had perceived (Rothbart & Bates, 1998).

In this study, it is firstly found that baby temperament impacted on MSE scores for the sample of Chinese primiparous women. Mothers who reported that they had a less fussy, irritable baby had a higher mean MSE score and scores on its four dimensions that were concurrently measured at six and 12 weeks

postnatally, which was consistent with the previous research findings conducted in Western countries (Porter & Hsu, 2003; Tarkka, 2003; Denis et al., 2012; Fulton et al., 2012; Troutman et al., 2012). The relationship between infant temperament and MSE was probably explained in the context of what Bandura (1982) referred to as perceived task difficulty as well as outcome expectancies.

For instance, when new mothers were successful in their attempts to soothe and comfort babies, they were more likely to acquire a greater sense of maternal confidence in this endeavour (Stifter & Bono, 1998). However, infants with a negative or difficult temperament had characteristics such as fussiness, irritability, and frequent intense crying, coupled with low soothability and manageability (Stifter & Bono, 1998), which possibly increased the difficulties of tasks in caring for them. Therefore, women were prone to suffering from more disappointments when taking care of babies with more fussiness, and if parenting tasks were repeatedly unsuccessful, they were likely to feel less effective in their caregiving abilities (Porter & Hsu, 2003; Troutman et al., 2012). Moreover, Liu et al. (2012) found that infants' difficult temperament could improve their mothers' maternal parenting stress, which would suppress maternal role competence. Therefore, women with a baby with a difficult temperament were more likely to have a lower level of MSE in this study.

5.2.5.10 Women's satisfaction levels with "Doing the month"

(1) The relationship between women's satisfaction levels with "Doing the month" and MSE

Chinese women had a special experience of "Doing the month" during the first month postnatally, which was distinct from women in Western countries. Therefore, whether this practice affected Chinese women's MSE was worthy of being researched to fill the research gap. According to this study results, women's satisfaction levels with "Doing the month" was one main factor

influencing MSE at six and 12 weeks postnatally. Some reasons probably accounted for this result. First of all, women who were satisfied with "Doing the month" could have had a good physical and mental recuperation from childbirth, such as eating good nutritious food, avoiding housework, having a good rest and strengthening family ties. According to the theory of Bandura (1997b), good physiological and emotional states positively impacted on MSE scores. Secondly, during the period of "Doing the month", women's mother or mother-in-law accompanied them and possibly gave them useful suggestions for nurturing the baby. The verbal persuasion likewise could have increased new mothers' parenting role competence (Bandura, 1997b). Therefore, women with a higher satisfaction level with "Doing the month" were more likely to have a higher mean MSE score and scores on its four dimensions.

However, the experience of "Doing the month" was not perceived as supportive by some Chinese new mothers in this study as illustrated by 23.0% of the women who said that they felt dissatisfied or very dissatisfied with the experience of "Doing the month", which was consistent with other research findings for Chinese women (Leung et al., 2005; Wong & Fisher, 2009; Gao et al., 2010). Firstly, it may be due to differences in values and belief systems between new mothers and their mothers or mothers-in-law, especially in terms of different life habits, methods and knowledge of raising babies. In the present mainland of China, most of the younger women may have preferred the modern style of life habits and caring for a baby (Gao et al., 2014). However, their mothers-in-law or mothers may have retained traditional Chinese values and customs (Gao et al., 2014). For example, in the winter, grandparents simply do not take children outdoors, as they think that their baby will catch cold outdoors. But young parents think that babies need to go out from time to time, so that their immune system can get used to all kinds of germs (Global Times, 2013). Furthermore, new babies were possibly more precious to their grandparents, and

would be easily spoiled by grandparents (Chen & Ma, 2002). For instance, Zhu Jia, when interviewed by Global Times in China (2013) said: "*When my daughter fell down, my wife and I probably just checked to see if she was hurt and told her to get up as we think that falling is not a big deal, and the child should be brave. But her grandparents would hurry to pick her up and comfort her in an 'overdramatic' way*". These conflicting ideas made it harder to communicate with each other. An older couple's response to such doubts would always be: "I raised you the same way" (Global Times, 2013). These differences had resulted in family conflicts, which aroused less of a sense of self-efficacy for new mothers.

Secondly, asking women following taboos such as being forbidden to wash hair or bathe also led to their unhappiness derived from the experience of "Doing the month", which diminished their maternal confidence. Thirdly, although "Doing the month" had resulted in much debate, Chinese women did acquire more support and help from their family after childbirth than did most women in Western countries (Hung, 2004). However, some Chinese women had high expectations for "Doing the month" and excessively relied on other family members, and overlooked their own responsibilities that should be the primary caregiver role for parenting babies. These undue expectations on "Doing the month" for Chinese women also led to their dissatisfied feeling with the experience of "Doing the month", which could have decreased their maternal role competence.

(2) How to improve Chinese women's satisfaction levels with "Doing the month"

In considering the effects of "Doing the month" on MSE, obstetric nurses and women's family members should attach importance to improve the satisfaction levels with this traditional practice among Chinese women. The themes of the open question concerning why women felt satisfied or dissatisfied with the experience of "Doing the month" (section 4.8.2, Pages 185—190) indicated that

some suggestions could be given to postnatal women and their family by obstetric nurses during the period of hospitalisation.

Firstly, women's family members especially mothers/mothers-in-law and husbands could be suggested to give women great support and help that enable women to have a good recovery after childbirth. Secondly, new mothers could be suggested to have an objective opinion on "Doing the month", not only its possibly positive impact, such as having a good rest and strengthening family ties, but also its possibly negative outcomes, such as being asked to follow taboos and dealing with conflicts with an older generation. Therefore, thinking positively probably is of importance for the better experience of "Doing the month". Thirdly, even though there were huge discrepancies between two generations about nurturing babies, probably leading to family conflicts, having an appreciative attitude is beneficial to help women to get along with older generations and deal with potential or real conflicts with them. Fourthly, regardless of whether women's family members giving them help more or less during the period of "Doing the month", as the first main caregivers of infants (Gage et al., 2006), women could be suggested to take the initiative in taking care of babies, rather than excessively depending on their mother-in-law or mother. It could help women to gain a greater sense of achievement from parenting their baby, and then increase their satisfaction levels with "Doing the month" and MSE levels, as some women described in this study.

5.2.5.11 Postnatal depression symptoms

(1) Comparison with other studies in terms of EPDS scores

In this study, the mean EPDS scores at six and 12 weeks postnatally were 9.09 (SD=4.33) and 8.63 (SD=4.41), which were higher than the results from other studies undertaken in Western countries. For example, 3,184 British women whose baby was less than 26 weeks old from Bristol, Manchester and London

had mean EPDS scores of 7.30 (SD=5.50) (Sharp et al., 2010). The other trial conducted in the Trent region of the UK found that the mean EPDS of 2,659 British women was 6.70 (SD=4.8) at six weeks postnatally (Morrell et al., 2009a). In total, 192 primiparous women in Australia had a mean EPDS score of 6.80 (SD=4.28) at four weeks postnatally (Haslam et al., 2006). Another study conducted in Ireland found that the mean EPDS score of 410 women was 7.20 (SD=4.40) at six weeks postnatally (Leahy-Warren et al., 2012). These results were consistent with the findings of an international study (Affonso et al., 2000) exploring levels of postnatal depressive symptomatology among a sample of 892 women from nine countries representing five continents. Affonso et al. (2000) showed that European and Australian women had the lowest levels of postnatal depression symptoms, USA women felt at the midpoint, and women from Asia and South America had more severe depressive symptoms; especially women from Taiwan, China had the highest mean EPDS scores of 12.68 (SD=4.95) and 10.95 (SD=4.72) at the two time periods of from one to two weeks postnatally and of from four to six weeks postnatally.

Furthermore, in terms of EPDS threshold scores, the proportions of women with an EPDS score of 12 or more in this study were 29.3% and 24.3% at six and 12 weeks postnatally. In contrast, only 13.4 percent of 2,659 women in the UK had an EPDS score of 12 or more in six weeks questionnaires (Morrell et al., 2009b). In this study, the proportions of women with an EPDS score of ten or more (identifying minor depression symptoms or sub-clinical postnatal depression) diminished from 47.4% at six weeks postnatally to 38.3% at 12 weeks postnatally, and the proportions of women with an EPDS score of 13 or more (identifying major depression symptoms) decreased from 21.4% to 18.2%. However, Gavin et al. (2005) conducted a systematic review of prevalence and incidence of postnatal depression, and found that approximately 19.2% of women in developed countries were screened to have minor depressive

symptoms and 7.1% of women had major depressive symptoms during the first three months postnatally.

The above results of comparing EPDS scores in this study with the related studies undertaken in Western countries demonstrated that the higher proportion in the sample of Chinese primiparous women were more likely to have postnatal depression symptoms than women in Western countries, such as in the UK. Some factors of Chinese cultures probably have contributed to this phenomenon. Firstly, Chinese values were dominated by Confucianism, and according to Confucian paradigm, women were usually expected to hold strong responsibility and obligation towards family members, such as being "a good wife and a loving mother" whose role was to take care of children, household and subordination of the self for the good of the family (Chen et al., 2006; Park & Chesla, 2007). In Chinese women's belief, the traditional characteristics of a competent mother meant commitment, self-sacrifice and endless concern for their infant (Ngai et al., 2011). For example, one Chinese mother interviewed by Ngai et al. (2011) said: "*A competent mother should be able to take care of the child properly and sacrifice herself... give a lot of time to the child, sacrifice personal time and even personal interests. I think a good mother would commit herself and focus all her energy on the child.*" (p.1483). Another mother said: "*A competent mother should take care of the child and... prevent any injury to the child. Actually, I seemed to be quite nervous since I had my child... I would pay particular attention to the safety of an environment and my child's responses.*" (p.1484). Therefore, owing to the excessively high expectation of being a competent mother at childcare and sacrificing themselves to maintain a well-functioning family for Chinese women (Chao, 1995; Chen et al., 2006), a strong sense of failure acquired by Chinese new mothers when not fulfilling these parenting obligations could possibly lead to feelings of guilt and shame about being an unsuccessful mother for these women. As a result, there were

increasing numbers of Chinese first-time mothers with postnatal depression symptoms.

Secondly, in China, the baby birth was not only a matter for the couple, but concerned by the whole family, and the grandparents were still the first choice to help new mothers to take care of the baby, especially during the period of "Doing the month" (Gao et al., 2012). The huge discrepancy between two generations in terms of nurturing an infant would induce some family conflicts between them (Gao et al., 2010). However, by the Confucian paradigm, women were expected to show respect for and obedience to their parents-in-law or parents (Chen, 2004). Thus, how to deal with the sensitive and stressful relationship with their old generation may have negatively affected the mental status of Chinese first-time mothers.

