EVOLVING MEANING FROM BEING PREGNANT AND BECOMING A NEW MOTHER OVER THE PERIOD OF A MAJOR EARTHQUAKE: A GROUNDED THEORY STUDY

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Ph.D

The Hong Kong Polytechnic University

This programme is jointly offered by

The Hong Kong Polytechnic University and Sichuan University

2017

The Hong Kong Polytechnic University

School of Nursing

Sichuan University

Institute for Disaster Management and Reconstruction

Evolving meaning from being pregnant and becoming a new mother over the period of a major earthquake: A grounded theory study

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A thesis submitted in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

April 2017

CERTIFICATE OF ORIGINALITY

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ABSTRACT

It has been reported in the literature that an earthquake, as an adverse life occurrence, could affect the physical and mental health of pregnant women, which might further affect the health of their baby. Family, as the major source of social support, may play a key role in the recovery and maintenance of maternal psychological health after a major disaster such as an earthquake. However, researchers have put their focus on quantitative investigation of such problems and related risk factors, yet the in-depth exploration of perinatal women's experience of earthquakes and related buffers or interventions, such as family support, remain scarce. This limitation would curtail the design of effective and efficient interventions targeting this population after a major disaster. This study aimed to investigate the experience of women who were pregnant and gave birth during the period of a major earthquake, and the roles and dynamics of family in relation to the health of these women.

Charmaz's constructivist grounded theory (GT) method was used for this study. The research setting was Ya'an, which was the epicentral area of the 2013 earthquake in Sichuan (China). Twenty-two women who were pregnant during the earthquake and two of their husbands were recruited through purposive and theoretical sampling. The constant comparative analysis was guided by coding practice of the constructivist GT approach, and aided by NVivo 10 for data management.

After the earthquake, the pregnant women experienced three dynamic stages, which include 'being disturbed', 'alleviating disturbances' and 'growing up' until their

return to normal life. During the first phase, the earthquake disturbed the daily lives of perinatal women and curtailed their family support due to decreased family resources and abilities, which led to 'negative psychological responses'. Yet the earthquake brought 'positive' effects as well, by increasing family cohesion and interpersonal relationships with others outside of their family. The women subsequently entered the second phase of 'alleviating disturbances' through 'being there of the family members' and 'love and hope instilled by the baby'. Motivated by love and hope instilled by the baby, and supported by 'being there of the family members', the women were able to alleviate their negative psychological responses and change their values about their relationship with their families and baby rearing. During the last phase of 'growing up', the women gained a new meaning in life and returned to their normal lives in their role as a mother. The women experienced a change in their values, and the core process for them in being pregnant and becoming a new mother over the period of a major earthquake was 'evolving meaning'.

This study provides implications for clinical practice and future research, which include integrating disaster preparedness courses into prenatal/rearing programmes for perinatal women and their families; providing more humanistic nursing services with an emphasis on psychological health around delivery; and establishing government policies and resources that support husbands in participating in pregnancy-related activities. In order to enhance 'being there of the family members' over the period of recovery from disaster with a new baby.

PUBLICATIONS

1. Ren, J., Chiang, C. V., Jiang, X., Luo, B., Liu, X., & Pang, S. M. (2014). Mental disorders of pregnant and postpartum women after earthquake: A systematic review. *Disaster Medicine & Public Health Preparedness*, *8*(4), 315-25.doi:10.1017/dmp.2014.62

2. Ren, J., Jiang, X., Yao, J., Li, X., Liu, X., Pang, M., et al. (2015) Depression, social support and coping styles among pregnant women after the Lushan earthquake in Ya'an, China. *PLoS ONE*, *10*(8), e0135809. doi:10.1371/journal.pone.01358009

3. Ren, J., Chiang, C.V., Jiang, X., Wang, G. Examination of the constructivist grounded theory: an application to disaster research on the experience of perinatal women. *Qualitative Research* (Referee paper submitted in Jan 2017 for reviewing)

4. Ren, J., Jiang, X., Yao, J., Li, X., Liu, X., Pang, M., et al. (2014, March) Depression, social support and coping styles among pregnant women after the Lushan earthquake in Ya'an. Oral presentation at the 16th East Asia Forum of Nursing Scholars (EAFONS) in 2014, Manila, Philippine.

5. Ren, J., Chiang, C. V., Jiang, X., Luo, B., Liu, X., & Pang, S. M. (2014, April). Mental disorders of pregnant and postpartum women after earthquake: A systematic review. Oral presentation at the 1st Red Cross/Red Crescent International Nursing Conference on 'Disaster Nursing, Humanitarian

Emergency Response & Nursing Trends on 23-25 April, 2014. Bangkok, Thailand.

6. Ren, J., Chiang, C.V, & Jiang, X. (2016). Evolving meaning: being pregnant and having a new baby over the period of a major earthquake. Oral presentation at the JCSPHPC 15th Anniversary International Conference on “Innovations in Public Health Sciences” on 23-25 Sep, 2016. Hong Kong.

ACKNOWLEDGEMENT

Soon the four years of my PhD study at both the Hong Kong Polytechnic University and Sichuan University will have passed. Similar to the participants in my study, I grew up with increasing research skills and evolving meaning of my life through such a process. Although there has been pain as well as happiness, I have arrived at a new understanding of life, research, and many other aspects (e.g. career, relationship with family and colleagues) during my studies in this joint PhD programme. I also learned to understand issues and other persons with an open mind and heart. Truly, it is my continuous effort in studying that has facilitated my improvements in research, and my accomplishment in completing a thesis. I cannot deny that the support from my supervisors, family, friends, colleagues, and participants has motivated me to persist on the road towards my PhD. I deeply thank all those who have contributed and supported me during the research and writing process of this thesis.

I must express my sincere and heartfelt gratitude to my thesis supervisor, Dr. Vico Chiang, for sharing his specialist knowledge and experience, and for his constant guidance, intellectual inspiration, and encouragement of my thesis. It is he who taught me so much, inspiring me to think more and more. His rigorous scholarship made me understand the importance of preciseness and open-mindedness in everything, including research and teaching. He also brought me an internationalised perspective, which built an international platform for my future research journey. I would also like to thank my supervisor at Sichuan University, Prof. Jiang Xiaolian. Her insightful ideas and emotional support sustained me through many difficult periods.

A very special thank you is owed to my husband, Zhu Shan, who gave me the greatest support during my studies in Hong Kong and during the production process of my thesis. He assumed the responsibility for rearing our daughter and all housework without complaint during my leave to Hong Kong. He even discussed philosophy with me and gives me suggestions when I am unclear. His countless encouraging words confirmed my confidence in finishing the PhD whenever I wanted to give up. I would also like to pay my gratitude to my 10-year-old daughter, Judy, Zhu Jialai. Her capability for self-care released me from worrying about her growth. Although I could not always be present with her, she did not complain and sometimes encouraged me to persevere.

I am grateful to my beloved mother, Xie Huijun, and father, Ren Baolin. They gave life to me and shaped my strong character, which is the foundation of my perseverance in writing this thesis. I am also grateful to my mother-in-law, Yang Guanying, and father-in-law, Zhu Zesun. They created a relaxing atmosphere for my studies and helped me to continue without worrying about my family.

I have to specifically thank the 22 women and two husbands who participated in this study. I am indebted to them for generously sharing their experiences with me for this study. Their willingness and frankness assured me of the importance of this study.

Last but not least, my deep gratitude to my supportive colleagues, Liu Xinghui, Luo Biru, Yao Jianrong, Wang Guoyu, Gu Li, and Xiang Jie. They assumed part of my

responsibilities during the long journey of my PhD study.

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CHAPTER 1 INTRODUCTION

Current evidence shows that earthquakes, especially major ones of over 7.0 on the Richter scale, affect the mental health of victims (Lo, Su, & Chou, 2012). The World Health Organization (2014) defines mental health as a series of activities related (directly or indirectly) to mental well-being, which includes the prevention, treatment and rehabilitation of mental disorders. A mental disorder is characterised by a set of behavioural or psychological symptoms or patterns occurring in an individual that causes distress or disability, and this reflects the underlying psychobiological dysfunctions as defined by DSM-5 (Stein et al., 2010).

Studies in general have indicated that pregnant and postpartum women experienced great physical and psychological changes over the period of various disasters (e.g., hurricane, landslide, terrorist attack), and they were more vulnerable to mental health problems than general survivors (Harville, Xiong, & Buekens, 2010; Lo et al., 2012). The association of stress and mental health has also been identified in both animal experiments and human studies (Brummelte & Galea, 2010; Burk, Davis, Otte, & Mohr, 2005). More specifically, earthquakes, as one of the largest among stressful events and disasters, may have detrimental effects on the mental health of perinatal women who were pregnant before and later gave birth to a baby after the event. Studies have found a high incidence of mental health problems in pregnant women after an earthquake (Chang et al., 2002; Hibino et al., 2009a; Qu et al., 2012a), with more problems than pregnant women in the general population (Choate & Gintner, 2011). The psychological responses related to earthquakes may lead to negative results for pregnant women and their babies, such as maternal suicide, preterm birth, and adverse psychological development in their offspring

(Beydoun & Saftlas, 2008; Kõlves, Kõlves, & De Leo, 2013; Oyarzo et al., 2012). The negative effects on mental health may also extend to a longer term after postpartum. The possible negative outcomes have attracted researchers' attention to studying the psychological impacts of earthquakes on this specific group of women (pregnant during, and giving birth after, an earthquake), as well as the influencing factors, in order to explore effective support and interventions for these women. Various factors were found to affect the mental health of pregnant and postnatal women after an earthquake, among which, family has been identified as a key factor associated with the mental health of this specific group of women (Dong et al., 2013; Lau, Yin, & Wang, 2011; Qu et al., 2012a; Hibino et al., 2009b).

The researcher of this thesis has a particular interest in the experience of pregnant women over the period of an earthquake, and the role that families, and family dynamics, may play in relation to women's mental health. The researcher has experience working as a nurse in a major hospital in Sichuan. I experienced two major earthquakes (Wenchuan earthquake in 2008 and Lushan earthquake in 2013) and took care of pregnant women who were rescued from the epicentral area of those earthquakes. In the process of providing nursing care, I took notice not only of the psychological trauma that earthquakes caused to these women, who were pregnant during and gave birth after the disaster, but also of the possible effects on family support in helping them to recover from various mental symptoms. For instance, a woman, who was 35 weeks pregnant, lived in the epicentral area and witnessed the death of her neighbour due to falling bricks when the earthquake occurred. More seriously, the dead body was laid out in front of her for three days, because of a worker shortage that delayed its removal. The rescue team then escorted her to the

obstetric department where I was working, which was located more than 100 kilometres away from the disaster area. She manifested with the symptoms of depression and PTSD since the admission, and frequently sank into long silences during hospitalisation, which was quite different from her past daily behaviours (as her husband and mother-in-law explained to the nurses). Fortunately, her family members, including her husband, elder daughter (five years old), and mother-in-law were staying with her. They were also advised by the doctors and nurses to watch over her closely, in order to minimise risk of suicide due to poor psychological health. According to my professional and clinical experience, given her poor psychological manifestations resulting from the earthquake, I estimated that she would deteriorate in her psychological status after the delivery of her baby. Unexpectedly, she easily gave birth to her baby, and eventually discharged with good recovery from her poor psychological status after the disaster. I was able to observe that her family members had spoken with her in turn, and were proactive in supporting her psycho-socially. Her husband, in particular, suspended his work, and accompanied her all the time despite their poor situation. This was one of various instances that I had encountered after the two major earthquakes, which indicated the negative impact of disasters and the impressively positive functions of the family. These particular clinical experiences provoked my curiosity as a researcher about what helps or facilitates these women in overcoming negative mental symptoms and poor psychological status (is it herself, her new baby, her family, or something else?); and how the families, who also experience the adversities of an earthquake, may support these women after such a major and stressful event. In this connection, a study titled, ‘Family interactions of childbearing and childrearing women over the time before and

after a major earthquake: A grounded theory study' was proposed and conducted.

CHAPTER 2 LITERATURE REVIEW

Glaser and Strauss (1967), the founders of grounded theory, suggested in their book that data collection and analysis could be directly commenced without any reference to existing literature for a grounded theory study. Too much knowledge about the literature regarding the study topic may contaminate the emergence of categories, because a literature review may form a certain degree of preconception and affect a researcher's judgment. However, it was argued by the grounded theoriests that library materials had many advantages over 'defects' for the beginning of a grounded study. For instance, in Glaser and Strauss's book (1967, p176-183), they emphasised that a literature review could be employed as a source of data, in comparison with materials from other sources, such as interviews or observation. The constant comparison of data from the literature and other sources can decrease the risk of preconception and improve research trustworthiness. Strauss and Corbin (1998) pointed out that a literature review is valuable in answering initial research questions, such as what were the knowledge gaps in a specific area, and what were the findings that researchers could take as a starting point. A literature review is believed to be able to highlight the implications of new studies (Polit & Beck, 2010). In consideration of these reasons, a literature review was carried out in order to identify and evaluate the research previously undertaken about the physical and psychological health of pregnant women after a major earthquake. This review also aimed to justify a new study for the knowledge gap.

The initial literature search was primarily performed for English and Chinese publications, within 30 years when applicable, related to the physical and psychological health of pregnant and postnatal women after an earthquake. It was

conducted from the literature searched in nine health science databases (CINAHL, MEDLINE, Journal@OVID, PsycInfo and Pubmed for English publications; CNKI, Chinese Electronic Periodical Services, China Doctor Dissertations full-text database, China Master Thesis full-text database, and Digital Dissertation Consortium for Chinese publications). The key words used in the searches including “physical health”, “health impact”, “mental health”, “psychological health”, “mental disorders”, “psychiatric disorders”, “pregnant women”, “prenatal”, “postnatal”, “earthquake”, “disaster” for English publications; and “孕妇” (pregnant women), “产后” (postnatal), “身體健康” (physical health), “心理健康” (psychological health), “健康影響” (health impact), “地震” (earthquake), “灾害” (disaster) for Chinese publications. A flow chart that illustrates the process of literature search for studies related to the health impact of earthquakes on pregnant and postnatal women is provided in Fig. 1. Initial review of the identified studies indicated the importance of family in pregnant and postnatal women’s health after an earthquake, which triggered the researcher to further expand the search to include articles that addressed issues about pregnant women-family dynamics after an earthquake. The further literature search was conducted by using the keywords “pregnant”, “postnatal”, “earthquake”, “disaster”, “family interaction”, “family function”, “family support”, “孕妇” (pregnant women), “产后” (postnatal), “地震” (earthquake), “灾害” (disaster), “家庭互動” (family interactions), “家庭功能” (family functions) and “家庭支持” (family support) in the same set of databases as the initial one. The flow chart of this extended literature search is illustrated in Fig.2.

Fig.1 Flow chart of the literature search for studies related to health impact of earthquake on pregnant and postnatal women

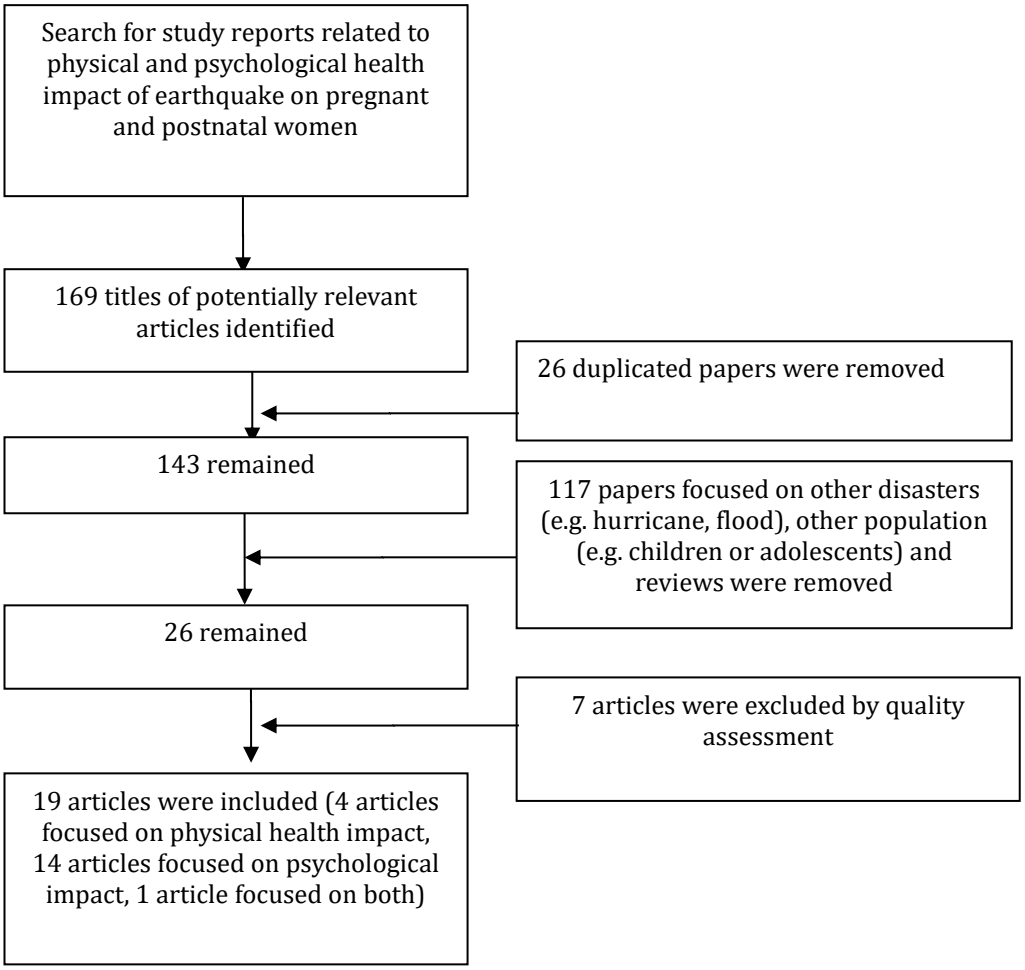
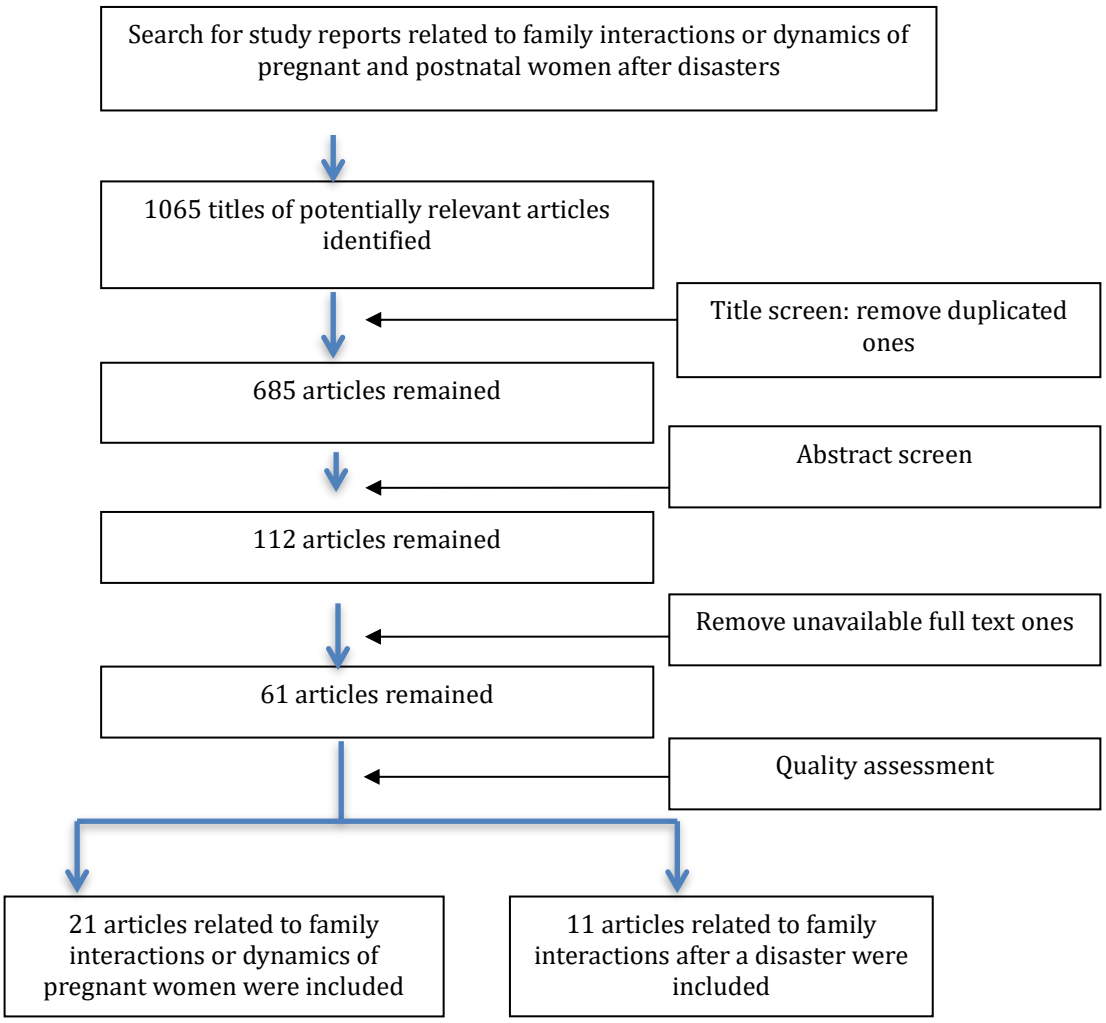


Fig.2 Flow chart of the literature search for articles related to family interactions or dynamics of pregnant and postnatal women after an earthquake or a disaster



In addition, the author conducted a supplementary manual book search and review from the Hong Kong Polytechnic University's library regarding the family interactions of Chinese pregnant or postnatal women. This is because issues of family interactions differ in various cultures (Domian, 2001; Rothbaum, Rosen, Ujiie, & Uchida, 2002). Knowledge found from books or monographs may contribute to a better understanding of the topic in the context of the Chinese culture. However, there were no specific books that focused on family interactions of Chinese pregnant or postnatal women during the time of an earthquake, nor any chapters that

specifically contributed to this topic. From these two rounds of searches and screening, there were a total of 51 studies identified and a summary of these articles are provided in Appendix I. The results of reviewing this body of literature are discussed in the following Sections 2.1 and 2.2.

2.1 Health impact of earthquake on pregnant and postnatal women

A review of the literature subsequent to the first round of screening (Fig.1) suggested that both the physical and psychological health of women who were pregnant during an earthquake may be influenced, and their affected health and obstetric status might lead to negative effects for their babies.

2.1.1 Physical health of women who were pregnant during an earthquake

Researchers from America, China, Chile, and Japan have done some research on the physical health of pregnant women after an earthquake. The results of these studies found that trauma (e.g. contusions and bruises) and negative obstetric outcomes, which included premature rupture of membranes (PROM), preterm delivery, low birth weight (LBW), and birth defects of babies, were common physical impacts of an earthquake. A survey on pregnant women after a major Chinese earthquake indicated that the incidence of physical trauma in pregnant women was as high as 90.32% (La, Sun, & Yu, 2010). In contrast with this type of trauma, obstetric outcomes attracted more researchers' interest because of their relevance to the health of children. Sekizuka et al. (2010) explored the relationship between the incidence of PROM and intensity of earthquake, and found that the incidence of PROM was significantly higher in pregnant women who experienced an earthquake

with an intensity of 6 than that of 5. Torche and Kleinhaus (2012) also investigated the obstetric outcomes of women who had been exposed to the Chile earthquake in early pregnancy. They concluded that exposure to an earthquake in early pregnancy was associated with a higher rate of preterm birth and a decline in the ratio of male-to-female live births. Studies conducted by Chinese researchers (Chang et al., 2002; Yuan, Zhang, Long, Sun, & Ren, 2008; La, Sun, & Yu, 2010) provided some evidence about the impact of earthquakes on the incidence of infectious diseases, preterm births, LBW, and fetal deaths. Almost all authors of these studies attributed the increase in negative obstetric outcomes to the psychological stress caused by the earthquake. This relationship was also confirmed by other human and animal studies, which did not focus on disasters (Beydoun & Saftlas, 2008).

All of the above studies suggest that pregnant women are vulnerable over the period of an earthquake because of their special physical status, and that they deserve attention from researchers in disaster studies. In addition, psychological stress and mental health problems, which may arise from the experience of an earthquake and appear to be associated with negative obstetric results, should not be underestimated.

2.1.2 Mental health of pregnant and postnatal women after an earthquake

2.1.2.1 Mental health conditions in pregnant and postnatal women after an earthquake

The review found that the main mental health conditions studied were post-traumatic stress disorders (PTSD) (Chang et al., 2002; Fu et al., 2008; Qu et al., 2012a; Qu et al., 2012b), depression (Dong et al., 2013; Hibino et al., 2009a; Hibino et al.,

2009b; Lau et al., 2011; Qu, et al., 2012a; Yang et al., 2011; Chen, 2010; Lei et al., 2009; Sun et al., 2009; Zheng et al., 2008), and anxiety (Yang et al., 2011; Chen, 2010; Lei et al., 2009; Liu et al., 2008; Sun et al., 2009; Zheng et al., 2008). The focuses on depression and PTSD in the reviewed studies were in line with most studies about the psychological impact of an earthquake on the general population (Gigantesco et al., 2013; Lo et al., 2012). It is quite interesting that almost all Chinese studies examined in this review had investigated the incidence of symptoms of anxiety, which rarely appeared in their English counterparts about pregnant women after earthquakes. In contrast to other mental symptoms such as fear, anxiety is usually considered to arise in response to situations of lower risk (or daily life), which may not be obvious to the person him/herself (Sylvers, Lilienfeld, & Laprairie, 2010). Nevertheless, an earthquake could destroy the sense of safety in daily life and becomes a source of higher anxiety for victims. Women who experienced anxiety during pregnancy are reported to have a higher rate of negative birth outcomes and maternal depression (Field et al., 2010; Glover, 2014; Jansson-Frojmark & Lindblom, 2008; Schetter, 2011).

In future research on the mental health of pregnant and postnatal women after a major earthquake, equal attention should also be paid to anxiety, as to depression and PTSD.

2.1.2.2 Instruments used for assessing mental symptoms

From the literature review, there are more than 20 questionnaires or scales used by researchers to explore people's mental health after disasters, targeting depression, anxiety, and post-traumatic stress. It is a challenge to extensively review and appraise them in detail. The most widely used instrument for the assessment of possible depression in women after delivery is the Edinburgh Postnatal Depression Scale (EPDS)

(Dong et al., 2013; Hibino et al., 2009a; Hibino et al., 2009b; Lau et al., 2011; Qu et al., 2012a; Qu et al., 2012b). Although most Chinese studies apply similar self-rating scales for the investigation of postpartum depression, the lack of evidence in their reliability and validity may limit their wide application. For the assessment of traumatic stress, Qu et al. (2012a; 2012b) used the Impact of Event Scale-Revised, and Chang et al. (2002) used the Earthquake Exposure Checklist and Posttraumatic Stress Reaction Checklist respectively. The lack of strong psychometrics for these instruments may also affect their future application.

To assess the symptoms of anxiety, most of the reviewed studies (Yang et al., 2011; Chen, 2010; Lei et al., 2009; Sun et al., 2009; Zheng et al., 2008) adopted the use of self-rating anxiety scales, which also necessitated evidence of acceptable reliability and validity. Although the Hamilton Anxiety Rating Scale, which is proven a reliable instrument for psychiatric diagnosis in the population of patients with chronic pain (Leentjens et al., 2011; Gjerris et al., 1983) and applied satisfactorily by Liu et al. (2008), the effectiveness of using this instrument in pregnant women is still inconclusive and requires further examination. In short, most of the instruments used for assessing the mental health of pregnant women after an earthquake carries a great deal of room for development in order to best screen pregnant women in such a specific disaster context. Quantitatively, a simple tool with good psychometrics specific to pregnant women after a major disaster is required.

2.1.2.3 Timing of studies regarding psychological impact of earthquake on pregnant and postnatal women

Studies, with the exception of the survey conducted by Dong et al. (2013) four years after the earthquake, focused on the relatively short-term reactions of pregnant

or postpartum women to an earthquake, varying from three (Lau et al., 2011) to 21 months after an earthquake (Qu et al., 2012b). It is not unusual for researchers to pay more attention to the acute psychological reactions to an earthquake, because such an experience is an acute stressor that occurs suddenly without warning. It is also believed that individuals, including prenatal women, could recover from the mental health consequences of disaster through a period of time for adaptation (Harville et al., 2010) in that the earthquake's impact would spontaneously decline with the progression of time. Although it has been realised from some studies that disasters could also cause long-term impact on the mental health of survivors (DiGrande et al., 2011; Yule et al., 2000), the participants of those studies were not pregnant or postnatal women. Nevertheless, if the time of pregnancy until postpartum covered by the studies was too long beyond the disaster, potential recall bias of the participants and other influencing factors might weaken the rigour of those studies. If feasible, a longitudinal study design that includes data collection at regular time points after the earthquake may be a suitable way to study women's experience over time. For studies about the psychological impact of earthquake on perinatal women, the overall timing should not be too long before or after the earthquake.

2.1.2.4 Factors relating to the mental health of pregnant and postnatal women after an earthquake

Various factors related to the mental health of pregnant women over the period of an earthquake were identified from reviewing the studies that had been retrieved from the initial search. These included experience about an earthquake (Chang et al., 2002; Hibino et al., 2009a; Hibino et al., 2009b; Qu et al., 2012a; Qu et al., 2012b), family relationship (Dong et al., 2013; Lau et al., 2011; Qu et al., 2012a), economic

factors, such as family income and employment (Qu et al., 2012b), support from society and family (Dong et al., 2013; Fu et al., 2008), the timing of the earthquake during pregnancy (Glynn et al., 2001), educational background of pregnant women (Zheng et al., 2008), bereavement and injuries of family members (Zheng et al., 2008; Lei at al., 2009), worries about fetus or baby (Hibino et al., 2009b; Yang et al., 2011), and health education from health workers (Liu et al., 2008). Among these factors, family income, employment, family relationship, support from family, and bereavement or injuries of family members were all about the family. It was observed that for family members dealing with the demands of stress, family income and employment (Qu et al., 2012b) were the required material resources, and family relationships (Dong et al., 2013; Lau et al., 2011; Qu et al., 2012a) were the emotional resources. According to Lau et al. (2011), Qu et al. (2012a) and Dong et al. (2013), there is a positive association between functional family relationship (especially the marital relationship) and the mental health of pregnant women after an earthquake. The marital relationship might serve as a resource to help family members (including pregnant women after an earthquake) to recover from or adapt to the stress of change. Family support is also identified as a key factor in both English (Dong et al., 2013) and Chinese studies (Fu et al., 2008).

The identified family factors from the literature may act as buffers in the process, in that they protect the mental health of perinatal women after an earthquake. More studies about these factors may contribute to identifying better evidence for appropriate and effective interventions for these women to recover, if they have suffered from associated mental health problems. Although the relationship between family dynamics and mental health conditions has been investigated and published,

many studies utilised a quantitative perspective. The lack of in-depth investigations (e.g., with a qualitative approach) on this topic in the literature reveals a need to more comprehensively understand the possible influences of family on the mental health of pregnant and postnatal women after an earthquake. Qualitative exploration can contribute to the development of knowledge about the practices and intervention/s that fit/s the specific needs of pregnant and postnatal women and their families after a major disaster, such as an earthquake.

2.1.2.5 Study design and quality

All of the reviewed studies employed a quantitative method in studying the psychological impact of earthquake on pregnant and postnatal women. Quality assessment of these studies showed that methodologically, most were cross-sectional surveys, and most were without a comparable group to better control the impact of factors other than earthquake in relation to the mental health of pregnant and postpartum women. Particularly for Chinese publications, most applied psychometric instruments, without any evidence of reliability or validity. Insufficient sample size and convenient sampling strategy were also common concerns for the risk of bias. According to the Method for Evaluating Research Guideline Evidence (MERGE) checklist, which was developed by the New South Wales Department of Health for assessing study quality (Liddle et al., 1996), the quality of those studies were of a lower level, which might have contributed to weaker evidence about the potential psychological impact of an earthquake on pregnant and postnatal women.

A major earthquake, as a significant stressor, can affect the physical and mental health of pregnant and postnatal women in the affected geographical area. The available studies have provided a background picture of the psychological impact of

earthquake on pregnant and postnatal women, but there are methodological limitations in those studies, which may hinder us from fully understanding the problem. All studies adopted a quantitative perspective, which focused on one or two specific kinds of mental health problems, and the quality of those studies was affected by a relatively low-level study design and poorly validated instruments. Studies that specifically explore pregnant women's experience during or after a disaster are very limited. Badakhsh, Harville, and Banerjee (2010) conducted a grounded theory study to investigate the experiences of pregnant women after Hurricane Katrina. They pointed out that the core experience after a disaster is "disruption of life during pregnancy". However, this study focused on the hurricane disaster, which was different in many ways from an earthquake, e.g. in terms of the predictability, area distribution, and culture of the victims. To our knowledge, studies on the experience of pregnant women after a major earthquake remain scarce. It seems that the qualitative research approach may serve as a better supplement for comprehensive investigation and explanation of the psychological impact of the experience of an earthquake on these women.

The literature review indicates that family is a key factor related to the mental health of pregnant and postnatal women after a major earthquake. The reviewed studies only identified a correlation between family and mental health of pregnant and postnatal women. Comprehensive and in-depth investigation of their experiences was not carried out. The grounded theory study, which studied pregnant women's experience of hurricane disaster, also indicated the importance of family support on the mental health of pregnant women (Badakhsh et al., 2010). Nevertheless, Badakhsh et al. did not discuss in detail how family support might have

helped childbearing women, nor did they discuss how family dynamics or interactions might affect them, after the disaster. With the paucity of studies specific to the family interactions of pregnant women after an earthquake, it is difficult for nurses or clinicians to grasp and scientifically utilise the key forces of family to help these women and their babies. In order to better understand the body of research literature on family interactions with women who were pregnant and gave birth after an earthquake, a further literature search for family functions and family interactions was conducted (Fig.2). Results of the subsequent review are discussed in Section 2.2 below.

2.2 Family interactions of pregnant and postnatal women after a disaster

Further exploration of the family interactions of pregnant and postnatal women after a disaster requires a basic understanding of what a family is. There is no monolithic and fixed definition for this concept, because human society, which is conventionally constituted by such a unit as the 'family', is continuously developing. From the most original explanation, which was biologically rooted in the study of animal families as filiation by blood, to the kinships of modern human families with great diversity, such as core families, single-parent families, and gay families, there are more than 30 explanations for the concept (Collins, 1988; Bidwell & Vander Mey, 2000; Zhao, 2000). The most widely accepted one is from the U.S. Census Bureau (1982; Medalie & Cole-Kelly, 2002; Zhao, 2000), which defined family as a group, in which two or more people are genetically, maritally, or adoptively connected as a unit. This definition contains both biological and sociological meanings, but simply focuses on the relationship between family members, ignoring other aspects such as the

functions and dynamics of a family. Since it was determined that family might play a key role in many issues for its members (Birmes et al., 2009; Casey, Cherkasova, Benkelfat, Dagher, & Leyton, 2010; Yen, Yang, Wu, & Cheng, 2013), conceiving the family as a complex system that is interactive with its members is more appropriate. In this connection, family is defined as a group of people who share a certain history and experience, have a certain degree of emotional bonding, and operate as a whole and develop strategies for satisfying each member's needs (Anderson & Sabatelli, 2007). The definition infers that members of a family interact with each other in order to meet the members' needs and maintain the family's stabilisation when facing changes or stressful events. Earthquakes, as a major stressor, can cause changes or challenges to both the family as a whole and the individuals within it. For a woman, being pregnant means the introduction of a new member and an alteration of the family structure, which will cause new needs in the woman and in her family. Additional needs and demands between childbearing women and their families after an earthquake are likely to be unavoidable.

2.2.1 Family interactions with pregnant and postnatal women

Researchers have studied the interactions between family and perinatal women in relation to health. Some researchers have investigated the topic from the viewpoint of family resources. For instance, Ehrlich et al. (2010) proposed that family resources mediated the effects of a hurricane on psychological distress during pregnancy and the postpartum period. Allen et al. (2013) postulated that a lack of family resources (housing) was associated with mental health problems in pregnant women. Kershaw et al. (2013) discussed family interactions from another perspective, which was a

focus on family relationship functioning on mental and physical quality of life among pregnant women. Some Chinese researchers also studied the impact of the marital relationship on pregnant women's mental health (Duan & Fan, 2007). Apart from family resources and family relationship functioning, researchers were also interested in studying the emotional support provided by the family. Jeong et al. (2013), Jones et al. (2005), Pan (2008), Stuchbery et al. (1998), and Turner et al. (1990) highlighted the positive role of family emotional support in maintaining the mental health of pregnant and postnatal women. Many researchers further emphasised the functions of partner support (Brandon et al., 2012; Rosand, Slinning, Eberhard-Gran, Roysamb, & Tambs, 2011; Rose et al., 2010; Stapleton et al., 2012; Li, Xu, Liu, & Wu, 2013). Most of these studies focused on quantitatively validating the correlation between family and the health of pregnant women, and investigated certain aspects of family interactions, such as material support, emotional support, and the quality of the family relationship. However, Anderson & Sabatelli (2007) pointed out that family interactions concern how a family operates, containing more subtle meaning than mere family support and relationship. Four studies, based on the framework from Barnhill, assessed the family interactions of pregnant and postnatal women in a more comprehensive manner (Hakulinen, Paunonen, White, & Wilson, 1997; Hakulinen & Paunonen, 1995; Tammentie, Tarkka, Astedt-Kurki, Paavilainen, & Laippala, 2004; Tomlinson, White, & Wilson, 1990). For example, Hakulinen & Paunonen (1995) assessed the family interactions of pregnant women through eight bipolar dimensions, which included individuation – enmeshment, mutuality – isolation, flexibility – rigidity, stability – disorganisation, clear communication–unclear or distorted communication, role reciprocity – role conflict, clear – unclear perception,

and clear – diffuse or breached generational boundaries. Tammentie et al. (2004) further investigated the association between family interactions and postnatal depression according to those eight bipolar dimensions. Apart from the studies using Barnhill's framework for family interactions, Cairo et al. (2012) creatively investigated the transition of family interactions in IVF families from pregnancy to parenthood, using an observational method. However, all of these studies targeted adolescents or pregnant and postnatal women who had faced stressful situations, but not a major earthquake. Family dynamics and the interactions of pregnant and postnatal women who are victims of a major earthquake should also be comprehensively studied and explored. Current studies in the context of earthquake were cross-sectional surveys aimed at describing the situations of interactions in childbearing and childrearing families with descriptive statistics, which dedicated little effort to disclose how family dimensions came into play in the support of pregnant or postnatal woman and other family members. Qualitative studies that are multi-faceted, more flexible and process-focused will be more suitable for the exploration of family interactions and processes (Polit & Beck, 2010).