The above two factors of Chinese cultures may account for the higher percentage of Chinese primiparous women with postnatal depression symptoms compared with women in studies undertaken in Western countries, such as in the UK. By comparison with other studies undertaken in other areas of China, the sample of Chinese primiparous women in this study was also found to have a relatively high proportion with postnatal depression symptoms in comparison to other Chinese first-time mothers. For instance, in a study by Zang & Shen (2010), the proportions of 147 Chinese primiparous women in Beijing with an EPDS score of ten or more at six and 12 weeks postnatally were 41.9% and 28.7%, respectively, which were lower than the corresponding percentages of 47.4% and 38.3% in this study at the two time points. Another study by Gao et al. (2012) conducted in Guangzhou City of China, found that the mean EPDS scores of 98 first-time mothers in control group were 8.87 (SD=4.37) and 6.86 (SD=3.97) at six and 12 weeks postnatally, respectively, which were lower than the corresponding scores of 9.59 (SD=5.57) and 8.64 (SD=4.40) in this study. The disparity of these results may be accounted for by different research

samples. For example, the women recruited in this study were from various demographic backgrounds. In comparison, the study sample of Zang & Shen (2010) and the study sample of Gao et al. (2012) were limited to women who were well-educated and had a higher income in an affluent area of large cities, such as Beijing and Guangzhou, who were more likely to have a better mental health status (Zang & Shen, 2010).

In addition, by comparing the EPDS scores of the 214 participants at six and 12 weeks postnatally in this study, the decreases in the mean EPDS scores and the proportions of women with an EPDS score of ten or more, 12 or more, and 13 or more all have statistical significance ($P < 0.01$), which indicated that the postnatal depression symptoms of the sample of Chinese primiparous women reduced overall as time went on. These results were congruent with other studies by Porter & Hsu (2003) conducted in the USA, and by Zang & Shen (2010) and Gao et al. (2012) undertaken in China. One of the possible reasons for the decreases in EPDS scores was that many of the initial worries regarding parenting transition and tasks were being alleviated for Chinese women through continuing maternal experiences with looking after their infant. Not surprisingly, past research has similarly demonstrated that nearing 12 weeks postnatally, maternal mood states started to improve perceptibly (Porter & Hsu, 2003). These findings also pointed towards a growing sense of ease and comfortableness probably associated with more parenting activities emerging that alleviated maternal postnatal depression symptoms. Moreover, most women were confirmed to develop postnatal depression symptoms in the first three months after childbirth, and have a peak in incidence at approximately six to eight weeks, and then their symptoms began to alleviate with the passage of time (Davies et al., 2003; Hewitt et al., 2009).

Matthey (2004) argued that although there was only a small actual difference between the scores, statistical significance between test scores sometimes could

be obtained. Therefore, even though the mean EPDS scores had a statistically significant decrease from 9.57 (SD=4.57) at six weeks postnatally to 8.63 (SD=4.40) at 12 weeks postnatally in this study, whether this difference (0.97 points) in scores was large enough to indicate a probable real change and to suggest a clinically significant effect was debatable (Jacobson & Truax, 1991). In other words, the clinical significance of any difference would need to be discussed in this section. According to the research findings (Matthey, 2004), the Reliable Change Index (RCI, a method of calculating the clinical significance, described by Jacobson & Truax in 1991) for EPDS was calculated to be four points. Matthey (2004) suggested that "This is the size of difference between two scores which is needed for a clinician to be 95% confident that this change reflects a real change in the individual's mood, and is not likely to be due to measurement error." (p.269). Owing to the standard by Matthey (2004) that the four points of change in EPDS scores were more likely to demonstrate a real change in the individual, there were 12.1% (26/214) of the women who experienced a clinically reliable increase (four points or more) in EPDS scores, and 4.2% (9/214) of the women who had a clinically reliable decrease (four points or more) in EPDS scores from six and 12 weeks postnatally in this study. However, the study of Matthey (2004) focused on Australian women who started with more severe postnatal depression symptoms, not the general population of postnatal women, and the sample size was not large (n=181). Therefore, whether the findings of Matthey (2004) could be appropriate for Chinese women was questioned by the researcher.

In consideration of statistical and clinical significance, conclusions could be drawn that the postnatal depression symptoms of the sample of Chinese primiparous women in this study experienced a statistically significant decrease from six to 12 weeks postnatally; however, this decrease as time went on could not be large enough to suggest a clinically significant change.

(2) The relationship between postnatal depression symptoms and MSE

According to the findings in this study, postnatal depression symptoms was an important influencing factor of MSE for Chinese primiparous women at six and 12 weeks postnatally. Mothers with a lower EPDS score were more likely to have a concurrently measured higher mean MSE score and scores on its four dimensions. This research result was consistent with most of the prior studies undertaken in different countries (Tarkka, 2003; Haslam et al., 2006; Sevigny & Loutzenhiser, 2009; Davey et al., 2011; Holland et al., 2011; Ngai et al., 2011; Choi et al., 2012; Gao et al., 2012; Kohlhoff & Barnett, 2013; Shorey et al., 2014b). In contrast, the research by Porter & Hsu (2003) conducted in the USA found that MSE was no longer significantly related to maternal postnatal depression at 12 weeks postnatally. The inconsistent results were explained by Porter & Hsu (2003) that in consideration of the relatively low-risk and demographically restricted nature of the sample (mainly Caucasian, middle-class, well-educated women with a very high level of MSE), these women could be exhibiting fairly high levels of adaptiveness to the parenting transition, leading to less depressive mood states in comparison to what might be found among more representative populations. Therefore, the conclusion drawn by Porter & Hsu (2003), that MSE measured postnatally demonstrated a disassociation with postnatal depression, could be questioned as their sample only focused on well-educated women with a higher level of MSE, lacking representation.

Some factors possibly accounted for the phenomenon, wherein the more depression symptoms the mother experienced, the lower her maternal role competence was. First of all, women with postnatal depression symptoms often exhibited uneasiness, irritability, confusion, forgetfulness, anxiety and guilt (Dennis & Creedy, 2004); and these negative emotional states resulted in low maternal self-esteem, a lack of confidence and unrealistic expectations of motherhood (Dennis & Creedy, 2004), which severely decreased the mothers'

capability to cope with the care of babies (Murray et al., 2003). Secondly, women with postnatal depression symptoms usually experienced fatigue, insomnia and poor appetite (Craig & Howard, 2009), and these disadvantaged physical conditions limited maternal capacity to engage in parenting tasks (Murray et al., 2003). These results also were supported by Bandura's theory (1997b), and he argued that the negative physiological and emotional status of women suppressed their MSE levels. Therefore, women who have postnatal depression symptoms, likewise, could experience guilty feelings about taking care of their new baby (Craig & Howard, 2009) because of their low maternal role competence, and vice versa (Davey et al., 2011).

Some researchers thought that postnatal depression (PND) could be difficult to identify, partly because some new mothers were often reluctant to report depressive symptoms to health professionals (Leahy-Warren et al., 2012). Hewitt et al. (2009) described that less than 50% of cases of PND were identified by primary healthcare professionals in routine clinical practice in the UK. Thus, there would be more women with postnatal depression symptoms than reported in this study, as some mothers maybe were not willing to disclose their symptoms to the researcher. Besides the high prevalence, PND may lead to several detrimental consequences not only for mothers but also for infants and their families as a whole (Murray, 1992; Dennis & Creedy, 2004; Pawlby et al., 2008; Chew-Graham et al., 2009). Firstly, PND was associated with severe, long-term hazards for the mother's mental health (Oates et al., 2004). Secondly, PND had adverse effects on the marital relationship and the psychological health of the spouse (Asten et al., 2004). Thirdly, PND could cause inefficient mother—infant interaction and insecure mother—infant attachment, which impaired the infant behaviour (Murray et al., 1996; Hipwell et al., 2000). In addition, the research findings showed that infants with depressed mothers, compared to ones with non-depressed mothers, achieved much lower scores in measurement

of the intellectual, cognitive and social development (Murray et al., 1999; Hipwell et al., 2000). A meta-analysis (Beck, 1999) reported that children with a depressed mother were two to five times more prone to developing long-term behavioural problems. A recent longitudinal study also confirmed that offspring of postnatally depressed mothers were more likely to experience depression by 16 years than the control group (41.5% versus 12.5%) (Murray et al., 2011).

In summary, there appeared to be a large proportion of Chinese women who exhibited symptoms of postnatal depression compared with women in Western countries, such as in the UK, which negatively affected Chinese women's MSE levels. In consideration of the high prevalence of PND and its negative outcomes that are discussed above, Chinese health professionals, Chinese women and their family members (i.e. husbands, mothers and mothers-in-law) should raise their awareness towards PND. Early detection or screening of postnatal depression symptoms among postnatal women by health professionals is recommended to become a routine work during the postnatal examination in hospitals at six weeks postnatally. Moreover, related interventions need to be designed and undertaken as soon as possible by health professionals to relieve postnatal depression symptoms and then improve MSE levels for Chinese primiparous women.

5.3.5.12 Social support

(1) Comparison with other studies in terms of social support scores

In this study, the mean social support scores at six and 12 weeks postnatally were 40.99 (SD=9.31) and 43.00 (SD=9.55) (score range: 0–60). In the four dimensions, the mean informational support scores were lowest (7.86 ± 3.18 ; 8.83 ± 3.34) (score range: 0–20) and the mean emotional support scores were highest (11.61 ± 2.36 ; 12.03 ± 2.22) (score range: 0–20) at the two time points. These results suggested that the sample of Chinese primiparous women in this

study received a moderate level of social support in general at six and 12 weeks postnatally. Compared with the emotional support and material support that women received, they received less informational support and evaluation of support.

These results were consistent with the previous findings of studies undertaken in Beijing, China (Zang & Shen, 2010), Singapore (Phang & Koh, 2010; Shorey et al., 2014a, b) and Ireland (Leahy-Warren, 2005). For example, Leahy-Warren (2005) found that mothers experienced a lack of informational and appraisal support on various newborn-care tasks at six weeks postnatally. Kapp (1998) argued that mothers received low informational support within the first two weeks postnatally, due to their early postnatal discharge. In contrast, other studies conducted in Hong Kong (Ngai et al., 2009) and Finland (Tarkka & Paunonen, 1996) demonstrated that mothers received adequate informational support, and great emotional and appraisal support from health professionals. The inconsistent results were probably related to the different cultural and clinical backgrounds of the studies and the different tools for measuring social support. Therefore, an exploration of mothers' perspective on various kinds of social support could be undertaken in the future to provide an in-depth understanding of different types of social support that primiparous women need or want.

In Chinese culture, due to Confucian values and "Doing the month" (Chen et al., 2006; Park & Chesla, 2007), family members of Chinese primiparous women, such as their mother/mother-in-law, husband and other female relatives, were the most important support providers. Friends of Chinese women were also regarded as the other important persons who supplied support. For instance, in this study family or friends were mentioned by women as the most frequent source of parenting information. In prior research (Leahy-Warren et al., 2012), Irish mothers also reported that they had received help from their husbands and

mothers, both with household chores and with infant care during the postnatal period, and this help was greatly important for them to smooth their mother role transition. Barclay et al. (1997) also showed that some Australian women had received valuable support in the mothering role from their own mother, friends and female relatives who had children.

Moreover, Haslam et al. (2006) argued that no single support provider would be beneficial in every situation. For instance, women's family and friends were appropriate to supply them with adequate emotional support and material support, such as love, trust and money. However, the related support from a woman's family may be ineffective if she is seeking informational support, such as professional advice and instructions on nurturing babies. The lowest scores of informational support in this study indicated that many parenting informational needs were unmet for Chinese primiparous women in the first three months postnatally. Therefore, in addition to support from women's own social networks (their family members and friends), support from health professionals was crucial in enhancing informational support, such as professional parenting advice and instructions for the sample of Chinese primiparous women in this study (Zang & Shen, 2010).