Domian (2001) conducted an ethnographical study to unveil how the dynamics and relationships that constituted social support affected pregnant Hispanic women and their family members. From this study, a mutual shaping process, in which positive birth outcomes were facilitated by cultural orientation and in turn promoted social support for pregnant women, was found to be important in establishing the family structure, defining roles and the relationships of family members, and integrating cultural beliefs. Since Domian focused her study on the Hispanic culture, the results might not be fully transferrable to pregnant women in other cultures. A

phenomenological study conducted by Blanchard et al. (2009) explored the experiences of women with depressive symptoms during pregnancy, and found that a couple's relationship and dynamics could influence the moods of pregnant women. However, this phenomenological study focused on the experiences of women, and the influence of a couple's relationship on moods was one of themes yielded from their experiences. A discussion of the dynamics and interactions between couples was not made in detail. Apart from those two studies, another qualitative study (Tammentie, Paavilainen, Astedt-Kurki & Tarkka, 2004) investigated the family dynamics of postnatally depressed mothers with a grounded theory approach. Although the design of this study is more suitable for discovering the social processes of family interactions, the targeted population was postnatally depressive women without the impact of an earthquake. In addition, unclear theoretical sampling made the theoretical saturation uninsured, which would further affect study rigour. Overall, the existing qualitative exploration of the family interactions of pregnant and postnatal women has been incomplete in capturing the processes of interactions between family members and perinatal women. This necessitates more in-depth exploration and discussion.

2.2.2 Family interactions and disaster

Some researchers have devoted their interests to quantitative investigations of family function after a disaster (Birmes et al., 2009; Cao, Jiang, Li, Lo, & Li, 2013a; Cao et al., 2013b; McDermott & Cobham, 2012). Family function, which is a part of family interactions, is defined as the ability of a family to cope and adapt to different conditions (Panganiban-Corales & Medina, 2011; Anderson & Sabatelli, 2007). From

the perspective of structural functionalism (Bidwell & Mey, 2000; Guo, 2002), disasters that affect the structure and available resources of a family will inevitably lead to influences on family function, by helping its members cope with such a stressful event. This point of view has drawn researchers' attention to the study of family function after a disaster. For instance, Birmes et al. (2009) and McDermott and Cobham (2012) investigated the relationship between family function and children's mental health after a disaster. Apart from children, bereaved parents of a catastrophic earthquake are another population that researchers studied. Cao et al. (2013a; 2013b) demonstrated that the poor family functioning prevalent in bereaved families was significantly related to greater loneliness and depression after the Wenchuan earthquake. Hackbarth et al. (2012) conducted a study on family resilience and adaptation after Hurricane Katrina; and the results revealed that hope, family hardiness, and spirituality are important variables that increase a family's ability to cope and adapt. Their studies shed light on the understanding of family functioning after a major disaster.

Family structure is another condition that appeared in the studies of families after a disaster. It is defined as both family composition, which refers to the family's membership and its organisation, and the collection of interdependent relationships and subsystems (Anderson & Sabatelli, 2007). For the organisation of a family, researchers found that the severity of loss and disruption in the family following a disaster was associated with young children's mental health symptoms, and that it was influenced by the pre- and post-disaster parent-child relationship (Felix et al., 2013; Nygaard, Wentzel-Larsen, Hussain, & Heir, 2011; Proctor, Fauchier, Oliver, Ramos, Rios, & Margolin, 2007; Wickrama & Kaspar, 2007; Zhang, Fan, & Geng, 2013).

In contrast to those studies on family relationships, a research team investigated the long-term impact of family membership on older people's quality of life (QOL) 30 years after the Tangshan earthquake in China (Xiong, Tao, & Yue, 2009). They found that destruction of family structure, triggered by the loss of spouse or children in the earthquake, was significantly correlated with decreased QOL among older people. The results of these studies about family interactions and structure after a disaster illustrate the importance of these conditions in relation to the mental health of family members. Previous studies focused on the populations of children and bereaved parents, and children are regarded as a vulnerable population. Pregnant women in a natural disaster have also been considered a vulnerable population in empirical studies (Arne & Prakesh, 2011; Carballo et al., 2005; Lewis, 2008), and that regulations or policies focused on their recovery after a disaster are required (Xinhua net, 2008). The need to study the family functions of pregnant women after a major disaster should not be underestimated. Earthquakes will occur with the deterioration of the natural environment (Cui et al., 2011; Dragan & Isaic-Maniu, 2011) and studies about pregnant women and family functioning during the time of a major earthquake deserve the attention of more researchers. In summary, most of the studies reviewed after the second round of literature searches indicated the investigation of certain aspects of family functioning and the mental health of family members after major disasters. However, comprehensive studies and discussion on how a family interacts with its members during and after a major disaster remain scarce. In order to explore the process of such interactions and family functioning to generate implications for nursing interventions and practice development, a qualitative study, which aims to explore the mechanism and processes comprehensively and in-depth, is warranted.

2.3 Conclusion

From this literature review, we know that major earthquakes can greatly affect the physical and mental health of pregnant women, and that their families, perhaps as mediators, can play a key role in this process. However, there is a paucity of studies focusing on the family interactions and processes of pregnant and/or postnatal women after an earthquake. It is necessary to better understand and explore how family members live and interact with these women during the period when they experience a major earthquake. Findings can provide implications for service improvement and interventions that better fit the specific needs of such a vulnerable population.

Existing studies about family and perinatal women mainly aimed to investigate the relationships between certain aspects of the family and the mental health of childbearing and childrearing women with a quantitative approach of low-evidence levels, i.e., cross-sectional and correlation studies. Although there were some qualitative studies (Blanchard et al., 2009; Domian, 2001; Tammentie et al., 2004) that explored the family dynamics and relationships of pregnant or postnatal women, the context of those studies was not a major disaster such as an earthquake. The dynamics of how family members may interact and play a role in the experience of a woman rearing a new baby after an earthquake are still not well understood. Further studies with a grounded theory method that aims to discover the family dynamics and support of perinatal women during, and rearing a new baby after, an earthquake as a social process, will be an alternative and methodologically suitable approach that is particularly good at exploring the experience in-depth for future services and practice development for these women and their families. In this connection, a study

titled “Family interactions of childbearing and childrearing women over the time of a major earthquake: A grounded theory study” for a PhD study was proposed and conducted.

CHAPTER 3 METHODOLOGY AND METHODS

3.1 Introduction

Disaster victim related phenomena, especially psychological ones, could be explored both quantitatively and qualitatively because of the complex behavioural dimensions involved (Batniji, Ommeren, & Saraceno, 2006; Halpern & Tramontin, 2007). However, most existing studies have employed quantitative methods, focusing either on the health impact of earthquakes on pregnant women, or on family interactions after a disaster (Birmes et al., 2009; Cao, Jiang, Li, Lo, & Li, 2013a; Cao et al., 2013b; McDermott & Cobham, 2012; Ren et al., 2014). Despite the advantages of objectively and numerically describing the impact of a disaster, this kind of research paradigm has not accommodated a contextualised view of the experiences of, and humanitarian responses to, a disaster. In addition, statistical findings cannot fully explain the family interactions of women after an earthquake, which are manifested in a collection of bio-psycho-social-spiritual phenomena and/or processes. In contrast to a quantitative perspective, studies using qualitative methods can provide an in-depth understanding of the meaning that individuals or groups ascribe to a problem or situation (e.g. disasters), and emphasises the importance of rendering the complexity of such a situation (Creswell, 2009; Marshall, 2016). Studies based on the qualitative paradigm could contribute more to an in-depth understanding of the experience of pregnant women and the process in which they interact with families after an earthquake, than do the existing quantitative studies.

Among the varieties of qualitative research methods, grounded theory (GT) is characterised by identification and description of the core, social or psycho-sociological process, as well as their interactions in such changing through a systematic way to collect, organise, and analyse data (Glaser & Strauss, 1967; Morse et al., 2009). Grounded theory was first introduced by Glaser and Strauss with their collaborative work in 1967, and was afterwards used by researchers worldwide (Charmaz, 2006; Charmaz, 2014; Glaser & Strauss, 1967; Glaser, 1978; 1992; Morse et al., 2009; Skodol-Wilson & Ambler-Hutchinson, 1996; Strauss & Corbin, 1990; 1998). It has an advantage in providing researchers with greater freedom to explore an area that is relatively little known, because it allows categories or process to emerge through the inductive and theory discovery procedures (Glaser & Strauss, 1967; Glaser, 1978; Goulding, 1998). Although disasters such as floods and earthquakes have struck human beings since ancient times, there is still a need to establish and develop a theoretical framework that aids healthcare professionals in better understanding such experiences (Rodriguez, Quarantelli, & Dynes, 2006, p.55). Disaster-related phenomena are a research area in need of further exploration, and grounded theory could be one of the best methods to develop such a theoretical understanding and middle-range theory.

Grounded theory has evolved and been refined into different schools, with numerous publications by representatives since its first appearance in 1967 (Birks & Mills, 2015; Charmaz, 2006; Charmaz, 2014; Glaser & Strauss, 1967; Glaser, 1978; 1992; Morse et al., 2009; Robrecht, 1995; Strauss & Corbin, 1990; 1998). The discussion around this method in the literature (Charmaz, 2006; 2008a; Chen &

Boore, 2009; Cooney, 2010; Engward, 2013; Heath & Cowley, 2004; Mills, Bonner, & Francis, 2006) is mainly centred on comparing three schools, Glaser and Strauss's (Glaserian) original / classic version, Strauss and Corbin's (Straussian) proceduralised version, and Charmaz's constructivist approach. All three schools could account for a range of ontological and epistemological underpinnings (Charmaz, 2014; Mills, Bonner, & Francis, 2006). Each school contains different philosophical standpoints towards the world, phenomena and data, which would further affect the research process and explanation of data (Morse et al., 2009). Therefore, it is important to establish a suitable GT method of research for suitable research questions. This chapter aims to discuss the methodological issues (and methods in section 3.3 to follow) for the study—family interactions of childbearing and childrearing women over time, before and after a major earthquake.

In summary, an introduction of the philosophical underpinning for grounded theory begins the discussion in this chapter, which is followed by a comparison among three schools of grounded theory and the reasons for choosing constructivism GT for this study. Finally, a description of methods including research setting, sample size, procedures for data collection, and data analysis is provided for this particular study.

3.2 Choosing among the three schools of grounded theory for this study

3.2.1 Overview of the methodological development of GT

Grounded theory was first introduced in the book "The Discovery of Grounded theory: Strategies for qualitative research" (Glaser & Strauss, 1967), which is

regarded as the “Bible” for grounded theorists. Although both originators co-created the method, they made their own contributions separately, based on their research backgrounds. Their collaborative work represents a marriage between two contrasting sociological traditions: the Columbia University’s positivism of Glaser, and the Chicago school’s pragmatism of Strauss (Charmaz, 2014). Glaser, who studied under the tutelage of Paul Lazarsfeld at Columbia University, injected this approach with positivistic conceptions including codification, and the building of middle range theories with systematic data analysis and emergent discoveries. However, Strauss influenced the method in the first book with the Chicago school heritage in a less visible way, by introducing notions including “human agency, emergent processes, social and subjective meanings, problem-solving practices, and the open-ended study of action” (Charmaz, 2014, p.9). Their different backgrounds were successfully integrated into the generation of grounded theory that is underpinned by postpositivism, but also predicted the later divergence of the method and the development of new versions.

After the first collaborative work in 1967, Strauss did not stand still in developing the grounded theory approach. A reformulation of the method by Strauss and Corbin (1990) was subsequently developed. On the other hand, Glaser (1978; 1992) made a supplement to the classic version by discussing theoretical sensitivity and providing the coding families. This bifurcation in approach derived from their different academic backgrounds and inadequacy of research strategies in the original version. Aiming to solve the technical and operational questions in the first book, Strauss and Corbin (1990) revealed a more interpretivist tendency and

affinity to pragmatism, and developed a “procedualised” version of the method. This procedualised version has provided fixed and operable guidelines for researchers, especially novices.

Subsequently to the 1990s, a number of theorists made new attempts to solve increasing criticism of the earlier two versions (Charmaz, 2006, 2014; Clarke, 2005; Mills, Bonner & Francis, 2006; Morse et al., 2009). The postmodernists criticised the GT approach during that time, insisting it was a rather outdated modernist epistemology, in that those versions of the method “fragmented the respondent’s story, relied on the authoritative voice of the researcher, blurred difference, and uncritically accepted enlightenment grand metanarratives about science, truth, universality, human nature, and world-views” (Charmaz, 2014, p.13). In this view, Charmaz developed the constructivist GT, which adopts the strategies of inductive, comparative, emergent and open-ended investigation of the original version; as well as the more relativist and subjectivist characteristics of the Straussian new version (Charmaz, 2000, 2014). For constructivist GT, Charmaz has made progress by emphasising the importance of flexibility and mutual construction of meaning between the researchers and participants in a specific context.

3.2.2 Fitting philosophical positions with the evolving trend of methodological understanding of grounded theory

Grounded theory has evolved and been refined into different schools with numerous representative works since its first appearance in 1967 (Birks & Mills, 2015; Charmaz 2006; 2014; Glaser & Strauss 1967; Glaser 1978, 1992; Strauss & Corbin 1990, 1998). The discussion around this method (Charmaz 2006, 2008a;

Chen & Boore 2009; Cooney 2010; Engward 2013; Heath & Cowley 2004; Mills, Bonner & Francis 2006) is mainly centred on comparing three schools, Glaser and Strauss's (Glaserian) classic version, Strauss and Corbin's (Straussian) proceduralised version, and Charmaz's constructivist's approach. Each school contains different philosophical standpoints towards phenomena and data, which drive the decision of strategies, approaches, and analysis for research (Morse et al. 2009). Therefore, philosophical traditions, which are logically consistent with the research problems (Creswell 2009; Newman 2008), should be clarified before the outset of a study. According to numerous representative works (Annells 1997a; Charmaz 2006, 2014; Denzin & Lincoln 2005; Glaser & Strauss 1967; Glaser 1978, 2005; Glaser & Holton 2004; Higginbottom & Lauridsen 2014; Sarantakos 2013; Strauss & Corbin 1990, 1998), I have identified the philosophical underpinnings for the schools of GT in Table 1. There is an evolving thread of philosophical underpinnings of GT from the historical context of each version.

Table 1. Philosophical underpinnings for three schools

	Glaserian / Classic	Straussian	Constructivist
Philosophy	Post-positivism	Pragmatism	Constructivism
Ontology	Critical realist	Relativist	Relativist
Epistemology	Modified objectivist	Subjectivist	Constructivist
Methodology	Emergence of verifiable category and emergent theory through concurrent data collection and analysis	Develop and construct a verifiable, localized and provisional theoretical framework through proceduralised strategies	Co-construct localised, provisional theory by researcher and participants through flexible research strategies; the resultant theory is revisable or adjustable and under inspection and reconstruction

3.2.2.1 Philosophical underpinning of the Glaserian (classic) GT

Glaser and Strauss's classic version of GT (also viewed as Glaserian GT) was first explicated during the second moment of the development history of qualitative research, which was divided by Denzin and Lincoln (2005) into eight stages. This moment is the "modernist phase", and is characterised by the rising power of the postpositivist paradigm of inquiry. Although Glaser, who is both the founder of and adherent to the classic GT, rejected positioning GT research within any philosophical tradition (Glaser 2005; Glaser & Holton 2004), there is still evidence indicating that the Glaserian GT is underpinned by postpositivism. Ontologically, Glaser (1978) insisted that the discovered basic social process from the GT research process was a reproduction of reality, while researchers should exclude their preconceptions when discovering them. This indicates the duality in his understanding of reality – the objectivist point in admitting the existence of one reality and subjectivist point in accepting its perceptibility. In short, the potential assumption in classical GT is that theory is not strictly a mirror of reality, but rather a mixed product woven cohesively and coherently by objective observation and subjective understanding (Morse 1991; Newman 2008). Epistemologically, the point that all things are data (e.g. observation, feelings of participants) (Glaser & Strauss 1967; Glaser 1978) indicates the hidden possibility of the participation of the researcher's mind and interpretations, which could also be regarded as data. The researcher, although assumed by Glaser to be a bystander (Glaser 1978), would inevitably interfere in the study by the process of subjective awareness in identifying the core category, theoretical sampling, and memo writing (Charmaz 2006). The modified objective essence of classic GT fits the ontological and

epistemological view of critical realism in postpositivism. This may further preface the beginning of a philosophical tendency that moves against the world view of conventional social research of objectivist positivism, to a stance of relatively subjective or modified objectivist idealism.

3.2.2.2 Philosophical underpinning of the Strauss and Corbin's (Straussian) grounded theory

On the basis of the classic version, Strauss and Corbin (1990) made further and deeper clarifications on the specific research procedures, which made the GT rather proceduralised (and more systematic). This version of GT is thus named proceduralised GT (also known as Straussian GT). It is widely accepted that the Straussian GT is rooted in the theoretical perspective of symbolic interactionism, which was regarded as stemming from American ideas of pragmatism by Dewey and Mead (Age 2011; Heath & Cowley 2004). Strauss himself also admitted that pragmatism and symbolic interactionism had strong influences on his thinking and the development of their reformulation of GT (Strauss & Corbin 1998).

Ontologically, Strauss and Corbin (1990) held the point of reality as unrealisable, but interpretable. This fits the view of symbolic interactionism and pragmatism that it is about the interpretations and perceptions of the world, and usefulness, rather than real world independence of mind, which influences human behaviours (Blumer 1969). Methodologically, for Straussian GT, knowledge is not "emergent" as advocated by Glaser, but "developed" by the interactions between researchers and their subjects. Strauss and Corbin (1990) proposed that researchers' perspectives would be reflected in the final substantive theory, which

fits the point in symbolic interactionism and pragmatism that meaning, which drives behaviours, results from the interaction process. In addition, rather than a gentle reminder of excluding preconceptions by Glaser (1978), Strauss and Corbin (1998) actively encourage researchers to make use of their experience and acquired knowledge as motivation or intention for their research. It is rather a more subjective perspective regarding the role of the researcher than what classic GT researchers perceive.

According to the above discussion, Straussian GT, which is basically driven by the theoretical perspective of symbolic interactionism, broadly underpinned by the philosophical position of pragmatism, has more interpretative ingredients, in contrast to Glaserian GT, which is directed by postpositivism. However, the relatively more fixed and proceduralised process and coding framework recommended by Strauss and Corbin (1990, 1998) manifests a residual shadow of positivism and postpositivism on GT. When comparing the Straussian with the Constructivist GT, there are fewer interpretive ingredients for the former (Annells, 1997a).

The Straussian GT was developed at a moment of “blurred genres” (Denzin & Lincoln 2005), through which sociological research moved from positivism to multiple genres complemented with a more interpretative tendency. The Straussian GT, which emerged in this moment (Annells, 1997a), indicates a genre shift from positivism and postpositivism to a state with relatively more interpretative ingredients, such as pragmatism with the perspective of symbolic interactionism. This could be viewed as an evolutionary response to the philosophical and

theoretical development of GT in social research during a moment of blurred genres.

3.2.2.3 Philosophical underpinning of the constructivist (Charmaz's) grounded theory

The more contemporary school of GT, in comparison with the Glaserian and Straussian ones, is the constructivist grounded theory (Charmaz, 2006; 2014). Constructivist GT was positioned at the latter end of the methodological spiral of the postpositivist-interpretivist grounded theory (Mills et al., 2006; Mills et al., 2007). In 1994, Kathy Charmaz named this school as constructivist, situated between positivism and post-modernism. She stated, "interactive nature of both data collection and analysis, resolves the criticisms of the method, and reconciles positivist assumptions and postmodernist critiques" (Charmaz, 1995, p.62). It is explicitly inferred from the term "constructivist" used in the name that constructivism underpins this specific school of grounded theory. Apart from the redundancy of its name, Charmaz (2014, p.14), the originator for this faction, directly expressed her philosophical stance as social constructivism, in order to "acknowledge subjectivity and the researcher's involvement in the construction and interpretation of data". This new school of GT actively repositions the relationship between researchers and subjects, and greater highlights on interpretive flexibility of the method also signal its constructivist underpinning.

Constructivism was born a long time ago, and has provided an alternative paradigm to knowing, in contrast to objectivism and positivism. According to Fisher (1991, p.7), Giambattista Vico (1668-1744, Italy) is generally credited as the first constructivist. The essence of his work was that "people have a mixed nature (Good

and Evil) and through acts of conscience could avert the disaster of materialism and ignoble motivation". In short, it presented the people's right to choose, and further emphasised the importance of mind in directing individuals and their actions. The viewpoints in his work are obviously subjective, which represented a challenge to the dominant orthodoxy—objectivism. Subsequently, a number of scholars, including Piaget, Kelly, Delia, von Foerster and von Glasersfeld contributed to the development of this paradigm, which was later labelled radical constructivism. Radical constructivism develops a theory of knowledge, in which knowledge reflects an ordering and organisation of a world exclusively constituted by our experience (Fisher, 1991). However, Charmaz indicated that she did not subscribe to it because those, believing in the radical one, regarded their analyses as accurately rendering rather than constructing the world. They usually neglected the processes of co-construction in research and social contexts. Instead, Charmaz was more aligned with those, including Lev Vygotsky and Yvonna Lincoln, who emphasised the "social contexts, interaction, sharing viewpoints, and interpretive understanding" (Charmaz, 2014, p.14).

Although constructivism has had a long history since Giambattista Vico, it was overshadowed by objectivism. In contrast with objectivism, which provides stable and controlled results, constructivism is less comfortable and acceptable because it does not offer solutions in any final sense, but rather a reformulation of ongoing experience (Fisher, 1991). Constructivism was greatly divergent with objectivism in ontological, epistemological, and methodological views, which made the two perspectives stand in a polar opposite to the research inquiry process. Ontologically,

constructivists believe that realities can be apprehended “in the form of multiple, intangible mental constructions” (Guba & Lincoln, 1994, p.110). This is relativist ontology, which highlights that beliefs and principles have no universal or timeless validity, unless social groups or individual persons held them (Appleton & King, 1997). People from the same or different cultural groups may hold similar or different views about social reality. Correspondingly to epistemology, which focuses on the nature of the relationship between the researcher and what can be known as such, constructivists adopt a subjectivist and transactional approach to research. In other words, researchers and their subjects co-create their interpretation of reality by interacting during the research process (Guba & Lincoln, 1994). This is rather different from positivism and post-positivism, to which the constructivists relocate the researcher as an agent actively participating in the interpretation of phenomena (Fisher, 1991), and admit the multiplicity of reality (Guba & Lincoln, 1994). Therefore, the constructivists take a rather hermeneutic and dialectic methodology, rather than a controllable experimental approach under positivism (Appleton &King, 1997). Hermeneutics emphasises the interpretation and understanding of the significance of human actions, discourses, and institutions, which aims at an understanding of the essential meaning of the constructions in reality (Appleton & King, 1997). In a dialectic approach, researchers believe that abstract knowledge could be reached by synthesising conflicting viewpoints. By the combination of hermeneutic and dialectic approaches, constructivist researchers believe that a single interpretation could not explain a complex phenomenon, and consequently, they should accept the differences in beliefs among individuals.

Insofar as the constructivist's emic perspective stands in an opposite position against the positivist etic viewpoint (Appleton & King, 1997).

It can be clearly seen from the more recent school of constructivist GT that the repositioning of the relationship between researchers and participants is underpinned by constructivism. This philosophical underpinning differs from positivism, postpositivism and pragmatism, which drives the divergence of the constructivist GT from the earlier two versions of grounded theory. Charmaz argued that since "we are part of the world we study and the data we collect" (Charmaz, 2006, p.10), researchers could not separate themselves and their experiences from their research, or be objective about the data, as Glaser insisted in the grounded theory method (Glaser & Strauss, 1967; Glaser, 1978; Charmaz, 2006; 2014). In contrary to the Glaserian school that researchers' preconceptions must be excluded, researchers would actively be involved in consistent and ongoing subjective interpretations of the data, and their constructions were greatly influenced by their "perspectives, privileges, positions, interactions and geographical locations" (Charmaz, 2009, p.130). Charmaz's emphasis on "rendering through writing" in regard to researchers' writing as a method of enquiry also reflects her inclination to the active role of the researcher (Mills et al., 2006). This new recognition of the researcher-subject relationship is dramatically different from the positivist and postpositivist viewpoints that the final theory or process is a reproduction of existing reality, and a neutral observer only serves as a "vessel containing a precious liquor" in research (Glaser & Strauss, 1967; Glaser, 1978; 1992; Higginbottom & Lauridsen, 2014; Mills et al., 2006). Although the Straussian

GT, underpinned by pragmatism and driven by symbolic interactionism, admits a relatively more active role for researchers (Strauss & Corbin, 1998), its inter-subjective and constructivist tendency was limited and weakened by the originators' insistence on the verification rather than construction of the theory. Charmaz's attitude and emphasis towards the constructive relationship between researchers and participants is aligned with the constructivistic relativism ontology and subjectivist epistemology that both researchers and subjects co-construct multiple realities through a research inquiry.

Another hint of the constructivist perspective for Charmaz's school, which is also viewed as a departure from the earlier two versions, is that Charmaz has placed a particularly strong emphasis on flexibility in grounded theory strategies. In her chapter about constructivism and grounded theory, Charmaz (2008a, p.403) clarified that "Using grounded theory strategies means responding to emergent questions, new insights, and further information and simultaneously constructing the method of analysis, as well as the analysis". In short, researchers should adjust and construct the method of collecting and analysing based on what emerges during the process of data collection and analysis. This view is similar to and congruent with the strategies of theoretical sampling and constant comparison emphasised by original versions of GT. Theoretical sampling is a technique, through which researchers would decide the following content (data) to be collected and analysed, as well as the place to find the following participants (Glaser & Strauss, 1967; Strauss & Corbin, 1990). Constant comparison is another analysing strategy that requires a back and forth process of data collection and analysis through

comparisons between codes and codes, codes and category, category and category, and category and incidents (Glaser & Strauss, 1967; Glaser, 1978; Strauss & Corbin, 1990). Nevertheless, Charmaz's view about the adjustment of methods has further advanced the strategies of theoretical sampling and constant comparison. She not only emphasises refining the context and philosophical underpinning of analysis, but also further includes research methods and strategies for adjustment. As she put it, "No set of rules can dictate what a researcher needs to do and when he or she needs to do it" (Charmaz, 2008a, p.403). This point of view particularly indicates Charmaz's resistance to a set of concrete, rule-bound and prescriptive research strategies by Strauss and Corbin (Kenny & Fourie, 2015) and the postpositivist strategy by Glaser. She favoured a more flexible and adaptable research process, which requires researchers to "learn to tolerate ambiguity" and "become receptive to creating emergent categories and strategies" (Charmaz, 2008b, p.168). In order to adjust or construct methods, researchers should think through what they are doing and how and why they are doing it, which implicates researchers to posit inside the studied process as a part of it, and put great effort into improving their analytic strategies (Charmaz, 2008a). The coding procedure of constructivist grounded theory goes from initial coding, through focus coding to theory construction (Charmaz, 2006; 2014). Although this coding procedure seems simple, which appears analogous to the structure of classic GT, and the generic grounded theory techniques (including constant comparison, theoretical sampling, memo writing, and theoretical saturation), the process is contained and intertwined with each stage until the final theoretical framework arrives. With this more malleable coding procedure, the researcher develops a substantive grounded theory

(Charmaz, 2014). Charmaz (2006; 2008a; 2014) repeatedly emphasises that researchers who choose the constructivist grounded theory should remain flexible during their inquiry. It means that researchers should improve their methodological and analytical strategies accordingly throughout the research process, which fits the constructivist viewpoint that the inquiry itself is a social construction, and researchers are assumed to co-construct categories with the subjects and from the data (Charmaz, 2008a).

To sum up, Charmaz explicitly expressed her philosophical underpinning of GT as constructivism. Her philosophical stance is also coherent with the methodological strategies, including data collection and analysis. This constructivist worldview is based on the relativist ontology and subjective epistemology, which differentiates it from the other two schools of the GT approach. Charmaz's GT represents the most subjective and interpretative faction for grounded theory research along the evolving thread of methodological development, from relatively objective to more and more inter-subjective.

3.2.2.4 Matching philosophical underpinnings with the evolving trend of methodological understanding of grounded theory: An epilogue

From the developing history of the GT method, we can identify the tendency that the representatives of three GT schools are becoming more explicit with their background positions with the advancement of the GT method. Although originators of the classic version remained obscure about their philosophical underpinnings, or even refused to frame this method to a fixed perspective (Glaser & Strauss, 1967; Glaser, 1978; 2005), GT methodologists have not given up trying to

explore the philosophical traditions because of their function in directing major research strategies. There were researchers other than the originators who instead identified postpositivism as the underpinning for the first version of this approach (Annells, 1997a; Ralph, Birks & Chapman, 2015; Chen & Boore, 2009; Guba & Lincoln, 1994; Reed, 2010; Rolfe, 2006). Subsequently, Strauss and Corbin, representatives for the Straussian GT, explicitly admitted that pragmatism and symbolic interactionism had strong influences on their thinking and position, although neither had further written this philosophical attitude into their publications. The obscurity of their philosophical stances stirs other methodologists' great interest and discussion over the 'missing link' in the Glaserian and Straussian versions. Until the most recent constructivist version, Charmaz and her followers clearly and affirmatively expressed the philosophic position in the naming of such a version, and the design of the methodological strategies in this regard. In spite of the fact the debate over the philosophical underpinnings for GT is ongoing, the pattern that researchers are becoming clearer about is that the abstract framework signals the function of the newest one in filling in the gaps arising from the earlier versions.

Coincident with the tendency towards increasing clarity on the philosophical underpinning(s) of GT, is the contemporarily growing proportion of relativism and interpretivism in ontological and epistemological viewpoints. The versions of Glaserian and Straussian GT were underpinned by postpositivism, which challenged the prevailing orthodoxy at a time dominated by positivism, in that more subjective and relative ingredients were included in the postpositivist perspective for the

Straussian school. Charmaz (2008a, p.399) actually argued that the original conception of GT by Glaser and Strauss assumed a rather "limited form of social constructionism" because it "laid the foundation for constructing sound methods, as well as analyses" by "adopting a few flexible guidelines" to allow "method and content" to emerge. However, it is the critical realist ontology and modified objectivist epistemology that orientates the classic Glaser and Strauss' versions to a postpositivist perspective rather than constructivism. The proportion of relativism and constructivism in the classic version is least among all grounded theory factions. Strauss and Corbin (1990) made a great step towards more relativist ontology and constructivist epistemology on GT inquiry, in contrast to Glaser and Strauss (1967). Their reformulation of the GT approach is backed by pragmatism, which is a step forward to relativist ontology (Annells, 1997a). In this perspective, a concrete reality independent of mind cannot be known but rather must be interpreted (at least to a certain degree). Thus "reality", which directs individual behaviours, is considered to be the researcher's interpretation and co-construction with the participants, rather than a more absolute representation of reality as the "truth" out there. The role of researchers as such is injected with more active ingredients, and the newer constructivist version of GT is ascribed to more of the subjectivist/inter-subjective epistemology. A "discernible dialectical quality to the constant comparative data analysis" (Annells, 1997a) in Straussian GT implies that the resultant theory or social process was not "emergent" but "was developed". Insofar as Strauss and Corbin further related research inquiry to conditions and context, the resultant theory or social process was regarded as a reflection on "a local and constructed reality" (Annells, 1997a). These properties of the Straussian version provide the groundwork

for researchers to consider it to be underpinned by constructivism. However, the Straussian version also shares the basic premises of an external reality, and the properties of verifying the developed theory through the research process as the classic one, which imparted its positivist characteristic (Annells, 1997a; Charmaz, 2008a). The proceduralised research process and specific use of a coding framework proposed by Strauss and Corbin reduce the flexibility of GT research, and thus, gave the approach an objectivist cast. But there appears to be a transition from postpositivism to interpretivism (or relativism) in the Straussian school of GT. Mills, Bonner and Francis (2006, p.3) pointed out that Strauss and Corbin's collaborative work demonstrates,

> *a mixture of language that vacillates between postpositivism and constructivism, with a reliance on terms such as recognizing bias and maintaining objectivity when describing the position the research should assume in relation the participants and the data.*

To the most recent generation then, the grounded theory approach is imbued with constructivism and interpretivism. Social reality is viewed as "multiple, processual, and constructed" from the constructivist perspective, and the researcher's "position, privileges, perspective, and interactions" should be considered as "an inherent part of the research reality" (Charmaz, 2014, p.13). The constructivist paradigm assumes relativist ontology and subjectivist epistemology, and a naturalistic set of methodological procedures (Denzin & Lincoln, 2005). Although Charmaz rejected subjecting this newer version of GT to radical constructivism, her emphasis on "social contexts, interaction, sharing viewpoints,

and interpretive understanding" (Charmaz, 2014, p.14) clearly indicates a high degree of relativist and subjectivist characteristics. Many researchers, including Strauss's students and colleagues, particularly contributed to the development of GT with constructivism (Charmaz, 2008a, p.401), which presents the ongoing interests of researchers on the methodology of GT.

In view of the above discussion, the GT approach has gone through a philosophical and perspective shift from postpositivism of the classic version, through pragmatism and symbolic interactionism of the Straussian school, to the contemporary worldview of Charmaz's constructivist focus. There is no definite consensus on the best philosophical underpinning and perspective that fit the GT method, because each of the underpinnings has its advantages and disadvantages in operation and application of the research. Nevertheless, the trend of being the methodology of even more interpretivist and constructivist ingredients, which represents the evolving thread of constructivism in GT, has been observed; and practised by many GT researchers. As Strauss and Corbin (1994, p.283) suggested,

> *No inventor has permanent possession of the invention … a child once launched is very much subject to the combination of its origins and the evolving contingencies of life. Can it be otherwise for a methodology?*

It is not always right to say that the latest one is the best one, but it represents the development and provides certain solutions to the problems arising from the precedents. Glaser once raised the nature of GT research in his statement "[Grounded theory] is not an either/or method. It is simply an alternative to positivistic, social constructionist and interpretive qualitative data methods"

(Glaser, 2001, p.6). Although Glaser does not agree that constructivism and/or interpretivism is the methodological basis of GT, GT remains an alternative to the dominant positivistic tradition of scientific inquiry. Charmaz (2008a, p.401) argued, for the meaning of taking constructivism as the philosophical underpinning of GT, "Postmodern challenges from without combined with positivistic inclinations from within grounded theory spurred efforts to reclaim its strategies for social constructionist inquiry". The latest philosophical development may be the one most correspondent to the requirements of the time, because it is arising from and injecting the characteristics of the time into the precedent ones. From a dynamistic and developing perspective, generations of researchers contemporaneously interact with their contexts and the study participants, and the individual philosophical perspectives are translated into products of research (Ralph et al., 2015). Under this consideration, the philosophical position for my study is constructivism because of its characteristics that fit contemporary thoughts of the time; and it opens the view and scope of my study about women bearing and rearing a baby over the period of a major earthquake.

3.2.3 Fitting the philosophical positions of research to the needs of pregnant women during an earthquake

A review of the literature on pregnant women experiencing an earthquake suggested that exposure to the disaster was followed by higher rates of negative psychological outcomes (e.g. depression, anxiety, and PTSD), and some family factors (e.g. family support, and marital relationships) were associated with them (Ren et al., 2014). All of those studies employed quantitative methods, such as

cross-sectional and longitudinal surveys, which are based on positivism. Under such a philosophical stance, the studies have provided a background picture of the psychological impact of an earthquake on pregnant and postnatal women through fixed and rigorous research strategies that are driven by positivism and objectivism. However, the positivist and control approach of data collection and analysis has limited the breadth and depth of those studies, which constitute a knowledge gap in the research area on pregnant women experiencing earthquake. For example, researchers are required to ground their studies on previous results about the statistically significant relationship between disasters and mental health problems, which has brought about a limited focus on one or two specific kinds of mental health problems (e.g. depression, and PTSD) to be investigated (Salkind, 2010). This is a limitation that inevitably narrows the view of researchers and clinical workers to understand in greater depth, other influences or events possibly induced by the disaster, which are experienced as being significant by the participants. This may cause a lack of comprehensive understanding for services design and the delivery of interventions. Depth was also curtailed with the cold numbers reported in quantitative studies, which can merely represent probabilities and proportions. Although these figures can depict the prevalence of phenomena, they could not represent how and why they occur (Charmaz, 2008a). Other essential aspects, such as the background stories and cultural context, may also be ignored (Batniji et al., 2006). It is also irrational to assert that the experiences of those who are not the majority, are insignificant for attention in terms of fulfilling their needs after a disaster. Since the existing quantitative studies may not have sufficiently generated in-depth knowledge about the experiences of women bearing and rearing a baby in

the time of an earthquake, clinical practice or interventions (which are designed on the basis of those studies) may not have fully met the participants' needs in context, but were reduced to formalism. Therefore, it is necessary for researchers to explore more comprehensively and in-depth the experiences of these pregnant women, in order to explore the essence of the phenomenon for better service or intervention design. In consideration of this concern, a grounded theory study underpinned by constructivism is a suitable alternate.

Constructivists believe that social reality is "multiple, processual, and constructed" (Charmaz, 2014, p.13). This relativist ontology opens the windows for the stories of people who may have been ignored in quantitative studies. The recognition of multiple realities and admittance of the importance of each individual's experience, even of minorities, will broaden our knowledge and evidence base about the phenomenon of focus. The open attitude that the story of every person is a reality and pattern to consider is a benefit for extending and deepening the understanding of such phenomena. The open narration of participants in qualitative studies will also provide a data source for researchers to discover meaning, rather than merely certain measurable aspects of the phenomenon. Epistemologically and methodologically, constructivists insist on the co-constructing of meaning. They hold that the researcher plays an active role in participating in research and co-creating meaning and reality (Guba & Lincoln, 1994). In short, the resultant interpretation reflects the understanding of both participants and researchers. The repositioning of the role of researcher can give more tone to stakeholders, and fills the knowledge gap in disaster nursing research

on pregnant women. Researchers are not only the person who is carrying out the study, but also the one who is interested in and highly involved in the development of knowledge, through co-construction of understanding in order to fulfil the needs of the targeted population. Final presentation of these research results can better represent the conciliating and comprehensive ideas of stakeholders. The designed interventions and support to follow up, based on an in-depth and more comprehensive understanding of the experience and processes, could more easily be accepted by both helpers and subjects, and better applied in practice. However, most researchers in disaster nursing studying pregnant women have positioned themselves as objective bystanders, and have provided relatively superficial recommendations.

A qualitative study (Badakhsh et al., 2010), targeting pregnant women after a hurricane, provided useful information to understand the in-depth experience of pregnant women after a disaster. However, the transferability of the study results for practice to women bearing and rearing a baby during the time of an earthquake is doubtful. There are differences in the social contexts and cultural backgrounds of the disaster, e.g. for the Chinese. Research studies exploring the experiences of perinatal women in an earthquake that incorporate the perspectives of both researchers and participants remain scarce. Applying constructivism as the philosophical underpinning of studies aiming to help perinatal women to better survive an earthquake is a suitable attempt to discover in-depth information that can fill a knowledge gap for disaster nursing.

3.2.4 Fitting the philosophical positions with the researcher's professional perspective and value

Another reason for choosing constructivism as the philosophical underpinning of GT for this study is the fit of such a position with the researcher's professional perspective, values, and the research phenomenon. Mills et al. (2006) suggested that researchers should choose the research paradigm fitting with their own beliefs or worldviews about reality, in order to warrant rigorous design. Walsham (2006) also emphasised the importance of fit between the research method and the researcher's preference, interests, and values. With the best fit, researchers would experience closer involvement in the study and have in-depth access to people, issues, and data for rigorous analysis. Out of all this, it is beneficial to participants if the researcher's determination to be involved and make a valid contribution to the field could be achieved through a good match in the philosophical position of the study with the researcher's values, rather than merely taking something, such as data, from the participants and walking away to perform the analysis. The researcher's experience in data collection in this study confirms this point. During the process of data collection, I obtained more participants' involvement when they realized my sincerity and enthusiasm, through my research, to help women who had been pregnant during the period of the earthquake. When I believe that I am doing the right thing (this is a study with a philosophical position that fits my values), I am more rigorous and enthusiastic about achieving the study aim. As a senior nurse in the area of perinatal care, my reflection on the philosophical position of my methodology drives my preference and indicates a good fit with constructivism. Despite my academic training and background in the positivist and

objectivist traditions as a nurse (and being involved in numerous patient-nurse interactions as well), I ultimately believe that individual minds and experiences are different from natural phenomena such as physics and chemistry, which are studied through manipulation and maximising the reduction of bias. It is also believed that the key tenet of "giving voice" to the subjects in constructivist GT fits a professional nursing practice, which is characterised by "partnership, collaboration, and advocacy for patients and their families" (Higginbottom & Lauridsen, 2014, p.11). My particular clinical experience of working with women to overcome negative mental symptoms, with or without outside help after an earthquake, also reminded me of the human agency that is involved in constructing meanings and adopting behaviours. I, as this study's researcher, believe in the existence of multiple realities. The exploration of psychological and social phenomena and human interactions is better accomplished on the basis of human understanding and interpretations, and the final "reality" may vary according to the context and conditions. The aim of this study was to explore the experience of pregnant and post-natal women, and the process in which they interact with their families over the period of an earthquake, in which nature is mainly a psycho-social (and/or political, economic) phenomenon. With this consideration, constructivism was chosen as the basis of this study in order to obtain valuable and qualitative data for in-depth analysis, and to further advance knowledge and understanding of the phenomenon.

3.2.5 Strategic considerations for choosing constructivist GT for this study

Throughout the progress of generations of grounded theory development, the essential study strategies of coding, constant comparisons, theoretical sampling, memo writing, and theoretical saturation must be included and applied in order to generate the theory (Annells, 1997b). These strategies are "transportable across epistemological and ontological gulfs" (Charmaz, 2014, p.12), which constitute the basic skeleton and principles of this method. However, the differences in philosophical positions determined the variation in manifestations and focuses of the essential study strategies, which become the disparities of methodological issues. The major methodological differences (Annells, 1997a; Charmaz, 2006, 2014; Glaser & Strauss, 1967; Glaser, 1978; Heath & Cowley, 2004; Higginbottom & Lauridsen, 2014; Holton, 2010; Jone & Alony, 2011; Kenny & Fourie, 2015; Strauss & Corbin, 1990, 1994, 1998) are summarised in Table 2.

Table 2 Major strategic differences among three schools of grounded theory

	Glaserian	Straussian	Constructivist
Intent of study	Generate a multivariate theory which emerges from data analysis	Develop an empirical grounded theory, which can be verified to some degree through a set of rigid procedures and applied in practice	Construct a grounded theory or theoretical understanding of the studied experience usually in the form of a "story", which shows the complexities of participants' worlds through interactions with people, perspectives and research practices
Beginning of study	General wonder or neutral	Having a general idea of where to begin	Having a general idea of where to begin or

	Glaserian	Straussian	Constructivist
	question (empty mind)	with structured questions	research problem/questions
Induction and deduction	Induction is the key process; deduction and verification serve for emergence	Deduction, hypothetico-induction and verification dominate analysis	Induction is the key process; but "imaginative engagement" with data is not rejected
Role of researcher	Unbiased and passive observer	Active reagent interacting with participants in interpreting meanings and validating the theory	Active interpreter of the meaning; and co-constructor with participants for the theory
Researcher's preconception	Experience or values of researchers would contaminate the research and should be 'contained'; remain distant with relevant academic literature prior to, or during the research process	Experience or values serve as the beginning of research and could refresh theoretical sensitivity, but should be dispelled through prescribed research procedures; literature can be employed throughout all phases	Experience and values must be examined; and shape the very fact that researcher can identify; literature can be used, but should be delayed until data analysis
Data collection	Single structured or informational interviews; passive listening	Single structured or informational interviews	Multiple visits over time combined with the intimacy of intensive interviewing
Coding process	A flexible process including substantive (open and selective) coding and	A rigorous and hierarchical coding procedures including open, axial and selective coding, and conditional matrix; an iterative process to	A rather flexible and adaptable process including initial coding and focus coding; an iterative process to move back and forth is recommended

	Glaserian	Straussian	Constructivist
	theoretical coding;	move back and forth is recommended	

It can be observed from Table 2 that the differences among the study strategies of the three schools of grounded theory, although sharing some common features, vary to differing degrees. Since there are three alternatives available, it is inevitable and necessary for the researchers, including PhD students, to justify and decide which grounded theory to use for their studies. For this particular study about the family interactions of childbearing and childrearing women before and after a major earthquake, the constructivist grounded theory, which fits the nature of the study phenomena and the researcher's perspective and values, is chosen. There is no need to repeat the rationales of constructivist underpinning, which has been argued in the preceding discussion as abreast of the times. A good fit in the research background with the researcher's preference is recognised. The specific study strategies of the constructivist GT approach, which are considered to be the best for this study, are discussed in contrast with the other two GT approaches below.

There are two strategic reasons for choosing Charmaz's constructivist GT rather than the Glaserian version for this study. Concerning the researcher's role and the attitude towards preconception (see Table 2), an unbiased and passive observer who will enter into the research area without preconceptions, is assumed in the Glaserian GT with its postpositivist tradition (Glaser & Strauss, 1967; Glaser, 1978). This is a view that I cannot agree with, because it is almost impossible to

exclude the researcher's personal experience and background during the study process (Charmaz, 2006, 2014). Glaser himself also conceded human agency, in that researchers, as human beings, inevitably have their tendencies and preferences, which would unintentionally influence their interpretations (Glaser, 2002). Grounded theory is not an approach to simply describe and represent what happened superficially (Glaser & Strauss, 1967; Glaser, 1978) (e.g. the earthquake causes specific damages to pregnant women), but one to interpret the meanings behind things (e.g. what is the meaning of pregnant women remaining with their husbands during the most dangerous time of the earthquake?), which would be filtered through the researcher's perspectives, professional background and personal history (Goulding, 1998). Furthermore, the selection of tentative core categories or sub-categories that emerge during the data analysis, depends at least partly on the researcher's subjective interests and personal history (Glaser & Strauss, 1967; Glaser, 1978; Charmaz, 2006; Charmaz, 2014). The exclusion and denial of a researcher's preconceptions is not only unrealistic inpractice, but also not beneficial in fulfilling the needs of the targeted population, as discussed in section 3.2.3. In contrast to classic GT, I appreciate Charmaz's frank admittance to the influence of the researcher's mind, and her optimising suggestions by recognising prior knowledge and theoretical preconceptions, while subjecting them to rigorous scrutiny. As Dey (1999, p.251) criticised, "There is a difference between an open mind and an empty head". By incorporating background knowledge and preconceptions into constant comparison, the researcher's background knowledge and preconceptions could become data for analysing, and inappropriately presumed relevancies could be corrected (Charmaz, 2014). This could also explain

why Charmaz particularly stresses the importance of memo writing, which is an entirely correctable discovery phase of self-reflecting and checking conjectures (Charmaz, 2014).

The second strategic argument of preferring Charmaz's constructivist GT to Glaserian and Straussian versions is the clear point about multiple visits for data collection in theoretical sampling. Theoretical sampling is a tenet emphasised by all grounded theorists, which requires collecting data from the next participants on the basis of an emergent category. Glaser and Strauss did not clearly indicate the number of interviews for each participant (Glaser & Strauss, 1967; Glaser, 1978; Strauss & Corbin, 1990) before the arrival of theoretical saturation. The target of "emerging of theory" and attempting theoretical saturation indicates that inclusion of a greater variety and larger number of participants is important. Under such a consideration, researchers may recruit as many subjects as possible to collect new data to refresh the emergent categories/theory. The number of interviews for each participant is not fixed, but driven by the need for theoretical sampling and saturation. In contrast to Glaser and Strauss's implicit attitude towards the number of interviews, Charmaz (2014, p.210) explicitly declared her supportive stand on multiple visits with "key informants"" with in-depth, intensive interviewing. She argued that multiple interviews and observations with "key informants" gave researchers "some leeway to gather further data to develop properties of categories", thus allowing theoretical sampling (Charmaz, 2014, p.210). This emphasis is particularly useful for "reconciling the emergent process of doing grounded theory with institutional constraints on research" (Charmaz, 2014, p.209).

The strategy of multiple visits with key informants could also reduce the risk of closing the research prematurely with only superficial data collected, a result of a weak bond in the researcher-participant relationship – and hence can increase efficiency when a large sample is unavailable. This study focuses on pregnant women who experienced a major earthquake. Potential participants dispersed after the earthquake, and there would be difficulties in finding a larger number and obtaining their approval to participate. Under such a circumstance, a large variety and number of participants would be difficult to find. In-depth and multiple interviews with each available participant for data collection is more efficient and pragmatic.

The major concern in choosing constructivist GT rather than a Straussian version for this study is the coding procedure. Strauss and Corbin publicised their highly hierarchical and proceduralised coding process in 1990. This process mainly comprises three steps, including open, axial, and selective coding (Strauss & Corbin, 1990). Among these steps, axial coding, which represents the process of forging links between a category and its sub-categories, is first added on the basis of the classic version (Kenny & Fourie, 2015), which makes the analysis process more complicated. Conditional matrix, and summarising and integrating the three levels of coding for identifying the breath of determining conditions and consequences related to the subject, are also foremost in the suggestions by Strauss and Corbin (1990). Not long after the collaborative publication (Strauss & Corbin, 1990), this version of grounded theory became popular because of its explicit analysing procedures, which can serve as a navigating system for the novice in its qualitative

inquiries (Charmaz, 2014). In spite of its popularity at that time, theorists, including Glaser and Charmaz, have heavily criticised the proceduralised coding process. Glaser (1992, p.3-4) views this reformulation as a distortion of grounded theory, and contends that the hierarchical coding process is actually "forcing" the data into "preconceived" concepts/categories to coerce a theory. As a consequence, theoretical sensitivity and inductive openness to the data are lost in the rigid process, and the research results may deteriorate into "full conceptual description" rather than a theory (Glaser, 1992). Charmaz (2000) also argues that the reformulated version destroyed the flexibility of grounded theory with immutable, rigid and overcomplicated rules. In addition to undermining flexibility, the Straussian version is also criticised for its complexity, which may confuse novices. Charmaz (2000) further criticises the procedure of this version as an excessive "maze of technique". In particular, the axial coding is described as a step distracting researchers with "awkward scientific terms and clumsy categories" (Charmaz, 2000, p.525). In contrast, the flexible and malleable coding procedure suggested by Charmaz is more interpretative and intuitive, and could allow for better emergence of theory.

Apart from deficiencies in the earlier two versions of GT, the fit between methodology and the research question is a justification for the choice of the constructivist version for this study. This study aimed to develop a substantive theory on the experiences of childbearing and childrearing women during and after a major earthquake, and their family dynamics. According to the literature review, the earthquake impact would vary according to the different types, locations and times

of the disaster (Harville et al., 2010; Ren et al., 2014). Thus the experiences and corresponding behaviours would also vary according to different contexts and cultural backgrounds. For example, studies on the experiences of Chinese pregnant women may be distinct from Western studies, because of the differences in socio-economic status and cultural context. Since there is only one available grounded theory study on the experience of pregnant women after a hurricane in Western culture (Badakhsh et al., 2010), a study that observes the phenomenon with the consideration of a Chinese context and background is needed. The present study is designed for Chinese women who have experienced a major earthquake; and the context and time will be the issues that must be considered in a substantive study. Thus, the constructivist GT, which emphasises co-constructing contexts and conditions into data analysis, is the suitable approach for this specific study. To sum up, Charmaz's constructivist GT is chosen for this study in consideration of correcting inappropriate assumptions by scrutinising preconceptions, achieving greater efficiency in data collection from fewer but more focused participants, and arriving at the best fit between the research question and methodology.

3.3 Study methods

3.3.1 Setting

In considering the need to collect data from women who were caring for a new baby after a recent (within two years) major earthquake, this study was conducted in Ya'an, China (including Ya'an city, Lushan County, Tianquan County, and Mingshan County). It is believed that in general, an earthquake's impact would lessen with the progression of time (Harville et al., 2010; Eksi & Braun, 2009). Distant timing of the

study after the disaster may increase the potential risk of recall bias, and weaken the study's rigour. It was found in studies on the psychological impact of an earthquake on pregnant women, that study timing was usually no more than two years after the earthquake (Chang et al., 2002; Hibino et al., 2009a; Lau et al., 2011; Qu, et al., 2012a). This suggests that a period of within/around two years after an earthquake is suitable.

The earthquake, which was 7.0 on the Richter scale, occurred in Ya'an, Sichuan, on April 20, 2013; and caused great damage to the city. The affected area was 15,720 square kilometres, and the economic loss was more than 85 billion RMB (Li, Yang, Tian, Jiang & Xu, 2013). Apart from the damage to property and injuries to people, this earthquake might have also psychologically impacted the victims in the affected area. From a survey (n = 128) conducted in Ya'an by the researcher immediately after the earthquake, the prevalence of depression (35.2%), based on the EPDS, in pregnant women was higher than in the general population (7%-14%) who had not experienced an earthquake (Ren et al., 2015). The grounded theory study was commenced in July 2014, which was within two years after the Ya'an earthquake.

3.3.2 Participants

Two methods were used to recruit potential participating women. The first was to identify the mothers who had brought their babies under two years old to the children's healthcare departments of hospitals. Normally, over 90% of the newborn babies in the cities and towns of mainland China receive routine health care, with their health records created in hospitals (Guo, 2011); and the targeted participants could be approached during their hospital visits. Another recruitment source was community centres in the affected area in Ya'an, where the researcher also explained

the study to potential participants and sought their participation. The researcher originally tried to recruit participants directly through these two methods. However, experience informed by the pilot study (conducted in April, 2014) indicated that liaison persons (mainly clinical workers in hospitals and community centres) were vital in establishing a connection between the researcher and participants for access in both locations. In the pilot study, only one of 23 eligible women in Lushan County agreed to participate. Some of the women who refused to participate in the pilot study had reasons such as, “had no time because of baby caring”; “had no interest in attending any research”; “could not stay outside home for a long time because they are rebuilding their house”; and “should go back home because hospital is distant from their house”. These reasons appeared to represent their doubts about the researcher and the legitimacy of the project. Other women, who did not make any comments about their refusal to participate, also expressed their scepticism about the project and researcher through their body language. In mainland China, close relationships (“hao guanxi”) are important for the establishment of trust (Song, Cadsby & Bi, 2011), which is also crucial for the recruitment of research participants. As a consequence, all participants were recruited through liaison persons rather than through the researcher herself, in the children’s health care departments of hospitals and community centres. In order to avoid the risk of coercing women with their fear of receiving unfair treatment from healthcare workers if they did not participate in the study, their autonomy was emphasised and fully explained, and their rights of refusal and withdrawal from the study were respected.

In order to gain insights into the range and complexity of the phenomena, the researcher set a series of inclusion criteria as a starting point for sampling, which were

later progressively adjusted with concurrent data analyses for comparison. The potential participants (women) for this study should meet the following inclusion criteria in the beginning that they,

a. experienced the earthquake during the second or third trimester of pregnancy;

b. were over 18 years old;

c. gave birth to a baby thereafter;

d. had no known history of hearing, speaking or cognitive problems, and were able to communicate in Chinese; and

e. had no known history of psychiatric disorders.

The targeted participants might not only be pregnant women during the earthquake and gave birth after the earthquake, but also could be close family members, e.g. spouse. Whether the family members or else were recruited for constant comparison was dependent on the emerging categories or subcategories.

3.3.3 Sampling

Purposive sampling and theoretical sampling were used to recruit the participants. The first five women were recruited according to the inclusion criteria by purposive sampling as the beginning. During this early stage, the strategy of maximising variations in sampling was used to gain insights into the range and complexity of the phenomena in this study.

The subsequent and ongoing sampling method for this study is theoretical

sampling. Theoretical sampling is the most widely used sampling method in grounded theory studies, as it requires researchers to seek and collect pertinent data to elaborate on and refine categories in the emerging theory. This can keep researchers from becoming stuck in unfocused analyses, which is suitable for the aim of generating a theory (Glaser & Strauss, 1967; Charmaz, 2006). Since theoretical sampling is one of the most important data analysis strategies of this GT study, it will be outlined in a later section on data analysis.

From research experience, it was estimated that a range of 20 to 50 participants should be included to achieve theoretical saturation for a GT study (Creswell, 1998; Morse, 1999, 2000). There were 22 women and two men (husbands) recruited, and relative theoretical saturation was observed for this study. The potential participants were women who had experienced the 2013 Lushan earthquake. They dispersed in Ya'an, which is 15,720 square kilometres, after their discharge from hospital. A concentrated source of potential participants was not practical or feasible because of their scattered residences. As discussed in section 3.2.5, multiple visits to individual participants and a stronger relationship between researcher and participants could contribute to both higher efficiency in the recruitment and richer data collection. In this connection, two of the women (participants F and S) were re-visited and re-interviewed. The reasons were that,

a. both agreed to be re-interviewed (availability);
b. both provided rich information during the first interview about their experience, and were able to further express themselves and share in-depth understanding about their lives and changes;
c. their backgrounds represent different situations surrounding the

tentative categories or questions for the theoretical sampling. Participant F had different experiences of family support in the 2008 earthquake and the 2013 earthquake, which served when comparing events or cases for the developing categories 'being there at her side' and 'no sense of being there'. On the other hand, the husband of participant S could not be with her all the time after the 2013 earthquake, yet the couple had a good marital relationship. This served as the comparison case for the developing category of 'being there at heart'; and

d. their husbands also agreed to participate, and the researcher could observe the husband-wife interactions during the second interviews.

The researcher was trying to recruit (theoretically sample) more husbands to participate in the study because they could provide information/data about family interactions, the meaning of 'being there', and meaning of the new baby (the latter two were the tentative categories developed during early focus coding stage) from the spousal perspective in the family. For instance, although all women participants mentioned the importance of baby in helping them to relieve negative psychological responses, participant D, G, and L described more stress when their husbands felt weary of the baby during the care because the baby disturbed their lives (e.g. sleeping, and leisure activities, etc). The researcher was wondering whether there were differences in the meaning of baby for women and men, which might suggest and uncover more or deeper influence/s of the baby (e.g. the women could identify the love of their husbands through their attitudes and behaviors toward the babies). This could also help us to understand more about the relationship and/or interaction

between the two major subcategories being there of the family and taking care of the baby in helping those women. Unfortunately, only the husbands of participants F and S were successfully recruited, which might have posted a threat to the study rigour. Since the earthquake occurred in Ya'an, a city located more than 100 kilometres from the centre of Sichuan province, most of the potential participants were dispersed in the remote countryside (e.g. Lushan County, Mingshan County, and Tianquan County). Many husbands of the participants in this area had to leave their hometowns to work for a better income in major cities. It was therefore very difficult to contact and invite them to participate in the study. Four husbands replied that they were busy and did not want to be interviewed. One husband died in a traffic accident after the earthquake. Finally, the husbands of F and S were available and recruited. These two husbands represented different backgrounds. One was from countryside with a relatively lower educational level (high school). He accompanied his wife almost all the time after the earthquake. The other husband was from the town with a relatively higher educational level (junior college), but he could not always accompany his wife, because of his occupation. Such a contrast in backgrounds provided good supplementation to the data on husband-wife interactions in this context after the earthquake.

On the other hand, many participants mentioned about their interactions with other family members besides husbands (e.g. mother, parents-in-law, or older child). Recruiting them for theoretical sampling might contribute to the construction of a more substantive theory. However, no other family members, such as parents and older children, agreed to participate in the interview. In any case, as realized from the interviews, the womens indicated that their other family members, like the parents,

had relatively less interactions with them though a few parents living together with them after the earthquake. In the countryside, according to the description of the liason person about the local culture, the relationship between mothers and daughters would usually change after the daughters are married. There is an old saying that “daughter married to someone else is like water pouring out”, which means that the daughter is less connected to her maternal family after marriage. This might explain why the women in this study had little interactions with their parents. On the other hand, the relationship and interaction between married women and their mother-in-laws were also not deep enough to supplement the primary data from women and their husbands for theoretical sampling because the in-law relationships are a common problem and a difficult theme to discuss in mainland China (Li & Guo, 2014; Wang, 2015). Other children of the women were still too young (their age ranged from three to 15 years old) to be interviewed at the time of this study. Overall, the analysis of data through initial coding indicated that husbands and babies were the most important sources of support for the perinatal women, even when the husbands might not be there with them during and after the earthquake. Furthermore, the researcher informally interviewed some people such as the recruitment liason persons, and friends of the participating women, who were not family members by normative definitions. Their views and experiences were recorded as field notes to supplement the comparative data analysis, contributing to theoretically sampling with more varieties of the individual normative or cultural perspectives. In view of the eclectic situation and specific context which could only be pragmatically explored to the best in this study, the relatively lack of views from other family members for comparative analysis might somewhat pose an impact, yet

considered to be limited, on the findings of this study.

3.3.4 Data collection procedures

Semi-structured interviews with individual participants were conducted for data collection. The researcher encouraged participants to talk freely during the semi-structured interviews about the study topic and related experiences, based on a set of written questions as a guide (Polit & Beck, 2010). It is assumed that the interviewees have a complicated and rich storage of knowledge, which includes not only explicit and controllable information, but also implicit information, about the research topic. The semi-structured interviews helped the researcher to clarify the implications of the interviewees by "carrying out a dialogue between positions as a result of the various degrees of explicit confrontation with topics" (Flick, 2006, p.160). Clarification of the participants' implications provided more detailed information for the researcher to analyse for the generating theory. An interview guide containing a number of open-ended questions was drawn up to target the aims and objectives of the proposed study (Appendix II). In addition to the interviews, a brief survey at the time of the interview was used to identify the women's psychological status in terms of stress, anxiety and depression after the earthquake. The data collected from this brief survey supplemented a different type of information that could be used to triangulate the interview data. The tool used for this purpose was the Depression, Anxiety and Stress Scales-21 (DASS-21) (Psychology Foundation of Australia, 2013). According to Glaser & Strauss (1967, p.65), different types of data collected in a grounded theory study can be used as a "slice of data" for triangulation, so that the data analysis is enriched and the results being generated can be deepened.

The full DASS scale is a 42-item self-report questionnaire, which contains three subscales that investigate three mental conditions: depression, anxiety and stress. It is not a diagnostic but rather a screening tool for relevant psychological symptoms. The DASS-21 is a short version of the full scale, and its items were selected and psychometrically acceptable to represent all subscales. The items in each subscale are reduced from 14 to 7, and the results obtained through it could be converted to the scores of full scale by multiplying by 2 (Lovibond & Lovibond, 2004). Each item in the three subscales carries a 4-point Likert scale that asks the participants to rate the extent of their feelings of depression, anxiety and stress during the past week. The four points range from 0 to 3, with 0 meaning “never applies to me at all”; 1 as “sometimes applies to me”; 2 as “often applies to me”; and 3 as “applies to me almost always” (Lovibond & Lovibond, 2004). The instrument has been proven to have good reliability and validity in assessing women, especially postpartum women (Cunningham, Brown, Brooks &Page, 2013; Oei, Sawang, Goh, & Mukhtar, 2013; Szabo, 2010; Tran, Tran & Fisher, 2013). If potential participants scored in the severe degree range (the degrees are categorized as mild, moderate and severe) on DASS-21 for symptoms of stress, anxiety or depression, the researcher would exclude them and refer them to psychologists for further diagnosis and suitable intervention. All included participants in this study scored moderate or mild degrees of those symptoms. Although women who scored severe could better serve as negative cases for comparison, the usefulness and validity of information collected from their interviews are doubtful. Severe psychological symptoms may affect the expression and understanding of their experience. To a certain extent, the triangulation from the perspectives of those women was missed, which may weaken the rigour of the

present study. In order to reduce such a limit, the author sampled some negative cases and literature theoretically, for comparison. For instance, a negative case was identified, and was included for analysis, through the description of participant F and her husband (see section 5.3.1.1). In any case, no participants scored severe at the time of the interviews in this study.

In this study, interviews were digitally recorded with a small MP3 recording pen and field notes written for the documentation of events, and reflection or observation pertinent to the interviews. The use of these tools maintains a track record of important issues and accurate data collection, in order to be close to a natural situation. With the help of a small recording pen, the interviewees eventually forgot that their conversation was being recorded, and appeared more relaxed in discussing their feelings and experiences in depth (Flick, 2006). The interviews lasted from 35 to 69 minutes; with an average duration of 50 minutes. All interviews were transcribed verbatim. Field notes are complementary to the digital recording of interviews, because they can highlight the circumstances and background of the interviews, which is not included in the voice recording. The field notes can also label critical points for ongoing reflection during the interview and analysis process. Non-verbal information, such as body language and expressions during family interactions, were also recorded in the field notes.

3.3.5 Data analysis procedures

Coding procedures

Since this study is underpinned by constructivism, data analysis is guided by the coding practices of the Charmaz constructivist GT approach. Coding is the first step in

transforming statements from transcripts to making analytic interpretations of data, which is defined by Charmaz (2006) as the process of naming a segment of data with a label (a code). The developing codes are used to aid the researcher in categorising, summarising and explaining the slice of data as a transcript. The strategies for grounded theory coding in constructivist approach, broadly speaking, consist of two phases: initial coding and focused coding (Charmaz, 2006). Charmaz's framework for coding procedures is summarised in Table 3 (Charmaz, 2014).

Table 3 Charmaz's framework for coding procedures

Stage	Description
Initial coding	During this period, researchers should be open to whatever theoretical possibilities from data. Three questions are suggested for the researcher to ask in initial stage (Charmaz, 2014, p.116): ● *What is this data a study of?* ● *What do the data suggest? Pronounce? Leave unsaid?* ● *From whose point of view?* ● *What theoretical category does this specific datum indicate?* The researcher tries to see actions in data and codes with words that reflect action (e.g. use of gerunds). Sensitising concepts are good starts for analysis, but the determination of its contents should be delayed. In order to make codes fitting the data rather than forcing the data to fit them, a code for coding should "remain open", "preserve actions", and be "simple and precise" and"short". The researchers"stay close to the data", "compare data with data", and "move quickly through data". The codes produced through word-by-word, line-by-line, and incident-by-incident coding are "provisional, comparative, and grounded in the data".
Focused coding	It is the stage of "using the most significant and/or frequent earlier codes to shift through and analyse large amounts of data". During this period, researchers concentrate on what the initial codes show, and the comparisons researchers make with and between them and to decide the codes, which make the most analytic sense to the categorising data. A list of questions are suggested to define which codes serve best as the focused codes (Charmaz, 2014, p.140): ● *What do you find when you compare your initial codes with data?* ● *In which ways might your initial codes reveal patterns?* ● *Which of these codes best account for the data?* ● *Have you raised these codes to focused codes?* ● *What do your comparisons between codes indicate?*

Stage	Description
	● *Do your focused codes reveal gaps in the data?* When the focused codes appear, researchers check how and to what extent these codes fit other data. It is also very important to reveal the researcher's preconceptions and subject them to scrutinising during this stage.

The researcher practised the coding process as described by Charmaz (2006) with measures to assure the rigour (section 3.3.6) of this study. Some examples of the initial codes and focused codes are provided in Appendix III. There were more than a total of 2,000 initial codes developed over the entire constant comparative process of analysis, among which there existed many duplicated ones with similar meanings. Then the researcher reduced the initial codes with theoretical sampling and ongoing analyses of more specific foci (focused coding) from more than 2,000, to 746 initial codes, and then 23 focused codes, before theoretical saturation and the core processes were finalised. Eventually, the more focused codes 'being there of the family members', 'love and hope instilled by the baby', 'changing values', 'being disturbed', 'alleviating disturbance' and 'growing up' emerged.

The researcher had imported the transcripts as the "internal sources" into the NVivo and conducted the initial coding. During the initial coding stage, for example, 'increased fetal movement', 'uterus contraction', 'nervous to shaking', 'fearful of frightening scenes' and many other codes were directly developed from the transcripts. Then, the codes that carried similar meanings were either clustered under a higher level of codes or merged into a representative code. For instance, no matter whether the fetal movement increased or decreased, both meant 'abnormal fetal movement'. Subsequently, fetal movement and uterus contraction, which were

related to physical status, were merged into ‘affecting physical health’. This higher code, together with other codes like ‘affecting psychological health’ and ‘disturbing medical services’ which were developed in a similar way, had the same meaning as the impact of the earthquake on health overall, which was then further coded as ‘affecting health’. With the other higher-level codes ‘disturbing of daily lives’ and ‘reducing family support’, ‘affecting health’ and these codes indicated a disturbed status during and after the earthquake, and hence were categorised into the highest focused code of ‘being disturbed’. During the focus coding stage, many unconnected and non-representing codes were not corresponding to the theorisation directions, were unable to form sub-categories or categories, and were excluded. For instance, although ‘feeling regret with diet control during pregnancy’ and ‘viewing work as one way that was beneficial for natural delivery’ were merged into ‘valuing the baby as usual’, this higher-level code only represented the experience of perinatal women in general. It was therefore excluded due to its lack of representativeness of pregnant women’s specific experiences in the disaster. Iteratively and progressively, other initial and focused coding was carried out with the same analytical process as demonstrated with the examples.

Theoretical sampling

Theoretical sampling is defined by Charmaz as a process of “seeking pertinent data to develop your emerging theory” (2014, p.193). According to this definition, theoretical sampling depends on the results of initial coding and focus coding; and progresses the data analysis to a theoretical saturation and final substantive theory. Theoretical sampling involves abductive reasoning, which seeks theoretical explanations for the surprising data and forming hypotheses, and checks those

explanations empirically by examining data (Charmaz, 2014, p.201). This logic of reasoning makes an iterative process to move back and forth, which includes reading and rereading transcripts and memos, a necessary strategy for theoretical sampling. Therefore, memos, notes, and reflections were written, recorded, and applied in developing the core categories and the resultant process. The researcher went through the notes, verbatim transcripts and reflections, and developed further interview questions before the next interviews. Some examples of my reflections on the process of theoretical sampling in this study are outlined in Appendix IV. The efforts in performing theoretical sampling in the study were also discussed earlier in section 3.3.3.

Theoretical saturation

The sampling process ceased based on the results and emerging conceptualisations, until theoretical saturation was achieved. Glaser and Strauss (1967) defined saturation as the condition that no additional data could be found to develop properties of the category. However, Strauss and Corbin (1998) stated that

> *the ideal form of theoretical sampling might be difficult to carry out if a researcher does not have unlimited access to persons or sites or does not know where to go to maximize similarities and differences. Realistically, the researcher might have to sample on the basis of what is available.*

This study is a PhD project, which has both time and resource limitations. Therefore, theoretical saturation in a perfect sense could not be achieved under these restrictions. The best achievable theoretical saturation, as it concerns available resources and participants, was attained through the examination and constant comparative analysis of the information obtained from individual participants and the

relevant events / incidents identified from the data to discover and develop the key categories and processes. The researcher does not stand still, and in future research, she will continue to improve and advance the level of the substantive theory over time with more resources available.

Use of computer aided qualitative data analysis software

Computer aided qualitative data analysis software (CAQDAS) NVivo (version 10) (QSR international, 2014) was used during the data analysis process of the full study. Among the various software packages for qualitative data analysis, NVivo has been identified as an extremely powerful tool that has been widely used in qualitative research (Bergin, 2011; Leech & Onwuegbuzie, 2011; Sun &Cai, 2013). It also carries the ability to deal with data in many languages (e.g. Chinese and English) (QSR international, 2014). It was a suitable tool that was used to aid data storage, retrieval and management in this study, in which the data were collected and transcribed in Chinese (being the same language, with the original best meaning intact) in the first place for analysis, and translated to English for reporting and discussion after the data analysis when the core category and process were developed, based on the analysis of the Chinese transcripts. In this way, loss of meaning due to language translation before data analysis can be avoided. Nevertheless, CAQDAS is merely a tool that enhances data management, aids data analysis, and maintains a clear audit trail. It cannot replace researchers as the analysts in coding and theory development for the GT study.

3.3.6 Study rigour

Rigour is defined, within an evidence-based practice (EBP) context, as the quality

of evidence that the study yields (Polit & Beck, 2010, p. 442-444). Since quantitative studies seek to reveal the "truth" about phenomena, the rigour or validity of such truth relies on adherence to a predefined set of strategies, which includes experimental manipulation, randomisation, and strict control of extra variables (Milne & Oberle, 2005). In contrast to this positivist position, qualitative research aims to generate insights through participants' perspectives and experiences to phenomena, which is founded on the naturalistic position. There arises a variety of controversies over applying the same criteria of quantitative study, such as reliability, validity and objectivity, into qualitative studies, because these terms and concepts were regarded as inappropriate to the naturalistic paradigm (Barusch, Gringeri, & George, 2011; Polit & Beck, 2010). From the post-positivist perspective, it is argued that a set of criteria unique to the qualitative research is required (Denzin & Lincoln, 1994; Krefting, 1991). In this study, Guba's (1981) model for assessing the rigour of qualitative data was applied, because it is comparatively well developed conceptually, and has been widely used in nursing studies for years (Krefting, 1991). Four criteria of rigour in this model can be used throughout the research process to increase the trustworthiness of qualitative studies, i.e. credibility, transferability, dependability, and confirmability (Guba, 1981; Lincoln & Guba, 1985). The strategy and practice of reflexivity, which is defined as "critical self-reflection about one's own biases, preferences and preconceptions" (Polit & Beck, 2010, p566), was also used in this study for scrutinising the researcher's preconceptions (Charmaz, 2006, 2014). Reflexivity permeates every aspect of the qualitative research process, and the researcher in this study applied measures to assure the four criteria of trustworthiness (Lincoln & Guba, 1985) during the continuous process of practising

reflexivity. Techniques utilised for establishing the measures of credibility, transferability, dependability, and confirmability collectively form a basis for reflexivity, and these measures are outlined in the following content.

Credibility

Credibility is defined in qualitative research as the degree to which a set of research findings could represent accurate descriptions or interpretations of human experience (Sandelowski, 1986). A number of techniques (e.g. prolonged and varied field experience, time sampling, reflexivity, triangulation, and member checking, etc.) are utilised for improving the credibility of qualitative research (Krefting, 1991). In this study, competent interview skills; triangulation of data; member checking; peer debriefing/examination; and the use of negative case analysis were applied.

Data triangulation is a strategy to enhance research credibility by assembling multiple perspectives together for mutual confirmation of data to ensure that, as much as possible, aspects of a phenomenon have been investigated (Shih, 1998). Apart from the women who had experienced the earthquake during their pregnancy, their husbands, who could provide information about their wives and their interactions with them after the earthquake, were also recruited for this study. Multiple forms of data, as verbatim transcripts from voice recordings of the participants, field notes and quantitative data of DASS-21, were collected for data triangulation in this study.

Member checking refers to testing the findings with their original sources, e.g. the interview participants (Carlson, 2010). The researcher showed the findings to some of the participants to ensure that their viewpoints were accurately interpreted and represented. In concluding the study, two participants conducted member

checking to assure the accuracy of the final presentation of the data.

In contrast to the external measure of member checking, peer debriefing provides an internal check with impartial and experienced colleagues as part of the inquiry process (Lincoln & Guba, 1985). The researcher regularly presented study progress of the project to supervisors and other colleagues, with the resulting brain-storming and internal critique helping to enhance deeper reflexivity. A systematic record system of the verbatim transcripts was maintained and made available for the examiners to review as needed.

Researchers' authority and interview skills can also influence the study credibility (Krefting, 1991). The researcher works in an obstetric hospital in Sichuan province, where two major earthquakes occurred (Wenchuan earthquake and Lushan/Ya'an earthquake). She is familiar with the experiences of pregnant women during the process of providing services to them, and this is a major focus of reflexivity in order to avoid undue influence of personal background on the analysis. With the accumulation of data, negative cases were identified. Rather than refuting the findings, the researcher analysed the negative cases and re-organised the categorisation in order to enrich the understanding of the process being studied to generate the substantive theory. In addition, this study's researcher received training in interviewing and listening skills.

Dependability

Dependability means that the variations in human experience and situations can be identified with explainable sources (Guba, 1981). One technique used for improving research dependability in this study is the audit trail. An audit trail is a description of the exact methods of data collection, analysis and interpretation,

through which other researchers could clearly follow the trail of decisions made during the entire research and analytical process (Lincoln & Guba, 1985). The researcher in this study has maintained a clear audit trail of the executive and analytical processes used with the aid of NVivo. Another technique the researcher used to increase research dependability was the code-recode procedure during the analysis phase. For instance, the researcher waited for two months to recode the same data after the first time spent coding. In addition to the audit trail and code-recode procedure, member checking and peer debriefing, described in the techniques of enhancing credibility, were also useful measures for improving dependability.

Confirmability

Confirmability is the neutrality of a qualitative study, which means the degree of excluding bias in the research procedures and findings (Sandelowsk, 1986). For this, Lincoln and Guba (1985) suggested considering the logics of the data or findings, more than the distance between researcher and participants. The logics of data are checked by "looking at analytical techniques used, appropriateness of category labels, quality of interpretations, and the possibility of equally attractive alternatives", which can also be achieved by the strategy of an audit trail (Lincoln & Guba, 1985, pp323). Apart from a clear proposal in the design, methods and executive process of this study, the researcher had a clear track record (audit trail) of the raw data, the process and products of data analysis, reconstruction and synthesis. An audit trail, aided by computer software (NVivo) was used. Therefore, all study details were maintained and managed using this digital system for checking and examining the audit trail as required. Furthermore, the practice of reflexivity, triangulation of data, and member

checking are also useful techniques for ensuring confirmability, and these procedures will be implemented in this study.