Having a variety of support providers was of significance, as these supporters can help women by giving time, information, and concrete assistance in child care or housework, which may positively affect maternal and infant well-being (Tarkka, 2003; WHO, 2005). If women lack close supporters, obstetric nurses should encourage their family members to form support groups for women to supply various support, especially emotional and material support. Additionally, obstetric nurses during women's hospitalisation and community doctors during postnatal home visiting ought to provide continuity of informational and appraisal support, especially after women's early discharge from the hospital (Salonen et al., 2014). Furthermore, researchers also argued that self-isolation

for new mothers may account for their unwillingness to seek support (Tarkka, 2003). Harrison et al. (1995) identified some barriers to the use of support, such as the reluctance to ask for support, lack of reciprocity, and non-supportive messages included within supportive actions. Especially for Chinese women, they are less likely to ask for help on their own initiative, owing to the cultural effect. According to collectivistic values in China, women tended to perceive that asking for support would be a burden for others (Lu & Zheng, 2001). It might be difficult for obstetric nurses and community doctors to help these kinds of mothers (Tarkka, 2003). Thus, in addition to playing the important roles of various support providers to help new mothers, primiparous women could be encouraged to take the initiative in seeking support about infant care during the postnatal period.

By comparison of social support scores of the 214 participants at six and 12 weeks postnatally in this study, the mean social support scores and scores of emotional support, informational support and evaluation of support had statistically significant increases. The findings indicated that the sample of Chinese primiparous women in this study had perceived that they had received more social support as time went on. It was inconsistent with the previous findings of studies that undertaken in other areas of China, in which social support that those Chinese first mothers had perceived had no statistically significant difference between six and 12 weeks postnatally (Gao et al., 2014). The different measurements of social support used possibly accounted for the conflicting findings of the two studies. For example, the tool used in the study by Gao et al. (2014) was to measure social support for the general population, not specifically for postnatal women, while the tool used in this study was specific for postnatal women. Furthermore, whether the improvement in social support scores with the passage of time had an important health effect or a clinical significance needs to be explored by further studies.

(2) The relationship between social support and MSE

This study results demonstrated that social support was an important factor which influenced MSE at six and 12 weeks postnatally. Women receiving more social support in their perception were more likely to have a higher level of MSE at the two time points. This result highlighted the potential significance of social support in improving MSE levels for Chinese first-time mothers during the postnatal period, which was consistent with the previous studies undertaken in Western countries (Tarkka, 2003; Haslam et al., 2006; Leahy-Warren et al., 2012), Singapore (Shorey et al., 2014a, b), and Beijing (Zang & Shen, 2010) and Guanzhou (Gao et al., 2014) of China.

In terms of the correlation coefficient between MSE and social support, this study and another study conducted in China (Zang & Sheng, 2010) found that social support scores had a strongly positive relationship ($r > 0.50$) with MSE scores. While studies conducted in Western countries (Tarkka, 2003; Leahy-Warren et al., 2011) have found weak to moderate ($r: 0.20-0.40$) correlations between the two variables. One probable reason was due to Confucian values and "Doing the month" in Chinese culture (Chen et al., 2006; Park & Chesla, 2007), as Chinese women could have received more social support from their family compared with most women in Western countries, which was more likely to strengthen social support's effect on the improvement in MSE. Another reason possibly for these inconsistent correlation coefficients was using different instruments. For example, in this study and the study by Zang & Sheng (2010), the measurement of PSSS (Postpartum Social Support Scale) was a specific instrument to measure Chinese women's social support during the postnatal period. By contrast, the tools used in other studies to measure social support (Tarkka, 2003; Haslam et al., 2006; Leahy-Warren et al., 2012; Gao et al., 2014) were not specific to postnatal women, but rather general people.

The following theoretical and empirical evidence may give explanations about why social support positively influenced maternal role competence. According to Bandura's theory (1997b), social support may impact on MSE through processes involving vicarious experience, verbal persuasion, and physiological and emotional status. Vicarious experience was a type of support whereby support providers assisted new mothers through modeling an effective parenting behaviour; for example, nurses or family members showed women how to soothe a crying infant effectively (Haslam et al., 2006). Bandura (1997b) commented that watching others successfully in parenting tasks may shape better expectations for women's own performance and increase women's maternal confidence. Verbal persuasion involved aspects of both informational and appraisal support (Haslam et al., 2006). For instance, support providers supply first-time mothers with parenting advice and information about infant rearing, which may increase their MSE levels directly (Leahy-Warren, 2005). Additionally, supporters who gave women material and emotional support such as time, money, love, trust and encouragement in baby care may positively affect mothers' state of mind and physiology; and consequently strengthen their parenting self-efficacy in the new mother role (Tarkka, 2003).

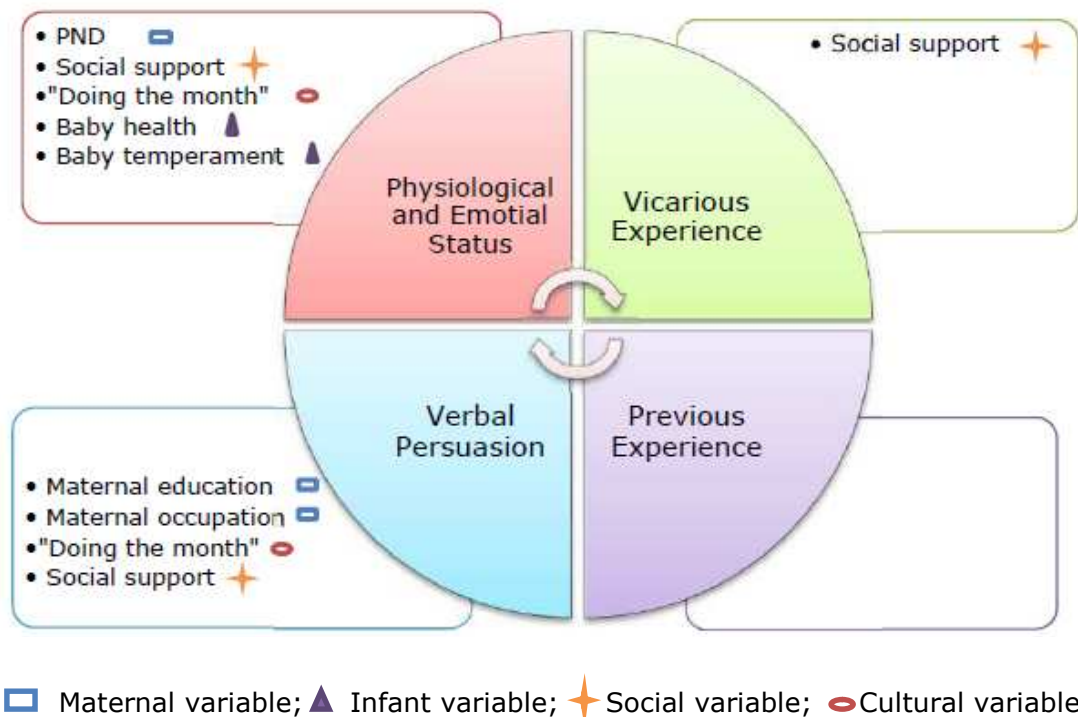
In summary, the sample of Chinese primiparous women in this study received a moderate level of social support in general at six and 12 weeks postnatally, and accepted the least informational support compared with the other support they had received. This study also noted the important effect of social support on the improvement of MSE for Chinese primiparous women. Therefore, health professionals could help women and their family members, especially their husband and mother/mother-in-law, to promote their awareness of the importance of social support for positive effects on maternal role competence after childbirth. In addition to encouraging women's family members and friends to supply various support for new mothers, and helping primiparous women to

take the initiative in seeking support, obstetric nurses and community doctors should afford continuity of informational and appraisal support during women’s hospitalisation and after their discharge from hospitals to effectively improve their MSE levels.

5.3.5.13 Interaction of the variables which affected MSE in relation to the self-efficacy theory

In this study, seven factors were found to influence MSE in the sample of Chinese primiparous women during the initial postnatal period, including maternal variables (maternal education, maternal occupation, and postnatal depression symptoms), infant variables (baby health and baby temperament), a social variable (social support) and a cultural variable (“Doing the month”). The interaction of these seven variables which affected MSE in relation to Bandura’s theory is described in Figure 5.2.

Figure 5.2 Interaction of variables which affected MSE in relation to the self-efficacy theory in this study



As shown in Figure 5.2, there are four major elements (previous experience, vicarious experience, verbal persuasion, and physiological and emotional status) that affected self-efficacy (Bandura, 1997). In this study, the element of previous experience was not strongly considered, as this study sample focused on first-time mothers without any first-hand parenting experience. Moreover, in the one child family, few Chinese women had any prior experience of caring for siblings because they were also a single child too. According to Bandura's self-efficacy theory, the seven influencing factors predicted MSE through the impact on the three major elements.

For instance, women with fewer postnatal depression symptoms, women with a healthy baby; women with a baby with an easy temperament, women who perceived more social support, and women who had a good experience of "Doing the month" were more likely to have better physiological and emotional states when taking care of babies, and these women were more likely to have a higher level of MSE (Loto et al., 2010; Salonen et al., 2009; Denis et al., 2012; Shorey et al., 2014b). Furthermore, women with a higher education degree or with a professional job were more likely to acquire more information and knowledge about infant care (Jackson, 2002; Koniak-Griffin et al., 2006). During the period of "Doing the month", women's mother-in-law or mother possibly gave them useful suggestions for parenting the baby. Informational and appraisal support providers, such as health professionals, supplied primiparous women with parenting advice and information about raising infants (Haslam et al., 2006). These kinds of verbal persuasion may directly increase primiparous women's MSE levels. Therefore, variables such as maternal education, occupation, "Doing the month", and social support affected MSE through the influence of verbal persuasion. Moreover, social support could impact on MSE also through vicarious experience. For instance, nurses or family members showed women how to soothe a crying infant effectively (Haslam et al., 2006). Bandura (1997b)

commented that watching others succeed in parenting tasks may lead to better expectations for women's own performances and increase women's maternal confidence through modelling effective parenting behaviour.

In summary, the interaction of variables in this study consisted of the seven factors, including maternal variables of maternal education, maternal occupation, and postnatal depression symptoms; infant variables of baby health and baby temperament; the social variable of social support; and the cultural variable of "Doing the month", which affected MSE through the impact on the three major elements of vicarious experience, verbal persuasion, and physiological and emotional status in relation to Bandura's self-efficacy theory.