Transferability

Transferability, which is also called fittingness, is defined as the applicability of the qualitative findings into other settings (Guba, 1981). It is determined by the degree of similarity or goodness of fit between the study situation and other outside contexts (Krefting, 1991). In this study, all participants were recruited by purposive sampling and theoretical sampling, which can improve participant representation. Demographic characteristics of the participants were examined, and participant selection could fill in gaps in the profile for theoretical sampling, which could provide an adequate database to allow transferability judgments (Lincoln & Guba, 1985). In addition, considering the data more than the participants, means that the researcher should determine whether the findings are typical or atypical of the participants' lives, and is also important in order to enhance transferability. Again, member checking can help in determining transferability and was used in this study.

3.3.7 Study ethics

The full study began after the Hong Kong Polytechnic University's Research and Ethics committee approved the research protocol. A number of ethical issues were considered in order to protect the participants.

Autonomy

Every participant was introduced to the study with an information sheet and was fully informed about the study. The researcher and volunteers (liaison persons) explained the research purpose to the participants, and their roles in the study, to

assure respect for their autonomy (Paula, Emma, Rebekah, & Paula, 2012). If the participants were unwilling to participate, their choices were fully respected without any influence on their continuing care or treatment.

Nonmaleficence

The issue of nonmaleficence for participants must be ensured. This study is a grounded theory study, a type of qualitative method, to explore the inner world of women after an earthquake. A qualitative study is constructed on the basis of the naturalistic paradigm, which deals with the issue of human complexity by exploring it directly. This kind of method emphasises exploring the inherent depth of humans, their abilities to shape and create their experience through narrative and subjective materials (Polit & Beck, 2010). In-depth interviews with women who had experienced an earthquake were the main sources of data. This kind of data collection might contribute to a negative outcome, in that psychological trauma may be aggravated. All the participants in this pilot study are individual women, or their husbands, who experienced a devastating earthquake, and some of them may suffer as a result, whether materially or psychologically. Through a period of recovery, they may find relief from psychological trauma. Nevertheless, interviewing them about their experiences and feelings about the earthquake might carry a small risk of causing them to recall unhappy and agonising events. The negative memories might lead to unstable emotions, or even distress. In order to avoid such unfavourable results or psychological risk to the participants, the researcher closely observed the reactions of participants during the interview process. The interview proceeding was controlled according to the actual status of participants at the time. If the interviewee appeared to be in distress, the interview would be suspended until the interviewee calmed

down, or it ceased immediately. Supportive nonverbal communication techniques (e.g. eye contact, and holding the women's hands, etc.) were practised throughout the interview process, and referral to a clinical psychologist was made if necessary.

Beneficence

Beneficence is defined as the capacity of research to promote good results in individuals and society (Huycke & All, 2000). Since the researcher hoped to investigate the role and dynamics the family plays in relation to the mental health of childbearing and childrearing women respectively during and after a major earthquake, the results can further aid health care workers in designing appropriate interventions, or inform practices for the mental health of women who experienced a major earthquake during their pregnancy. The aim of this study is to be of practical benefit.

Fidelity

Fidelity describes the responsibility of researchers to be faithful to what they create to research participants; lying and deception are unacceptable (Striefel, 2001). The researcher explained in full the information about the study to all participants, and assured them of their right to withdraw from the study whenever they wished, without punishment, and also their right to inform the secretary of the Human Subjects Ethics of the Hong Kong Polytechnic University if there were any deception or lying in the research process.

Justice

Justice means treating everyone equally in the research process (Packman, 2008). In this study, every participant was interviewed for information related to their experiences about the earthquake and their family interactions for a period of up to six months before their deliveries, and two years after the disaster. Each study

participant spent one to two hours in the interview. And for the recruitment helpers, a considerable amount of time was also required for them to search out and invite potential participants. With respect to the ethical principle of justice in recognising their time and energy spent in this study, compensation fees (25 RMB per hour) were given to them as an honorarium for their time spent contributing to the scientific inquiry.

Confidentiality

A characteristic of qualitative data is that they are more narrative than quantitative data, which may contain more individual and private information. Therefore, it is imperative for researchers to protect participant confidentiality (Finkenbine, Redwine, Hardesty, & Carson, 1998). In this study, the participants were not identified through hospital records, which contain large amounts of patients' private information. Instead, eligible participants were identified from clinics and the community, and the assurance of confidentiality was fully explained to them. Participant anonymity was strictly maintained during the presentation of the results, with the use of pseudonyms. Participant names, and any information that may have contributed to their identification, were not shared among participants. On the other hand, the collected data were stored in password-protected electronic devices and under lock in a cabinet or room. Only the researcher and her study supervisors could access the data.

3.4 Summary

Charmaz's constructivist GT was selected for this study to explore the in-depth and complex experience of women bearing and rearing a new baby over the period

of a major earthquake, with philosophical and strategic considerations. Regarding philosophical considerations, constructivism was chosen for being abreast of the times, a good fit with the research background, and the researcher's preference. As to strategic considerations, Charmaz's constructivist GT has advantages in correcting inappropriate assumptions by scrutinising preconceptions, achieving a higher efficiency of data collection from fewer but more focused participants, and arriving at the best fit possible between the research question and methodology.

This study was proposed and conducted in a careful and rigorous manner to ensure fitness and rigour. Through the methods described above, a basic social process, related to the experiences and family interactions of women bearing and rearing a new baby over the period of a major earthquake, was discovered and advanced.

CHAPTER 4 FINDINGS (PHASE 1)

4.1 Introduction

This chapter describes participant demographics and findings of the 'evolving meaning' (phase 1) of women bearing and rearing a baby around the time of a major earthquake. Evolving meaning represents a process of how these women recover and realise their own meaning in their lives, from the time of being disturbed by the disaster (phase 1), through an overall 'alleviating' stage of fluctuating psychological responses (phase 2), to the period of 'growing up' with adaptation to new ways of living and the meaning of survival (phase 3) after being pregnant and giving birth over the period of an earthquake. The process of evolving meaning with the categories in phase 2 - 'being there of the family members' and 'love and hope instilled by the baby' will be discussed in the next chapter; with phase 3, 'growing up', to follow. The category, 'changing values' occurred throughout the entire process, and will be described in the three stages. The 'evolving meaning' is not a linear but dynamic process, through which the women entering into the second phase might return to the first one of 'being disturbed' with the threatening from aftershocks or the change in endocrine system around the childbirth. In addition, the 'changing values', which partly represented the meaning of 'growing up', permeated, presented, and developed throughout the entire process.

As described in the methodology chapter, the researcher practised coding procedures described by Charmaz (2006; 2014) until the construction of substantive theory. Some detailed coding examples (initial coding) are provided in Table 4 (see also Appendix III).

Table 4 Initial coding examples

First level focused coding	Categorized initial codes	Initial codes (line-by-line)	Data
Worrying	Destructing houses	1. Breaking house 2. Repairing house after childbirth 3. Water leaking with broken house 4. Repairing house after childbirth	*Since the first floor collapsed* (after the earthquake)*, water would leak into the first and ground floor whenever it was raining. We had to repair it. We began our repairs one month after the childbirth. …… Once raining, my husband would use the coloured cloths distributed to us as disaster relief supplies, to hold against the leaking water. But they were quickly blown away and water continued to leak into the downstairs. Since it was not a good idea to repair the house when we were expecting our baby soon, the repairs did not begin until one month after the baby was born*. (Participant I_488-499)
Abnormal fetal movement	Giving birth	Decreased fetal movement	*We stood in the open space immediately after the earthquake. I found that my fetal movement was a little abnormal. I felt that the fetus was not moving at that time.* (Participant B_14-15)
Being reduced of energy to provide support	Less energy to help	1. Husband's feeling tired 2. Lacking care from other family members 3. More workload after earthquake	*Felt tired, tired, and tired. If we could experience the earthquake as a usual event, everyone could just go with the flow. And her family members could also come to care for her. … But once we met with those things* (disaster, childbirth)*, as I have said, first, I had many more things* (working as a policeman) *to deal with and could not take care of her.* (Husband of S_87-90)

4.2 Participant demographics

A total of 24 participants were recruited in this study. Of that total, 22 were

women who had experienced the earthquake in the epicentral area during their pregnancy, and the other two were husbands of two of these women. The women ranged in age from 23 to 39 at the time of the interview. One woman (participant K) is widowed, as her husband died in a traffic accident after the earthquake. The husband of participant J was severely injured during the earthquake, but ultimately recovered. Seven of the women were bearing their second baby when they experienced the disaster, and the others were primigravid. The results of DASS-21 indicated that none of the women had severe psychological problems; five had moderate anxiety and three had mild anxiety; two had mild stress and one had mild depression at the time of the interviews. A summary of the women's demographics is detailed in Table 5.

Table 5 Demographics of the women

	Age	Occu-pation	Education	Family income (year)	Child	DASS-21 scores
A	39	Peasant	Junior school	10000~19999	1st: boy 2nd: boy *	D 11 mild A12 moderate S 16 mild
B	25	Account ant	Bachelor	≥50000	1st: girl	D 3 normal A10 moderate S 10 normal
C	24	Clerical officer	Bachelor	≥50000	1st: girl	D 1 normal A 3 normal S 3 normal
D	24	Nurse	Junior college	5000-9999	1st: girl	D 4 normal A 13 moderate S 9 normal
E	24	Nurse	Junior college	20000-49999	1st: boy	D 2 normal A 3 normal S 8 normal
F	31	Peasant	High high school	≥50000	1st: girl (ex-husband) 2nd: boy *	D 3 normal A 3 normal S 6 normal
G	27	House-wife	Junior college	≥50000	1st: girl	D 1 normal A 3 normal S 1 normal

	Age	Occu-pation	Education	Family income (year)	Child	DASS-21 scores
H	26	House-wife	Junior school	20000-49999	1st: girl 2nd: girl *	D 1 normal A 6 normal S 10 normal
I	34	Peasant	High school	5000-9999	1st: girl 2nd: boy *	D 0 normal A 4 normal S 5 normal
J	26	Nurse	Junior college	10000-19999	1st: girl	D 1 normal A 1 normal S 0 normal
K	23	Factory worker	High school	<5000	1st: girl	D 7 normal A 10 moderate S 14 normal
L	23	House-wife	High school	⩾50000	1st: dead 2nd: boy *	D 0 normal A 4 normal S 9 normal
M	24	House-wife	High school	10000-19999	1st: girl	D 7 normal A 11 moderate S 17 mild
N	28	House-wife	Junior school	⩾50000	1st: girl 2nd: girl *	D 2 normal A 1 normal S 2 normal
O	27	House-wife	Junior school	< 5000	1st: girl (ex-husband) 2nd: girl *	D 8 normal A 6 normal S 10 normal
P	27	Nurse	Bachelor	⩾50000	1st: girl	D 1 normal A 5 normal S 8 normal
Q	27	Nurse	Bachelor	⩾50000	1st: girl	D 3 normal A 8 mild S 10 normal
R	28	Midwife	Bachelor	⩾50000	1st: girl	D 3 normal A 0 normal S 5 normal
S	31	Nurse	Bachelor	⩾50000	1st: girl	D 2 normal A 0 normal S 0 normal
T	32	Teacher	Bachelor	< 5000	1st: girl	D 5 normal A 8 mild S 6 normal
U	29	Account-ant	Junior college	⩾50000	1st: girl	D 0 normal A 0 normal S 1 normal
V	27	Clerical officer	Junior college	5000-9999	1st: boy	D 6 normal A 8 mild S 13 normal

* Children born after the earthquake

Two husbands were interviewed for theoretical sampling and supplementing data of family members; their demographics are summarised in Table 5.

Table 6 Demographics of the two husbands

Husband	Age	Education	Occupation	Description of their living with wife
Husband of F	39	High school	Peasant	He is the second husband for F; Stayed with her during and after the earthquake
Husband of S	31	Junior college	Policeman	Lived with S, but could not accompany her all the time because of work

4.3 Overview of the process of evolving meaning

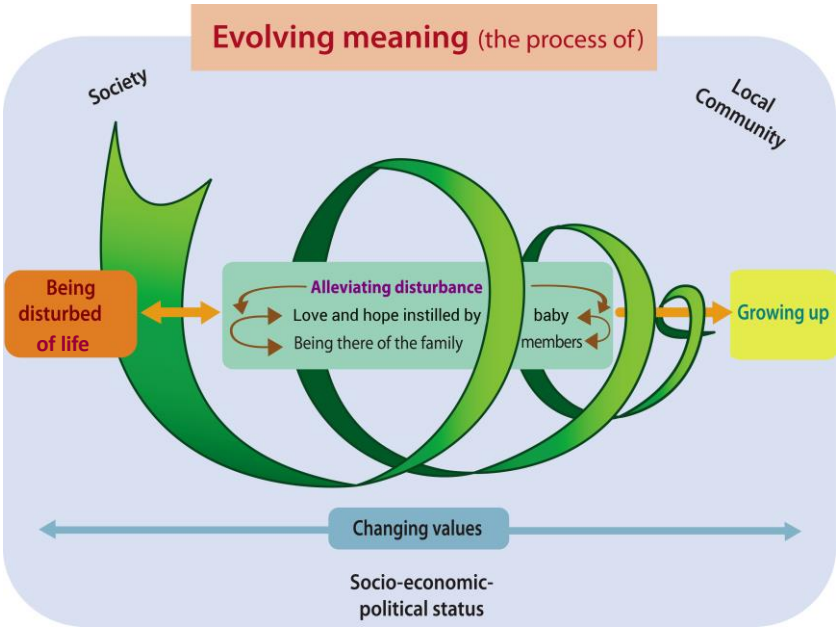
The whole process of 'evolving meaning' has three phases (Fig.3), which includes 'being disturbed', 'alleviating disturbance', and 'growing up'.

Fig. 3 The major phases of evolving meaning

During the phase of 'being disturbed', the earthquake interrupted women's daily lives and reduced their family resources and the family's ability to provide support; and these women responded in a psychologically negative way, both to the disaster and within themselves. The phase, 'alleviating disturbance' is a transition period of alleviating negative psychological responses and disturbances in the lives of these pregnant women. They were gradually restoring normalcy to their daily lives with external support (e.g. being there of the family members), and the love and hope instilled by their babies. Although, in this phase, the women presented fluctuating

psychological responses and even returned to the first stage because of aftershock and childbirth, there was still an overall trend of alleviating towards the final stage of 'growing up'. In the final phase, the women returned to the normal lives they had lived before the earthquake struck; and obtained new meaning in their lives by assuming their role as a mother; being satisfied with their new lives and family members; having a new understanding of the earthquake, daily life and rearing a baby; and working hard for a better life. In the following section I will discuss the different phases one by one and examine the dynamics that affect the process of evolving meaning, which is illustrated in Fig.4. Finally, the categories, 'being there of the family members', 'love and hope instilled by the baby' and 'changing values', which are intertwined and interacted with the entire process, will be discussed in detail.

Fig.4 The overall process of evolving meaning



4.4 Phase 1-Being disturbed by the earthquake

The sense of 'being disturbed' is a common experience of victims after a disaster. For instance, Edwards (2013) described that the victims of 2011 Japanese earthquake

and the ensuing Fukushima nuclear accident experienced displacement and loss of livelihood, producing fear, and feelings of uncertainty and distress. A qualitative content analysis of studies on disaster victims (Thornburg, Knottnerus, & Webb, 2007) indicated that disasters could lead to a breakdown in action and meaning, which further caused a deritualisation in daily life. Stephens et al. (2013) compared the experience of survivors of two major natural disasters, Hurricane Katrina in 2005 and the Chilean earthquake in 2010, and suggested that the survivors of both disasters encountered extreme hardships, of disruption and loss of control. A number of studies also indicated that disasters resulted in various psychological symptoms or disorders in the victims (Akason, Olafsson, & Sigbjornsson, 2006; Feder et al., 2013; Katz, Pellegrino, Pandya, Ng & DeLisi, 2002; Yilmaz, Cangur & Celik, 2005). As victims after a disaster, the perinatal women were also influenced in their daily lives and psychological status. A study on pregnant women after Hurricane Katrina (Badakhsh et al., 2010) discovered the core category 'disruption of life during pregnancy', which covers findings from other similar studies, and it represents the key experience of pregnant women after a disaster.

In the current study, the first phase,'being disturbed' in life is characterised by the 'disturbance in their daily lives' (4.4.1), 'being reduced in family support and energy to support' (4.4.2), 'increasing family cohesion and interpersonal relationship as a result of the earthquake' (4.4.3), 'experiencing negative psychological responses' (4.4.4), a sense of 'being insufficient and unconfident' (4.4.5), and 'developing a positive attitude towards life out of the earthquake' (4.4.6). The earthquake caused great damage to properties and threatened the safety and health of victims in the disaster area. Almost every aspect of life in the epicentral area was affected, including

the daily lives of pregnant women. They described their disturbed daily lives in terms of living-conditions, eating, clothing, transportation, work, pregnancy symptoms, and birth plan. Apart from the women's daily lives, the entire family was also affected in its reserved resources and ability to support the expectant mothers, yet with a paradoxical increase in family cohesion after the earthquake. These influences caused the women to be more negative in their psychological responses and attitudes towards themselves, and triggered a need for them to adopt coping strategies (i.e.'changing values' commenced at this point, towards their own lives and the earthquake), as a result of the disturbance.

4.4.1 Being disturbed in their daily lives

Almost all aspects of the women's daily lives were disturbed by the earthquake, which included their living conditions, eating, clothing, transportation, work, pregnancy symptoms, birth plan, and leisure activities. Daily life is also known as "everyday life", which is a key concept in the field of sociology. Felski (1999, p.15) defined everyday life as "the essential, taken-for-granted continuum of mundane activities that frames our forays into more esoteric or exotic worlds". It is the ways in which people think, act, and feel on a daily basis; and contains"domestic activities, routine forms of work, travel and leisure" (Felski, 1999, p.16). The women's everyday lives were troubled and interrupted by the earthquake, as "being disturbed in daily lives by the earthquake". Inconvenience and disturbance to their daily lives can be seen in the following ways.

4.4.1.1 Poor living conditions

Participant I expressed that,

Since the first floor collapsed (after the earthquake)*, water would leak into the first and ground floor whenever it was raining. We had to repair it. We began our repairs one month after the childbirth. …… Once raining, my husband would use the coloured cloths distributed to us as disaster relief supplies, to hold against the leaking water. But they were quickly blown away and water continued to leak into the downstairs. Since it was not a good idea to repair the house when we were expecting our baby soon, the repairs did not begin until one month after the baby was born*. (Line 488-499)

Similarly, participant J said that,

We lived in the tent until I delivered the baby, because there was no way for us to repair our house if we did not break it down first – we could not do so at the time I was pregnant and after the earthquake. (Line 308-309)

4.4.1.2 Insufficient supply of good quality food and poor appetite

Another disturbing situation was the lack of good quality food supplies and a healthy appetite after the earthquake. Participant D said,

Regarding the material resources needed, we could not go back home for dinner because of the earthquake. We had to eat in restaurants, or buy something instant to eat from supermarkets. I really did not want to eat fast food, such as breads and mineral water. I just wanted to have a good dinner at home. (Line 272-274)

Conditions were even harsh for the pregnant women. Participant U commented,

Although I was pregnant at the time of the earthquake, I waited in the morning until one o'clock and ate in the afternoon. Since everyone was rushing to purchase necessities like (they were) *robbing something, it was hard to buy things* (food)*. Later at three to four o'clock in the afternoon then, they* (rescueworkers) *gave us some porridge to eat, because I was pregnant and we had something more to eat. But it was nothing much before during the day.* (Line 79-82)

4.4.1.3 Poor quality clothing

A comfortable and safe clothing supply was another concern for daily living. Participant T said,

I was wearing slippers all the time for four days, and got a blister on my foot. Until the fifth day -I took my courage in both hands to go back home as if there would be no more aftershock. And then we took some things, like sports shoes, socks and clothes out from there.(Line 102-105)

4.4.1.4 Inconvenient transportation

The earthquake damaged transportation facilities, such as roads, which made it inconvenient for the perinatal women to go anywhere for help. For example, it took more time for participant V to return her hometown to receive support from other family members. She described it as follows,

It was not distant (hometown)*, and it is even closer now. It takes only a few minutes to go through the cave to be there, but we needed to cross the whole mountain before. At that time, we did not cross the mountain, because we heard that the mountain had collapsed. We had*

gone back through another way then, which required us to detour; probably over 10 kilometres away. (Line 62-64)

4.4.1.5 Being disturbed at work

After the earthquake, we had to move to Chengdu, but our business was in our hometown (Ya'an)*. This meant that my family members frequently had to commute between the two places. We had to continue our business in Ya'an, and the transportation was inconvenient. They had to go out early and return at night. It was really laborious at that time*. (Participant U, Line 458-460)

Participant U provided an example of how her work and business routine was upset after the earthquake, which contributed to a difficult time for her family.

4.4.1.6 Altered symptoms of pregnancy and insufficient medical services

The main influences of the earthquake on both the participants' feelings and symptoms of their pregnancy included increased or decreased fetal movement and abnormal uterus contractions. The women in this study attributed their nervousness about their pregnancy to the earthquake. Medical services were also interrupted or delayed by the chaos in the aftermath of the earthquake. As participant T put it, "*Oh, it was indeed very tight. I frequently felt tightness in my belly, basically always tight, more than usual… At the time, when I felt tight, I thought I was probably frightening my baby. So I had to try telling myself to relax, relax, and relax*". (Line 189-194)

Regarding fetal movement, participant B said that, "*At that time, my baby was a little older. After the earthquake when we found an open space to have a rest, I found that the fetal movement was not as normal as usual. I felt little movement, it seemed that she might have a bit of hypoxia*" (Line 14-15). Similarly, when I asked another

participant (E) what were her physical reactions to the earthquake, she said, "*it was the increase in the fetus' movement*" (Line 102-103).

And when the earthquake struck, the usual care of the pregnant women was disturbed. As participant B recalled, "*Because I was admitted to the hospital a little earlier, I needed to have oxygen inhalation three times a day. But look, doctors were flustered at the time of the earthquake, and they could not care for me*" (Line 16-17).

4.4.1.7 Disturbance in the birth plan

The plan for time, place, and delivery method was a major issue for perinatal women and their families. The earthquake interrupted their birth planning by disturbing the medical facilities and services they needed. As described by participant B, the plan for her C-section was shifted to an earlier time than had been planned, which was not considered as being lucky, due to the chaos resulting from the disaster. She said that,

> *I wondered what to do if I would deliver my baby right after the earthquake. According to the fortuneteller, we had originally planned to have a C-section on a particular date* (one day after the earthquake) *because my parents were a little superstitious. They thought that for a C-section, a lucky date to deliver the baby could be chosen. And such a date for the delivery must be fixed. Finally, the earthquake occurred before we arrived at a consensus about the date for the C-section.* (Line 29-33)

Unexpectedly, participant B gave birth on the day of the earthquake, because the doctors suggested that it should be done before resources became scarce after such a major disaster.

4.4.1.8 Reduced leisure activities

The negative moods (e.g. fear and irritation) caused by the earthquake reduced the women's desire for leisure activities. They did not dare go out as before, preferring to stay at home with their families instead, due to the uncertainty of aftershocks. Participant C described that she could only go out to enjoy herself freely until after she had forgotten her unhappiness from the earthquake.

> *I began to go out to enjoy myself, after I gradually forgot about the earthquake. Before that, I never went out to play, and stayed at home almost all the time.* (Line 248-249)

From the coding of data with available literature, the earthquake caused great disturbances and inconvenience to almost every aspect of these women's daily lives. This could lead to certain levels of stress and anxiety for the pregnant women, and was also associated with undesirable psychological responses on their part. Nevertheless, results of DASS-21 (Table 4) did not indicate significant psychological problems in the women in this study, two years after the earthquake. This encouraged the researcher to explore their perinatal experience under such a circumstance in a more in-depth manner.

4.4.2 Being reduced in family support and energy to support

Although all of the women in this study were the key persons in their families in terms of the pregnancy, and were accepting the best care and concern from their family, it was observed that family support provided to them was curtailed by reduced family resources and abilities, compared to the time before the earthquake. The decreased resources or ability of their families to support them included reduced

instrumental and emotional support, and diminished energy to become involved in supporting them.

4.4.2.1 Being reduced in instrumental support

The earthquake caused damages (e.g. collapsed houses and damaged properties), which reduced the reserved resources and hence the supporting abilities of the women' families. With reduced supporting abilities, the actual economic or instrumental supports to those women were reduced. Participant I indicated that the property damages increased the burden on, and decreased the instrumental support, from her family. She commented that,

> *Although I comforted myself that the house was only a worldly possession, I still worried about my future life. Everyone around me was not rich and was burdened by the earthquake. … It* (the burden) *was mainly economic stress, which is inevitable for ordinary life. Before the earthquake, we did not borrow money and just had a sufficient life. My daughter also wanted someone to accompany her. After she told us her idea about having a sister or brother several times, we began to consider having another baby. Unfortunately, the earthquake occurred when I was several months pregnant. And repairing our collapsed house further increased our economic burden.* (Line 421-430)

4.4.2.2 Being reduced in emotional support

The damage to houses and threat to life from the earthquake frightened and dislodged some of the victims in the epicentral area. Being forced to move away from their hometown was one way that consoled the victims, including the family members of these pregnant women, by keeping themselves away from danger. Family

members leaving, and their separation from the pregnant women who were in need of companionship, jeopardised the women's emotional support network. If family members were suffering from psychological instability, this also distracted their attention from emotionally supporting the pregnant women during that period of time. Participant Q was a fortunate woman, who was carefully looked after by her family members during the earthquake. At the time of the disaster, her mother was the first one climbing upstairs to the 15th floor to save her. Her greatest need after the earthquake was the companionship of family members. However, her parents left her for at least half a month to assuage their own fears about the earthquake. The emotional support for participant Q was limited after the departure of her parents.

> *It* (the earthquake) *greatly influenced my mom and other elder relatives. My husband was good. It was maybe because he was a 'boy' and was not so scrupulous; or to say he did not express his feelings. He would not say anything like this "earthquake, uh, I am scared about it". Regarding my mom, the earthquake frightened her. You can imagine, she was over 50 years old, which was over half a life; and she experienced the major earthquake in Ya'an and had to face my pregnancy, she was really frightened.*
>
> *Researcher: What did she do with her fear then?*
>
> *Fearful at the time, she left and went to Chengdu. Ha …*(a helpless laugh) (Line 443-451)

4.4.2.3 Being reduced in family's energy to support

Since the earthquake could cause disturbances to the everyday life of the victims, and family members would assume a greater than expected workload to help relieve

the expectant mothers from their duties, the experience distracted the family from providing support. In the interview with the husband of participant S, he described his shortage of energy in helping his pregnant wife after the earthquake, even though he indeed wanted to provide as much material and emotional support to her as possible.

> *Felt tired, tired, and tired. If we could experience the earthquake as a usual event, everyone could just go with the flow. And her family members could also come to care for her. … But once we met with those things* (disaster, childbirth)*, as I have said, first, I had many more things* (working as a policeman) *to deal with and could not take care of her.* (Line 87-90)

The reduced energy of family members after the earthquake led to a decrease in family support for these women, which could partly explain their negative responses (e.g. psychological symptoms in the initiate stage) towards the disaster and their lives.

4.4.3 Increasing family cohesion and interpersonal relationships as a result of the earthquake

Although the overall impact of the earthquake on the women and their families appeared to be negative (disturbing their daily lives and reducing family support and supporting capacities), it paradoxically brought with it a number of unimaginable positive effects. This included an increase in family cohesion and stronger interpersonal relationships for the pregnant women, which could somewhat explain their change to having more positive attitudes after the earthquake. The women attributed these positive effects to more gathering time and greater mutual

understanding between family members, brought about as a result of the earthquake and subsequent social support.

4.4.3.1 Increasing family cohesion (closeness) after the earthquake

There were polarised situations for the victims during and immediately after the earthquake: either being separated from family members because of dislodgement from unsafe dwellings, or paradoxically gathering more frequently, because of the convenience for mutual care and support due to the dislodgement. The increase in family gathering time could have contributed to improvements in family cohesion (closeness). Family cohesion was defined by Olson (2000, p.145) as "the emotional bonding that family members have towards one another". In other words, it concerns the relationship between family members. The focus of cohesion is how family systems balance the separateness of their members versus togetherness. The time of togetherness is more important for increasing family cohesion than the time of separateness (Olson, 2000; 2011). In the present study, the women expressed strong emotional attachment and bonding with family members, especially with those they were in companionship with, which suggested that increased gathering time could enhance family cohesion and closeness after the earthquake. For instance, the relationship between mother-in-law and daughter-in-law is a usual concern for a Chinese woman after marriage. The quality of this relationship is directly associated with family cohesion (Li & Guo, 2014; Wang, 2015). The experience of participant D represents a typical example for the positive effect of the earthquake in relationship to the trigger of family cohesion. She had a changing recognition of her relationship and bonding with her mother-in-law before and after the earthquake. Before the earthquake, she disliked her mother-in-law because of her mother-in-law's lack of

care and concern for her. As she described it,

> *Uh, my mother-in-law had a careless personality, and seldom considered others' feelings. … No, no. She seldom communicates with me and never notes any changes about me. She seldom talked with me about this. … My husband and I lived separately from my mother-in-law when I was pregnant before the earthquake. My husband had to go out for work, and left early in the morning and returned late at night. I stayed at home alone, and she never called me to ask whether I was well or not, or whether I had any needs. She never asked me about these things. I thought she was indifferent. My husband has a sister, her (mother-in-law's) focus was put on the child of his sister.* (Line 238-240)

But participant D felt a change in her relationship with her mother-in-law through more family gatherings and the companionship of her mother-in-law after the earthquake.

> *I felt that the relationship between my mother-in-law and me, or between other family members and me, had become better after the earthquake. All of us lived separately before the earthquake, but living together after the earthquake, the relationship between us became better. Anyway after the earthquake, our family cohesion increased. What to say about that? It means that we could experience more family love and affection. Thus the relationship between us had become better.* (Line 367-370)

In addition to the improvements through family gathering time, the threats to life

made family members express their concerns and emotions in a way that was more undisguised and timely. They seemed to think it would have been a pity to have died before they had the chance to express their emotions and concerns to their loved ones. This undisguised expression of love could increase family cohesion (Black & Lobo, 2008; Clark, Young, & Dow, 2013). Both participant S and her husband also found that people were more open about expressing their emotions or affections after the earthquake. She commented during the interview in 2015 that

> *It (the family relationship) surely becomes better and better, because everyone cares about each other a lot. Even my parents, who were not good at expressing their emotions, and would call a long time after the last call they had made, would call me frequently then*. (Line 395-396)

Her husband directly indicated that his expression of emotions for his wife had become greater after the disaster. He said,

> *Because of such a circumstance of this natural disaster, even ordinary people would express their emotions more than usual. I don't know whether my idea is right or not. But for us, under such circumstances of our hometown being destroyed, everyone was busy, anxious and irritated. If you did not devote more, assume more responsibilities, it was unreasonable for you to be a person.* (Line 131-135)

4.4.3.2 Increasing interpersonal relationships after the earthquake

Apart from the positive effects on family cohesion, the earthquake resulted in stronger interpersonal relationships outside of the family as well. When asked about the changes in interpersonal relationships after the earthquake, participant Q described it this way,

> *Interpersonal relationships? The situation was similar to family relationships. You know that friends would contact each other when the earthquake occurred, and they paid more attention to you. The relationship between colleagues was closer, which was a relatively intimate one. They seemed like my relatives, because they did not want to lose you. So I felt that our relationship was becoming closer. This is real, and particularly obvious in my department*. (Line 327-331)

In view of this, the earthquake not only brought negative consequences, but it had positive effects as well, by increasing family cohesion and the strength of interpersonal relationships. The contradictory outcomes of the disaster also brought about psychological responses in these women, whose thoughts were dominated by negative responses in the beginning, yet were interspersed with a more positive attitude and outlook towards their lives after the earthquake ('changing values').

4.4.4 Experiencing negative psychological responses

Although there were positive experiences, the most commonly used words by the participating women to describe their feelings and experiences during and immediately after the earthquake could be classified as 'negative'. Their negative responses were psychological and were found to be in four types: fear, anxiety, nervousness, and irritability.

4.4.4.1 Being Fearful

Being fearful was the most common psychological response among these pregnant women during the time of the earthquake. It is a normal response when a person is facing a horrible and life-threatening event such as a disaster (Hubbard,

1991). In this study, such a response was brought about by the threat to life due to the earthquake, and indirectly related to the disturbances in their lives later.

The earthquake frightened the women by threatening their safety. As participant M described it,

> *The first stage was the time of the earthquake when it occurred. I thought that safety was the most important problem. Then, I was fearful about the earthquake. Oh, no, no it should be like this. Safety was important, the most important. The second was my fear and anxiety about aftershock.* (Line 424-426)

The fears of a pregnant woman could also stem from her concerns about the safety of her loved ones (e.g. husband and baby). Participant J had not yet married her husband, and lived separately from him during the earthquake. It seemed that she had telepathy with her fiancé, and feared a great deal for his safety when she had no knowledge of his situation. Her fiancé was actually seriously injured, and fell into a coma with multiple fractures. That's why she used the word "intuitively" when she could somewhat sense it.

> *At that time, my heart was always beating too fast. Then at the time of running downstairs and seeing my mother standing in the middle of the road, I cried. No specific reason for that, I cried intuitively. I cried to my mom that my fiancé had not gotten up from bed, and then I burst into tears.* (Line 48-50)

No matter how great the fear about their safety, or the safety of their loved ones, it was caused by seeing or knowing the possible damage the earthquake could cause, to their own lives and to their surrounding community or relatives. Participant T used

the American TV series “The Walking Dead” to describe the frightening scene that she saw after the earthquake.

> *When I returned and went through the east gate bridge, the bridge was completely deformed. Until this day, it is still deformed and you could feel that it was oblique if you walked on it. There is a slit and you can see the river through it. The more terrible scene of the bridge was that there were many shoes, high-heeled ones, slippers, cotton slippers, and many things left on it right after the earthquake. There were also fallen bikes. People just abandoned everything and ran away quickly. The situation made me feel like I was in a scene from the TV show, “The Walking Dead”. It is not an exaggeration.* (Line 75-80)

From the frightening scenes seen and perceived during the earthquake, the women could feel the threat to their lives. The earthquake could also make them fearful of being disturbed in their daily lives. When asked about fear, participant A told the researcher that she was more frightened about the possible economic losses. She said,

> *Yes, still a little bit* (fearful). *In those days we farmed some pigs, and we were afraid that the falling bricks would have killed them all. We were fearful.* (Line 107-109)

Participant K expressed her fear of being homeless, and worried about the destruction of her house.

> *I feared that there would be no place for me to live after I delivered my baby, if the house had collapsed. There was less than one month to go until the birth, so I was fearful at that time. I was wondering what I should do when I gave birth to my baby, with so many aftershocks.*

Some of them asked me to deliver in Ya'an. I said, damn my mom. Finally, I did not go there and stayed here to give birth to my baby. (Line 68-72)

Eventually, this participant had to stay in the epicentral area rather than moving to a relatively safe place for delivery, after considering the convenience of available family care, and the possibility of preterm delivery. Being forced to remain in her unsafe hometown directed her attention more to the destruction of the earthquake on her house, which aggravated her fear of the disaster.

4.4.4.2 Being anxious

Anxiety is a psychological response in those women that is similar to fear. They worried about their future laborious lives, and were also anxious about the threat to their lives from the aftershock. Participant T said that she had inner conflicts between worrying about the threat of living in her dangerous house, and a laborious life, yet relatively safe, living in a tent.

I can tell you that whenever I went to the house, I thought of finding something to cover myself, and the earthquake would not kill me with falling objects, haha. I also thought about whether I should put myself into the closet once an earthquake had occurred. I thought a lot.

Researcher: *How was your sleep when you lived in the house, in comparison with living in the tent?*

It was better to live in the house than in the tent.

Researcher: *How was your sleep before the earthquake?*

In comparing that with before the earthquake, I was more worried and anxious then. The other things were similar as before. But I was always

worried about whether there would be another earthquake. This is my feeling that occurred after the earthquake. (Line 435-445)

4.4.4.3 Being more nervous

The psychological impact of the earthquake on pregnant women also manifested in their nervousness about any vibrations in the house. Being more nervous would have developed from the fear of the threat to their lives. The interview with participant D indicated that her fear of losing her life made her nervous about vibrations.

Researcher: *What affected you the most after the earthquake?*

The psychological impact was the most.

Researcher: *What were the influences?*

They were my fear and nervousness. I felt nervous all day (after the earthquake). *If there were any vibrations, I would think it was an earthquake. For example, I went to see my mother-in-law, and they lived on the third floor. When I climbed upstairs and felt the beating in my head, I felt that it was an earthquake. I felt that everything was shaking.* (Line 350-353)

4.4.4.4 Being irritable

Descriptions of irritability from the interviewed women indicated that poor daily living conditions caused by the earthquake, together with their psychological vulnerability during pregnancy, were more associated with their feelings of irritation than with the earthquake alone. Participant Q attributed her irritation to not being able to take a bath.

Another response was the irritability, as described in the questionnaire

you gave me just now. I would be angry about little things, and I became stingy. I was angry that I could not take a bath. I asked why I could not take a bath, and I cried and shouted. I was indeed emotionally affected. I did not sleep well during that time. As described in your questionnaire, I was irritated and easily angered. Some events that were trivial, and would not agitate me now, would infuriate me at that time. It is incomprehensible and I don't know why. (Line 104-109)

During the interview with participant K, she said that her irritation might have been related to her psychological vulnerability during the prenatal stage.

Researcher: *What else did your husband say?*

Nothing else. I lost my temper and shouted everyday. Anyway, my temper was not very good.

Researcher: *What were you angry about?*

I don't know. They said that it was prenatal depression. I shouted everyday, and didn't know what I was shouting at. I was a little crazy and disliked all things. They even did not want to talk with me. (Line 187-192)

From the data, I found that the earthquake and subsequent disturbance of their lives, together with their psychological vulnerability during pregnancy, troubled the women a great deal and contributed to their negative responses, which further disturbed their lives. Their relationships with family members might be jeopardized or alienated by their fear, nervousness, irritation and/or anxiety.

4.4.5 Being insufficient and unconfident

Apart from these negative psychological responses, the women were discouraged, and felt insufficient and lacked confidence in themselves during the earthquake and pregnancy. They began to doubt their ability, or even to lose their confidence in their ability, to protect and help themselves, their family members, their unborn child, and others in society.

4.4.5.1 Feeling insufficient at protecting herself

> *They called me at that time and said "Damn, why are you still in the room and did not come down?" I told them that I could go downstairs by myself. Then they asked me to stay there waiting for them. Then they took me down. They still said that I dared and stayed at home during the earthquake. Indeed, I dared not but did not know what to do. I did not know whether I should go down or stay over there. You can imagine, I was alone on the 15th floor, and I could not go down by the lift. I was fearful to walk down by myself. So I chose not to walk down.* (Participant Q, Line 15-20)

Participant Q was unsure of her ability to escape, and fell into confusion and agitation at the time of earthquake. She felt insufficient in her ability to protect herself.

4.4.5.2 Feeling insufficient at protecting the fetus or baby

Many women in this study indicated their anxiety about the health and safety of their baby because of the earthquake and their negative psychological responses. They feared that the earthquake might kill them and their baby; and also worried that their unstable and negative psychological responses might influence their baby's health. They felt they could not protect the baby on their own, and that it was

necessary to seek the help of others. Participant D doubted her ability to protect her baby on her own, and sought the help of others.

> *I was worrying that my baby would be timid after birth, and that the baby's growth might be affected by my unstable mental status and timid characteristics over this period. I was also worrying that the earthquake would influence the baby's growth.*
>
> Researcher: *So what did you do at that time to alleviate this feeling?*
>
> *I moved to live with my mother-in-law. If there were many people around me, I would feel better. I told my husband that I was scared when he went to work and that I stayed at home alone.* (Line 82-90)

Participant U felt guilty because she was unable to provide a good and safe environment for the birth and growth of her baby.

> *I worried whether I would deliver her before term and she would be born too early because of the earthquake. She was frightened, so was I. I also worried that there would be symptoms of preterm delivery because of the panic. I want to say that it was evil to deliver my baby under such a laborious and dangerous situation. The situation was really laborious.* (Line 127-130)

4.4.5.3 Being insufficient at helping others (e.g. other family members)

The women felt insufficient and unconfident in their ability to help others, because of the limitations and incapability brought about by their pregnancy. According to participant T, pregnancy handicapped her ability to help others, although she wished to.

> *If I were not pregnant, I would do many things* (help others and rebuild

the hometown). *The belly was a little big at the time* (at six months pregnancy).

Researcher: *Please give me some examples.*

I would help with the manual work. Because I was pregnant, I didn't dare to do so. I was afraid that bad things would happen to my baby and myself, so I didn't dare to do so. (Line 529-534)

According to the findings, these women felt insufficient and unconfident about their ability to protect and help. Such a sense may not be caused directly from the physical damages of an earthquake, but may be realised by those women through their first-hand experiences of the disaster (when they had to protect and help their family or others, yet found themselves unable to do so because of their pregnancy).

4.4.6 Developing a positive attitude towards life out of the earthquake

Although most of the responses were negative in relation to the destructive impacts of the earthquake, there were positive effects as well - increased family cohesion and interpersonal relationships (section 4.4.3). There was also a change in their attitudes over the time of the disaster, to be more positive about life after the earthquake. This also constituted a part of the 'changing values' over the trajectory of being pregnant and rearing a baby before and after the earthquake. When asked to remark on the earthquake, participant S said,

Uh, there are good and bad things about it. The bad are the damages brought by the disaster, which were greater than the good. Of course we cannot really say it is good; the earthquake could not bring good things to us. But on the other hand, it made us recognise that we

should cherish our lives. I do not mean that the earthquake brought any good to us; there was no good for us, only influences..... Anyway, I felt that I became tough with my experiences building up over the period of the earthquake. I think that people can increase their abilities to cope better with adversities in life. Nothing was special then. My experiences of every little thing after the earthquake made me tougher.

(Line 288-292; Line 426-429)

Although this participant was reluctant to admit the earthquake's positive effects on her, the disaster triggered her growth and her becoming tougher than before, which was considered to be the development of a positive attitude about life.

4.4.7 Summary

During the phase, 'being disturbed', the earthquake interrupted the women's daily lives, reduced their family support, and caused some negative psychological responses (e.g. fear, anxiety, nervousness, and irritability) and negative experiences. The negative psychological responses worsened their lives (e.g. alienation from family members due to their irritation) and made them feel less loved or welcome. Nevertheless, the participants experienced some positive effects as a result of the earthquake as well, through increased family cohesion and interpersonal relationships. With these positive effects, the women held a positive attitude about life after the disaster. Although there was a developing positive attitude towards life out of the negative outcomes during this period, the overall impact of the disaster was rather negative, and their lives were 'being disturbed' in the beginning (phase 1) of the entire process, according to their 'being disturbed in daily lives', 'being reduced

in family support and energy to support', and 'experiencing negative psychological responses', with a sense of feeling insufficient and unconfident about themselves after the earthquake.

CHAPTER 5 FINDINGS (PHASE 2)
Alleviating disturbances

5.1 Introduction

'Alleviating disturbances' refers to allaying the women's negative, although not always (fluctuating emotions) and psychological responses, and gradually restoring their daily lives. It is a transition period from 'being disturbed' to the process of 'growing up'. Two major sub-categories (e.g. family members' being there, love and hope instilled by the baby) are intertwined throughout the entire process, which enhances these women's confidence and courage to fight against the disturbances of the disaster, and engaging them in a process of 'growing up' as mothers by changing their values.

During the first phase, the earthquake up ended the pregnant women's lives by disturbing their daily activities; reducing their family support and destabilising their psychological status. Later, in the second phase, in spite of the reduced family support and energy for support, those women were still at the centre of the entire family because of their pregnancy and the new baby, receiving the best of concern and support from others around them. Various social supports were available to them, which constituted a solid foundation of confidence and allowed these women to restore their lives and rebuild their hometown. Among the social supports, 'being there of the family members' was a key need of these women, and their companions helped them a great deal in alleviating negative psychological responses and regaining their confidence to confront the remaining disturbances caused by the earthquake. 'Being there of the family members' encouraged these women to reconsider their

relationships with others around them and to change their values about life and interpersonal relationships accordingly. During phase 2, the women also experienced the important time of the childbirth. The baby, no matter whether in the womb or an infant, was another source of courage and energy in strengthening them to struggle with the difficulties of bearing and rearing a baby over the period of the earthquake, and eventually to become a competent mother. The expectant/actual mothers would try hard to cope, and even sacrifice themselves in some ways to protect and provide the best care to their babies. Finally, they refreshed their values towards life, relationships, and raising a baby; and immersed themselves in their role as a mother as they lived the experiences of 'being disturbed' by the earthquake, the 'being there of the family members', and 'love and hope instilled by the baby'.

Since aftershocks occurred frequently during this phase, threatening people's safety from time to time while staying in the epicentral area, the women remained psychologically restless. Their baby's birth was also a stressor for them, because they thought that it was inconvenient to protect their babies outside of their bodies. Some of them experienced more stress and anxiety after the childbirth. Overall, the women's psychological status fluctuated, yet advanced in terms of 'alleviating disturbances'. With the interactions of various factors that included significant ones, such as social support and courage to care for the baby, the women's negative psychological responses were alleviating, and they began to participate in rebuilding and recovery activities. The alleviating disturbances in phase 2 was an interactive process of the women with other people and the environments that contributing to their final stage of maturity and being a mother.

With the two major subcategories 'being there of the family members' and 'love

and hope instilled by the baby' emerged for this phase, some examples of theoretical sampling (in addition to the examples of my reflection on theoretical sampling around 'being there of the family members' in Appendix IV) were described here in order to better present how the subcategories were theoretically developed. According to participants A to D, they felt relieved from negative psychological responses to the earthquake after childbirth. For example, Participant C described, "*it seemed that I don't have the worries about the earthquake after childbirth. I placed my focus on my baby, and no longer thought about those things associated with earthquake. I was anxious only before her birth"* (Line 91-93). This suggested the importance of baby in relation to their sense of well-being. The researcher was wondering whether this was the situation that participants experienced in common, and therefore attempted to theoretically sample and search for negative cases for comparison. For example, Participant E was the one who expressed more stress after the childbirth. However, she described that it was the rumour of a greater earthquake to come at that time rather than the new baby that caused her stress. As she said,

> *Other people were saying that there would be an earthquake during the period after my childbirth. I felt anxious and I thought again and again about how I would save my baby if there would be an earthquake. She could not walk. I had to hold her and run. Then I was wondering the ways to hold her more safely* (Line 212-214).

We also found that there was actually a decrease in family support to her after childbirth. It was difficult to exclude the possible impact of decreasing family support to her that this might have also contributed to her perceiving stress. In contrast, the interview with participant A and F indicated that their husband's support increased

after the childbirth and they felt more relieved with the baby. As participant F described,

> *After the baby was born, he* (her husband) *almost always stayed at home with me. The baby was so little that he almost did not go out for work and merely took care of me at that time. He did all things for us while I did nothing for him and the family. It was him who took care of the whole family. I felt happy and fortunate to have such a husband. I no longer think about the earthquake* (Line 392-297).

The data suggested that family support might interact with the childbirth and affect the women indirectly. It is necessary to understand more the relationships between family support, baby, and the women after childbirth about the psychological responses. Later, Participant G was interviewed to theoretically explore about 'being there of the family members' (see also Appendix IV). She was also feeling stressed after the childbirth as she was attached to the baby, which indicated that the baby could be an immediate factor for women's negative psychological responses. She said, "*my personality has changed through a period of time with my baby. I became less calm than before because of my baby. I would worry about her safety*" (Line 638-640). The impact of baby and the relationship between 'being there of the family', women, and the baby were substantiated. On the other hand, Participant H, J, M and N (see section 5.4) provided good examples of the baby's influence in uplifting the women, which facilitated us to confirm the subcategory related to the baby. Overall, the experience of women in their families pointed to emergence of the subcategory of 'love and hope instilled by the baby'. Nevertheless, Participant O was the one whose husband felt more stress after the childbirth. She said, "*he worried too much about*

the baby's safety, and care about her greatly. What he concerned first was the baby" (Line 534-535). This was another example of the impact of baby on family members and in turn to the women as well. The researcher was then triggered to explore more about the experience of husbands. Subsequently, two husbands were successfully recruited with their data compared and analyzed that 'being there of the family members' and 'instilled love and hope by the baby' were confirmed (see section 5.3 and 5.4 below for details).

5.2 The Dynamic of 'alleviating disturbances'

'Alleviating disturbances' means that the disturbances caused by the earthquake gradually reduced. During this phase, the perinatal women were alleviating their negative psychological responses, and gradually restored their usual daily routine. Nevertheless, their psychological responses were fluctuating, which might have contributed to the women returning to the first phase of 'being disturbed'. The process of 'alleviating disturbances' is back and forth, but overall there was an alleviating dynamic of three interacting components: 'alleviating negative psychological responses', 'fluctuating psychological status', and 'gradually restoring daily life'.

5.2.1 Alleviating negative psychological responses

During the phase of 'alleviating disturbances', the perinatal women, especially postpartum, felt relieved of their negative psychological responses after the earthquake. Participant V described it as a very slow, but an advancing alleviating process in the dynamic. I found that the women could cope with the disturbances

through communicating with family members and attending to the baby.

> *As time went by, my fear and anxiety were relieved slowly and gradually overall. It does not mean that I forget about them. If I recall my experience of the earthquake, I still feel a little scared. But I feel that those feelings are receding if I avoid thinking about them. Particularly the first day of the earthquake made me feel petrified. Then I gradually felt relieved. Later, I even felt that my experience of the earthquake was funny and I might burst out laughing when I talked about it with my family members. I said to them that I could not even see them because of being close to death. If it shook further, we might be pounded when the roof collapsed. I felt that we were very lucky. After that, I merely worried about whether my anxiety would affect the health of my baby. I felt relaxed when the health check on my baby indicated that all was well.* (Line 206-216)

According to participant V, she experienced a process of alleviating negative psychological responses (fear and anxiety) over the earthquake, which was relieved when she spoke about her feelings with her family members, and learned that her baby was well.

Most studies concerning the psychological responses of survivors after a disaster indicated a similar result of alleviated negative psychological responses after the event. A number of quantitative surveys (Lazaratou et al., 2008; Liu et al., 2013; Priebe et al., 2011; Xu, Dai, Rao, & Xie, 2016; Xu, & Wang, 2012) found the psychological symptoms declined over time. Other studies (Arnberg et al., 2012; Cook & Bickman, 1990; Hull, Alexander, & Klein, 2002) aiming to follow up on the recovery process of

survivors after disasters (e.g. flood, tsunami) also revealed a declining trend in negative psychological responses. Studies that focused on perinatal women after an earthquake also indicated that negative psychological responses would decline with the passage of time (Harville et al., 2010; Ren et al., 2014). The decreasing trend in negative psychological responses towards alleviating disturbances after an earthquake in perinatal women was common among the survivors of various disasters.

5.2.2 Fluctuating psychological status

Nevertheless, the earthquake's aftershocks did not stop for a long time, which constituted a potential threat, and made the perinatal women restless and fluctuate in terms of negative psychological responses. The birth of their baby could also increase their stress about protecting the baby, which in turn made them more anxious or frightened. Furthermore, the changes in the endocrine system after childbirth increased their risk of distress. These factors might at times worsen their negative psychological responses, although overall the responses were alleviating with the support available from their surroundings (e.g. being there of the family members). Their psychological status could fluctuate during the time of alleviating negative psychological responses, and the women might return to the first stage of 'being disturbed'. Participant L stated that her anxiety was aggravated because of the aftershocks and her worries about her newborn baby.

> *They said that our house had cracks and would collapse with more earthquakes. So we were more anxious. Then one more earthquake* (actually an aftershock) *occurred, my mom grasped my baby. She was prepared to shout from downstairs and urged us to escape. All of us*

were anxious. Since we focused all our efforts and concerns on the baby, we were fearful of a re-occurrence of the earthquake. We became more anxious and stressed because we had a baby. We worried about whether the earthquake would injure him. (Line 185-189)

For this participant, she actually felt relieved of her fear and anxiety within a short time frame (half a month) after the earthquake. However, after the baby was born, it increased her uncertainty about her ability to protect him. She further explained that carrying the baby in her body was more convenient for protection and escape. With her increased fear and anxiety, the woman would return to the first phase of 'being disturbed'.

Apart from external causes, the changes in the endocrine system after delivery also posed a risk of disturbance for these women. It has been identified in the literature that postpartum women are prone to depression because of hormonal changes after giving birth (Bloch, Daly, &Rubinow, 2003; Glynn, Davis, & Sandman, 2013; Le Donne, Settineri, & Benvenga, 2012). For instance, participant V experienced unstable moods after childbirth and attributed it to postpartum distress or depression.

I cried more easily regarding my feelings after the childbirth. It might be attributed to "postpartum depression" as they said. I would cry on the bed without any specific reason, so the tears wet my pillow during the postpartum period. …… I didn't know the reason for my sadness. I would lie on the bed and cry by myself. It seemed that I was so sad. I didn't know why. After a long period, they told me that someone else also had similar symptoms. I thought that it might be postpartum depression. I didn't know about it at all before. (Line 177-185)

Although there was 'fluctuating psychological status' in terms of the 'negative psychological responses' of the perinatal women during the phase 'alleviating disturbances', the situation developed towards alleviating and restoration over time. Therefore, the overall phase was still described as 'alleviating disturbances'.

5.2.3 Gradually restoring daily life

The situation of 'fluctuating in psychological status' in terms of the 'negative psychological responses' continued until daily life was restored ('gradually restoring daily life'). Through this process, their interactions completed the dynamic of 'alleviating disturbances'. With relief from their negative psychological responses, the perinatal women were not passively waiting for the restoration of their lives, but rather they participated in various recuperating activities to restore their daily lives. They took part in those activities as much as their capacity allowed, as pregnancy had limited them from making a full return to their daily lives and work. Participant M said that she prepared food at about seven months gestation, to support her family members who were rebuilding their house.

> *I helped my family members when they repaired our house. I cooked for them when they did that. I was seven to eight months pregnant during that time, and my belly was so big. But I still cooked for them because I thought they worked very hard outside to repair the house. What I could do for them was just cooking. It was just cooking.* (Line 344-346)

Apart from operational and instrumental support, the perinatal women would also provide emotional or psychological support. Participant F commented that she

supported her elderly parents with spiritual encouragement.

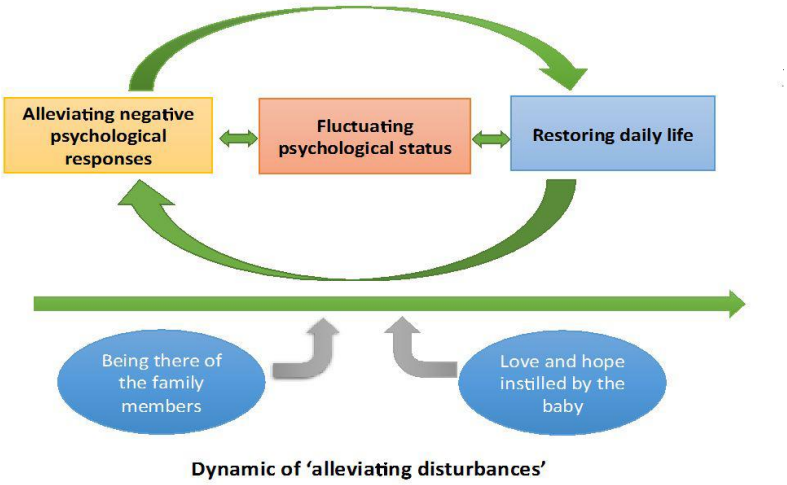
> *I could not help them for any instrumental or operational aspects. But what I could do was talking with them and supporting them emotionally. I told them what to do during the earthquake, and then they would know how to cope with different situations. This was better than just giving them money or something else. Regarding physical strength, I was really insufficient to help.* (Line 518-521)

The perinatal women would gradually restore their activities as they were relieved of their negative psychological responses and fluctuating psychological status. For example, in section 4.4.1.8, participant C began to go out for leisure activities when she felt relieved of her unhappiness as a result of the earthquake.

During the dynamic, 'alleviating disturbances' as phase 2, two sub-categories ('being there of the family members' and 'love and hope instilled by the baby') were found to be crucial and interwoven with the three conditions ('alleviating negative psychological responses', 'fluctuating psychological status', and 'gradually restoring daily life') for the advancement of such a dynamic. "Being there of the family members" made the women feel better, by strengthening their emotional attachment to family members; reducing their stress through receiving daily care and reassurances; being beneficial to the baby's growth; and helping them to express and ventilate their negative emotions. The baby's birth helped them to alleviate their anxiety through evidence of their baby's well-being, and they gained increasing confidence in their ability to care for their babies; and decreased their stress by sharing their concerns, responsibilities, and workload in caring for the newborn; and they also improved their emotions by feeling a sense of special treatment from others

and enhanced family cohesion. Consequently, the perinatal women felt alleviated from disturbances and gradually recovered after the earthquake. The findings of the two sub-categories, 'being there of the family members' and 'love and hope instilled by the baby' that are interwoven with the dynamic of alleviating disturbances, are outlined below (Fig.5) illustrates the relationships of these components that operate within the dynamic of alleviating disturbances.

Fig.5 The relationship of five components in the dynamic of alleviating disturbances (Phase 2)



5.3 Being there of the family members

During and after the earthquake, the pregnant women obtained more-than-ordinary social supports (instrumental, emotional, and spiritual support) from their families and outer organisations (e.g. communities, workplaces, and governments) because of their pregnancy and the new baby. Among the different types of support, 'being there of the family members' was a crucial force that helped the alleviation of psychological disturbances to progress. 'Being' is a fundamental mode of existence, which is rooted in love and is concerned with sharing experience and productive

activity (Smith & Smith, 2008). In this mode, people place themselves in situations, and entertain ideas and experiences. According to psychologists, 'being there' means being committed and ready to respond to the emergencies of life (Smith & Smith, 2008). Similar to the present study, no matter in the form of 'at the side' or 'at heart', the family members were committed to the women and were ready to respond to their needs through various ways, such as direct care and telephone. 'Being there' was a mutual need for both the women and their close family members. Satisfying the need of 'being there of the family members' bore several meanings (e.g. strengthening emotional attachment, facilitating instrumental support), which could contribute to the alleviation of negative psychological responses.

There are studies indicating the significant role of 'being there of the family'. Most of them targeted people with physical illnesses (Carter, Edwards & Hunt, 2015; Redley, Levasseur, Peters & Bethune, 2003; Santos et al., 2013; Twibell et al., 2015; Wolff et al., 2012) or women during the perinatal stage (Aguiar & Jennings, 2015; Loureiro et al., 2009; Qing, 2015; Turnbull et al., 2004). Being there, or the presence of family members, could better facilitate the health of patients and perinatal women. Even if family members did nothing except remain in the presence of their loved ones, the quality of patient care could be improved, together with the work of medical staff (Santos et al., 2013). For perinatal women (Aguiar & Jennings, 2015), the presence of their husband could increase the rate of institutional delivery and skilled birth attendance, and was associated with a higher uptake of postnatal services. Being there of the family members during an alteration in health could play a significant role in helping people during difficult or demanding times.

There were three types of 'being there of the family members' according to the

experiences of women in this study: being there at her side; being there at heart; and no sense of being there.

5.3.1 Being there of the family members at her side

'Being there at her side' refers to a situation where family members actively stay with the woman, and the family members feel they are present to each other in person and with their heart. As participant F described it:

> *At that time I was carrying my baby, wasn't I? I could not escape, because I was pregnant. His father* (the baby's father) *stayed with us. He was just staying with me, reassuring me, "nothing to worry about, the house would not collapse because we built it recently. The newly built house is strong". Oh, he told me that theoretically, that strengthened my mind. Then I felt I didn't fear as much, don't know why.* (Line 28-31)

The husband was there with participant F, both in person and in his staying with her, and this was also at heart with his comfort and reassurance. This participant further clarified the meaning of 'being there' as "*facing disaster together and not giving up*".

> *Everyone can mutually understand each other. When faced with such a disaster, everyone should treat it seriously and stay positive psychologically. … What is the meaning of companionship? It means the two persons should not give up on each other. Yes, it is not giving up on each other. The two should correctly face the difficulty together. Whatever difficulties are faced, the two should face them together in any case.* (249-250; Line 256-258)

This experience re-emphasised and re-clarified the importance of being there in person and with the heart for one another. When facing danger, they should have the determination and confidence to stay together (in person) as well as bind together (with heart).

This kind of 'being there', though mutual, had more positive effects on the women than the other two types, because family members may fulfill multiple roles, including as caretakers, listeners, lovers, and close friends, and provide support and help through their actions at the woman's side. The functions of 'being there at her side' included 'strengthening emotional attachment', 'obtaining daily care', 'reassuring', 'being beneficial to the baby's growth', 'venting negative emotions', and 'gaining courage in facing danger'. 'Being there at her side' is analogous to 'being around' as discovered by Smith and Smith (2008, p.16-19), which means the presence and readiness of people to be in a place of direct availability, and to listen, talk, and help with other activities. It is considered to be the most effective style of 'being there'.

5.3.1.1 Strengthening emotional attachment

Since 'being there' was a mutual need for the women and their family members, meeting this need could make them feel more relieved and increase their emotional attachment. Taking participant F as an example, she indicated increased emotional attachment to her husband because of their mutual accompaniment of one another during the earthquake. From participant F's perspective, she described 'being there of the husband' as a reassurance for her to calm down, placing this uppermost in her sequence of needs. Once the 'being there'was in place, her other needs would become trivial.

I feel that I was more frightened during the first earthquake (5.12

earthquake). *This time I was not too frightened because his father* (baby's father – her husband) *accompanied me all the time. He encouraged me and asked me not to fear, and not to be anxious. So I did not fear and was not anxious at all. … Uh, I don't have any more needs. I felt that everything was good and nothing bad. His dad* (husband) *is very good to us anyway. And he is very good to us every day.* (Line 59-63; Line 344-345)

She clearly indicated that the being there for each other strengthened her emotional attachment to her husband.

Anyway, the emotional support was the most important. It is best that the couple cares about each other. Thus our relationship become better, and we feel better. I really love the type of man like his father is (her husband). He is really ... um um …(blushing and being shy)

On the other hand, her husband also needed the 'being there of his wife' and greatly appreciated his wife's companionship when facing danger. Participant F's husband thought that his wife's being there deserved his more devoted emotions.

To tell my feeling, I could not talk too deeply. After the earthquake, I really appreciated my wife very much. She did not escape. Indeed, she did not escape. She could just go away if she wanted to. But she woke me up, for more than 10 seconds. This was not long, yet not short. (Line 97-100)

During the interview with this couple, it was also observed from their interactions that both the woman and her husband had good psychological status and were deeply in love because of their mutual accompaniment during the disaster.

Participant F's husband said,

> *I really appreciated her!* (Looking to his wife with a smile) *It was she who woke me up, hahaha.*
>
> F：*Thank God that you did not escape. If you had escaped, I wouldn't have known what to do. I really appreciated you* (Also smiled and felt happy).
>
> Husband of F：*At that moment, whatever I thought was that I must not escape as a man. If I escaped by myself, I can't imagine how she would have viewed or thought of me as a man.* (Husband of F _ Line 42-45)

From their interactions, we could see and sense that their mutually being there for each other strengthened their emotional attachment. Each thought that their partner was completely devoted to them, which in turn deserved their own devotion and emotional attachment. Furthermore, the husband explained the meaning of "being there" with the negative case of his cousin.

> *I don't know. Anyway, I felt that if I would escape by myself, I really had the ability to escape. But I don't know how she would have looked at me. To tell you about my experience, one of my cousins could serve as a good example. My wife knew him and his wife. At the time of the earthquake, my cousin escaped by jumping downstairs by himself. Then, they divorced. It was a real event and I am not joking.* (Line 47-51)

'Being there at the side' was a mutual need for the women and their husbands, and satisfying this mutual need could increase their emotional attachment and

consolidate the marital relationship. The women might feel the love through 'being there at the side' of their family members. Participant C described her need for being there of her husband after the disaster like this,

Researcher: *Oh, I see. What was the greatest need for you after the earthquake?*

Love. I hoped my husband could hold me all the time. When he held me, I felt …(blushing)

Researcher: *What else?*

It was love, sentiment.

Researcher: *How is love shown?*

If my husband held me, I would feel better. (Line 167-181)

This participant clearly indicated that even after the earthquake, her husband's embrace, which indicated a deeper sense of companionship, could make her feel loved. No matter whether during the earthquake or afterward, 'being there at her side' could provide the women with the feeling of being loved by their family members.

In addition to the emotional attachment of spouses during the earthquake, 'being there at her side' was also found in other close family members, which increased emotional attachment. For instance, 'being there of the family members at her side' is viewed by H as the strongest support to facilitate emotional attachment.

Researcher: *Who else do you think to give you great support except your daughter?*

Uh, I don't think there is another?

Researcher: *How about your dad and mom?*

My dad was not at home during the earthquake. He often went out. My mom and my daughter usually stay with me at home. My mom had to work in the hospital and had little time with me in most cases.

…

Only my daughter had the most concern for me during the earthquake.

Researcher: *So whom do you like the most among your family members?*

I like my daughter the most. (Line 212-218; Line 243-244)

This participant clearly described that 'being there at her side' was the most important support she needed, and she was more emotionally attached to her daughter in comparison to her parents. She further indicated her sudden awareness that she should devote more to rewarding her daughter's companionship.

I remember that we two went out and there was still an aftershock that day. Then she (daughter) *saw that I was wearing a skirt. She went upstairs to get me my coats, regardless of the aftershock. … Then she spoke words to encourage and console me. She said that she was not scared, and I should also not be fearful. Then she said that she would protect us. She told me that. … I was moved and I thought I did little to care about her. She was so sensible that what I did for her was not enough. This is my feeling.* (Line 169-180)

This participant later mentioned that she decided to do more to cultivate and nurture their relationship, and spending more time accompanying her daughter was a key strategy. With more giving to each other, the emotional attachment between the woman and her family members improved.

From participants' experiences, 'being there at her side' is a vital support that could increase emotional attachment among family members. A number of studies (Hankin, Kassel, & Abela, 2005; Ross & Fuertes, 2010; Sanja, Tamara Martinac, &Ivanka, 2015; Sumer & Harma, 2015) have identified the relationship between emotional attachment and psychological status (e.g. depression symptoms), which consolidates the finding that the alleviation of the women's negative psychological responses is associated with increased emotional attachment through 'being there at her side'.

5.3.1.2 Obtaining daily care

The women could obtain daily care from their family members during times of mutual companionship. In general, caring refers to assisting activities that people perform to assist a person with insufficient ability to accomplish his/her activities of daily living (e.g. preparing food, washing tableware, providing a residence, and childcare), but not limited to physical care. During the first phase, the women felt insufficient in their ability to cope. Their family members could do something to care for them, and they indicated that the care they received could help restore the disturbances in their daily lives after the earthquake, and supplement their insufficiency (e.g. taking care of baby). Participant A felt insufficient in self-care and escaping during the earthquake. But the caring of her husband could supplement her insufficiency, and gave her a sense of safety.

> *He come to see me regularly in the hospital on time, this consoled me. It is good for me with his care, because he could take care of me in more detail. I didn't worry any more about the earthquake when he was there with me. If there had been no one there with me, I would*

have been worried. And I could not escape quickly, because of my pregnancy. (Line 670-673)

Although the earthquake decreased the family's reserve of resources for support, their caring for one another could remain intact or increase, if the family members were determined. For instance, a woman's workload, as a homemaker, assuming the bulk of the work in the home, would be reduced if her family members wanted to help her, in order to provide better care for her. Reduced family resources could not affect the delivery of caring. 'Being there at her side'could facilitate daily caring, because the accompanying family members could alleviate the stress on these women by sharing the burdens of daily life, making them feeling more at ease in order to recover from the disaster. As described by F,

He did all the work inside and outside the house. He said that my work was just taking good care of the baby and I did not need to worry about other things. He also knew that I was not good at making money, so he did everything all by himself. Then he asked me to take good care of the baby and just cook meals for him. I stayed at home taking care of the baby, and cooked for him. He made money outside, including cultivating tea and farming all by himself. Gee, there was no need to remind him what to do, because he could do it all by himself. Sometime, he would also cook after he returned from work. I think he was really good. Really felt that touching to my heart. (Line 420-426)

The sharing of the responsibilities of daily life by the husband could make the woman feel alleviated or unburdened. As participant F put it, she"*really felt that touching to my heart*", which indicated her sense of safety and fulfilment with her husband's

caring after the earthquake. Her husband's care was powerful in alleviating this woman's stress, because of the traditional Chinese cultural recognition of the role of husband as breadwinner (Hsieh & Burgess, 1994; Qian & Qian, 2015). The husband's extra devotion to household chores greatly moved his wife, because it was not what was usually expected of him.

> Researcher: *Did he accompany you during the work break?*
>
> *Yes, he accompanied me during his break. He was very good.*
>
> Researcher: *So you think your husband was good, could you give me some examples, please?*
>
> *Uh. I had never cooked, washed dishes since my pregnancy. My husband did all that for me, and he even washed my feet. Anyway, he was so thoughtful, very considerate. Whenever I wanted to eat, even at night, midnight, he would go out and buy food for me.* (Line 159-165)

The husband of participant D was very busy with his work, but was still thoughtful in helping out with household chores and caring for his wife. With his caring and presence, D expressed her appreciation.

The women could also obtain caring from other family members, in addition to their husbands. Care from other family members could supplement any insufficiency on the part of the husband, if that were the situation, and comfort the woman.

> Researcher: *What did your husband do besides cook for you?*
>
> *He could do nothing else. It was mainly his mother who looked after me. She could hold the baby safely when I breastfed her* (the infant)*.*
>
> *Or I didn't dare hold her. If I held her* (the infant)*, she would withdraw*

her body like a ball and I could not breastfeed. So it was mainly my mother-in-law who took care of her. She was hospitalized when two months old. Ah, it was so annoying.

Researcher: *What did your husband do at that time? Did he look after the baby?*

The baby was mainly taken care of by us. He was busy earning money.

(Participant K _ Line 332-338)

For K, her husband could not fulfil all of her needs to have a family member be there with her. However, her mother-in-law helped out with what the husband could not do in timely manner, and she was not worried. Participant K was carefree about her daily life until the death of her husband after the earthquake.

Researcher: *What did you worry about during pregnancy?*

No. To tell you the truth, I did not worry about anything. If I needed something, I would ask my husband for help. If there were no formula milk after ablactation, I would ask him to buy some. I never worried during that time. But now I have begun to worry (about her life after the death of her husband)*. It seemed that he had worried all for me but now. Indeed it was.* (Line 349-352)

If the family members could not share in the housework duties or take good care of the woman, she would feel tired and stressed, which was detrimental to her psychological recovery. When participant N was asked about sharing responsibilities with family members, she said,

Of course I wanted help. Sometime it was really hard and tiresome to rear two children. I also wanted them to carry the burden of taking care

of the baby. (Line 481-483)

Participant S commented that she was unhappy with her husband's impatience at taking care of the baby. She thought that her husband could not understand her if he did not participate in looking after the baby.

During the second stage (from the birth to the baby's first birthday)*, I hoped that my husband could care about me more, because he did not have my experience —breastfeeding baby four to five times a day. Then he even thought that the baby's crying at night affected his sleep. I can say that the saying of "father's love is as large as the sky" was not present too much in him. I didn't feel good about him.* (Line 371-374)

Further in the second interview with this participant in 2016 for theoretical sampling in the subcategory 'being there of the family members', she emphasised the meaning of 'being there' as 'caring'.

Researcher: *What does being there with you mean to you?*

It is the caring from him (husband)*.* (Line 87-88)

Caring from family members could alleviate the stresses on pregnant women, not only by reducing the burden of household chores and nursing the baby, but also by giving them a sense of being understood, a sense of being concerned about their welfare, and of being present for them.

5.3.1.3 Reassuring

'Being there at her side' has the advantage of reassuring the woman during childbirth and while raising a baby, even if the family members did nothing but remained at her side. Some participants described a strong sense of safety when their families, especially their husbands, were there with them. Participant H explained her

reason for feeling relaxed when she saw her husband or beloved family members standing in front of her.

> Researcher: *Did you have any psychological needs?*
>
> *I hoped that my husband could come back soon at that time and then accompany me during delivery. Then I felt nothing was more important than the safety of the whole family.*
>
> Researcher: *What did you hope your husband would do after he returned?*
>
> *I would feel no fear of anything if he stayed with me. I didn't need to worry so much. If I were dead in the earthquake, I could not even see him one last time.* (Line 157-163)

Another participant (P) felt it was 'reassuring' because of her trust in family members and friends. She had a strong impression that her husband, or friends, could be protecting and caring, for her and her baby.

> *Because I was the focus to be protected, they would protect me, even if I did not require them to do so. They would accompany me actively. Wherever I needed to go and whether it was before or after the earthquake, there was always someone with me. It may have been my husband, or my friend. They would accompany me at my side. … Because of my pregnancy, I was fearful of falling. If there was no one there with me, I would have thought it was irresponsible of me with regard to my baby.* (Line 235-242)

In most cases, all close family members (e.g. parents, husbands, and children) could provide these women with a sense of safety and reassurance. However, the women

placed the most significance or priority on their husbands.

> Researcher: *You mean that because your husband was accompanying you, so you…?* (Interrupted by the woman)
>
> *I did not fear as others. It was that feeling. I didn't fear anything whenever my husband was there. Even when my parents were there with me, I was still fearful. But I did not fear if my husband was there.*
>
> Researcher: *Were there any other persons who could affect your feelings and needs besides them?*
>
> *No, I don't think there are. I felt the first one was my husband, the second, were my other family members.*
>
> *It was the feeling that he* (husband) *gave me that was the most important. It was he who gave me a sense of safety, can you understand?* (Line 376-379; Line 389)

I inferred from the women who were accompanied by their husbands during and after the earthquake, that the companionship and presence of their husbands was the most powerful factor, and could greatly alleviate their anxiety about safety. This may be attributed to the most intimate relationship between the women and their husbands, and could also be attributed to the powerful image of the husband in a family. Participant O further explained,

> *During that time, I think it was my husband. He is my current husband. Because they* (parents) *were older, and their ideas were different from ours. I did not tell them about my concerns. I would discuss these with my husband. Like this, it was better for us two to discuss. Their ideas were different from ours.* (Line 454-458)

From her explanation, I saw that she felt safe with her husband because he shared most of the same ideas with her (which suggested their intimate relationship) and had the advantage of being a younger age (which suggested his powerful image). I also discovered that the person perceived as the most capable could help best in alleviating the women's negative psychological responses. The evidence was found in the participants who thought about other family members other than the husband as the most important source of support.

> Researcher: *Among your family members, who did you want to accompany you to reassure yourself?*
>
> *It may be my mother-in-law.*
>
> Researcher: *Why?*
>
> *Because my mother-in-law was an obstetrician. She was good at taking care of the baby. She was also experienced in handling my C-section wound. Then I believed her, because of her expertise in medicine.*
>
> (Participant B; Line 238-243)

This participant preferred her mother-in-law to her husband, because of her mother-in-law's expertise and perceived more powerful image in protecting her and her baby. Therefore, from a point of safety and reassurance, the family member who has both a close relationship with a woman and the power to protect her, can play a strong role in helping pregnant women after an earthquake.

5.3.1.4 Being beneficial to the baby's growth

Being there at a woman's side was also viewed as a way to promote the baby's healthy growth, as well as to examine the love of their family members for them. The woman expected her husband to interact with the unborn child when accompanying

her.

> Researcher: *What were the expectations for your husband?*
>
> *Regarding my expectations for my husband, I hoped my husband could talk more with my baby for prenatal education. You know, the baby can move at six months pregnancy and father talking to the baby was interaction between parent and baby and prenatal education. Simply speaking, I hoped he would accompany me more, at my side, as what is said on the Internet, there is nothing to do but be there. Haha …*(Participant Q; Line 204-207)

Q believed that her husband could interact more with the baby when accompanying her, which could be beneficial to the baby's growth.

On the other hand, from the husbands' perspective, husbands also thought it was important to interact with the baby when they accompanied their wives. For example, when asked about the meaning of accompanying his wife, participant S's husband described it this way,

> *Before the childbirth, my presence with her could make her feel not alone, which could make her happy. Of course, a woman* (in general) *is such a person that she would feel happy with someone's companionship. It is my responsibility to accompany them when we have a baby. It is also beneficial for the baby's growth.* (Line 313-317)

The interaction between father and unborn child could move and satisfy the woman, and make her happy. When participant J talked about the interaction between her seriously injured husband and unborn child, a bright light of happiness could be seen on her face.