5.3 Theoretical framework of this study

5.3.1 Development of the theoretical framework for this study

As the foundation on which all knowledge is constructed for a research study, both metaphorically and literally, the theoretical framework serves as the structure and support for the rationale of the study and the problem statement, and provides a basis for the literature review, and most importantly, for the methods and analysis (Lysaght, 2011). Therefore, the theoretical framework is described as a "blueprint" for the entire thesis and is regarded as one of the most important aspects of the research process (Grant & Osanloo, 2014). Eisenhart (1991) defined a theoretical framework as "a structure that guides research by relying on a formal theory . . . constructed by using an established, coherent explanation of certain phenomena and relationships" (p.205). Lovitts (2005) defined empirical criteria for developing or applying a theory to the dissertation that must be appropriate, logically interpreted, well understood, and aligned with the question. Berg (2008) argued that a theoretical framework can be expected to propose values and belief that are not necessarily unique to researchers in this field, but which share a familiar paradigm with other

researchers. This is why “researchers generally do not locate their work in some completely new theoretical framework but will search to identify the perspectives that align their research and literature with other researchers and scholars.” (Berg, 2008, p.86)

In this quantitative longitudinal study, in order to best answer the research question concerning what factors affected MSE, the self-efficacy theory described by Bandura was chosen to guide the research because this existing theory is well accepted, solid, reliable, and accommodates the study question. For example, Bandura (1997) firstly described self-efficacy and identified four major elements that affected self-efficacy, as well as firstly recognising MSE and emphasising the significance of MSE in parenting. In addition to the self-efficacy theory, some important variables, such as maternal, infant and social contextual variables were found to influence MSE when reviewing the literature (Porter & Hsu, 2003; Tarkka, 2003; Koniak-Griffin et al., 2006; Salonen et al., 2009; Loto et al., 2010; Ngai et al., 2011; Denis et al., 2012; Kohlhoff & Barnett, 2013; Shorey et al., 2014a, b). Therefore, the theoretical framework in this study has been developed while integrating Bandura’s self-efficacy theory with other related literature (Figure 2.2), since the theory could be developed harmoniously with the literature, and then both used to support the data, interpret the findings, and underlie the recommendations (Grant & Osanloo, 2014).

5.3.2 Supplement of culture context into the theoretical framework

Culture has been defined as the worldview, lifestyle, learned, and shared values and beliefs, knowledge, symbols, and rules that guide behaviour and create shared meanings within a group of people (Racher & Annis, 2007). In this study, the cultural variable of “Doing the month” was verified as one of the important influencing factors for MSE, which indicated the significant effect of cultural context on maternal role competence. In contrast, Bandura’s self-efficacy theory

did not refer to the cultural context as a factor that would influence self-efficacy; and limited research has been conducted to explore whether cultural variables affected MSE. The findings of this study supplement the current theoretical framework of studies related to what factors may influence MSE. Specifically, in addition to maternal variables, infant variables and social contextual variables (Belsky, 1984), cultural variables in various countries need to be considered to integrate the new theoretical framework of further studies in order to explore the potential influencing factors of MSE. Similarly in Bandura's self-efficacy theory, the impact of four major elements (previous experience, vicarious experience, verbal persuasion and physiological and emotional status) on self-efficacy need to be considered in different cultural contexts.

Furthermore, the findings of this study implied that cultural sensitivity and cultural competence could play an important role in nursing practice. For instance, in order to improve MSE levels for Chinese primiparous women, health professionals could be more aware of how health care for these first-time mothers needs to be customised to fit their special postnatal cultural values, beliefs, traditions, practices and lifestyle. As various researchers (Leininger, 2002; Leininger & McFarland, 2006) have recommended, high quality health care can occur within a patient's cultural context to meet different values, preferences and expressed needs (Institute of Medicine, 2003). At present, health professionals provide health care within an increasingly multicultural and global society. Therefore, proposing the integration of cultural awareness, consideration and competence into nursing education could support the development of patient-centred care that identifies, respects, and addresses differences in patients within various cultural contexts.

5.4 Strengths and limitations of this study

5.4.1 Research design

To my knowledge, this was the first quantitative longitudinal study to explore thoroughly the influencing factors for MSE among Chinese primiparous women, considering the Chinese culture. For example, the Chinese postnatal practice of “Doing the month” and baby characteristics including baby health and baby temperament were firstly tested to their effects on Chinese primiparous women’s MSE. Compared with previous research undertaken in China only focused at one time point (Ngai et al., 2011) or only related to a few characteristics of mothers or their children (Zang & Shen, 2010), this study considered the maternal, infant, social and cultural characteristics together to explore thoroughly the potential factors that had affected MSE for Chinese primiparous women at the two time points. Therefore, the findings of this study explained 51.0% of the total variance in MSE scores at six weeks postnatally; and 48.5% of the total variance at 12 weeks postnatally; much higher than 20%–30% of variance in other studies (Leerkes & Crockenberg, 2002; Zang & Shen, 2010). However, this also indicated that the potentially other unknown factors which may affect MSE could not have been accounted for in this study.

Furthermore, the sample size of 304 at six weeks postnatally and 214 at 12 weeks postnatally in this study was larger than the other longitudinal studies related to MSE’s influencing factors that have been undertaken in the USA by Hudson et al. (2001) (n=44 at four, eight and 12 weeks postnatally), and by Porter & Hsu (2003) (n=52 at four weeks and n=50 at 12 weeks postnatally); and undertaken in Australia (n=247 during the last trimester and n=192 at four weeks postnatally) (Haslam et al., 2006). In quantitative research, the sample size is of importance because small samples are at risk of being overly representative of small subgroups within the target population (Coughlan et al.,

2007). In contrast, most of the other larger studies related to MSE during infancy were cross-sectional design (Tarkka, 2003; Prasopkittikun & Tilokskulchai, 2010; Leahy-Warren et al., 2012; Shorey et al., 2014a).

Therefore, this study was better able to answer research questions and contributed to filling the research gap by descriptions of the change trajectories of MSE scores, postnatal depression symptoms scores and social support scores; and thorough exploration of the influencing factors of MSE for Chinese primiparous women. However, in consideration of feasibility (financial and time resources), this study focused on the two time points of six weeks and 12 weeks postnatally. It is not possible to infer from this study results how Chinese primiparous women's MSE and its influencing factors changed beyond this period.

5.4.2 Recruitment, follow up and the predetermined sample size

Recruitment to this study was successful, with only 41 (8.9%) primiparous women in 461 eligible participants declining to take part. It was emphasised to women that participation was voluntary, and although there was a relatively short time between childbirth and discharge from the three hospitals in which to inform, recruit and consent participants, all were given at least a day to consider their participation. Dunn et al. (2004) reported that non-consent rates in five large epidemiologic studies were approximately 30 percent. By comparison, the higher consent rate (91.1%, 420/461) in this study was possibly attributed to several factors such as giving a clear explanation of the research and building up a rapport with primiparous women during the first contact. Using the findings from the pilot study, the researcher smoothed the recruitment process; and became familiar with communication skills to build up a good relationship with hospital staff and participants. Therefore, the outcome of the pilot study was crucial for the successful recruitment. In addition, support from the head nurses and other nurses were important, in that these health professionals on obstetric

wards spent time in introducing the researcher and the study to the parturient women and their family members; and helped the researcher to gain participants' trust and support.

This study had an attrition rate of 26.9% (112/416) at six weeks postnatally and of 48.6% (202/416) at 12 weeks postnatally. The reasons for loss to follow-up were reported in Chapter Four Result (Pages 135—136). The percentage of the sample who participated in research is an important element in considering the generalisability of the results (Coughlan et al., 2007). Recommendations for acceptable response rates vary widely, but Polit & Beck (2006) recommended that if a response bias was to be avoided, then at least fifty percent of the sample would be needed to respond. Therefore, the response rates (73.1% and 51.4%) in this study at the two time points higher than fifty percent were both acceptable to avoid response bias. However, compared with the higher recruitment rate, the response rate of this study was not very good. The possible reasons for the response rate were that participants were first-time mothers who needed to spend most time on baby rearing and had relatively little time available to spend on the questionnaire completion (Zang & Shen, 2010). Additionally, survey via email or mail was verified to have a low response rate (Zeng, 2008). In China, the average loss rate to follow-up by email or mail was approximately higher than 25% at one time point (Zhao & Jiang, 2008; Zang & Shen, 2010). Furthermore, owing to the expense limitation, there was not any voucher or gift provided for participants to thank them to follow up this study. Indeed, how to recruit 416 participants and motivate them to follow up were the most challenging and considerable tasks for the researcher throughout the data collection process.

Representativeness known as the degree to which a sample reflects the population it was drawn from, is a decisive factor in determining the adequacy of a quantitative study (Polit & Beck, 2006). The women recruited in this study

were from various backgrounds. By examining baseline data, the 416 participants' socio-demographic and clinical characteristics were much more similar with the features of Chinese population compared with other related studies undertaken in the mainland of China (Table 5.1), which meant that individuals recruited in this study could represent the target population. Furthermore, aspects of recruitment, particularly comparisons of respondents with non-respondents in terms of important characteristics need to be discussed. In this study, there were no statistically significant difference in socio-demographic and clinical characteristics between respondents and non-respondents at six and 12 weeks postnatally (Tables 4.2 and 4.3). It demonstrated that selection bias was not likely to be associated with dropout of participants at the two time points in terms of baseline data; thus non-respondents cannot be said to have distorted the findings. By comparison of 6-week characteristics (Table 4.15), the results indicated that non-responding participants at 12-weeks postnatally did not contribute to a bias in the research results in MSE scores, social support scores, baby health and baby fussiness scores. Participants with lower EPDS scores and higher satisfaction with "Doing the month" scores at six weeks postnatally were more likely to be lost to follow up at 12 weeks postnatally. Possibly because they thought that continuing follow up of this study was not necessary for them owing to their good physical and mental conditions (such as participants with fewer postnatal depression symptoms and more satisfaction with "Doing the month"). Moreover, some researchers argue that selection bias arises when the study population is not selected randomly from the target population for which a statement is to be made (Hammer et al., 2009). In this study, systematic sampling, one type of randomised sampling techniques, was used to recruit every eligible woman in sequence of the three hospitals in sampling interval to effectively avoid selection bias.

The other strength of this study was the predetermined sample size. In consideration of ensuring stable test parameters in a multivariate analysis for statistical power or precision (the maximum sample size was about 200); and the loss rate to follow up at every time point, the required sample size was predetermined before data collection. This ensured that there were sufficient sample numbers acquired at six weeks postnatally (n=304) and 12 weeks postnatally (n=214) for statistical accuracy. In a systematic review, researchers described that many longitudinal observational studies lacked statistical power to determine real differences until sufficient follow-up time has passed to accumulate enough outcomes (Tooth et al., 2005). For example, Tooth et al. (2005) reported that none of the 49 randomly selected studies with longitudinal design included any justification for the sample size. The appropriate calculation of statistical power for these observational longitudinal design have been recommended by many researchers to accurately quantify the difference between effects of variables on one outcome (Dunn et al., 2004). However, this kind of priori consideration for the precision of a longitudinal study also has been questioned by some researchers in consideration of its feasibility (Twisk, 2003).

5.4.3 Data collection and management

Questionnaires are the most common method used for data collection in quantitative studies and consist mainly of closed questions with a choice of fixed answers (Coughlan et al., 2007). Postal questionnaires are administered by post or mail and have the effect of perceived anonymity. Questionnaires also can be issued in face-to-face interviews or in some instances over the telephone (Polit & Beck, 2006). After identifying the appropriate data collection method, the next step that needs to be considered is the design of the instrument. Researchers have the choice of using a previously designed instrument or developing one for the study (Coughlan et al., 2007). Designing an instrument is considered to be a protracted and sometimes difficult process; and qualities of newly developed

instruments should be tested by further research (Burns & Grove, 1997).