Researcher: *Did he ask about your status during that period* (when seriously injured in hospital)*?*

Oh, yes, he did. He asked me about this everyday. He touched my belly and talked with my baby everyday. He did like to do that everyday. Although he was not very sober-minded, he was concerned about asking me to have a good rest. He asked me not to take care of him, and to return to Lushan. Haha. (Smiled and blushed) (Line 218-222)

Participant J felt happy and moved because of her husband's concern and interaction with the baby, despite the dangerous situation with his injuries. She thought it was an expression of her husband's caring for her and the baby, which could represent her husband's love for them. Happiness gained from the interactions of their husband with the baby helped alleviate the women's stress and negative psychological responses. The husband's being there not only directly benefited the baby's growth, but also contributed to an increased sense of psychological well-being in these women.

5.3.1.5 Venting negative emotions through talking

'Being there at her side' provided the women with the opportunity to ventilate their negative emotions, which could help them alleviate negative psychological responses and promote health. The most common way for them to vent negative emotions was by talking. Most participants indicated an increased need for talking with others after the disaster.

Researcher: *Were there any other needs except this?*

Mmm, I think it was venting my emotions. I had a lot to say.

Researcher: *Oh, you mean that you wanted to talk with someone.*

What did you want to talk about?

There were no limitations as to the content. I could talk about anything. I could ventilate my unhappiness and negative emotions, as you have just mentioned, even very little things could be talked about. I just wanted to talk more, and then I could feel better in my heart. This is what we always call "Tu Cao" (ridiculing something popular)*. Haha.* (Line 123-129)

The main topics for discussion were the earthquake and the baby. Although speaking about the earthquake might make them recall unhappy things, the activity of talking actually provided these women with an outlet for their emotions. Participant E shared that speaking about the earthquake and baby could make her feel comfortable.

Anyway, I liked to stay with my friends and talked with them. Talking with them could alleviate my negative emotions. When we talked about the earthquake, I would not be so fearful. I would tell them about my anxiety, and then I would feel better. …… The frequency was still relatively high. The major topics we talked about were about the earthquake. And because some friends in my department were pregnant during that period, we talked more about babies and our responses towards babies. We all had more frequent fetal movement on the day of earthquake. So did I, it was so vigorous. (Line 92-100)

Alleviating negative emotions through talking had the same function for pregnant women and ordinary earthquake victims. But the pregnant women could relax more as a result of talking about their babies. For the women who were reluctant to discuss the negative events of the earthquake, talking about their baby was a choice to

ventilate their negative emotions. Participant K thought that speaking about the disaster did no good, and refused to discuss the earthquake with others. However, she thought that talking about the baby could be better.

> *Whoops, to tell you the truth, there was nothing worth talking about. Otherwise, we talked about babies; really it was about babies. Just like Gao Li* (the pseudosym for her close friend) *whom I just told you about, that her baby was 10 days older than mine, I talked with her about the ways to deliver babies. We just talked about those things. Everything was about babies.* (Line 472-474)

This participant disliked the topic of the earthquake, which could be attributed to her fear after the disaster. Nevertheless, she still had a desire to vent her emotions through talking. She instead chose to speak about another important theme, which focused on babies. Apart from venting negative emotions, talking with others could also help the women gain a positive spirit to grow. Participant I said that people gathered together were more willing to discuss positive ideas, which seemed to be a way they could encourage themselves.

> Researcher: *What did you talk about usually?*
>
> *It was just joyful things. Then everyone would talk about joyful things, and avoid sad ones.*
>
> Researcher: *Could you give some examples?*
>
> *Anyway, we talked about joyful events.*
>
> Researcher: *Could you be more concrete?*
>
> *In general, we said that the houses collapsing did not matter. We have everything we need if we survive. That's all we talked about.*

Researcher: *Anything else?*

We also talked about the fact there were still joyful things in daily life.

Researcher: *Did you feel better when you talked about those things?*

Er, it could distract our attention and alleviate our sad moods. (Line 391-418)

In addition to a positive spirit, participant S obtained useful knowledge (e.g. escaping tips) at the same time as she was venting negative emotions.

It helped me to assess how to escape. It seemed that the tips were translated from theory to practice. Then we knew how to escape, what and how much to prepare, in order to escape in a timely way when the earthquake occurred. (First interview; Line 263-265)

Therefore, the women talked about their feelings with others who stayed with them. Talking could help them relieve their negative emotions or moods, and also alleviate their negative psychological responses, by giving them a positive spirit for growing, along with useful knowledge.

5.3.1.6 Gaining courage in facing danger

For these women, the courage to face danger came from the belief that they were not standing alone, and that all difficulties could be overcome by collective power. Other people could supplement their insufficient ability as they were striving to survive in a difficult or dangerous time. Participant A felt there was nothing to fear while staying with other family members.

We stayed together (her greatest need)*. It seemed that there were no difficulties when we stayed together. Everyone felt there would be nothing to worry about, and there would be no difficulties for us.* (Line

251-253)

In summary, the ‘being there of the family members at her side’ offered several functions, including ‘strengthening emotional attachment’, ‘obtaining daily care’, ‘reassuring’, ‘being beneficial to the baby’s growth’, ‘venting negative emotions’ and ‘gaining courage in facing danger’. All of these functions contributed to alleviating the negative psychological responses of pregnant women during this time, and helped them gain an understanding of a new meaning in life, the result of undergoing a difficult time after the earthquake.

5.3.2 Being there at heart

‘Being there at heart’ means that family members could not stand by a woman for certain reason/s, but the woman could also feel that their hearts were with her, on the basis of their regard and concern. It seemed that they stayed together at heart. Although it is still one kind of ‘being there of the family members’, its function in satisfying the women’s needs was weaker than ‘being there at her side’.

> Researcher: *Do you mean that you didn’t need his companionship?*
>
> *I also hoped, more hoped so. I hoped more that he could accompany me at my side. Of course emotional accompaniment was also necessary.*
>
> Researcher: *What does emotional accompaniment look like?*
>
> *Psychologically, you must be sure that he was always considering you first. So at that moment, he could say something or else through telephone or video communication, which could make you feel that he was concerned about you, and you were not alone over there. However,*

he did not achieve that. He did not return immediately. I just hoped that someone could be with me at my side, but all were friends.

(Second interview of participant S; Line 53-61)

For this participant, being a pregnant woman after an earthquake, she was most in need of accompanying by her husband and family, both physically and psychologically. However, her husband was unavailable to do so because of his work. In such a situation, the woman sought the lesser objective—'being there at heart'.

A number of behaviours could make the woman gain a sense of 'being there at heart', which included 'asking trusted others to be with her', 'increasing communication through technology', 'choosing a closer workplace', and 'working hard for the family'.

5.3.2.1 Asking trusted others to be with her

When her husband could not be present at her side after the earthquake, other trusted persons could partly supplement the function of caring for the woman. Although her husband did not mean to express his concerns through other trusted persons, the woman would think that she might not get help without the concern and requests of her husband. She would believe that her husband was staying with her at heart, through her feeling that her husband was caring for her through others.

Actually, I appreciated my husband, although he could not take care of me himself. He couldn't help it. At that time, I was hoping that he could come back to stay with me, which would have made me feel safer. However, he did not return. Ah, I could not require too much because of his work demands. However, his friends took his place in taking care of me, although my wish was for the support of my family and family

members. ……

Researcher: *Apart from sending you greetings, what kind of behaviours could manifest his concern, if he still could not be at your side?*

My feeling? I felt that it would be better if he asked some friends in Ya'an to send me necessities. (Line 42-45; Line 71-74)

It was the best for participant S if her husband could be there at her side, which not only gave her a sense of safety, but also satisfied her daily needs. The assistance she received from others she trusted also met some of her daily needs, and was a partial comfort to her.

5.3.2.2 Increasing communication through technology

With the development of modern technology, many tools (e.g. telephone, network video) were used after the disaster. Those technologies could allow family members to hear each other's voices, and even see images of each other. Technology can simulate a situation as if family members were physically present. Participant R mainly communicated with her husband through the Internet.

Researcher: *How did your husband support you?*

Because we did not live in the same place, we communicated through phone calls. He comforted me over the telephone, and sometimes through network video.

Researcher: *Could you get on the Internet at that time?*

Er, we connected on the Internet the second or third day after the earthquake.

Researcher: *Was there any change in the frequency of phonecalls or*

Internet communication, compared with before-the earthquake?

It was more frequent than before. (Line 98-100)

Family members could also acquire information about a woman's safety by using the telephone to contact her more frequently. The husband of participant E was worried about her safety after the earthquake. But he could not stay with her every day, because of his work.

Because my husband had to work and could not stay with me all the time, he often called me when working, or sent messages to ask about my safety. (Line 44-46)

5.3.2.3 Choosing a closer workplace

The husband might choose a workplace that was closer to his family, in order to make his wife feel he was 'being there at heart'. This could make her feel her husband was closer to the family, and would be convenient to take care of her.

Researcher: *Oh, would he come back during the Lunar New Year?*

Er, no. He works in Ningji, which is near Qionglai.

Researcher: *Oh. So he moved to Ningji after he returned* (from Fujian, which is located in another province and more distant from the hometown).

No, he first went to Jiaguan immediately after returning. He went there recently. Both places were very close (also closer to home than the previous workplace).

Researcher: *So he chose those places in order to be closer to you and to be able to take care of you more conveniently, is that it?*

Er, yes. (Participant H _ Line 412-419)

Although this participant (H) was not satisfied with her husband's absence, she could also understand her husband through his 'choosing a closer workplace'. The sense of becoming closer made the woman feel that her husband wanted to stay with and take care of her. The shorter distance could reduce the distance at heart.

5.3.2.4 Working hard for the family

Although their husbands could not accompany them, most women were not angry, because they thought their husbands were working hard. They depended on their husbands for a living, and recognised their husbands were working hard for them and their families. For them, having their husband accompany them at their side was important, but paid work was also necessary in order to sustain a family. As participant F described it,

> *It was impossible to require your husband to be with you all the time. He had to earn money or go out to work. The couple would separate sometime, wouldn't they? It was impossible for the couple to stay together all the time, because work had to be done. It means that he could take care of you then when he was there at your side. If he was not there at your side, you should take care of yourself, no matter whether you were at home or outside.*
>
> Researcher: *So you didn't care whether he was there at your side or not, if he does work for you?*
>
> *Er, yes. No matter whether he is at home or outside, he does everything for us if he is working for money. There is no need to ask him to come back at any time.* (Line 295-304)

The husband of participant F accompanied her during the most dangerous time of the

earthquake, but later he needed to go out to work. From her perspective, her husband did it all for a better life for the family, and she could understand.

From the women whose husbands could not return during or immediately after the earthquake, almost all expressed an understanding of their husbands' absence, because the husbands supported the whole family as breadwinners.

> *He had to earn money and had no way to return, because he got the job not long ago. I could understand him because he supported the whole family. I was pregnant at that time. Before my pregnancy, I was a shop operator. However, I stopped doing it after my pregnancy. Ah, everyone in this family was dependent on him. I think his stress was great. He wanted to return to accompany me, but he could not.* (Line 331-335)

This participant (H) thought that her insufficiency after the pregnancy was a burden for her husband, which increased his stress level. Thus she tended to think that her husband did not need to return to supplement her insufficiency, but was instead striving to sustain the family, and she could forgive him, in spite of her psychological need for his presence at her side.

Participant K believed her husband kept her in his heart, because her husband thought of and fought for her, even when he was not there by her side.

> *He had to help transport things for other people at the time of earthquake. He helped others, but he also brought things back home. He would bring some necessities back home. We did not live together during that time.* (Line 167-169)

The supply of necessities was commonly used by husbands or family members to

make these women have a sense of their 'being there at heart'. Like 'being there of the family members at her side' (section 5.3.1), this kind of being there of the family members at heart also contained several meanings or functions, which could alleviate the negative psychological responses of perinatal women by 'reassuring and obtaining courage to face dangers', 'strengthening emotional attachment', and 'venting negative emotions'.

5.3.2.5 Reassuring and obtaining courage to face dangers

The women derived a sense of safety and courage to face dangers from the reassuring, encouraging words of family members through various forms of telecommunications, even though those members could not be there with them physically. When asked about her husband's support, participant O stated that,

> *He sent a message to tell me that he could not return that night. Then he told me not to fear and assured me of his coming back. He asked me not to fear. Because a phone call could not be made at that time, he sent me a message to tell me that he was there. … Then he sent me a message and told me that he also experienced the earthquake. Because it was not so serious, their situation was not very dangerous. He then sent me a message to tell me that he was coming back and not to fear. This was the situation at that time.* (Line 137-144)

Through these messages, the woman knew that her husband was safe. He assured her of his 'being there at heart' by encouraging her not to be afraid. Thus the messages from family members could also provide the courage for these women to face danger. Although the effect might not be the same as physically being there at their side, due to the inability to see posture, expression, and sense their touch, which

are important factors in human communication (Mcglone, Wessberg, & Olausson, 2014; Schultz, 1983), the participant felt relaxed after receiving those messages.

5.3.2.6 Strengthening emotional attachment

Less opportunity to be there at their side would not necessarily decrease the concerns of family members, and thus did not necessarily lead to reduced emotional attachment. The mother of participant D showed her concern by increasing the number of phone calls and supportive words to her daughter.

> Researcher: *Did she* (mother) *accompany you all the time?*
>
> *No, she did not accompany me all the time. She has lived in Chengdu until now. I always live with my husband and we've talked very little.*
>
> Researcher: *What did she do to move you?*
>
> *Because she called me after the earthquake and comforted me. She encouraged me, and said that I should not worry too much about the baby and that I should try to avoid stress and anxiety. Then she asked me to go to her place to have a rest. I did not go as she asked. Then she called me every other day to enjoin me to eat something good and not to worry. She would call me if there was any news, and told me what happened that day. She asked me not to worry. So she called frequently to comfort and alleviate me.*
>
> Researcher: *Was her behaviour different from before the earthquake?*
>
> *Before the earthquake, she was not so concerned about me, because she thought that I had a cheerful personality. Then I told her that I was very fearful after the earthquake. Anyway, she was much more concerned about me after the earthquake.* (Line 209-218; Line 225-227)

Participant D was moved the most by her mother's concern through more frequent phone calls and her encouraging and comforting words. She felt more attached to her mother, although she lived separately from her mother after her marriage. In addition, the increased frequency of phone calls from her mother also provided the woman an opportunity to confide her feelings and ventilate negative emotions. She could seek help by telling her mother that she was frightened after the disaster.

Participant S was a little disappointed with her husband because he could not accompany her either during or after the earthquake. But she still felt emotionally attached to him because of his encouraging words. When describing the most touching things her husband had done for her, participant S said,

> *It was those words. He said that I was the most important, and anything else was minor to him. Anyway, I should not be worried, and also there was no need to worry about the baby. It was my body that was most important. He asked me not to be anxious. Those words he told me made me particularly pleased.* (Line 178-181)

These two participants provided the examples to explain the function of strengthening emotional attachment by 'being there at heart'. Even when their family members were unavailable to be there at their side, the perinatal women could still feel their family members' concern in various ways.

In conclusion, 'being there at heart' was not as strong as 'being there at her side' in supporting these women. It shared the functions of 'strengthening emotional attachment' and 'reassuring' with 'being there at her side'. In addition, modern communication technologies (e.g. talking on the phone) could also help the women to attain two functions, including 'obtaining courage' from the encouraging words of

family members and ‘venting negative emotions’. However, their effectiveness and usefulness might be lessened by distance, as well as by the inability to see and touch one another. Nevertheless, ‘being there at heart’ could still alleviate the negative psychological responses of these women, which was actualised in various ways (e.g. asking trusted others to help).

5.3.3 No sense of being there

‘No sense of being there’ means that the perinatal women had no sense of being there from their family members, no matter whether they stayed at their side or not. It could specifically refer to the status of neither being there in person, nor in heart. The perinatal woman might feel especially helpless and sad when she thought that her family members were standing there (even) but did nothing for them. Participant F is a woman who experienced two major earthquakes (2008 Wenchuan earthquake and 2013 Ya’an earthquake). During the first earthquake, her first baby was two months old. Unfortunately, her husband at the time and his family members stood downstairs and did nothing. This distressed her greatly.

> *Her grandfather and father stood downstairs and dared not to go upstairs to save the baby.* (Fell with a heavy tone)*. I took her down slowly by myself. They saw that the house was shaking badly. They said that the house seemed to collapse and then none of them went upstairs. Can you understand? I am afraid whenever I think of the scene on that day. There was no one but me there, and then I held the baby, who was only several months old. …*
>
> Researcher: *So your husband was not there, was he?*

He was not in the house during the first earthquake. We all entertained outside. Then the earthquake came. He came back, but he did not come upstairs to save us. He merely shouted to us that the earthquake came, and you should come down quickly. Consequently, none of them came upstairs.

Participant F felt that her family members were not there at heart with her and her baby, although all of them stood just downstairs. Thus she cried and directly expressed her sense of helplessness and sadness.

Whenever I thought of that earthquake, I felt very sad. Because they did not even come upstairs to save the baby who was so small. I may not have felt so helpless if they had come to save the baby. Can you understand? I may not have felt helpless even if I had been injured by the earthquake. What I thought of, was the baby. Imagine that they, as adults, could not even come upstairs to save her. I felt very sad whenever I thought of this event (burst into tears)*. … I felt that and sorry for my baby, it was so …* (no words here)*. I did not care about my own safety, but it did matter to my baby. So many people were standing downstairs, but nobody came upstairs to save my baby and me. (Line 360-364)*

This participant was the only one among all participant women, who cried because of poor family support, which indicates her great sadness and disappointment with her family members. She divorced her then-husband after the first earthquake, which could partly be attributed to her disappointment. Fortunately, she subsequently re-married with a good partner, before the second earthquake, and her current husband

accompanied her all the time during that earthquake. She feels happy now because of everything that her current husband has done for her. The comparison of her experiences in the two earthquakes could serve as a typical example of 'being there at her side' and 'no sense of being there', which led to the woman showing negative emotions. The keynote of her later experience in the 2013 earthquake was happiness and assuredness that her new husband was there at her side. In contrast, with 'no sense of being there' during the 2008 earthquake, helplessness and sadness were her main feelings. This situation is different from those of the women whose family members wished to help, but could not (e.g. 'being there at heart').

Another participant (B) could forgive her husband's inappropriate helping behaviours, but could not accept indifference.

> Researcher: *Did you understand more through this earthquake?*
>
> *Er, when I was sleeping in bed, I was wondering whether I should bend my body if the ceiling fell down, because my bed was against the wall. That is a triangular area.*
>
> Researcher: *It seems that you knew more than your husband. You mentioned that he even wanted to use the quilt to cover and protect you.*
>
> *No, I think he just thought that I could not move with a big belly. His first response was to cover me with the quilt and then he held me.* (Line 441-448)

Although what her husband had done was not very appropriate in protecting her, participant B had no sense of his not being there at heart, nor any indifference on the part of her husband, and she still appreciated his protective behaviour. This was

actually a sign of ‘being there at heart’.

To sum up, there are three kinds of ‘being there of the family members’. These included ‘being there at her side’, ‘being there at heart’, and ‘no sense of being there’. Through these factors, the positive functions in alleviating women’s negative psychological responses varied. Both ‘being there at her side’ and ‘being there at heart’ had the function of ‘strengthening emotional attachment’ and ‘reassuring’, but the former had more meanings, which included ‘obtaining daily care’ and ‘being beneficial to the baby’s growth’. Although the meaning of ‘venting negative emotions’ and ‘obtaining courage in facing dangers’ could also be fulfilled in ‘being there at heart’ through communications using various technologies, their usefulness and effectiveness were curtailed by both distance and inconvenience, the difficulty inclearly seeing postures and expressions, and the inability to touch each other. ‘No sense of being there’ has the lowest, and even a destructive function, in helping perinatal women to alleviate their negative psychological responses during and after an earthquake, and should be avoided as much as possible by family members.

Apart from the function of alleviating negative psychological responses, ‘being there of the family members’ stimulated the perinatal women to rethink the meaning of living together and social support, which facilitated their changing values concerning interpersonal relationships. This will be outlined and discussed in a later section on ‘changing values’.

5.4 Hope and love Instilled by the baby

There was another source of power in phase 2 that interwove with the three conditions of ‘alleviating disturbances’ in helping perinatal women after the

earthquake. Baby was a kind of special existence, which could inject new meanings of love, hope, and courage into the mothers, no matter whether it was in the form of an unborn child, or an infant after birth. It seemed to be a major power source that stimulated the women to pursue self-improvement and become better, in order to create a good environment for the baby.

5.4.1 Love Instilled by the baby

The perinatal women could feel the love of their family members through the baby. Their family members' attitudes and behaviours towards the baby could serve as a lens for evaluating their family members' love for them. During her pregnancy, the woman would feel better if her husband interacted with the unborn baby, because she believed her husband would not interact with the baby without having love for its mother. The husband of participant J was severely injured during the earthquake and still felt great pain after an operation. But he tried to interact with the baby and showed his concern for his wife every day.

> *He* (husband) *could remember something after the operation. He felt better four days after he was injured. However, he still felt great pain, which he could not tolerate. So he still could not recall many things. … He would touch my belly everyday and said something to the baby as so. Although his consciousness was not very clear at that time, he still remembered to remind me about having a good rest. He refused to let me take care of him, and asked me to go back to Lushan. Haha.* (Line 214-216; line 219-222)

This participant thought that it was true love that drove her husband to interact with

the baby and to remind her of the importance of having a good rest. Although she did not indicate the love directly, it could be inferred from her emphasis on the physical status of her husband, that she believed in the power of love: if her husband did not love her, he would not have done that intuitively, with his poor physical and mental status.

A similar situation could also be observed in participant M, with regard to her family members. She was a homemaker living in the countryside, and believed that most families there preferred boys to girls. However, her family treated her daughter very well, which she believed was due to the power of love.

> *Anyway, after the earthquake, they* (family members) *specially loved me, and loved her* (daughter) *since her birth. They did not dislike her because of her gender. It was not like other families that had patriarchal ideas. They took care of my daughter all the time, took care of her both day and night. I was charged with the housework. They might think that they could not have seen us if we had not escaped from the earthquake, so they loved her especially* (as long as we survive, other things, such as preferring a boy over a girl, are trivial). (Line 190-194)

The family behaviours towards the baby made the perinatal women see that their family members loved them very much. With the love instilled by the baby and family members, these women learned how to love others and became a person filled with love. Participant T is a teacher in a high school in the earthquake's epicentral area. She explained that she began to think about love, and to learn to love, after her experience of the earthquake and childbirth. She said that her teaching style had

changed.

> *There is a change in my teaching style. I pay more attention to weak students because they need my attention more now. … The weak students are lagging emotionally; they need more attention and love from the teacher.* (Line 604-608)

This participant particularly noted that she obtained extra help from her family and volunteers because of her baby during her pregnancy and postnatal period. Through the experience of having a baby after a major earthquake, she began to think about the essence of love, which she viewed as the driving force for the additional help. Then she understood the love as a devotion of concern and care from the heart, and considered focusing her attention more on those in need (her students). She explained,

> *I had not seen so many volunteers and good-hearted people before the earthquake. Now, I want to learn from them to try my best to rescue and support if there would be any disaster, such as an earthquake. Regarding my work, I must fulfil my duty and teach the children well. I want to learn their spirits.* (Line 555-559)

The perinatal women obtained and sensed the love of their family members and outsiders because of the baby, and further understood the essence of love in their perspectives and experiences. It was the baby who instilled the love in these women, and in turn helped them learn how to express their love for others, and hence to grow up more as a person.

5.4.2 Hope instilled by the baby

The baby meant hope for the perinatal women and their husbands, and could stimulate the couples to take action, rather than remain passive during the difficult time after the earthquake. Participant E commented that the baby made the experience of an earthquake different.

> *I felt happy when I was pregnant, because of my baby. Nothing worried me if I thought of my baby; and because of the care I had received from other family members. Although others might care for me during the 5.12 earthquake, the feeling of this time was different, because I had my baby, I was so fortunate.* (Line 422-425)

She experienced the 2008 Wenchuan earthquake as a college student. During that time, she faced the disaster alone at school, and subsequently received great support from her family. Participant E also obtained strong family support in the 2013 Lushan earthquake. What was different that time, was that she was pregnant, which gave her happiness and anticipation for the future. She found the meaning to survive through the earthquake, and indeed fought against the negative impact of the disaster on her and the baby. Both participating husbands explicitly described the baby as the hope for their families. The husband of F said that the baby was the biggest hope for him and his family, describing it as "*the sustenance of life*".

> *Hahaha, simply speaking,* (the baby) *meant everything for my future, hope for everything, and also many other meanings. It meant us, it meant my everything. Losing them would not mean that I could not continue to live, but I could not walk out from the shadow for a very long time.* (Line 376-378)

Thus, for the perinatal women and their husbands, the baby meant hope for the future, and they would fight for the baby's well-being during a difficult time. For instance, participant M explained that she was more anxious about the baby's safety than her own, because the baby would have more possibilities in the future.

> (What I thought about most) *was running faster and faster, and I should keep myself away from falling things, which would do something bad to my baby, because he had not been born at that time. … I must not die now. It would be a pity if I had died during the earthquake. As you see, I was merely 20-something years old and had not given birth to my baby. I had not even seen my baby's appearance.*
>
> (Line 29; line71-72)

She felt that the baby was the hope, and he would have possibilities for the future. It would be a great regret if the baby had died during the earthquake. She would also feel sorry if she could not see her baby. Therefore, the perinatal women did their very best in hopes for the baby's future.

5.4.2.1 Courage instilled by the baby

In addition to love and hope, the baby could further instill courage in the women in confronting the difficulties they faced after the earthquake. It seemed that this love and hope provided them with the will and right impulses, but courage buoyed their strength and confidence to become stronger and to grow up. As described by participant D, she was more confident and had courage after the childbirth.

> *I did not fear so much after the childbirth. I felt that I would try my very best to protect my baby, no matter if anything bad happened. I would definitely take her away or use my body to withstand the danger*

immediately during the earthquake. Now, I don't fear of death as I did before. In the past, I was really afraid of my death. But now, I place my energy on the baby basically. I feel that I don't fear so much since my baby was born. I consider everything for my baby. So the baby has provided me with more confidence. (Line 327-331)

This participant thought that the baby instilled confidence and courage in order for her to fight against the fear of danger and death. Without the baby, she indeed had the will and impulse to survive, but she was not sure whether she could accomplish her goal. So she was still fearful and seemed lacking in strength, as well as dependent. It was their baby who gave these women the power that motivated them to pursue their will.

The existence of the baby had two functions in helping his/her mother: on the one hand, it constituted the motivator for coping and growth of the perinatal women, and on the other, it alleviated the women's negative psychological status. Although the literature did not directly indicate the positive functions of childbirth in alleviating negative psychological responses from other traumatic events, this study discovered such a process. And a number of studies targeting women with perinatal loss indirectly validate the irreplaceable role of a baby in maternal psychological health (Armstrong, 2002; Cote-Arsenault, Donato & Earl, 2006; Swanson, Connor, Jolley, Pettinato & Wang, 2007).

5.4.2.2 Coping for the baby

On the basis of inner importance for a perinatal woman and her family, the baby instilling love, hope, and courage further highlighted his/her indispensable role for the mothers. But their well-being, which was threatened by the adversities of the

earthquake, became a strong pressure and caused great stress for the women in trying to cope. Coping is defined as “realistic and flexible thoughts and acts that solve problems and thereby reduce stress”(Lazarus and Folkman, 1984, p.118). The love, hope, and courage instilled by the baby in the perinatal women during the adversities of the earthquake motivated them to actively adopt coping strategies for the benefit of their babies. Through the experiences of earthquake and childbirth, the perinatal women coped with the ‘disturbances of the earthquake’ and learned to devote themselves to the baby. These dedication behaviours (also engaging behaviours) were viewed as the necessary responsibilities of a mother (Stephenson et al., 2014). Nelson (2003) carried out a synthesis of nine qualitative studies and suggested that the primary social process of childbearing women was ‘engagement’. ‘Engagement’ was described by those qualitative studies as being actively involved and experienced in the presence of the infant (Nelson, 2003). Thus it is intuitive for childbearing women to actively cope with a situation with positive thoughts and behaviours, in order to engage with their babies. In contrast with other perinatal women, those who had experienced an earthquake would do more, because there were greater threats to the baby from the disaster, and they would do more to protect it. They adopted a series of coping strategies, which included ‘adjusting negative moods’, ‘ensuring safety’, and ‘earning more money for the baby’. The former two are specific for perinatal women after the earthquake.

5.4.2.2.1 Adjusting negative moods

The perinatal women believed that the earthquake would affect the safety and health of their baby indirectly through the mother, thus they adjusted their thoughts to reduce negative moods or emotions to ensure their baby’s health. According to

Lazarus and Folkman (1984), coping strategies are mainly divided into two types, which included problem-focused and emotion-focused coping. Emotion-focused coping is aimed at regulating emotions, including reducing emotional distress and increasing positive emotions. 'Adjusting negative moods' could be viewed as the emotion-focused coping strategy for the perinatal women after the earthquake, because they tried to reduce their distress and anxiety for the well-being of their babies.

Participant F realized in her first experience of the earthquake that panicking and rushing to escape would probably cause injury to herself, as well as indirectly to the baby. During the second earthquake, she felt that she must keep calm to prevent herself from falling, thus protecting the baby.

> *I experienced the earthquake on May 12* (2008)*. I accumulated experiences from that earthquake. For this first earthquake, we had not experienced any earthquake since our childhood. So we had more experiences when facing the 4.20 earthquake* (2013) *after the 5.12 earthquake. We knew that the earthquake was occurring when the house was shaking. At that moment, I told myself, ouch (sighed), I should not be panicking or anything else, and I should treat it calmly and avoid anxiety. …… If the ground shook severely, I should wait until it stopped. Especially at the time of my pregnancy, I should not run in a hurry, should I? I could not run when carrying a baby.* (Second interview _ Line 17‐21; line 27-28)

Although 'being there at her side' of her husband played a significant role, the baby was a very important factor for this participant in telling herself to stay calm and not

rush. She thought that waiting until the shaking stopped, and escaping later, would contribute to the safety of both her baby and herself.

The perinatal women also thought that their negative moods during pregnancy would cause negative psychological results or affect the personality of the baby, with their fluctuating endocrine system. They would adjust their moods for their babies. Participant J was busy rescuing her severely injured husband after the earthquake and felt increased fetal movement. After her husband was settled in the hospital, she began to tell herself to calm down.

> *When we arrived at the hospital, I began to tell myself to calm down, because I was afraid that my negative mood would affect the baby. He was irritated almost all day. I felt that the fetal movements increased dramatically.* (Line 160 – 161)

These participants clearly indicated that the baby is the key moderator, and the courage instilled by the baby stimulated them to adjust their emotions and moods for coping.

5.4.2.2.2 Ensuring safety

After the earthquake, the perinatal women demonstrated a series of behaviours to ensure their safety, which included escaping from danger, looking for safe environments, acquiring health information, eating nutritious food, reducing social activities, and reducing work. Ordinarily, pregnant women would also adopt the latter three behaviours, which were the general intuitions of a mother. Particularly for those experienced in an earthquake, escaping from danger, looking for safe environments, and acquiring health information were major focuses for the women.

The perinatal women would escape for the baby, without considering other

family members. The brother of participant J lived next door to her. When the earthquake struck, she only thought of her baby and escaped alone, without heed for her brother. Although she felt a little guilty after that, she found it reasonable to escape to ensure the safety of the baby.

> *My brother lived next door to us. Then I ran first downstairs, and he ran after me later because he first went to my bedroom for me. I also wanted to find him. But I felt I could not find him because something was falling down in the living room, which was located between my brother's and my room. So I ran downstairs. Because I thought that I was pregnant, I was selfish and ran immediately to protect the little life in my belly.* (Lien 37-42)

As she described, she would have gone for her brother if not for her concerns about the safety of her baby. When balancing their behaviours, the perinatal women would first choose the safety of the baby.

Many participants mentioned that they worried about and indeed looked for safe environments for their babies. The earthquake caused risks to life in their original houses, which made the perinatal women (especially those close to delivery) seek a safe and comfortable place for the baby after the delivery. From participant R, I saw her struggle to find a safe place for her baby.

> *During that time, I was not afraid of preterm delivery, because it was close to the pre-production period. I only worried about what we should do if the earthquake occurred again and caused damages to us. I stayed in Hanyuan, but I struggled with myself: Should I give birth in Hanyuan or in Yan'an? In Ya'an, we lived on a high floor, which also*

worried our family members (it is hard to escape). *However, the environments for delivery in Hanyuan were not as good as in Ya'an. I also worried that the baby would not receive good health care in Hanyuan. We didn't have a high quality neonatological department in Hanyuan.* (Line 86-91)

This participant eventually chose Ya'an as the place to deliver her baby because it offered better health care services. A safe place for the unborn baby was one of the most concerning problems for these pregnant women after the earthquake.

Acquiring health information was another coping strategy adopted by the perinatal women in order to ensure safety. After the earthquake, they did not know the health status of the baby, which caused them further anxiety. They would go for a prenatal examination to acquire health information. Under ordinary conditions, pregnant women would simply go the hospital for a regular examination, which is once a week at most. However, the women who had experienced the earthquake felt it was more urgent to acquire health information about the baby. After the examination, participant J felt relaxed and began to care for her injured husband.

Two or three days after the earthquake, that hospital (where her husband was hospitalised) *arranged some obstetrical examinations for me. The examinations indicated that I was good. Then I felt relaxed and began to take care of him with all my heart. There was nothing else.* (Line 161-164)

Apart from physical examinations, the perinatal women even requested to be admitted into hospital earlier than usual, in order to ensure the health of the baby. Participant L was an example.

I went to the hospital half a month before the pre-production period. The doctor told us that I was normal in my physical health, and that I should wait. But we, the whole family, were anxious. Finally, I had a C-section one week before the term through my relatives. (Line 309-312)

5.4.2.2.3 Earning money for the baby

'Earning money for the baby' is not unusual for perinatal women. This is an intuition for a perinatal woman, which could help her to mature and become a mother. An earthquake would increase the difficulties in attaining these goals. Nevertheless, the women tried to create a high-quality growth environment for the baby, against all odds. For example, the earthquake and childbirth increased the economic burden on the family of participant F. She felt stressed and tried to earn more money, regardless of the risks from the earthquake.

So the most important thing for me was to earn more money. I have two children, and earning more money could buy them houses in the future. So I don't care about whether there is an earthquake in the place we work. (First interview _ Line 538-540)

In contrast with those who had not experienced an earthquake, these perinatal women carried a greater burden after the earthquake. However, their wish to provide a high-quality growth environment for their babies motivated them to confront difficulties and work hard to earn money for the baby.

The manifestations of 'ensuring safety' and 'earning money for the baby' are closer to the meaning of problem-focused coping (Lazarus and Folkman, 1984), which is defined as strategies used for solving problems. In these two ways of coping, the women focused on solving the actual problems that emerged from the process of

overcoming the disturbances of the earthquake, and striving for the benefit of the baby. Nevertheless, no matter what kind of coping strategies the women adopted, the baby was the crux that resulted in their coping with adversity. Those coping strategies highlighted the functions of 'love and hope instilled by the baby' in helping these women to grow, and become mothers who could assume their responsibilities for the benefit of their babies.

5.4.3 Alleviating negative psychological status of perinatal women

The baby could help to alleviate the mother's negative psychological status by 'decreasing anxiety with the evidence of baby's well-being' and 'increasing the mother's perceived ability or confidence to protect after the childbirth'; and indirectly by 'sharing concerns, responsibility, and workload in caring for baby with other family members', 'improving family cohesion', and 'being privileged in others' treatment because of the baby'.

5.4.3.1 Decreasing anxiety with the evidence of the baby's well-being

There is an old saying that "no posterity is the greatest unfilial act towards ancestors". Thus, Chinese people place great emphasis on posterity. Especially in the remote countryside, children are the major force to support their parents when they are old, because of a relatively insufficient social security system (Pan, Chen & Liu, 2009). In this study, it was also found that all women and their families were concerned most about the well-being of the baby. As described by participant L,

> *I think my opinion was the same as my husband, which was that there should not be any danger to our baby. … From my own feelings, being there together and the baby were most important to me. What I hoped*

for was safety, the safety of my baby, and then the whole family living together over there. (Line 327-332)

The interview with the husbands also indicated a similar emphasis on the baby's well-being.

Because she was pregnant at that time, I asked her not to run or the baby might be hurt. If the baby was hurt, we would not know what to do. I was over 30 years old, I didn't know what I could do if we lost the baby. Haha. … What I thought of first were her and the baby, oh. Anyway, what I considered first, was them. If I could get them out, I was ready to die. It was the situation. Haha. … (shyly smiled)

Researcher: *What were your feelings about the baby at that time? What was the meaning of the baby for you?*

Baby? Any meaning? It was the sustenance of all my life.

Researcher：*Sustenance of "all your life"?*

Oh, sure. I haven't had a baby until in my 30s, so I felt very happy. The baby born at my age, in my 30s, must be the sustenance of all life. It must be, mustn't it? (Husband of F _ Line 28-30; Line 59-61; Line 165-170)

The baby was one of most important people for both the perinatal women and their family members, because it represented the "sustenance of life". Thus the perinatal women were most anxious about the well-being of their unborn or newborn child at a dangerous time, both during and after the earthquake. After the earthquake, pregnant women might go to doctors to reassure themselves about the health of their unborn child. With medical confirmation of the baby's well-being, the mother's

negative psychological symptoms, such as anxiety and fear, could be alleviated. Participant U left with her family members for Chengdu the day after the earthquake, and her most urgent activity was to check the health status of the baby.

> *Of course there were, but I could not remember too clearly. I just wanted to find a hospital and a doctor, and get into the hospital. Being admitted into a hospital could make me feel relaxed. Because the uterus contractions had become more frequent when I arrived at Chengdu, I wondered whether the earthquake had a certain impact on him. I could check the health status of the baby and deliver whenever something bad happened. I just wanted to find out whether the earthquake would affect the health of the baby or not. So I thought that I would be reassured by being admitted to a hospital.* (Line 231-236)

After she was hospitalised at a large hospital, she felt completely relaxed and did not worry about anything.

> *Anyway, the doctor asked me to stay in the hospital and worry about nothing. I think the hospital would treat you in the same way. What they told me was to wait for the delivery with reassurance. My husband also said that it was relaxing to stay in the hospital. During that period, I felt calm. I think he thought that I didn't need any comforting.* (Line 260-262)

If the earthquake led to a negative result for the baby, the psychological status of the perinatal women would deteriorate in a negative direction. All participants in this study ultimately gave birth to healthy babies, because it was difficult to approach

those who had had a negative pregnancy outcome for theoretical sampling in this study. It may, however, be inferred from the first failed pregnancy experience of participant L that a negative pregnancy outcome was strongly associated with women's psychological status.