In this study, the instruments including SICS (Self-efficacy in Infant Care Scale), EPDS (Edinburgh Postnatal Depression Scale) and PSSS (Postpartum Social Support Questionnaire) had good reliability and validity as reported in Chapter Three Methods (Pages 112–116) and were selected to constitute the research questionnaire. These chosen instruments with sound psychometric properties were the most appropriate for answering to the research questions and eliciting accurate information about MSE, postnatal depression symptom and social support for Chinese women; and helping achieve the goals of this study. In addition, these instruments used in this study were pre-tested by the ten women in the pilot study to ensure they were understandable. The Cronbach's alpha coefficient of MSE, EPDS and PSSS that tested in this study were 0.94, 0.85 and 0.90, respectively. Having reliable and valid instruments is one of the best ways of reducing measurement bias in quantitative research (Tooth et al., 2005). Therefore, using these instruments with good psychometric properties in this study was highly likely to improve the confidence with which conclusions can be drawn from the research results.

However, some researchers argued that pre-set answers on questionnaires do not necessarily reflect how people really feel about a subject and in some cases might just be the closest match (O'Neill, 2006). Moreover, these self-appraisals measurements contributed to other weakness of this study, that primarily leading to a reliance on only one common source of information. Furthermore, in consideration of the important variables of MSE and "Doing the month", there have been no related designed measurements for Chinese postnatal women.

During the data collection process, the questionnaire completion rate in this study was 100% and there were no missing data in questionnaires. The reasons for the very high completion rate of questionnaires may be that the researcher built up the rapport with these women during contacts, and requested every

participant to fill in every item of questionnaires carefully and noted that if more than 20% of data was missing, the questionnaire would be excluded as any missing data could affect the accuracy of research results. In this study, no questionnaire was excluded; and 14 questionnaires had missing data accounting for less than 20% initially. For these questionnaires with missing data, the researcher contacted the related participants by telephone and asked for their permission to answer these questions, and all of the 14 participants were willing to provide the missing data. Data missing not at random can be a source of bias affecting internal validity and can also affect estimates of absolute prevalence or incidence (Reijneveld & Stronks, 1999); so that questionnaires with no missing data in this study can reduce effectively the information bias of results.

5.4.4 Data analysis

Before data analysis, the database including data entry, coding and data cleaning was checked twice by the researcher. Statistical analysis including descriptive statistics and inferential statistical tests was completed using SPSS Statistics 21.0. Data were checked to ensure that they met the assumptions required for different analysis methods, and these methods such as t-test, analysis of variance, Chi-square test, spearman correlation, and multiple linear regression, were strictly conducted and followed by the standard recommended procedures (Field, 2009). One advantage of this scientific analysis was to allow for greater objectivity and accuracy of results; and reduced or eliminated errors in calculation (O'Neill, 2006; Coughlan et al., 2007). Secondly, it involved a greater number of samples, and enhanced the generalisability of the results. Thirdly, personal bias can be avoided by researchers keeping a "distance" from analysing data (O'Neill, 2006). By contrast, some researchers thought that because statistical analysis only focused on numbers, results from this analysis were more likely to be limited as they provide numerical descriptions rather than detailed narrative and generally provide less elaborate accounts of human

perception (O'Neill, 2006).

5.4.5 Summary

5.4.5.1 Summary of strengths

Researchers recommended that some considerations including conducting an assessment of the key factors in the design, sampling and analysis of the study should be critiqued as to whether or not the study findings were generalisable; also referred to as external validity (Coughlan et al., 2007). Therefore, as Hammer et al. (2009) recommended, the strengths of this study: a longitudinal design with a good representative and predetermined sample, a high recruitment rate and an acceptable response rate, the use of sound instruments with a high validity and reliability, and statistically scientific analysis, can be seen to reduce bias effectively, such as selection bias, information bias, measurement error and confounding, and enhance the generalisability of research results beyond the target population (Tooth et al., 2005). In other words, using a quantitative longitudinal design, research questions in this study were best answered by description of the change trajectories of MSE, postnatal depression symptoms and social support, and by thorough exploration of the influencing factors on MSE for primiparous women in Xiamen City, South-eastern region of China, and these research findings were generalised to the larger target population of Chinese primiparous women in South-eastern areas. Furthermore, this study's findings explained approximately 50% of the total variance in MSE scores at the two time points and indicated the model's power of explanation was good, much higher than 20%-30% of variance in other studies (Leerkes & Crockenberg, 2002; Zang & Shen, 2010).

5.4.5.2 Summary of limitations

Findings from this study should be tempered by consideration of the limitations of the research, such as the reliance on self-report measures which limits the generalisability of the findings. In addition, the study sample was limited to women who had access to technology resources in Xiamen City because all women responded to the questionnaire online. Furthermore, the data of this study was limited to the short term of six and 12 weeks postnatally. If available, follow up time of further study could be prolonged to one year postnatally to know the change trajectory of MSE in the longer term. Moreover, the special measurement of MSE and "Doing the month" could be developed which would be derived from Chinese women. Additionally, there were still other unknown variables affecting MSE that may not have been accounted for in this study, such as the sensitive issue of domestic violence or sexual relationship with husband.

The findings from this study, and the results and methodological strengths and limitations of this study are discussed in Chapter Five. According to the above discussion, the conclusions of this study and the recommendations for nursing practice and for further research are drawn in the following chapter.

Chapter Six Conclusions and Recommendations

6.1 Introduction

The conclusions of this study are drawn in this chapter. The implications for nursing practice and identified areas for further research in relation to the improvement of MSE scores for primiparous women in the context of health care in China are also included.

6.2 Conclusions

6.2.1 MSE

In this study, Chinese primiparous women had a moderate level of MSE at six and 12 weeks postnatally. During this period, they experienced a statistically significant increase in their maternal role competence from six to 12 weeks postnatally; however, whether this increase in MSE scores had a significant health effect was not clear. Chinese primiparous women had more confidence and ability in some parenting tasks, such as keeping the baby safe, nutrition, and having good interaction with their infant. In contrast, these women were not confident in continuing to breastfeed when they returned to work or were outside the home, and were less sure of their capability in particular parenting areas, such as recognition and management of some common ailments (diarrhoea, constipation, and fever) and emergency care (first aid for choking, seizure, and tracheal foreign body).

6.2.2 Postnatal depression symptoms

A higher proportion of Chinese primiparous women in this study had postnatal depression symptoms than did women in studies undertaken in Western countries, such as in the UK (Morrell et al., 2009a), at six and 12 weeks

postnatally. These depression symptoms decreased with the passage of time; however, this reduction was not large enough to have a clinical significance.

6.2.3 Social support

In this study, Chinese primiparous women received a moderate level of social support in general at six and 12 weeks postnatally, and from their own perspective, Chinese primiparous women received more social support as time went on. However, whether this improvement in social support had a significant health effect was not clear. The informational support and evaluation of support that women reported they received were less compared with the emotional support and material support that women reported they received.

6.2.4 "Doing the month"

"Doing the month" was still popular in modern Chinese society in this study. Some practices of "Doing the month" were felt to be beneficial for the wellbeing of postnatal women; however, the practice of supplementary feeding for infants was considered to be harmful for child health according to health professionals' judgement (Raven et al., 2007). In this study, almost half of the women felt satisfied or very satisfied with their experience of "Doing the month", because their family gave them a great deal of support and helped them to have a good rest; some women felt a sense of achievement when taking care of their baby; some women always thought positively; and some women stated that having an appreciative attitude helped them to get along with older generations, as the open question response indicated. In contrast, approximately one quarter of the women felt dissatisfied or very dissatisfied with "Doing the month", due to being tired of following taboos, having conflicts with their mother-in-law, the lack of family help and care, and undue expectation on "Doing the month".

6.2.5 Factors influencing MSE

In this study, several factors had influenced MSE in the sample of Chinese primiparous women during the initial postnatal period, including social support, women's satisfaction levels with "Doing the month", postnatal depression symptoms, maternal education, maternal occupation, baby health, and baby fussiness. Other variables, including maternal age, family income, mode of birth, whether women attended parenting training, and baby gender, did not appear to influence MSE in these women during the first three months postnatally.

Obstetric nurses and women's own family members, such as husbands and mothers-in-law/mothers, need to be aware of and acknowledge the significant contribution of social support and women's satisfaction levels with "Doing the month" to positively influence primiparous women's MSE. They also need to be aware of the significant effect of postnatal depression symptoms on negatively impacting on first-time mothers' MSE during the postnatal period. Moreover, obstetric nurses and women's family members should be more aware of these women with relatively low MSE levels in the following groups: primiparous women with lower education, unemployed mothers, women with unskilled occupations, women with an unhealthy baby, and women with a baby with a difficult temperament.

6.3 Recommendations

6.3.1 Implications for clinical practice

(1) From the findings of this study there is an identified need for alterations to be made to the current parenting training offered in hospital settings to women. It should be ensured that parenting training includes information on emergency care, such as first aid for choking, seizure and tracheal foreign body; information about care of common ailments, such as diarrhoea, constipation and fever; and

parenting education about continuing breastfeeding when women return to work or go outside the home. Nurses in obstetric departments are the best resource to provide this kind of parenting information to primiparous women during the period of hospitalisation.

(2) In this study, there appeared to be a large proportion of Chinese women who exhibited symptoms of postnatal depression compared with women in Western countries. As a result, health professionals and the woman's own family should pay more attention to these symptoms. Early identification of postnatal depression symptoms by health professionals caring for Chinese postnatal women could be achieved through initiating additional training to prepare the health professionals to recognise postnatal depression and undertake an assessment while providing postnatal care, or formalise the detection as one part of routine postnatal examination by health professionals in hospital at six weeks postnatally. The development of an intervention specifically designed to effectively relieve postnatal depression symptoms in Chinese cultural context should be a priority.

(3) In order to improve social support for Chinese primiparous women, and thus increase competence in their new maternal role, obstetric nurses should help women and their family members, especially their husband and mother/mother-in-law, to be aware of the importance of social support for the improvement of MSE levels after childbirth. This could be achieved by women identifying kinds of support that are helpful to new mothers that family members and friends could use. In addition, obstetric nurses could encourage Chinese primiparous women to take the initiative in seeking support; furthermore, obstetric nurses and community doctors could be encouraged to provide continuity of informational and appraisal support during the woman's hospitalisation and after discharge from hospitals.

(4) To increase women's satisfaction levels with "Doing the month" and then increase their MSE levels, obstetric nurses could give women and their family members some information and suggestions during their hospitalisation. For instance, new mothers could be suggested to have an objective opinion on the potentially positive and negative effects of "Doing the month". Thinking positively is of importance for a better experience of "Doing the month". Additionally, obstetric nurses could encourage primiparous women to have an appreciative attitude to help them to get along with older generations, and deal with potential or real conflicts with them. Moreover, women are suggested to take the initiative in taking care of their baby to gain a greater sense of achievement from parenting, rather than excessively depending on their family members during the period of "Doing the month". Furthermore, women's family members, especially mothers/mothers-in-law and husbands, could be suggested to give women great support and help that enable women to have a good recovery after childbirth.

(5) In clinical practice, health professionals should give more attention to those primiparous women with lower education, unemployed first-time mothers, women with unskilled occupations, women with an unhealthy baby, and women with a baby with a difficult temperament, who are more likely to have a comparatively lower MSE level than other women. Additionally, health professionals should raise the awareness and attention of women's family members towards these women with lower MSE levels, especially their husbands, mothers and mothers-in-law.

(6) The findings of this study indicated that the effects of parenting training from health professionals were not as positive as expected, possibly because of the heavy workload of obstetric nurses and the single verbal method in which parenting training was used in the three hospitals. Therefore, the introduction of written materials such as leaflets in these clinical settings is

suggested by the researcher in order to improve the outcomes of antenatal and postnatal education from hospitals for the increase of Chinese women's MSE levels.

6.3.2 Implications for further research

(1) Owing to financial and time limitations, this study focused on two time points of six weeks and 12 weeks postnatally. As a result, the long-term impact on MSE was not assessed. Therefore, there is a need for a longitudinal study to be undertaken, including the time points of six months and one year postnatally, to assess the natural course of MSE in Chinese women.

(2) As indicated in the findings, women with lower EPDS scores and higher satisfaction with "Doing the month" scores appeared to be more likely to be lost in follow up, and the study sample in this study was limited to women who had access to technology resources (i.e. responding to the questionnaire online) in Xiamen City, South-eastern region of China. As a result, the generalisation of the research findings could be affected negatively. Thus, further, larger, similar studies should be conducted in other cities, provinces and regions in China to examine this study results.

(3) No related measurements have been specially designed for Chinese women to measure the important variables of MSE and "Doing the month" in this study. Therefore, the special measurements for MSE and "Doing the month" should be developed with Chinese women in further studies in Chinese cultural context.

(4) As indicated in the findings, the outcomes of parenting training from health professionals were not positive as expected, possibly owing to the heavy workload of obstetric nurses and the single training approach of oral explanation in this study. Thus, various feasible methods of parenting training, such as oral explanation plus leaflets, should be researched in the future by obstetric nurses to identify whether the effectiveness of parenting training could be improved.

(5) In consideration of the higher proportion of Chinese first-time mothers with postnatal depression symptoms in this study, the reasons for the higher proportion need to be deeply explored in Chinese cultural society, such as the social expectation of women as a mother and wife, and an intervention by health professionals needs to be developed and its effectiveness needs to be researched as soon as possible with the aim to relieve postnatal depression symptoms for Chinese primiparous women.

(6) In aiming to develop an in-depth understanding of various types of social support needed by primiparous women, a qualitative study of mothers' perspectives on social support needs to be conducted in the future.

(7) Some parenting programmes undertaken in the UK were evaluated and demonstrated to effectively increase women's MSE scores (Bloomfield & Kendall, 2007; Bloomfield & Kendall, 2010), which could afford implications for the possibility of conducting parenting programmes in China. Based on this study results, such as the explored influencing factors on MSE for Chinese first-time mothers (social support, women's satisfaction levels with "Doing the month", postnatal depression symptoms, maternal education, maternal occupation, baby health, and baby fussiness), the future intervention studies should be designed and conducted to explore effective parenting programmes to raise Chinese mothers' MSE levels and to ultimately improve Chinese primiparous women's parenting practices.

(8) There is no research evidence on how much improvement in MSE scores and in social support scores constitutes an important health effect. Therefore, there is scope to undertake future research exploring this aspect in more depth.

(9) Approximately 50% of the total variance in MSE scores at the two time points was explained by the analysis undertaken in this study. However, this highlights that the potentially other unknown factors which may affect MSE could

not have been accounted for. Therefore qualitative studies are recommended in order to explore MSE and its influencing factors more deeply in the future, to avoid the limitations of only using numerical descriptions and self-appraisal measurements in this study. For example, what is the view of Chinese primiparous women on what they feel affects their MSE levels? What are the perspectives of health professionals, women's husband and mother/mother-in-law?

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Appendix

Appendix 1 Studies related to MSE for differently aged children

Differently aged children	Studies
Infant	Cutrona & Troutman, 1986; Froman & Owen, 1990; Reece, 1992; Reece & Harkless, 1998; Hudson et al., 2001; Porter & Hsu, 2003; Jones & Prinz, 2005; Kendall & Bloomfield, 2005; Haslam et al., 2006; Prasopkittikun et al., 2006; Barnes & Adamson-Macedo, 2007; Bloomfield & Kendall, 2007; Crncec et al., 2008, Farkas-Klein, 2008; Ngai et al., 2009; Salonen et al., 2009; Ngai et al., 2010; Piercea et al., 2010; Prasopkittikun et al., 2010; Biehle & Mickelson, 2011; Ngai et al., 2011; Salonen et al., 2011; Choi et al., 2012; Denis et al., 2012; Fulton et al., 2012; Gao et al., 2012; Leahy-Warren et al., 2012; Ngai & Chan, 2012; Swanson et al., 2012; Troutman et al., 2012; Kohlhoff & Barnett, 2013; Perez-Blasco et al., 2013; Shorey et al., 2014a, b
Toddler	Gross et al., 1995; Coleman & Karraker, 2003; Whittaker & Cowley, 2006; Finlayson et al., 2007; Surkan et al., 2008; Sevigny & Loutzenhiser, 2009; Piercea et al., 2010; Whittaker & Cowley, 2012; Fry-Bowers et al., 2014
Pre-and school-age children	Dumka et al., 1996; Brody et al., 1999; Coleman & Karraker, 2000; Izzo et al., 2000; Harty, 2005; Sanders & Woolley, 2005; Whittaker & Cowley, 2006; Suzuki et al., 2009; Suzuki, 2010; Meunier et al., 2011; Purssell & While, 2011; Tahmassian et al., 2011a; Bloomfield & Kendall, 2012; Breitenstein et al., 2012; Kendall et al., 2013; Murdock, 2013
Adolescent	Bogenschneider et al., 1997; Gondoli & Silverberg, 1997; Ardel & Eccles, 2001; Shumow & Lomax, 2002; Dumka et al., 2010
Unhealthy children with autism, diarrhoea, Down's syndrome, chronic kidney disease or premature baby	Laws & Millward, 2001; Sofronoff & Farbotko, 2002; Kuhn & Carter, 2006; Tahmassian et al., 2011b; Swallow et al., 2012; Swanson et al., 2012; Joventino et al., 2013

Appendix 2 Introduction of the research setting

China vs Fujian Province vs Xiamen City





Xiamen Maternity hospital

The first affiliated hospital of Xiamen University



The affiliated Zhongshan Hospital of Xiamen University



Nursing Station



Obstetrical Ward

Appendix 3 Participant information sheet

Title of Study: An exploration of factors which influence maternal self-efficacy in primiparous women in China during the initial postnatal period

Name of Researcher(s): Xujuan Zheng, Dr Jane Morrell, Dr Kim Watts

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. Xujuan Zheng will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

What is the purpose of the study?

The aim of this study is to describe maternal self-efficacy (MSE) and to explore factors which may influence MSE in primiparous women in China in the first three months postnatally. The objectives are to describe MSE, postnatal depression and social support at six weeks postnatally and monitor change over time to 12 weeks postnatally; and to explore the factors which influence MSE in primiparous women in China. This work is being conducted as a part of a PhD.

Why have I been invited?

You are being invited to take part because you are a first-time mother who had a baby in the hospitals involved in the study. We think your answers to questionnaires may help us best understand MSE and its influencing factors. We are inviting 420 women like you to take part.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign the consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights.

What will happen to me if I take part?

As a participant you would be asked to complete some questionnaires. The questionnaire includes four sections of the baseline questionnaire (socio-demographic and clinical characteristics, "Doing the month", baby health and baby fussiness), the Self-efficacy in Infant Care Scale (SICS), the Edinburgh Postnatal Depression Scale (EPDS) and the Postpartum Social Support Scale (PSSS). The socio-demographic and clinical questionnaires will be distributed to you face-to-face by Xujuan Zheng on the hospital postnatal ward at three days postnatally; and your contact details such as e-mail, address and phone number will also be collected. You would return your replies in an envelope which you can seal and return in confidence to the researcher Xujuan Zheng on the same day. It will take 5-10 minutes to complete it. Then, you would receive the six weeks questionnaires (SICS, EPDS, PSSS, "Doing the month" including how satisfied you are with the experience of "Doing the month", your attitudes toward "Doing the month", and the open question of "why you feel satisfied or dissatisfied with the experience of 'Doing the month'?", baby health and baby fussiness) and the 12 weeks questionnaires (SICS, EPDS, PSSS, baby health and

baby fussiness) sent by post (also including an envelope, with a stamp and the researcher's address for you to reply) or e-mail (depending on your choice) at six weeks and 12 weeks postnatally, and you will return them to the researcher either via post or e-mail. It will take you about 20 minutes to complete it. The researcher will give you reminders via text or mobile telephone calls according to your choice at one week before and after the six weeks and 12 weeks postnatally survey distributions.

Expenses and inconvenience allowance

Participants will be not paid in the study.

What are the possible disadvantages and risks of taking part?

We do not anticipate any disadvantage or risk in taking part in this study.

What are the possible benefits of taking part?

We cannot promise the study will help you but the information we get from this study may help us further understand maternal self-efficacy for first time mothers and their infants in China.

What if there is a problem?

If you have a concern about any aspect of this study, you can speak with Xujuan Zheng, who will do her best to answer your questions. The researchers' contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you should then contact Mrs Louise Sabir, the Ethics Committee Secretary, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH. E-mail louise.sabir@nottingham.ac.uk."

Will my taking part in the study be kept confidential?

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you which leaves the setting will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

Your personal data (address, telephone number, home number) will be kept for three months after the end of the study so that we are able to contact you about the findings of the study. All other data (research data) will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality; only members of the research team will have access to your personal data.

Although what you write in the questionnaires is confidential, should you disclose anything to us which we feel puts you or anyone else at any risk, we may feel it necessary to report this to the appropriate persons. Some actions would be taken by the appropriate persons to protect you or anyone else and Xujuan Zheng will inform you by telephone; however, the decision to accept or refuse the service will be left to you.

What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will happen to the results of the research study?

It can be anticipated that the results will be published as a doctoral thesis by 2015. A summary of the results will maintain anonymity and confidentiality in the reports. It can be also anticipated that the findings will be presented at conferences and submitted for publication in peer-reviewed journals.

Who is organising and funding the research?

This research is being organised by the University of Nottingham and is not funded.

Who has reviewed the study?

All research in the University of Nottingham is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the Medical School Research Ethics Committee.

Further information and contact details

Xujuan Zheng, PhD student in Health Studies, School of Nursing, Midwifery and Physiotherapy, University of Nottingham, Room B33 Queen's Medical Centre, Nottingham, NG7 2HA. Email: ntxxz1@nottingham.ac.uk; zhengxujuan@163.com. Tel: 07404476340

Dr Jane Morrell, Associate Professor in Health Research, School of Nursing, Midwifery and Physiotherapy, Faculty of Medicine and Health Science, University of Nottingham, Room C54, Queen's Medical Centre, Nottingham, NG7 2UH. Email: Jane.Morrell@nottingham.ac.uk. Phone: 0115 82 30058

Dr Kim Watts, Midwife Lecturer, School of Nursing, Midwifery and Physiotherapy, Faculty of Medicine and Health Science, University of Nottingham, Room M11 Postgraduate Education Centre, Nottingham City Hospital, Hucknall Road, Nottingham, NG5 1PB. Email: kim.watts@nottingham.ac.uk. Phone: 0115 82 31956

Appendix 4 Consent form

Title of Study: An exploration of factors which influence maternal self-efficacy in Primiparous women in China during the initial postnatal period - A longitudinal study

REC ref: S14032013 SNMP OVS

Name of the Researcher: Xujuan Zheng

Participants need to know the following information:

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis.
3. I understand that relevant sections of my data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential.
4. I agree to take part in the above study and agree to fill in questionnaires.