> *The first baby did not live because of suffocation during a C-section. So we were very anxious about this baby. …I didn't think too much about playing during pregnancy. I just hoped to give birth to this baby safely. I could not afford the trauma from losing a baby.* (Line 214-215; Line 295-297)

This participant had not recovered from the last sad pregnancy experience until this pregnancy and childbirth after the earthquake. As a consequence of the baby's well-being, the perinatal women would feel relaxed, alleviating their negative psychological responses, and entering into the phase of 'alleviating disturbances'. Since their psychological status would change with their baby's health status, the pattern of their psychological responses was not steadily directed to recovering, but was somehow fluctuating.

5.4.3.2 Increasing the mother's perceived ability or confidence to protect after the childbirth

The women delivered their babies during the phase of 'alleviating disturbances' and the childbirths could alleviate their anxiety by increasing their perceptions of their ability or confidence to be able to protect the baby. Participant D had significant manifestations of fear and anxiety after the earthquake, but was greatly relieved after the baby-birth, because she thought that her capability to protect the baby had increased.

After the childbirth, I was not afraid as before. I think I will try my best to protect my baby for whatever would happen. I will take her away immediately, or use my body to shield any damage to her. I do not fear death now. In the past, I feared greatly. But now I put my focus on my baby. Since the childbirth, there was nothing to be afraid of. Anyway, everything is considered for the baby. So the baby actually gave me a lot of confidence. (Line 327-331)

Most participants were alleviated in negative psychological responses after they gave birth to their baby, because they could see the health status of their baby directly. However, there were still some participants who showed increased anxiety after the childbirth. Participant L gave an example of increasing anxiety after the delivery.

Yes, I was more anxious after the baby-birth. Because I could take him away when he was in my belly during the earthquake, I did not worry too much about that. After his birth, I became anxious. (Line 194-197)

Although she became more anxious about the safety of her baby immediately after the delivery, her overall pattern of psychological status was still 'alleviating' with her gradual recognition of their safety, and with the help of family members.

The second stage was the period after the baby was born. At the time of one month after the childbirth, they cared about me greatly. They indeed cared about me a lot. I didn't have any negative emotions at that time. (Line 613-614)

The examples of two participants present the fluctuating psychological status of women during the 'alleviating disturbances' phase. Fluctuating psychological status was related to the concerns about the baby's well-being. However, when comparing

participant D with L, we find that overall, the perinatal women were alleviating their negative psychological responses with help from family members, and the eventual identification of the baby's well-being.

5.4.3.3 Sharing concerns, responsibility, and workload in caring for baby with other family members

After the childbirth, it was more convenient for the perinatal woman to share her concerns, responsibilities, and workload of protecting and caring for the baby with family members (e.g. husband), which could further relieve the stress on her and thus alleviate her negative psychological responses.

Before the childbirth, the fetus could be felt in utero by the mother, which made her feel more attached to her child. Although the husband might also be concerned about the baby's well-being, the father's involvement might not be as high as that of the mother. According to Bhatta (2013), the percentage of males in Nepal involved in antenatal care of their partners was only 39.3%. There is no study about the involvement of husbands in China, but a similarpatriarchal culture ina developing nation suggests that the involvement of Chinese husbands during pregnancy might be similar. The researcher, a senior nurse in perinatal care, also found that expectant fathers have little involvement before the childbirth, because they think their major responsibility is to earn money as the family breadwinner. Thus the expectant mother might place more focus and concern on the baby, which could lead to great stress on them before the childbirth. However, after the childbirth, the actual existence of the baby could make the husband more involved in parent-child interactions. Bhatta (2013) also found that husbands' involvement increased after the childbirth (47.9% vs. 39.3% before). The husband might share concerns about the baby, which could

make the woman feel more secure. As participant V put it,

> *The baby may bring motivation to him* (husband)*. He has changed a lot, and become more responsible. In the past, he liked going out and having fun, and often played late at night before returning home. Now, he has changed.* (Line 286-288)

She felt more satisfied with her husband because of his increased sense of responsibility after the childbirth. It was the baby who changed the concerning behaviours of her husband, and increased the happiness and satisfaction of his wife.

Apart from sharing concerns, family members could also divide the responsibilities of protecting the baby. The sharing of responsibility in protecting the baby could make them feel relieved in the stress and guilt of feeling they had insufficient ability to take good care of the baby. Participant Q commented that she felt greatly alleviated after the childbirth.

> *I didn't worry* (after the childbirth) *anymore, because the earthquake would do harm to him* (baby) *if it caused the same damage to us and buried me. I was afraid of having any problems or accidents because of the earthquake. Generally speaking, the accidents I worried about most did not occur and the baby was born healthy.* (Line 242-245)

She clearly indicated that her stress before the childbirth was derived from her worry about the potential impact of the earthquake on the baby. She felt that the disaster could injure her baby indirectly through causing harm to her. She would feel guilty if the earthquake harmed the baby through her as a 'moderator'. Then, when asked about the reason that she was able to alleviate her stress after the delivery, she explained her feelings of being relieved of her responsibility to protect and take care

of the baby.

> *There are no responsibilities for me* (after the childbirth)*, haha. So I felt happy and relaxed from that time onward. Then my baby was fed with assistant food and formula; it was none of my business, haha.* (Line 427-428)

She thought that if the baby was not protected or properly taken care of, she would not assume the responsibility alone. The same situation could also be observed with participant F. She explained that her greater stress before the earthquake was from the commitment to her husband, and she would feel guilty if she could not protect the baby during her pregnancy.

> *At that time of being pregnant, I feared that he would be affected* (by the earthquake)*. His father was around 37 years old and had not had his own baby, as you see. I would feel guilty towards his father if I lost the baby because of my hurry to escape. I felt stressed, because his father had not had his baby until he was in his 30s. After the childbirth, I didn't fear anymore, because there was a baby with me. After all, even if there were any earthquakes, I would ask his father to take him away first. Anyway, I have given birth to a baby for him. I would not feel sorry or any regret. Can you understand me?* (Second interview _ Line 153-159)

In her opinion, bearing and giving birth to a baby was her responsibility to her husband. Before the birth, she was the main person in-charge to protect the baby, because she was carrying it in her body. After the birth, her responsibility to her husband was fulfilled and the major responsibility for protecting the baby was shifted

somewhat to her husband. Thus, she felt satisfied with her own devotion in protecting the baby after the earthquake, and relaxed about sharing the responsibility with her husband.

Furthermore, family members could also share some of the workload of caring for the baby, helping bring relief to the mother. Participant V was touched by the meticulous care of family members, and thought that everything went smoothly. Then she felt relieved.

> *His relatives were kind to me. During hospitalisation, his aunt even came to scrub me. They took care of my baby and me before my mom arrived here. I was moved greatly. I felt dirty after the birth, so what they did moved me a lot. Anyway, they were very kind to me, although I am an 'outsider'. In general, everything went through smoothly.* (Line 304-308)

In contrast, participant M did not feel as good as V, because of the heavy workload in taking care of her baby. She described that her temper became particularly bad after the childbirth. When asked about the reason for her poor temper, she explained that,

> *I just felt fretful, very fretful after the childbirth. The baby could not leave me for even one moment after the birth. I did not have any leisure time and felt fretful.* (Line 279-280)

Therefore, the sharing of concerns, responsibility, and workload of protecting and taking care of the baby by family members could relieve perinatal women's stress, and help to alleviate their negative psychological responses.

5.4.3.4 Improving family cohesion

Since posterity is highly valued in most Chinese families, childbirth is one of the

most significant events for women and their families (Gao et al., 2015). The childbirth could ensure the gathering of family members and consequently increase family cohesion. A number of researchers (Cervera, 1994; Claxton & Perry-Jenkins, 2008; East & Chien, 2010; Nomaguchi & Milkie, 2003) reported that the birth of a child could bring greater intimacy and closeness to family members. The perinatal women would feel happy and relieved, with better family cohesion or interpersonal relationships between other family members and themselves. During her pregnancy, participant E felt happy with the focused attention from family members due to the baby. Her family members stayed with her with the same goal of taking good care of mother and baby.

> *It was amazing during my pregnancy because there was a baby in my body. In addition, I could feel that the whole family was concerned most about my belly. I felt that the whole family revolved around me, which gave me a taste of happiness.* (Line 447-449)

With this feeling, E could turn away from the fear and stress brought about by the earthquake.

After the childbirth, family members approached and tried to take care of the woman and her baby, because they thought highly of the baby. For example, the husband of G had not returned home until the time of the childbirth. He worked in Beijing and did not return, even when the earthquake occurred. Other participants also mentioned that the baby brought happiness to the entire family and increased family cohesion. As participant S indicated, the baby's function was as the moderator for the improvement of family cohesion, because of the common goal to protect him/her.

My baby made us want to protect her better. Then this also motivated the improvement of family cohesion. (Second interview _ Line 32-33)

The baby instilled happiness in the perinatal women and their families by bringing them together, which could please the women and help to alleviate their negative responses.

5.4.3.5 Being privileged in others' treatment because of the baby

Because of the baby, the perinatal women were more vulnerable in their role, and needed more help than ordinary people after a disaster. Thus, these women could be treated in a privileged manner after the earthquake. While there was a poor supply of food for everyone, participant U was given priority to eat because of her pregnancy.

Others, like those around me, provided special care to me because of my pregnancy. For example, if there was nothing to eat or the food was insufficient, they would ask me to eat first. Then they would provide me with special privileges when they saw me. (Line 198-200)

In addition to food, family members and outsiders alike would prioritise the needs of perinatal women in other areas as well, such as clothing, residence, and health care. These privileges given by others could provide these women with a strong sense of being supported, relieving their stress, because they didn't need to be anxious about anything else other than bearing and rearing their baby. Participant V described that her family members all tried to satisfy her needs after the childbirth, and she did not need to worry about anything else.

I think I may be satisfied very easily. I didn't have any special needs, because my family members took good care of me during my

postpartum period. Although my appetite was poor, they even caught wild fish for me. I didn't have any special needs. Anyway, I was happy to have a baby. (Line 171-174)

This participant felt happy and satisfied not only because of her baby, but also because of the fact her family members made her needs a priority. Her family members could tolerate a simple dinner for themselves, but would try their best to satisfy her with a good meal. It was the love and care for the baby that made her needs a priority. Thus, being treated in a privileged manner because of the baby could also help in satisfying these women's needs and make them happy.

In conclusion, the baby constituted a source of power and strength in helping perinatal women after the earthquake alleviate their negative psychological responses through 'hope and love instilled by the baby' with'decreasing anxiety with the evidence of baby's well-being' and 'increasing the mother's perceived ability or confidence to protect after the childbirth'; and indirectly by 'sharing concerns, responsibility, and workload of caring for baby with other family members', 'improving family cohesion' and 'being privileged in treatment by others because of the baby'. Furthermore, the baby was a special being who injected a new meaning into the mother's life, with love, hope, and courage, which constituted the motivator for these women's coping and maturation. As a consequence of having a new baby, the mothers were motivated to actualise 'coping for the baby' by 'adjusting negative moods', 'ensuring safety', and 'earn more money for the baby'. With these strategies, which contributed to the entire dynamic, these women were alleviating the disturbances caused by the earthquake and fulfilling their responsibilities on their way to stepping in to their new role as a mother.

5.5 Summary

During the phase of ‘alleviating disturbances’, the perinatal women were alleviating their negative psychological status and restoring their disturbed daily lives, which was all caused by the earthquake. Throughout this dynamic phase, the subcategories of ‘being there of the family members’ and ‘love and hope instilled by the baby’ played significant roles. ‘Being there of the family members’ could help these perinatal women in ‘strengthening emotional attachment’, ‘obtaining daily care’, ‘reassuring’, and ‘venting negative emotions and gaining courage’. ‘Love and hope Instilled by the baby’ could also be a moderator in alleviating the women’s negative psychological responses, by providing evidence and assurances of the baby’s health, having family members share in the responsibilities and workload of caring for the baby, improving family cohesion, and inspiring family members to treat the women in a privileged manner. The baby could also be a trigger for the women to cope and explore new meanings and values in life by instilling love, hope, and courage in them. Eventually, these perinatal women rethought their lives, relationships with others, and rearing of their baby, entering into the final stage. During this stage,they accepted their new lives after the earthquake and childbirth, restoring their daily lives into almost before-earthquake status, and growing with new values about life.

CHAPTER 6 FINDINGS (PHASE 3)
GROWING UP WITH CHANGING VALUES

6.1 Introduction

'Growing up' is the final stage of the process of evolving meaning for the women bearing and rearing a baby over the period of a major earthquake. During this phase, these women were 'returning to normal daily life as before the earthquake'; 'being satisfied with new lives'; 'changing values'; and obtaining new understanding of earthquake, daily life, and rearing a baby. These were the results derived from the dynamic interactions of the women with the earthquake, through the process of 'alleviating disturbance' under the conditions of 'being there of the family members' and 'love and hope instilled by the baby', and with the even broader social support. In contrast to their status before the earthquake, these perinatal women evolved in their understanding of the meaning of their lives and family relationships, which represented their increasing maturity and 'growing up'.

6.2 Returning to normal daily life as before the earthquake

After a period of time of recovery, the daily lives of the perinatal women returned to the status of, or close to what it had been, before the earthquake. The most obvious manifestation was their elimination of the negative psychological responses, which were present in the first phase of 'being disturbed in life', and the second phase of 'alleviating disturbances'. As participant D described it, she walked out of the shadow of the earthquake for good after her baby was delivered and she returned to work. When she was asked about her feelings then, she replied,

I felt much better now. I totally walked out of the shadow of the earthquake. Since the time the baby was one month old, I gradually felt better. I become better, particularly after returning to my work. (Line 312-313)

In addition to the recovery of psychological status, other aspects of daily life, such as eating, transportation, etc. were eventually restored to normal status. For example, participant T felt that her daily life was restored after her family had returned to their repaired apartment and she had delivered the baby.

Then we repaired and refurbished our apartment, and we moved into it. I delivered our baby after we had moved back to the apartment. Gradually, everything was restored to normal status. It was the situation after the earthquake. (Line 127-129)

In section 4.4.4.1, this participant reported a "walking dead" scene, which frightened her, and she felt that the earthquake disturbed everything. After over half an hour of talking about the disturbances that she was suffering as a result of the disaster, she summarised her current status as having returned to normal life as it had been before.

6.3 Being satisfied with new lives

Although the women's daily lives (e.g. eating and commuting in the community) were gradually restored, the experience of the earthquake and childbirth injected some changes into their lives. For instance, when compared with life before the earthquake, their financial stress increased, because of damages to property, as well as job changes. The childbirth brought new roles to the women, which added responsibilities and stress. They had to deal with more difficulties. However, they

were becoming accustomed to their new lives rather than complaining about them.

Almost all of the study participants were satisfied with their current lives after both the earthquake and childbirth, though they described a long time of difficult recovery before arriving at that stage. When asked about her present feelings, participant S summarised that,

> *I am satisfied with my current life. Not experiencing any disasters, going to and returning from work every day, and living my days well, is already the best for me.* (Line 284-285)

I asked her to compare her status before her pregnancy and the earthquake with her current life, and she even commented, *"It is better than before"*(Line 339). She had found meaning from her negative experiences. Similarly, participant F found that the earthquake and the arrival of her baby had brought about better family cohesion, and as a result she felt happy and satisfied with her current life, even though there was more financial stress.

> *I am satisfied with my current life. For us, a peaceful life and harmonious family relationships are the best. We are a family, I feel satisfied with our harmonious atmosphere, and we have no disputes.* (Line 580-581)

Interpersonal relationships in the family are another important aspect of perinatal women's new lives. During the second phase of 'alleviating disturbances', they appreciated the emotional support of 'being there of the family members' over a difficult period of time. They were satisfied with what their family members did when they were there with them, either at their side, or in their heart. And all study participants indicated their appreciation for the devoted efforts of their family

members and friends in supporting them. For example, what participant F appreciated most was the companionship of her husband during the dangerous time of the earthquake.

> *For now, we have experienced life and death anyway. I feel that my husband is very good. I reckon. It was mainly due to such a big event (earthquake), he is very good because he can accompany me when facing life and death. Until now, I still think that my husband is really good.* (Second interview_Line 282-284)

Besides the accompaniment of family members during a dangerous time, the attentive care of the family after the disaster also satisfied the perinatal women. As participant L described it, she was moved by what her parents and husband did in taking care of her after the earthquake.

> *My mom prepared all food for me during my pregnancy. My husband also helped take care of me, and made me not worry about anything. I can concentrate to look after the baby and myself. … I have never hoped that they would support me. I am greatly satisfied*. (Line 278-279; Line 286)

From these stories, I found that the women were satisfied with their current lives, and gained a better relationship with their family members out of a terrible disaster. These are parts of the portraits of the perinatal women during the 'growing up' phase.

6.4 Changing values

Values refer to guiding principles about what is important and desirable (Grant & Rothbard, 2013), which have dominating power in driving one's life, associated with

both attitudes and behaviours (Blankeship, Wegener, & Murray, 2012). Since the stressful earthquake, the perinatal women had changed some of their values (e.g. values about relationship and about rearing a baby) accordingly. Their changing values, which formed a strong motivational continuum (Schwartz et al., 2012) for the women's growing up, were the result of their response to the disturbance of disaster, social support (especially from family members), and the baby. There were mainly three kinds of changing values, which were associated with 1) the earthquake, 2) the subsequent social support, and 3) the birth of the baby. All of these factors helped to alleviate negative psychological responses in the perinatal women, and represented a change in their understanding about the meaning of life. Their experiences further indicate their increasing maturity and growing-up.

During the first phase of 'being disturbed in life', the disaster caused great disturbance to the women's psychological status. This stressful event triggered them to reflect on the disaster and on survival. Their attitudes towards the disaster were mainly negative, but concurrently mixed with positive ones related to the favourable effects of improving interpersonal relationships after the earthquake. They obtained great social and family support, which made them experience the meaning of interpersonal relationships more deeply, causing them to change some of their thoughts and values towards the disaster and their lives. The birth of the baby during the second phase of 'alleviating disturbance' was a critical event for the women and their families. This milestone event caused them to reflect on rearing their baby, and allowed them to develop their values (and new values) about their role as mothers. All of these events, together with 'being there of the family members' and 'love and hope instilled by the baby', contributed to their 'growing up with changing values'.

And this was the ‘third’ phase, which actually began and had proceeded since the first phase of ‘being disturbed in life’.

6.4.1 Earthquake-associated changing values

As discussed in section 4.4.1, the women’s attitudes towards the earthquake were mainly negative, because of its dominating adverse impact. Nevertheless, the positive effects of increased family cohesion and improved interpersonal relationships as a result of the disaster also brought them a more positive attitude, and made them refrain from indulging in negative emotions such as sadness, fear, and irritation. The women began to see that there were both positive and negative sides to the disaster. Apart from this, some changing values linked with the earthquake were also observed in the participants. These earthquake-associated changing values included ‘shifting from instrumental to family and health focused’, ‘living in the moment’, and ‘making plans for future’.

6.4.1.1 Shifting from instrumental to family and health focused

The earthquake caused fear by threatening the safety of perinatal women and their loved ones, which made them aware of their vulnerability, yet thanking God for their survival and continuing life. The women valued the safety, health, and companionship of their family more than ever before. Participant Q said that money and honours could not change the destiny of his/her survival or death, and the most important and best thing to hold on to was to stay alive and live on in a healthy way.

> *You can imagine that you may be buried under the earth if the house had collapsed during the earthquake, even if you had a lot of money. You could not use the money. The same went for your so-called titles,*

honours, and aura. Everyone is equal in the face of the earthquake. So, no matter whether it was ordinary staff or high-level leaders, everyone was equal. There was even someone wearing pajamas going to work, haha. The president of my hospital was wearing pajamas to the hospital. It was so funny that he was wearing pajamas nine days after he returned from the earthquake relief work from Qidao. He was so busy that he could not even change his clothes. So I say that everyone was equal in the face of the earthquake. (Line 349-355)

This participant saw her value through the position of the president of a hospital after the earthquake. Believing that survival and health are more important than fame and money are common values among ordinary victims who had had a near-death experience after a disastrous event (Feder et al., 2013; Vázquez et al., 2005). This is the changing value associated with the earthquake, which made these perinatal women, after the earthquake, different from perinatal women who had not been in an earthquake. Participant Q further noted that, after changing from a typical pregnant woman to one who had experienced an earthquake, her values about the essence of life had changed.

(Before the earthquake) *It seemed that I had do things according to what the book presented. For example, I wanted to buy, and I wanted to buy, some special strollers and other beautiful things when I saw them in the book. But after the earthquake I saw that many things of mine had changed. It's better to be simple. Something that I viewed as highly important before, was not so practical now. As long as the baby is there with us, and we are healthy, being there with each other as a*

> *family, everything is good. There was no need to pursue many materialistic things. The cost for rearing a baby is indeed lower after the earthquake. For example, in the past I wanted to buy a German-made car. But now I think it is just enough for me to have a simple vehicle good for transportation. What is the need? I just don't need to pursue the luxury things.* (Line 364-369)

From her experience, it was not unusual for a pregnant woman to pursue first-class merchandise (e.g. a German-made car) for her baby and herself, which was materialistically instrumental. As a mother, she would rather devote the best of more than material goods for her baby. The experience of the earthquake also made her aware that 'being alive' and 'being there of the family members' with her were more significant factors in her happiness. As she described it, "*as long as the baby is there with us, and we are healthy, being there with each other as a family, everything is good"* (line 366-367). Vázquez et al. (2005) found that these family-focused values could help earthquake victims cope with their stress through bringing up positive emotions. Therefore, these women, as victims, began to understand the essential value of life as being simple and easy living with their family,as well as being safe and staying healthy together, rather than additional money and instrumental properties after the earthquake.

6.4.1.2 Living in the moment

Another major changing value following the earthquake was 'living in the moment'. According to the data analysis, this is a free and easy attitude towards life, which means enjoying one's current life and cherishing what one has owned; and trying hard for, but not imposing dreams to be realised. Participant Q described that

her values in life had changed to “living in the moment”. She defined it with the following words.

> *Actually, we human beings are insignificant to face big disasters, and we could not fight against those natural disasters. So living in the moment, enjoying everyday, dealing happily with everyday life demands, and working with a pleasant mentality are important. For now I feel well in my heart, and do not particularly value anything else more.* (Line 339-342)

This participant depicted “living in the moment” as enjoying her everyday life and gratefully accepting all that she had (e.g. life and work), no matter whether it was positive or negative. She also described herself as feeling well, and that what she experienced as the changes in her values could help alleviate her negative psychological responses. For example, before the earthquake, she had many material dreams, such as buying a prestigious car, which was described in the previous section as “shifting from instrumental to family and health-focused”. Sheevolved from herexperiencein the disaster, in that she now believed in her ability to fight against a disaster on her own. And she considered her dreams as unrealistic then, because the disaster destroyed her properties and made her feel powerless when faced with the losses, and increased her difficulties in attaining those dreams. She was uncertain about her life and future, which might have caused distress and anxiety (Hirshe & Kang, 2015; Jiang & He, 2012; Liao & Wei, 2011). However, through cherishing what she already owned, she could alleviate a degree of uncertainty. What she possessed was still there and definite. She began to value what she actually possessed, and found that she was blessed with the supply of many resources though facing the

disaster, and she felt happier and was alleviating her negative psychological responses. Another participant S further explained that leading a simple and practical life, without imposing dreams to be realised, was also about 'living in the moment', which made her feel calm and comfortable.

> *I just felt that human beings should lead a simple life. We don't need to pursue those unrealistic things, but live concretely in the moment. I might dream that I could do some great things, but now, living simply is good enough. You can see that it is just good enough for people to be able to live ordinarily.* (Line 457-460)

Although they believed there was no need to impose dreams to be realised on themselves, "living in the moment" does not mean they should not make an effort to live better. It means they should accept reality and carry on living simply, if the reality was not favourable in life. As participant P summarised her deeper feeling after the earthquake,

> *So I felt that many things in life have been pre-determined by fate. But then you could still probably change something, such as being hard working, so as to create your fate for yourself. But you could not and should not impose something. That's the meaning* (deepened after the earthquake)(Line 287-289)

Therefore, 'living in the moment' means enjoying one's current life and cherishing what we own. It also refers to working hard, but accepting any results with an easy attitude. Following the earthquake, with these changing values, the perinatal women would work harder for a better life than they had worked before. Participant U indicated her determination to create a better life.

I thought that we must strive to survive and not die here. It was so horrible at that time. I thought the house would have collapsed if it shook more for a few more seconds. What I thought is that we must survive, not to die then at all … and I thought I had to live better later. (Line 192-195)

This changing value is categorised as an earthquake-associated value, because it is derived from the recognition of the women's vulnerability and incapability in facing the earthquake. As participant L described it,

I just want to say that the earthquake last year was very frightening. Then, I found that the lives of human beings were vulnerable. Like what I said in general, human beings would have a time of being unhappy, and their lives were vulnerable sometimes. So if there is anything we should do, then we should. (Line 518-520)

The earthquake caused the women to change their values, from forcing themselves to pursue unrealistic dreams, into 'living in the moment'. This change could also help the women alleviate their negative psychological responses by assuring them of existing resources, and inspiring them to dedicate themselves to living steadfastly.

6.4.1.3 Making plans for the future

The changing value of 'making plans for the future' was derived from the life disturbances caused by the earthquake. The perinatal women felt uncertain about their lives in the difficult context of the earthquake. In order to cope with the disturbances brought about by that uncertainty, these women altered their values towards their plans for the future. Participant P changed her view about making financial plans.

> *I had a deep sense about what Xiao Shenyang (a famous comedy actor) said. He said that money was useless when an earthquake deprived us of our lives. After all, the probability of earthquake was not high, but ironically what could we do if we did not have money and the earthquake did not strike? I had a deep sense about it. Whether one is successful or fails to sustain lives within a thin line. So I strongly urge you to plan for yourself, especially to make financial plans. Health needs also affect me greatly. You must emphasise a savings plan. You can see that the government could not help you too much. You can only believe in yourself and some money will partly support you* (Line 251-257).

This participant changed her values about future planning because of the earthquake and poor social support from government, and she shifted from going from "paycheque to paycheque" to a person who would save a certain amount of money regularly.

Besides a financial plan, perinatal women made other plans in preparation for another possible earthquake. As participant R described it,

> *Then after the earthquake, my family members carried a bag, packed with almost all necessities. We should prepare for an earthquake. There is basically water and dry food in it. They carry the bag because the whole family will rely on it if an earthquake occurs again* (Line 132-134).

These changing values could help these women become better prepared, and increase their resilience in facing unknown stressful events.

6.4.2 Changing values associated with subsequent social support

During and after the earthquake, because of their pregnancy, the perinatal women obtained the best of care from their families and other concerned people. This support not only touched and satisfied them emotionally, but also made them rethink and change their values towards life and their relationships with others. According to the participants, those changing values mainly included 'believing in a better life with hard work', 'cherishing family relationships and love', and 'actively giving back to others'.

6.4.2.1 Believing in a better life with hard work

Although there was a relative shortage of resources after the earthquake, the social support that the women obtained from their families and community assured their basic living needs were met. Those women felt reassured and could focus on nursing their babies and looking after themselves without worrying about other issues, such as earning money or acquiring food for the family. Furthermore, they were able to more easily attain their goals with help from others. This condition has been described in the section, 'being there of the family members'. The perinatal women believed that although they were insufficient at creating a better life on their own, they could accomplish it with the support and help of others. Participant A was greatly worried about her family's future life because of an increased financial burden, the result of the damages of the earthquake, and the medical cost of her father's disease. Immediately after the earthquake, she doubted her ability to make a better life. However, she was the youngest sister in her original family and received care from her elder brothers and sisters over the period of the earthquake. With their help and her own hard work, she gradually repaid most of her loan after the earthquake and

her childbirth. She was then able to believe in being able to achieve a better life through hard work.

> *The major problem now is the shortage of money. Nothing else troubles us. But it is good that we could borrow money if we wanted. So if we go to work and work hard, we can earn money and make our lives better* (Line 681-683).

These changing values increased perinatal women's confidence and could stimulate them to actively pursue a better life. Furthermore, if her brothers and sisters had not supported her instrumentally and emotionally, she would have been anxious about her future life, which might have discouraged them. In contrast, participant K was not fortunate because her husband was killed in a traffic accident after the earthquake. Originally she was carefree thanks to family support after the earthquake. But after the death of her husband, she had to assume all of the burdens of the family. She was concerned, with doubts about a better future life.

> *I don't have any way* (to create a better life) *and must take care of my daughter, because I can't leave her. I just say to myself let's see whether it would be better after the Chinese New Year (in a sceptical tone). Or I may start a small business and slowly muddle along with my life. But my educational level is not that high, so I don't have too many things I can do* (Line 589-591).

Although she still returned to work, it could be inferred from her sense of helplessness and doubtful voice about her pessimism about future. The women's beliefs in their efforts at realising a better life for the future was associated with whether they would

receive instrumental and emotional support from their family and social network.

6.4.2.2 Cherishing interpersonal relationships and love

Family support, during and after the earthquake, induced the women's deeper understanding of the meaning of family relationships and love. The perinatal women presented their greater preferences for cherishing their loving relationships with family members. Participant U thought that it was true love that drove her husband to protect her during the earthquake, which stimulated her to cherish their relationship and love in their family life together.

> *Since we experienced the important juncture of life and death, the family relationship has become more important. I think this is my greatest feeling. Whenever I quarrel with my husband now, my father-in-law would ask us to stop for the sake of the family relationship. After all, my husband commits his life to care for us. Sometime, each of us retreats a step, and all will become well. That's my deepest feeling for the time being.* (Line 108-113)

Through the support she received during the earthquake, participant U thought that her husband loved her very much, despite some quarrels between them. She understood that love and a good marital relationship was about accepting and supporting each other. And she cherished the family relationship even more. Apart from the marital relationship, after the earthquake the perinatal women also felt more attached to people in the community. Participant T described that the instrumental and emotional support of good-hearted people in the community had made her understand caring relationships in the community more deeply.

> *Another deep feeling was about interpersonal relationships. The*

victims were more concerned about that and thus supported each other in face of the disaster. ……Unknown individuals gathered after the earthquake, talking to each other and discussing things, and were concerned about each other. They showed their unselfish love by bringing you some small necessities such as toothbrushes, toothpaste, and even sanitary napkins and washing powder. All of those things represented interpersonal care in the world, which had all been brought about by the disaster. (Line 3444-345; line 353-356)

With this deeper understanding of interpersonal relationships and the love and care that accompanied them, participant T became more appreciative of her relationships with others, including her family members and strangers in the community.

6.4.2.3 Actively giving back to others

The support they received from other people brought these women a sense of owing others, which directed them to appreciate and give back to others. One way to give back was to devote their efforts to helping family members as their abilities allowed. For instance, when the interviewer asked about her feelings concerning family support, participant B answered that she felt happy and wanted to give back to her parents by providing more companionship to them.

I felt happy about their support. I want to give back to them, though I don't have too much money to support them instrumentally. In any case, I accompany with them more. I return home immediately after my work everyday now. Then I will take my baby to my parents' house because they live near us. Compared with being there with them less

before the earthquake, I became more attached to them after the disaster (Line 386-391).

No matter whether it was in the form of money or emotional companionship, this participant gave back by being present with her parents, and helped them more actively than before the earthquake.

Another way to give back was to help strangers in need of help, which represented a higher level of giving back, because the pregnant women considered the entire community to be helpers for them during the earthquake. There was an obvious tendency that these participants wanted to help others more after the earthquake. Participant T thought there was no definite reason but love, that could explain the help she received from volunteers and other kind-hearted people. This inspired her to devote more care and concern to her students after the earthquake.

Unknown people, including outsiders, were particularly friendly. Many people, especially kind-hearted ones, came to us because there were primary and middle schools here. Our living conditions were really poor, and these strangers even came here to help us. … I felt that was it really difficult for them to be here. They gathered after the earthquake, talking to us, discussing things with us, and were concerned about us. They showed their unselfish love and care. So I want to return my concerns more to them (her students)*. You can see that those volunteers cared about us unselfishly. So I should be more concerned about my students unselfishly, and help them succeed.* (Line 348-350; line 353-355; line 621-623)

Participant M also mentioned that she paid more attention to unknown people who

experienced other disasters and were in need of help.

> *When there was an earthquake, I would acquire relevant information such as the status of victims through the Internet. For instance, we didn't know where to donate money. I would also pay attention to the use of donated money and see whether it was actually used for the victims. Anyway, I need to know about how to donate money to victims. I think we should help others, because I obtained help from other people too during the earthquake* (Line 360-363).

This participant was rarely concerned about other people outside of her family before the earthquake. It was the social and other supports she received, both during and after the disaster, that made her pay attention to others in need of help. She was determined to help others more actively.

6.4.3 Baby-associated changing values

As described in section 5.4, the bearing and rearing of a new baby was a significant event for perinatal women and their families over the period of the earthquake. The earthquake experience triggered the women to think about their roles and induced changing values related to rearing a new baby. After the childbirth, they were not only wives to their husbands, and daughters of their parents (most of these were the roles where they were accepting help from others), but also mothers who should devote themselves more to giving than accepting. Their changing values associated with their baby included 'being more responsible', 'being there with the baby', and 'being tougher', which helped them feel assured in their role as a mother as well.

6.4.3.1 Being more responsible

The baby was insufficient at protecting and taking care of himself or herself, and was mainly dependent on others to grow up. The perinatal women were the persons responsible for providing care and protection to them. After the childbirth, the perinatal women felt more responsible and wanted to devote all of their efforts to their babies. When the interviewer asked participant S about the meaning of the childbirth for her, she described that the baby had become her focus in life, which made her more responsible.

> *I am more responsible than before. Then I would care for her non-stop. I slept and she could even stay on my arm all night. I was afraid that she would roll off (the bed). Sometimes my arm was numb, I still waited for her sleeping there. I was afraid that she would roll off, or kick off the quilt. So I let her sleep on my arm and fixed her here. I was really anxious about her condition. If she caught a cold, I would feel anxious even when I was working* (Second interview _ Line 183-187).

This is a very common change for a new mother, who tends to prioritise the child's well-being (Read, Crockett, & Mason, 2012). Although the perinatal women, after the earthquake, revealed the same pattern of increasing their sense of responsibility, the degree to which they did so was different from that of perinatal women in normal life. For example, a qualitative study on women's experience of motherhood (Read, Crockett, & Mason, 2012) indicated that some women would identify their own needs as important when considering motherhood, rather than completely prioritising the baby's well-being. It seemed that the sense of responsibility of those women was relatively reserved. In contrast, all participants in this study indicated their devotion

to their babies. It may be attributed to the experience of earthquake, which made them cherish life more. As participant R put it,

> *My baby was not born before the earthquake. She was born after that. We felt greater responsibilities because there was a new life in our family. In the past, what I thought was always about myself. But after the disaster, what I thought about was all about my baby. Anyway, I thought that it didn't matter if the earthquake caused damage to me, but she could not be hurt. I also had the same feeling during my pregnancy, but after she was born, the sense of responsibility became even stronger* (Line 186-189).

Furthermore, she compared herself to one of her friends, who had delivered a baby before the earthquake. She found that she had a higher sense of responsibility.

> *A friend told me that there was nothing to worry about after the earthquake. She had no sense of it, because she had delivered her baby before the earthquake. The earthquake occurred during her postpartum period, and she felt nothing. She said there was no big deal after the earthquake. I thought that her attitude was very interesting* (Line 351-353).

According to participant R, it was the specific experience of bearing a baby during the time of the earthquake that made her more anxious about her baby, and she had a greater sense of responsibility after the earthquake.

6.4.3.2 Being there with the baby

Women would anticipate their children's future and make plans to bring them up, early in the pregnancy. After the earthquake, the perinatal women changed some

of their values about rearing and educating their babies, most of which were related to the 'shifting from instrumental to health-focused'. For instance, before the earthquake, they imagined they would try their best to cultivate their children into becoming great people by investing greatly in their education. However, their original attitude towards such a direction was changed to simply hoping for their babies' well-being. Among various changing values about raising babies, the most representative one was 'being there with the baby for rearing'. This changing value could be viewed as one of the consequences of the main experiences from the earthquake: 'being there of the family members' and the childbirth. After the earthquake, the perinatal women viewed 'being there of the family members' as more important, finding this to be the best support for themselves, as well as for their loved ones. The women also rethought their direction of bringing up their children, and decided that simply 'being there' was the best approach for raising their children. Participant H's experience could serve as a typical example. She already had an elder daughter before her pregnancy during the earthquake, and her past values in terms of raising a child could represent the values of ordinary women. She thought that working hard to earn money was the best for her daughter. But after the earthquake and the birth of her second baby, she disagreed with her previous values about child rearing.

> *It seemed that I was stricter with her* (elder daughter) *after the earthquake. I thought I should place more stress on her and discipline her in every aspect. I would not discipline her in the past, but it has changed now. I felt that I missed a lot of something* important (in her rearing) *in the past. But I finally find the truth of it after I care about them now. … I do not leave them* (babies)*. I may even take them*

together to work in other cities. Perhaps I will not take them now with me, but immediately after I am stabilised in my work, I will take them together. …… In the past, I thought I needed to do nothing but just earn money and send back money for her (Line 198-200; line 206-207; line 210).

Similarly, participant Q, as a primigravid woman, thought that providing the best instrumental environment for her baby was essential. But then, she felt that taking her baby out with her for travelling was better than instrumental support and materials provision.

I think that being there and the health of the baby, and being there of my family members, are enough for my happiness. Thus, I don't need to pursue other things. The cost for rearing was indeed lowered. …… I would rather save spending my time with my baby. For example, I would save money and then take her out to travel around when she becomes older. I want to take her to see the world, and I will spend more time and money for it. This is the change in my mind for this kind of spending, rather than the usual attitude of consumerism. (Line 366-368; line 369-372)

Although this participant thought of it as a change in her consumer attitude, it was essentially her changing in her values about how to raise her baby that drove the consumer attitude. She thought that being there with her baby and taking her out together to see the world was the best way to bring up her child.

6.4.3.3 Being tougher

The mission to protect the baby facilitated these perinatal women to become

more resilient after both the experiences of the earthquake and childbirth. In contrast with women who have not experienced an earthquake, who mainly receive caring from family members in a passive manner, the women after the earthquake thought more about the meaning of survival and motherhood, and presented a higher tendency to develop the characteristic of firmness. Although they might feel insufficient at protecting their babies on their own, they felt that it was necessary for them to become stronger and tougher in order to accomplish their goal. Participant I thought that it was important for her to become tougher during the earthquake.

> *I was also anxious about the unborn child. But I told myself that I must be tougher, which could protect him from injury* (Line 372).

According to this participant, being tougher could calm her down and allow her to get out of her own way, to protect herself and her baby. Similarly, participant P described the differences in her feelings towards the two earthquakes. It was the baby that made her psychologically tougher.

> *Because I shifted from being a student into an expectant mother, my experience and the psychological growth were different* (from that in the 2008 earthquake) (Line 54-56).

Ordinarily, pregnant women who did not experience an adverse and stressful event like a disaster, do not think about whether they need to be tougher, as those after the earthquake did, because things went relatively well for them.