When you finish reading this consent form and would like to take part in this study, please sign your name. Your signature means that you have read and understand the information sheet for the study and you agree to take part in the study and agree to use your information in the study of the researcher.

Participant Signature:

Date:

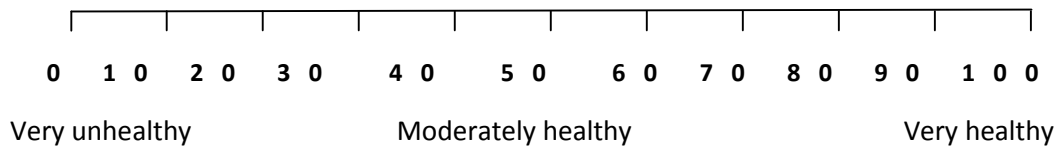
Appendix 5 Questionnaires

Baseline Questionnaire

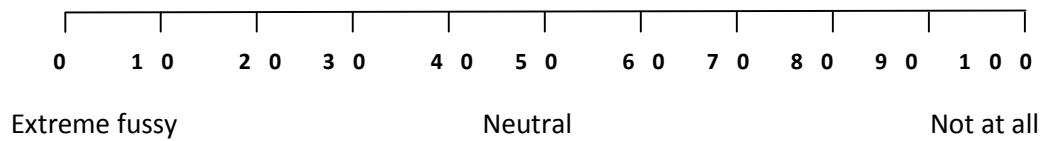
Please give the answers according to your true situation.

1. What is your age: _____
2. What is your educational level ()
(1) Middle school or lower (2) High school or Vocational school (3) University or College (4) Master degree or higher
3. What is your occupation ()
(1) Worker (2) Farmer (3) Governmental officer (4) Teacher (5) Health professional (6) Company employee (7) Self-employed (8) Unemployed states (9) Others _____(Please note)
4. What is your marital status ()
(1) Married (2) Divorced (3) Single
5. What is your family income (RMB/Per month/ Per person) ()
(1) <1500 (2) 1500-3000 (3) 3001-5000 (5) >5000
6. What is your mode of birth ()
(1) Normal vaginal birth (2) Assisted birth (3) Caesarean section
7. What are the sources of your parenting information () (Can multiple option)
(1) Health professionals (2) Family or friends (3) Books or magazines (4) Internet (5) Television (6) Prior parenting experience such as taking care of siblings (7) Others _____(Please note)
8. Whether you attended parenting lecture/training/seminar? ()
(1) Yes (2) No
9. If you attend, please choose the sources of training () (Can multiple option)
(1) Antenatal education from the hospital (2) Postnatal education from the hospital (3) Others _____(Please note)
10. What is your baby gender ()
(1) Boy (2) Girl

11. How healthy is your baby () (Please rate your degree of health by recording boxes a number from 0 to 100, 100 = best possible, 0 = worst possible)



12. How fussy or irritable your baby is ()



13. What the birth date of your baby: _____

14. What are your contact details?

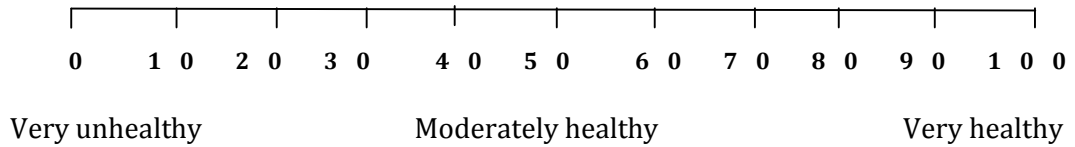
Mobile phone number: _____ home number: _____

E-mail: _____

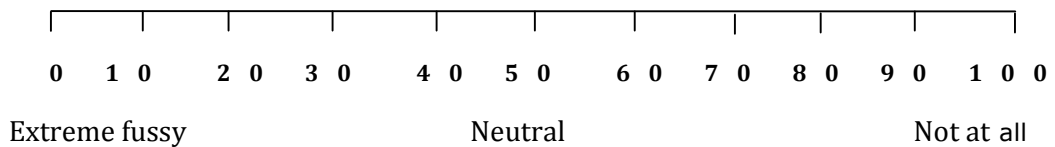
Address:

Six-week Questionnaire

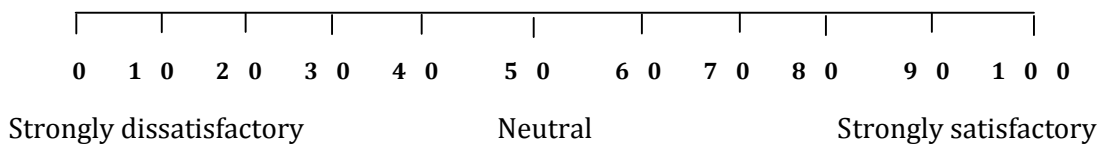
1. How healthy do you think your baby is () (Please rate your degree of health by recording boxes a number from 0 to 100, 100 = best possible, 0 = worst possible)



2. How fussy or irritable do you think your baby is ()



3. What is your experience of "Doing the month"? ()



Please describe why you felt satisfied or dissatisfied with the experience of "Doing the month":

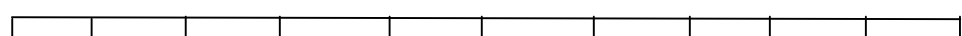
4. What is your attitude towards "Doing the month"? ()

1. Necessary and I followed it on my own initiative.
2. Unnecessary to follow it.
3. Does not matter, but my mother-in-law or mother asked me to follow it.

Self-efficacy in Infant Care Scale (SICS)

Instruction:

The following items asking about the confidence or belief you have in your ability to effectively manage a variety of tasks or situations in taking care of your infant aged from birth to one year old. On the items below, please rate your degree of confidence in performing the designated tasks/situations by recording in each of the blank boxes a number from 0 to 100 using the scale given below.



0 10 20 30 40 50 60 70 80 90 100

Not confident at all

Moderately confident

Definitely confident

to do it

I can do it

I can do it

Self-efficacy in Infant Care Scale (SICS)

I am confident that I am able to...	Confidence (0-100)
1. understand what my baby at this age can do	
2. provide music toys or sing a song to my baby.	
3. provide a specific space for my baby to practice crawling, creeping, or pulling her/himself to stand.	
4. teach my baby name of person, animals, and objects.	
5. allow my baby to feed herself/himself though this causes a mess.	
6. play with my baby every day though I am very busy.	

I am confident that I am able to...	Confidence (0-100)
7. teach my baby how to play by playing with her/him.	
8. allow my baby to do what s/he is trying to do before offering a help.	
9. understand what my baby's different cries mean.	
10. get my baby to smile or laugh.	
11. understand what my baby likes or dislikes.	
12. show affection to my baby every day	
13. read my baby's gestures of what s/he wants or needs.	
14. speak to and make eye-to-eye contact with my baby during breast or bottle feeding.	
15. distract my baby from what s/he is doing.	
16. give mouth care to my baby every day.	
17. use a suction bulb correctly when my baby has phlegm.	
18. give my baby medication without choking her/him	
19. use a thermometer correctly when taking my baby's temperature.	
20. prevent my baby from diaper rash.	

I am confident that I am able to...	Confidence (0-100)
21. decide when I should give my baby a tepid sponge when s/he has a fever.	
22. relieve my baby's gas pain.	
23. understand the differences between vomiting and milk spitting.	
24. understand whether my baby's bowel movements are normal.	
25. give proper care when my baby gets mild diarrhoea.	
26. decide whether my baby with diarrhoea should see a doctor.	
27. give help when my baby is constipated.	
28. give proper care when my baby has a seizure.	
29. give first aid to my baby when there is an object blocking her/his throat or nostrils.	
30. give proper care to prevent suffocation when my baby is vomiting.	
31. protect my baby from cigarette smoke.	
32. protect my baby from getting close to a person having a cold.	
33. gently refuse my baby when s/he insists on playing a harmful toy or staying in a dangerous place.	
34. make the home environment safe for my baby.	

I am confident that I am able to...	Confidence (0-100)
35. hold my baby firmly while bathing or feeding her/him.	
36. provide safe toys for my baby.	
37. select formula that is appropriate for my baby's age.	
38. clean utensils (e.g., bottle, pacifier) correctly.	
39. manage a regular meal for my baby when s/he is 6 months old.	
40. manage three regular meals for my baby when s/he is 12 months old.	
41. provide solid food that is appropriate for my baby's age.	
42. let my baby have breast milk on schedule even I am not at home or at a place of work.	
43. hold my baby every time s/he is breast or bottle fed.	
44. always burp my baby after breast or bottle feeding.	
45. be a good mother.	
46. seek knowledge about infant care.	

Cited in Prasopkittikun & Tilokskulchai (2010)

Edinburgh Postnatal Depression Scale (EPDS)

Please **UNDERLINE** the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today. Cited in Cox et al. (1987)

1. I have been able to laugh and see the funny side of things.

- (1) As much as I always could
- (2) Not quite so much now
- (3) Definitely not so much now
- (4) Not at all

2. I have looked forward with enjoyment to things.

- (1) As much as I ever did
- (2) Rather less than I used to
- (3) Definitely less than I used to
- (4) Hardly at all

3. I have blamed myself unnecessarily when things went wrong.

- (1) Yes, most of the time
- (2) Yes, some of the time
- (3) Not very often
- (4) No, never

4. I have been anxious or worried for no good reason.

- (1) No, not at all
- (2) Hardly ever
- (3) Yes, sometimes
- (4) Yes, very often

5. I have felt scared or panicky for no very good reason.

- (1) Yes, quite a lot
- (2) Yes, sometimes
- (3) No, not much
- (4) No, not at all

6. Things have been getting on top of me.

- (1) Yes, most of the time I haven't been able to cope at all
- (2) Yes, sometimes I haven't been coping as well as usual
- (3) No, most of the time I have coped quite well
- (4) No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping.

- (1) Yes, most of the time
- (2) Yes, sometimes
- (3) Not very often
- (4) No, not at all

8. I have felt sad or miserable.

- (1) Yes, most of the time
- (2) Yes, quite often
- (3) Not very often
- (4) No, not at all

9. I have been so unhappy that I have been crying.

- (1) Yes, most of the time
- (2) Yes, quite often
- (3) Only occasionally
- (4) No, never

10. The thought of harming myself has occurred to me.

- (1) Yes, quite often
- (2) Sometimes
- (3) Hardly ever
- (4) Never

Postpartum Social Support Scale (PSSS)

Please UNDERLINE the answer that comes closest to the degree of support you have received from the family, friends, health professionals, society, among other things.

Items	The degree			
	Never	Seldom	Sometimes	Often
1. Some people love me				
2. Some people understand my feeling of being a new mother				
3. Some people would like to listen my complains when I suffer from the maternal role strain				
4. Some people care for me				
5. Some people give me emotional support (such as encourage, comforts)				
6. If necessary, some people offer me financial or material help				
7. If necessary, some people take care of my baby for me				
8. Some people help me do domestic chores (laundry, cooking, cleaning, etc.)				
9. Some people accompany me when I go to hospital to do postnatal examination or other things				
10. When I feel uncomfortable after childbirth, some people take care of me.				
11. Some people give me instructions of self-care postpartum				
12. Some people guide me how to look after my baby (bathing, changing diapers, umbilical care, etc.)				

13. Some people give me instructions of breastfeed / bottle feeding				
14. Some people guide me how to observe abnormal signs and symptoms of myself and my baby				
15. Some people guide me how to create and (or) to maintain harmony among family members				
16. Some people think I am a good mother				
17. Some people think I am a good wife				
18. Some people trust my judgment in terms of taking care of baby				
19. Some people compliment me owing to my efforts after childbirth				
20. Some people give me positive appraisals for my self-care and (or) parenting behaviour				

Cite in Lu & Zheng (2001)

12-week Questionnaire

1. How healthy do you think your baby is () (Please rate your degree of health by recording boxes a number from 0 to 100, 100 = best possible, 0 = worst possible)

0	1	0	2	0	3	0	4	0	5	0	6	0	7	0	8	0	9	0	1	0	0
Very unhealthy				Moderately healthy								Very healthy									

2. How fussy or irritable do you think your baby is ()

0	1	0	2	0	3	0	4	0	5	0	6	0	7	0	8	0	9	0	1	0	0
Extreme fussy				Neutral								Not at all									

Then the items of SICS, EPDS and PSSS.

**Appendix 6 The mean score rank of 46 SICS items at six weeks
postnatally (n=304)**

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
35. hold my baby firmly while bathing or feeding her/him.	91.58 (11.16)
33. gently refuse my baby when s/he insists on playing a harmful toy or staying in a dangerous place.	90.92 (11.57)
39. manage a regular meal for my baby when s/he is 6 months old.	90.89 (11.21)
40. manage three regular meals for my baby when s/he is 12 months old.	90.72 (11.41)
31. protect my baby from cigarette smoke.	90.56 (13.54)
32. protect my baby from getting close to a person having a cold.	90.10 (12.76)
34. make the home environment safe for my baby.	90.08 (10.66)
36. provide safe toys for my baby.	89.87 (11.29)
12. show affection to my baby every day.	89.51 (12.74)
38. clean utensils (e.g., bottle, pacifier) correctly.	89.27 (11.75)
37. select formula that is appropriate for my baby's age.	88.49 (15.60)
14. speak to and make eye-to-eye contact with my baby during breast or bottle feeding.	87.04 (13.05)
6. play with my baby every day though I am very busy.	86.07 (13.21)
5. allow my baby to feed herself/himself though this causes a mess.	84.74 (15.00)
8. allow my baby to do what s/he is trying to do before offering a help.	84.69 (13.39)
2. provide music toys or sing a song to my baby.	84.42 (14.62)
43. hold my baby every time s/he is breast or bottle fed.	83.39 (17.40)

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
19. use a thermometer correctly when taking my baby's temperature.	82.75 (17.59)
10. get my baby to smile or laugh.	82.61 (15.27)
7. teach my baby how to play by playing with her/him	82.57 (15.46)
46. seek knowledge about infant care.	81.64 (14.18)
3. provide a specific space for my baby to practice crawling, creeping, or pulling her/himself to stand.	81.56 (15.63)
45. be a good mother.	81.55 (12.69)
4. teach my baby name of person, animals, and objects.	81.07 (17.63)
20. prevent my baby from diaper rash.	80.97 (16.55)
15. distract my baby from what s/he is doing	79.10 (16.22)
41. provide solid food that is appropriate for my baby's age.	78.90 (17.75)
44. always burp my baby after breast or bottle feeding.	76.88 (19.20)
1. understand what my baby at this age can do.	72.53 (16.72)
23. understand the differences between vomiting and milk spitting.	70.76 (26.68)
13. read my baby's gestures of what s/he wants or needs.	70.03 (18.57)
11. understand what my baby likes or dislikes.	68.50 (19.08)
24. understand whether my baby's bowel movements are normal.	68.26 (20.02)
26. decide whether my baby with diarrhoea should see a doctor.	64.87 (23.76)
18. give my baby medication without choking her/him.	64.25 (22.18)
9. understand what my baby's different cries mean.	63.62 (19.18)
25. give proper care when my baby gets mild diarrhoea.	62.15 (23.88)
27. give help when my baby is constipated.	59.42 (24.27)
21. decide when I should give my baby a tepid sponge when s/he has a fever.	58.98 (22.88)

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
42. let my baby have breast milk on schedule even I am not at home or at a place of work.	57.85 (29.93)
22. relieve my baby's gas pain.	51.68 (24.87)
16. give mouth care to my baby every day.	51.21 (25.85)
17. use a suction bulb correctly when my baby has phlegm.	48.13 (25.22)
30. give proper care to prevent suffocation when my baby is vomiting.	45.12 (28.15)
28. give proper care when my baby has a seizure.	38.57 (28.06)
29. give first aid to my baby when there is an object blocking her/his throat or nostrils.	38.26 (27.87)

**Appendix 7 The mean score rank of 46 SICS items at 12 weeks
postnatally (n=214)**

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
33. gently refuse my baby when s/he insists on playing a harmful toy or staying in a dangerous place.	91.53 (11.10)
35. hold my baby firmly while bathing or feeding her/him.	90.91 (13.39)
36. provide safe toys for my baby.	90.69 (10.85)
34. make the home environment safe for my baby.	90.56 (11.29)
32. protect my baby from getting close to a person having a cold.	89.84 (12.95)
12. show affection to my baby every day.	89.60 (13.19)
39. manage a regular meal for my baby when s/he is 6 months old.	89.51 (13.36)
31. protect my baby from cigarette smoke.	89.42 (13.93)
40. manage three regular meals for my baby when s/he is 12 months old.	89.34 (13.44)
38. clean utensils (e.g., bottle, pacifier) correctly.	88.34 (14.32)
14. speak to and make eye-to-eye contact with my baby during breast or bottle feeding.	88.32 (12.64)
6. play with my baby every day though I am very busy.	87.76 (12.51)
37. select formula that is appropriate for my baby's age.	87.64 (17.72)
2. provide music toys or sing a song to my baby.	87.20 (12.10)
10. get my baby to smile or laugh.	86.64 (12.75)
8. allow my baby to do what s/he is trying to do before offering a help.	85.79 (13.94)
5. allow my baby to feed herself/himself though this causes a mess.	85.65 (12.90)
7. teach my baby how to play by playing with her/him.	85.57 (12.78)
45. be a good mother.	85.23 (12.36)

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
3. provide a specific space for my baby to practice crawling, creeping, or pulling her/himself to stand.	84.04 (15.13)
46. seek knowledge about infant care.	83.76 (14.12)
19. use a thermometer correctly when taking my baby's temperature.	83.34 (17.36)
43. hold my baby every time s/he is breast or bottle fed.	83.26 (17.93)
4. teach my baby name of person, animals, and objects.	82.90 (15.57)
20. prevent my baby from diaper rash.	82.63 (15.86)
15. distract my baby from what s/he is doing.	81.45 (15.35)
41. provide solid food that is appropriate for my baby's age.	80.59 (18.56)
1. understand what my baby at this age can do.	79.57 (16.84)
44. always burp my baby after breast or bottle feeding.	77.71 (17.96)
11. understand what my baby likes or dislikes.	76.23 (17.33)
23. understand the differences between vomiting and milk spitting.	76.14 (22.51)
13. read my baby's gestures of what s/he wants or needs.	75.61 (17.23)
9. understand what my baby's different cries mean.	71.61 (18.54)
24. understand whether my baby's bowel movements are normal.	70.64 (19.75)
26. decide whether my baby with diarrhoea should see a doctor.	68.28 (23.64)
18. give my baby medication without choking her/him.	66.54 (20.45)
25. give proper care when my baby gets mild diarrhoea.	66.40 (23.15)
21. decide when I should give my baby a tepid sponge when s/he has a fever.	64.00 (25.01)
27. give help when my baby is constipated.	63.36 (23.74)
42. let my baby have breast milk on schedule even I am not at home or at a place of work.	61.05 (31.24)

Items	Mean (SD) (Descending)
I am confident that I am able to...	Confidence (0-100)
16. give mouth care to my baby every day.	57.23 (26.97)
22. relieve my baby's gas pain.	56.71 (24.13)
30. give proper care to prevent suffocation when my baby is vomiting.	54.59 (27.24)
17. use a suction bulb correctly when my baby has phlegm.	53.90 (23.86)
28. give proper care when my baby has a seizure.	49.77 (28.39)
29. give first aid to my baby when there is an object blocking her/his throat or nostrils.	47.14 (27.30)

Appendix 8 The collinearity diagnostic in multiple regression models at six weeks postnatally (n=304) and 12 weeks postnatally (n=214)

The condition indices and VIF of collinearity diagnostic in the multiple regression model at six weeks postnatally (n=304)

Model Dimension	Eigenvalue	Condition Index	Variance Proportions							
			Constant	PSSS scores	Satisfaction scores with "doing the month"	Education 2	Baby fussiness scores	EPDS scores	Baby health scores	Occupation 3
1	6.421	1.000	.00	.00	.00	.01	.00	.00	.00	.00
2	0.922	2.640	.00	.00	.00	.00	.00	.00	.00	.92
3	.346	4.306	.00	.00	.00	.92	.00	.03	.00	.01
4	.216	5.451	.00	.01	.02	.04	.00	.42	.00	.02
5	.044	12.103	.00	.07	.23	.00	.53	.06	.01	.00
6	.026	15.661	.01	.41	.73	.03	.10	.01	.03	.04
7	.016	19.734	.05	.42	.00	.00	.37	.17	.48	.01
8	.008	28.517	.94	.08	.02	.00	.00	.31	.47	.00
VIF			-	1.704	1.540	1.038	1.259	1.456	1.306	1.071

The condition indices and VIF of collinearity diagnostic in the multiple regression model at 12 weeks postnatally (n=214)

Model Dimension	Eigenvalue	Condition Index	Variance Proportions					
			Constant	PSSS scores	EPDS scores	Baby health scores	Satisfaction scores with "Doing the month"	Baby fussiness scores
1	5.667	1.000	.00	.00	.00	.00	.00	.00
2	.236	4.903	.00	.01	.54	.00	.02	.00
3	.042	11.572	.01	.01	.11	.02	.89	.12
4	.029	13.895	.00	.70	.02	.00	.08	.32
5	.017	18.136	.04	.21	.09	.52	.01	.46
6	.008	26.640	.95	.07	.23	.45	.00	.09
VIF			-	1.412	1.294	1.217	1.351	1.152

Note: various recommendations for levels of VIF for a sign of multicollinearity have been published in the literature. A value of 10 has been recommended most commonly as a sign of multicollinearity. However, a recommended VIF value of 5 and even 4 also can be found as a sign of multicollinearity.