In addition, after the disaster, perinatal women thought more deeply about life, seeing that human lives were vulnerable in the face of disaster. In order to protect and cherish such hard-won survival, they feel they should try hard and become stronger. Participant S described that she became tougher with her idea of life being

vulnerable as a result of the earthquake and childbirth.

> *The earthquake is part of the reason* (for my toughness)*. I have changed my values after the earthquake. I feel that life is hard-won, and it is really necessary for me to cultivate the little life* (the baby) *very well* (Second interview _ Line 218-220).

Therefore, the perinatal women tried hard to become stronger and tougher in order to protect and take care of their babies, during and after the earthquake.

6.5 Meaning of 'growing up'

In the period after the earthquake, the perinatal women returned to their normal lives as before the earthquake, which represented their recovery from the phase, 'being disturbed in life'. In addition to their 'returning' physically, they also grew psychologically, which included being satisfied with their new lives, changing values, obtaining a new understanding about the meaning of experiencing the earthquake, living for daily life, and rearing a baby. The latter two meanings represented the elevated levels of their maturity. Although those women did not explicitly indicate that their changing values were positive, it was inferred from the description of their changing values that all of these experiences actively induced the women to pursue a more meaningful life and relationships with others, rather than passively waiting for happiness. Most participants thought that they had grown up, in comparison with their past. Furthermore, in the following theoretical sampling, the interviewer asked the participants about the meaning of 'maturity' and 'growing up'. The participants responded that there were their changing values. Participant F described the experience of the earthquake and childbirth as a test that stimulated

her to grow up, and that she was able to handle stressful or emergent events calmly.

> *So I felt that it* (bearing and rearing a baby over an earthquake) *was a trigger for the growth of my life. How to say it, it means that you should handle any events calmly. If you cannot live with it calmly and have a clear mind, it is still troublesome and vexing. The key is to keep calm and avoid hurrying. This is what I summarised now from the experience of bearing a baby over the earthquake.* (Line 76-78)

The capacity to remain calm in the face of danger was similar to the changing values of being more responsible and being tougher. In addition, participant S also summarised maturity as 'assuming more responsibility' and 'being tougher'.

> *I just felt that lives were experiencing and experiencing more. Then you should adjust yourself to cope with them with a good psychological quality, which could prevent you from being affected by any events. Anyway, I thought that I became tougher with the accumulation of experiences over time. Then there was nothing special. Experiencing those things could make me deal with and sustain those and more events.* (First interview _ Line 426-429)

In addition, the women also believed that focusing more on health and family was a characteristic of maturity, which is also a changing value after the experience of an earthquake. When the interviewer asked participant R about the meaning (what is) of maturity, she described it this way,

> *I felt that everything was OK in the past. But the people's health and presence of my family members had now become more important. There was a change in values for my focus about life.* (Line 216-217)

‘Growing up’ is a product of the interactions between earthquake and childbirth. In particular, the experience of childbearing and childbirth might be the crucial factor. Rubin (1967, 1984) identified the attainment of identity as a mother as part of the maturational process. It was also suggested that the transition to motherhood was a way of providing an opportunity for growth (Mercer, 2004; Pancer et al., 2000). Through the literature, the meaning of ‘growing up’ was the identification of and assuming their role as mothers, and the changes in their thinking and way of life, about the events of their time and those around them. This is similar to the findings from the present study, and more evidence was sustained about the situation. Therefore, the changing values after the earthquake and the childbirth represented the maturing and ‘growing up’ of those women.

6.6 Summary

‘Growing up’ is the final stage of the evolving meaning, during which the perinatal women returned to their normal lives as before the earthquake. Apart from this, they were satisfied with their new lives and changing values as a result of their interactions during the time of the earthquake, the presence (being there) of their family members, and the baby. The changing values were earthquake-associated, subsequent social support-associated, and baby-associated, which represented the women’s maturing and growing up. Through the experience of the earthquake and childbirth, they reflected on their lives over that period, and eventually achieved a new understanding of the meaning of life, relationships, and rearing of the baby. It seems as though they broke through a cocoon and evolved into a more mature mother, with their evolving meaning after all of those perceived adverse events.

CHAPTER 7 FINDINGS – EXTERNAL CONTEXT OF THE FAMILY AND A SUMMARY FOR THE CORE PROCESS OF EVOLVING MEANING

7.1 External context of the family

The earthquake caused great disturbances, not only to the individual lives of victims, but also to the entire society. Social resources were curtailed and daily social order was in turmoil with the shock of the earthquake, which further affected the lives of perinatal women. For example, health services were disturbed and the birth plan of participant B was changed, because of the anxiety of the influx of wounded people and reduced resources after the earthquake. The earthquake also caused the suspension of industries and commerce, which in turn increased the economic burden on local victims. As participant I described, her husband had no work for a period of time after the earthquake. It also increased the burden of unemployment by damaging victims' work ability. The husband of participant J was severely injured, which caused them economic difficulty.

In spite of the disturbances, overall, society was supportive of the pregnant women, which made them thankful for the help of their community, government, and even the entire country. The help obtained from those systems included instrumental support (e.g.subvention for rebuilding, and relief supplies), emotional support (e.g. concern from volunteers), and spiritual support (e.g. uplifting and consoling words from the leader of the government). Most participants made positive comments, some of which will be presented in the following examples, on the support they received from their community, government, and the whole country. For example, participant G thought that the government helped them by providing relief supplies, which was what the government could do with its abilities.

The government provided tents for people whose houses were badly damaged. Then they provided subsidies for rebuilding houses. … From my perspective, the government had done what its ability allowed. I didn't mind that. (Line 609-610; line 614-615)

From an emotional and spiritual perspective, the pregnant women felt heartened by the encouraging words of unknown persons. Participant Q was moved by the concerns from the government leader.

During that time, Grandpa Wen (nickname of Prime Minister Wen) came to see us. My classmate was working in the Lushan hospital and took a photo with him. When we saw the photos, we felt that there were still many people concerned about us confronting the big disaster.

These instrumental, emotional, and spiritual supports made the pregnant women feel relief, because these things counteracted part of their loss. However, the external supports were limited, and could not satisfy all of their needs, or their major needs. For instance, although both the community and government provided subsidies for rebuilding, they were dissatisfied with the unfairness in the distribution of the money. As participant H commented,

The governments gave us 1,000 Yuan for simple repairs. They would give more money if you dismantled your house. However, the people in Jiaguan also obtained subsidies, even though they were not so affected by the earthquake. They still got the money and tents. We were more affected by the earthquake here, but we could not get enough tents. My daughter received only two bottles of water from her school. So I felt a little disappointed with the government. No one came to see and

console us (Line 325-329).

Participant J was disappointed because the subsidy was low and could not solve her major financial problem.

> *The government would provide a subsidy only if you dismantled and rebuilt the first floor of your house. There was only 20,000 to 30,000 Yuan for rebuilding. However, the money was not enough to solve the problem. Everything in Lushan now is expensive. Uh, the money they could obtain from the government was only 28,000, for some it might be 30,000. Our family, including my baby, had four people, and could only be provided with 30,000 at the most. So how could we build up a new house? So we had not repaired our house because of insufficient money. Our baby is just one year old, and we also worried about her every day because of the money (Line 324-329).*

The relatively limited support from the government or community made the women believe more in their families, and they thought they could change their plight mainly through the efforts of their families and themselves. Therefore, external supportas the context for the process of 'evolving meaning' helped the perinatal women to a certain extent, but was not the major force in facilitating the women to alleviate their negative psychological responses and grow up. It was essentially the family that played this very significant role in advancing the process of evolving meaning.

7.2 Summary of the core process

'Evolving meaning' represents a process of how the perinatal women recovered

and realised their own meaning in their lives, from the time of being disturbed by the disaster, through an overall alleviating stage of fluctuating psychological responses, to the period of growing up with an adaptation to new ways of living, and learning the meaning of survival after being pregnant and giving birth to a baby over the period of the earthquake and two years after.

During the first phase of 'being disturbed', the earthquake interrupted the women's daily lives, which included their living-conditions, eating, clothing, transportation, working, symptoms of pregnancy and medical services, birth plan, and leisure activities (section 4.4.1). Additionally, the earthquake curtailed family support to these women, due to decreased family resources and a reduction in the ability of families to provide support (section 4.4.2) - in spite of the fact that they were still the centre of their family's attention for receiving care and concern. These negative impacts on the daily lives and family support for these perinatal women, together with the threat of earthquake, caused them to be psychologically 'negative' towards the disaster and themselves (section 4.4.4). They felt fear, anxiety, nervousness, and irritability. Paradoxically, the earthquake also brought unimaginable "positive" effects to the women by increasing family cohesion and interpersonal relationships with others outside their family (section 4.4.3). These "positive" effects were attributed by the women to having more gathering time and a mutual understanding between family members after the disaster. This partly explains their positive values or attitude, such as becoming tougher, towards life as a result of the earthquake (section 4.4.6). In spite of the interspersion of this positive attitude, the overall impact of the earthquake was negative in the beginning; the women's lives were 'being disturbed' because of 'being disturbed of daily lives', 'being reduced of

family support' and 'experiencing negative psychological responses' with a sense of feeling insufficient and unconfident (section 4.4.5).

Later the women gradually restored their daily lives with external support (e.g. family members being there for them) and inner motivation (e.g. love and hope instilled by their babies), which occurred during the phase of 'alleviating disturbance'. 'Being there of the family members', which included 'being there at her side' (section 5.3.1), 'being there at heart' (section 5.3.2) and 'no sense of being there' (section 5.3.3), were the most crucial among all external supports for the perinatal women after the earthquake. 'Being there at her side' bore the most functions to help them in 'strengthening emotional attachment' (section 5.3.1.1), 'obtaining daily care' (section 5.3.1.2), 'reassuring' (5.3.1.3), 'being beneficiary for baby growth' (section 5.3.1.4), 'venting negative emotions' (section 5.3.1.5) and 'obtaining courage in facing dangers' (section 5.3.1.6). 'Being there at heart' carried weaker functions than 'being there at her side', yet still helped the women with 'strengthening emotional attachment' (section 5.3.2.6), 'reassuring' (section 5.3.2.5), and 'venting negative emotions' (section 5.3.2.2) through technology. 'No sense of being there' had the lowest and even a destructive effect on the perinatal women, and should be avoided. The inner motivator that could facilitate their recovery from negative psychological responses and obtaining a new meaning in life was 'love and hope instilled by the baby'. The arrival of a new baby, as a special situation, could inject new meanings of love, hope, and courage into mothers, which motivated them to adopt positive behaviours such as 'adjusting negative moods' (section 5.4.2.2.1), 'ensuring safety' (section 5.4.2.2.2), and 'earning money for the baby' (section 5.4.2.2.3) to cope with the disturbances after the disaster. The two major sub-categories ('being there of the

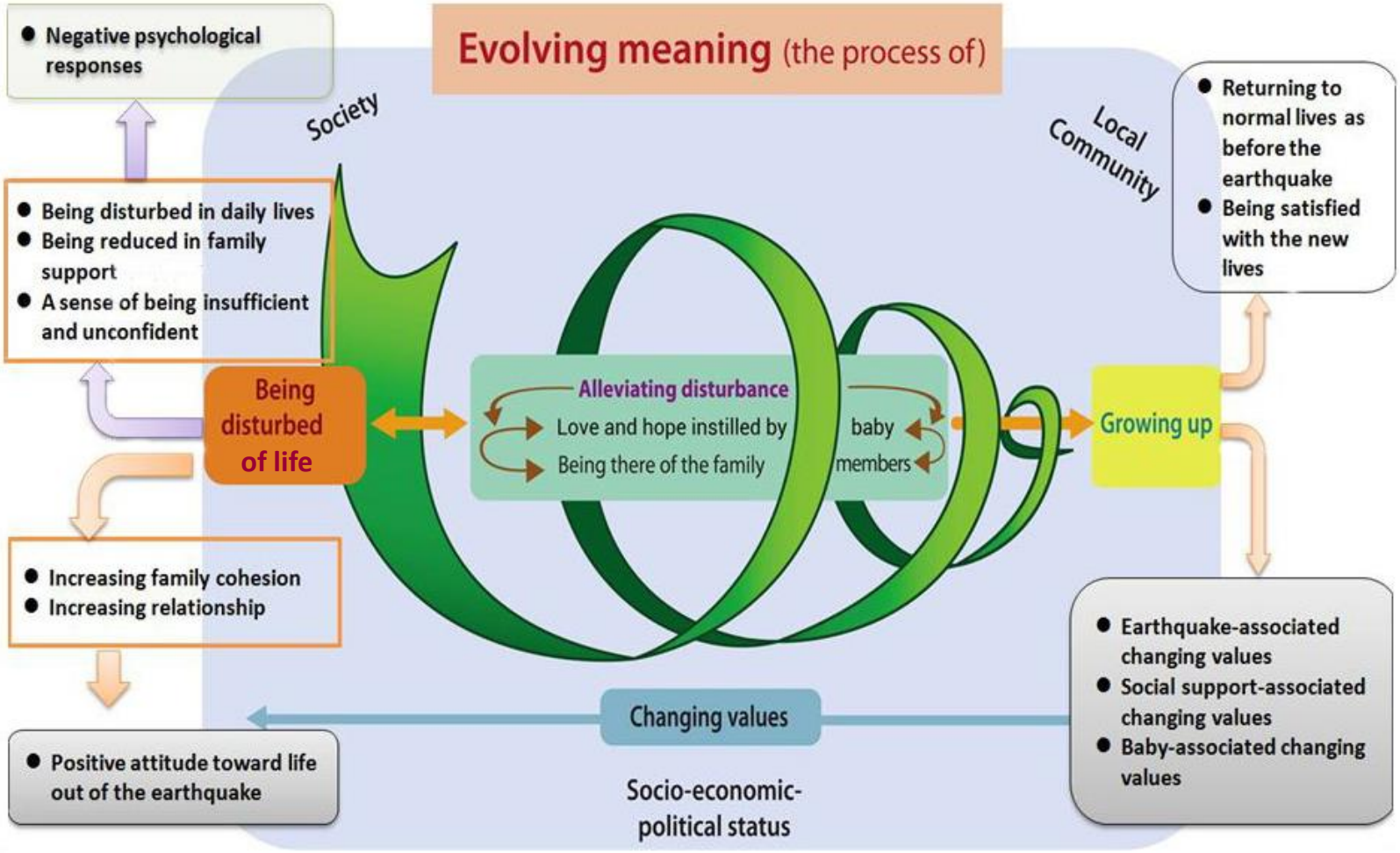
family members' and 'love and hope instilled by their babies') could also interact with one another and facilitate the women's recovery. The family members devoted a great deal of support to the women for the new baby, and made 'being there with' them their priority. On the contrary, 'being there of the family members' could make the woman appreciate their family members and try their best to protect the baby as the reward. In addition, 'being there' helped them understand the importance of companionship and changed their values about baby rearing (e.g. being there is the best way to raise the baby). During this phase there were fluctuations in the women's psychological responses, which were related to endocrine system changes, the increased stress of protecting their baby, as well as continuous threats from aftershocks around the time of childbirth. With the interactions of two major sub-categories ('being there of the family members' and 'love and hope instilled by the baby'), the perinatal women were motivated to cope with their negative psychological responses and gained new understanding of the meanings in life, relationship and child rearing. Although the women presented fluctuating psychological responses, and even returned to the first stage, it was an overall trend of alleviating these responses towards the final stage of 'growing up'.

During the final phase of 'growing up', the women returned to their normal lives as close as possible to what they had been before the earthquake; and obtained new meaning in their lives by assuming the role of a mother. Through this entire dynamic process, the perinatal women reflected on their lives, survival, and child rearing out of their experience, and eventually recognised the new meaning of their lives, which allowed them to transform into their role as a new mother (like breaking through a cocoon). The changing values included those that were 'earthquake associated',

‘subsequent social support associated’, and ‘baby associated’. These changing values represent the new meanings that evolved from the beginning of the process until the final stage of growing up. The entire core process is ‘evolving meaning’. The following diagram (see Fig. 6) indicates the process and the relationship between categories and subcategories.

For the findings of this study being described and outlined with data in each chapter (Chapters 4, 5, 6), the experience of perinatal women as such being represented by different categories in each phase of the ‘evolving meaning’ appear similar to some outcomes of other studies about survivors after other disasters, and perinatal women in general. However, the core process of ‘evolving meaning’, which uniquely represents the recovery and meaning-generating process of the population of childbearing women during a major earthquake, is rather different from others. The differences between the existing body of knowledge and the present one in this regard, and the implications of practice, are provided in the following chapter of discussion.

Fig.6 The whole process of 'evolving meaning'



CHAPTER 8 DISCUSSION

8.1 Introduction

Through the research process, as outlined in Chapter 3, the process of evolving meaning of women bearing and rearing a baby over the period of an earthquake was developed and described in detail in Chapters 4 to 7. The purposes of this chapter are to recap those findings, discuss the issues related to the process of evolving meaning, and to highlight the specific roles of family members, including the baby, during the process of perinatal women's recovering from and obtaining new meaning after an earthquake. The process of evolving meaning will be examined, and the implications for social and nursing practice focused on perinatal women after an earthquake are also provided in this chapter. The experience of conducting this study, and its limitations, are also summarised and delineated, which also informs recommendations for future studies.

The researcher of this study attempts to discuss the experience and family interactions of women bearing and rearing a baby over the period of a major earthquake, with the three subcategories of 'being there of family members', 'love and hope instilled by the baby', and 'changing values', and the three phases of 'being disturbed', 'alleviating disturbances' and 'growing up' as a theory developed from the participant data. Although the researcher used literature as a slice of data, the process was not derived from existing theories in the literature, which is consistent with the principle of the grounded theory approach (Glaser & Strauss, 1967; Glaser, 1978). Subcategories and phases of the developed theory represent the interactions that the perinatal women experienced with their surroundings in overcoming and recovering

from the adversities of the earthquake. All of those components constitute the sequences of a process within a specific context of childbearing and earthquake, and eventually push the 'being disturbed' women to a new life and new understanding of their relationships and baby rearing. Therefore, 'evolving meaning' represents the specific process that the perinatal women experienced during their difficult time after the earthquake, which was different from that of ordinary victims after a disaster or of perinatal women in general, who had not experienced an earthquake.

8.2 The category of 'being disturbed'

'Being disturbed' is the first phase of the process of evolving meaning, which represents the disturbances of daily life, family support, and psychological status of perinatal women during an earthquake. As depicted in Chapter 4,activities of daily life, such as eating, clothing, living conditions, transportation, working, and leisure activities were all disturbed. Family support was also curtailed by the damage caused by the earthquake. Both issues contributed to the negative psychological responses of perinatal women after the disaster. It has been described in Chapter 4 that the experience of 'being disturbed' was commonly found in other studies concerning survivors after disasters (Akason et al., 2006; Edwards, 2013; Feder et al., 2013; Katz et al., 2002; Stephens et al., 2013; Thornburg et al., 2007; Yilmaz, Cangur & Celik, 2005), which further consolidated the destructive and disturbing impact of disasters on survivors and perinatal women. However, there were different aspects of the participants in the present study compared to victims of other disasters or perinatal women in general who had not experienced a disaster.

These perinatal women would produce a higher sense of 'being disturbed' than general victims after a disaster. In contrast with general victims, the context of childbearing produced higher requirements in the normal daily lives of perinatal women after the earthquake (Callaghan et al., 2007; Veenema & Ebrary, 2013). For instance, the requirements for good nutrition and a safe residence are higher for pregnant women than for the general population, in order to ensure fetal growth and maternal health (Küllenberg de Gaudry et al., 2015; Liu et al., 2007; Sadovsky, 1998; Walsh & McAuliffe, 2015). These exceptional demands, mainly caused by the baby, relatively increased the sense of being disturbed and caused greater psychological and emotional responses, compared to general victims of an earthquake (O'Hara & McCabe, 2013). Apart from apprehensions about ordinary issues such as displacement, which are similar to those of general victims, perinatal women might develop greater uncertainty and anxiety for the safety of their unborn baby. A study on childbearing women during Hurricane Katrina (Badakhsh et al., 2010) described their rising feelings of disruptions in life with uncertainty about their pregnancy, medical access, and the future. In the present study, most participants indicated their worries about the impact of fast food, poor living conditions, and limited medical resources on the baby's health. A participant even changed her birth plan over worries about reduced medical resources due to the influx of other patients. These results implied that 'being disturbed' was a representative experience for perinatal women during and after a disaster, no matter whether it was a hurricane or an earthquake. What was different, was that the sense of being disturbed was higher in perinatal women after an earthquake than it was after a hurricane, because the affected aspects were broader than mere

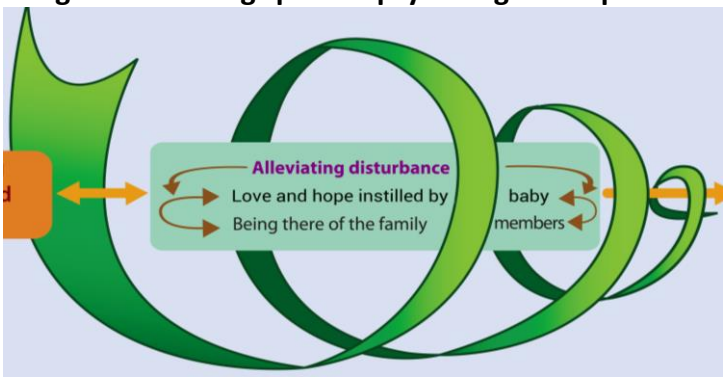
displacement and uncertainty (Badakhsh et al., 2010). As described in Chapter 4, almost every aspect of daily life was affected by the earthquake, which covered more issues - such as transportation, eating, clothing, and leisure activities–than the hurricane. In addition, the study after the hurricane (Badakhsh et al., 2010) did not include the impact of disaster on social support, especially family support, in the resultant categories or subcategories. In this regard, the comprehensive impact of disaster on perinatal women had not been disclosed. Family support could be an important part of women's lives affecting their psychological responses and attitudes towards life (Agostini et al., 2015; Emmanuel, St John & Sun, 2012). According to the present study, perinatal women actually experienced decreased family support in contrast with their status before the earthquake, yet ironically increased family cohesion, which could be viewed as emotional support. With the earthquake's contradictory impacts on family support, childbearing women held negative attitudes or values (at least in the beginning of the earthquake's aftermath), but these were mixed with somewhat positive attitudes towards the disaster as well.

In summary, perinatal women after the earthquake might be more taxed, in comparison with general earthquake victims, by its larger impact and the exceptional demands of life, and more disturbed than victims of a disaster such as a hurricane. For these women, the heavily taxing aspects included those activities of daily life and family support. The 'being disturbed' could be a category that represents the experience of perinatal women during and after the earthquake.

8.3 The category of 'alleviating disturbance'

'Alleviating disturbances' is a transition period during the process of evolving meaning after the earthquake, which represents the stage of women's gradually alleviating negative psychological responses. During this phase, the perinatal women received care, concernand support from their surroundings, as well as courage from the baby. With all this, the main pattern of negative psychological responses was alleviating. However, aftershocks occurred from time to time, which stirred up their psychological and emotional status, making them fearful and worried. The childbirth occurring in this phase increased the anxiety or fear of these women about the safety of their newborn babies. They felt it would be more difficult to protect their babies after the delivery, as described in Chapter 5. In general, the endocrine system varies greatly before and after delivery, which also increased the risk of negative psychological symptoms, such as distress, depression, and anxiety (Bahr, Martin & Pryce, 2001; Fite & French, 2000; Fleming et al., 1997). Given the varied endocrine system and the increased fear and anxiety as a result of aftershocks and the childbirth, negative psychological responses would not decline in a straight line. A waning spiral shown in Fig.7 better demonstrates the gradually decreasing, but fluctuating psychological responses of these women.

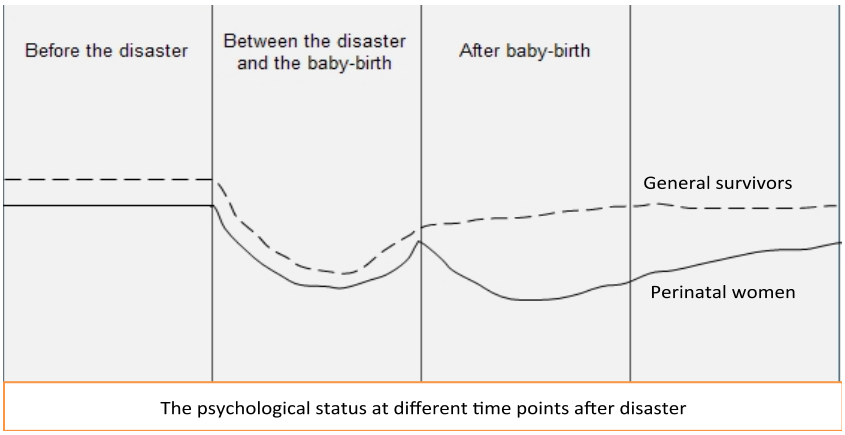
Fig.7 The waning spiral of psychological responses



Decreasing but fluctuating psychological responses represents the unique pattern of perinatal women after an earthquake, which is different from that of general survivors after other disasters. Surveys investigating the psychological status of survivors after various disasters merely identified the declining results of negative psychological responses (Lazaratou et al., 2008; Liu et al., 2013; Priebe et al., 2011; Xu, & Wang, 2012; Xu, Dai, Rao & Xie, 2016) rather than the process of alleviating. The studies aiming to explore the recovery process had also not revealed a fluctuation in psychological responses, as presented by the participants in the current study. A survey of adult Swedish tourists repatriated within three weeks after the 2004 Indian Ocean tsunami indicated that the high social support they received buffered the stressor-distress relationship and alleviated their negative psychological responses (Arnberg et al., 2012). A longitudinal study (Cook & Bickman, 1990) on psychological symptomatology following a flood found that the serious distress experienced during and immediately after the disaster, decreased quickly only six weeks afterward. Then their psychological symptoms were gradually relieved over the course of several months after the flood. These disaster-related studies presented a straightforward declining pattern of negative psychological responses of survivors after disasters without any fluctuations. Although Arnberg et al. (2013) found that some negative emotions of survivors were ongoing, 15 years after the ferry disaster, there was no fluctuating pattern showing in the study. Another study (Hull, Alexander & Klein, 2002) on survivors of the Piper Alpha oil platform disaster also indicated a similar tendency of PTSD after the disaster. In contrast with the participants in those studies, perinatal women in the present study unfolded their specific alleviating, mixed with fluctuations, psychological responses, along with the comprehensive actions of

changing hormones during the perinatal period, and the recurrent threats from aftershocks and reemergence of worries about the safety of their babies. The approximate patterns for the change in psychological health of general survivors and perinatal women are summarised in Fig. 8. Given the physical and psychological particularities of the perinatal period (Gavin et al., 2005; O'Hara & McCabe, 2013), the curve representing the psychological health status of perinatal women was lower than that of general survivors from the beginning, before a disaster. There was a decline in perinatal women's psychological health, which would later gradually increase, after the baby-birth, in comparison with general survivors.

Figure 8 Illustrative patterns of the psychological health of general survivors and perinatal women



There is very limited literature concerning the impact of disaster on perinatal women. As was discussed in the literature review for this study, most of the studies were quantitative surveys, which only described cross-sectional status. It has been identified that the prevalence of psychological symptoms, such as depression, anxiety, and PTSD was higher than in pregnant women who had not experienced a disaster (Ren et al., 2014). The grounded theory study on childbearing women after Hurricane Katrina provided the picture of the impact of the disaster on their experience, which had not yet further explored the recovery process. Before this study, the evidence

suggestinga pattern of decreasing yet fluctuating psychological responses, which is applicable to perinatal women after other disasters, is insufficient because of the scarcity of relevant research.

8.4 Being there of the family members of perinatal women

'Being there of the family members' was a key sub-category that pushed perinatal women to the phase of 'growing up'. Disasters can produce difficult situations for people by disrupting their lives, which made the women need a great deal of assistance and support from their family members. Among those requirements, 'being there' was the most important one. As depicted in Chapter 5, this sub-category assumed various functions, which helped alleviate negative psychological responses and changed their values about interpersonal relationships and baby rearing. It is a key mutual need for both perinatal women and their family members, and this could indeed help them feel better during the difficult time of overcoming adversity and recovering from the earthquake. It could further change the women's values about baby rearing and made them choose 'being there with the child' as the best way to care for them.

Accumulating studies have indicated the importance of 'being there of family' (Aguiar & Jennings, 2015; Carter, Edwards, & Hunt, 2015; Chiang, 2011; Loureiro et al., 2009; Qing, 2015; Redley, Levasseur, Peters & Bethune, 2003; Santos et al., 2013; Turnbull et al., 2004; Twibell et al., 2015; Wolff et al., 2012) for sick people or perinatal women in general. However, there was no study identifying the function of 'being there' or the presence of family members in directly helping survivors after a disaster. The evidence about the function of 'being there of family members' was indirectly

implied through the emphasis on social and family support in other studies (Arnberg et al., 2012; Banks & Weems, 2014; Reid & Reczek, 2011; Wen, Shi, Li, Yuan & Wang, 2012). From the current study, 'being there either at side or at heart' is the requirement for providing support. For instance, a study on the experience of childbearing women after Hurricane Katrina suggested that "families and friends had supported them through their pregnancies, and the women planned to rely on that support system after their babies were born" (Badakhsh et al., 2010, pp.6-7). We could also infer from this finding that childbearing women need their families and friends to be there with them and to provide support. Although the importance of social support had been emphasised, being there of family and friends had not been highlighted as a key source of support in Badakhsh et al.'s study. This might limit clinicians' attention in providing other supportsas an intervention for perinatal women after a disaster, because there is much to do other than simply 'being there' on the part of the family and friends. To answer the research question of "what and how does the family play its role in supporting childbearing and childrearing women over the period of an earthquake", 'being there' represents one of the significant mechanisms that matters.

8.5 "Evolving meaning" and other resilience models

"Evolving meaning" is a process through which perinatal women recovered from negative psychological responses and obtained new meaning in life, relationship and baby rearing after the disturbances of the earthquake. This is a process that represented the psychological resilience of perinatal women who experienced the adversities of an earthquake and subsequent childbirth (which is mainly a positive

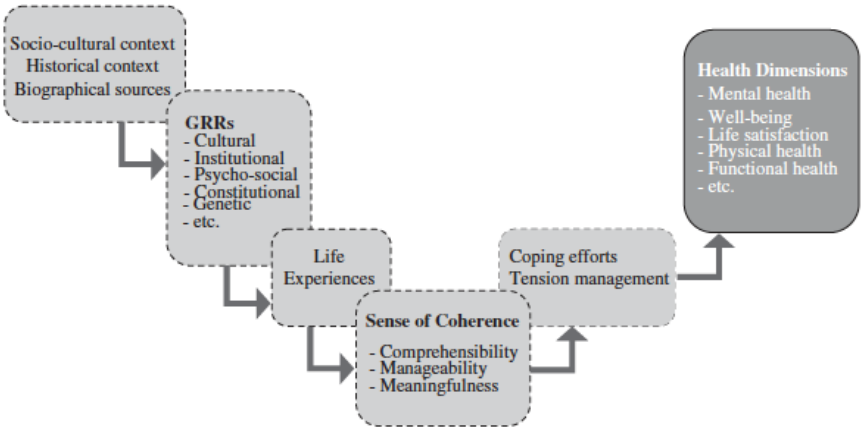
experience) when resilience is conceptualised as a continuum (Block & Block, 1980). Resilience came from a Latin word “resi-lire”, which means springing back or bouncing back (Davoudi, 2012; Shastri, 2013). It is generally used in physics to describe the stability of materials and their resistance to external pressure (Conti & Conti, 2010). Since the 1960s, this word was gradually applied in other fields such as ecology, disaster, and psychology (Davoudi, 2012). According to the American Psychological Association (2014), resilience is psychologically defined as “*the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress – such as family and relationship problems, serious problems or workplace and financial stressors*”. This definition conceptualises resilience from the perspective of a continuum. The earthquake is undoubtedly a significant source of stress that can cause trauma, adversity and threats; and the perinatal women indicated their eventual adaptation to their new lives after the disaster. ‘Evolving meaning’ discloses and captures the entire process, which represents the psychological resilience of these women, and such a process matches the definition of resilience as a continuum. In view of this, searching for resilience models was necessary in order to compare them with the discovered one from this study. The search for publications on resilience models was conducted in three major databases (CINAHL, Pubmed and PsychInfo) with the key words “resilience framework or theory” and “disaster or traumatic” because the present study was focusing on the recovery of women after an earthquake. A total of 951 English language publications were found. After excluding the duplicated articles and those unrelated to individual resilience models, four models that shared some aspects in common with the model of the present study were included for comparison. Among the four models (Antonovsky, 1987;

Abramson et al., 2015; Fife, 2005; Tseng, Chen & Wang, 2014), there was a tendency to focus either on the recovery of psychological status (Abramson et al., 2015; Braun-Lewensohn & Sagy, 2014; Riedel, Wiesmann, & Hannich, 2011; Tseng, Chen, & Wang, 2014), or on constructing new meanings through the traumatic events (Alves, Mendes & Neimeyer, 2012; Hamilton-Mason et al., 2012; Ville & Khlat, 2007). However, data from the present study indicated there are practically two major outcomes in the process of evolving meaning: one is the recovery of psychological health that indicated their restitution, and the other is finding a new meaning that indicated their transcending. The theoretical model postulated by Fife (2005), which integrated those two aspects, is the most similar to the model discovered from the present study. Discussion of the four models, in contrast with the process of 'evolving meaning' as discovered from the present study, is provided as follows.

8.5.1 Comparison with the 'Salutogenic Model'

The first framework is Antonovsky's (1987) 'Salutogenic Model', which was developed in the medical field to explain how people manage stress and maintain well-being. As opposed to the pathogenic approach that focuses on what makes people ill and how to treat illness, the Salutogenic Model emphasises the protective factors and "Sense of Coherence" (SOC) that protect humans (Frommberger et al., 1999). These factors could activate and strengthen individual resources for the prevention of physical and psychological disorders. A simplified diagram of the Salutogenic Model is shown in Fig.9.

Fig. 9 A simplified diagram of Salutogenic Model (Riedel et al., 2011)



The sense of coherence (SOC) is the core concept for the Salutogenic Model, which was widely studied by researchers (Frommberger et al., 1999; Griffiths, 2009; Surtees, Wainwright & Khaw, 2006; Ville & Khlat, 2007). The SOC is defined as (Antonovsky, 1987, p.19):

> *The sense of coherence is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement.*

According to Fig.9 and the definition of SOC, the available resources, together with internal and external contexts, give people a sense of coherence and make them feel confident about surviving a stressful event, and being able to remain healthy, or return to healthy status. Similar to this model, 'evolving meaning' assumed that the perinatal women were eventually restored to their normal lives and overcame

negative psychological responses with crucial resources (and support) in the context of earthquake and childbearing. Both models emphasised the importance of available resources for recovery after traumatic events.

Although the final outcome for both models is the recovery of psychological health, the main difference lies in the focused aspects of resilience. The Salutongenic Model emphasises the SOC, which is more like one's intrinsic characteristics, such as personality, as the major factor for recovering. In this model, the contexts and available resources provide one with a set of life experiences, which are characterised by consistency, participation, and a balance between overload and underload. Examples of these life experiences include constitution, social support, social stratum, cultural stability, etc. Repeated life experiences build up the SOC, which affect scoping and health outcomes (Antonovsky, 1987). Antonovsky (1986, p.214) appears to suggest that researchers conceive the SOC as a personality, because it indicated an "*enduring tendency to see one's life space as more or less ordered, predictable, and manageable*". The model assumes the strong role of intrinsic characteristics, such as personality, in helping people meet challenges and remain healthy. The available resources are the prerequisites for the SOC and subsequently affect coping and outcomes. However, Antonovsky (1986) further found that the SOC was unassociated with anxiety in response to an acute stress situation communally perceived as very threatening. Thus, the Salutogenic Model may be inapplicable for explaining the recovery of perinatal women after an earthquake, because an earthquake is an acute disaster and communally viewed as very threatening. This can also be inferred from those women in their description of their great fear of the disaster. Although some participants indicated that they were brave, which facilitated them in partly walking

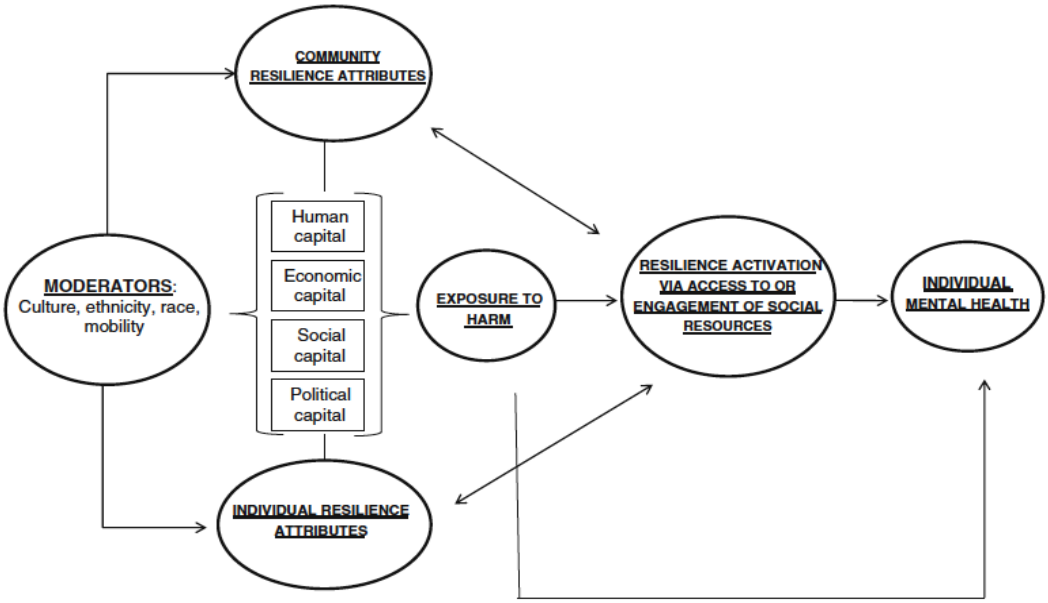
out of the shadow, the data indicated that the most striking aspects were 'being there of the family members' and 'love and hope instilled by the baby'. These two aspects, especially the former, could be viewed as available external resources, rather than intrinsic characteristics. In 'evolving meaning', the available resources served to act on the experience of those women after the traumatic event and directly affected their coping, rather than through a pre-requisite personality. In spite of the fact that women might also accumulate experiences and reshape their personality in the following days, the major stimulators for the recovery of perinatal women after the earthquake remained the available resources. With the process of 'evolving meaning', the Salutogenic Model could help us understand more about the mechanism of recovery after the so-called "*acute stress situation communally perceived as very threatening*" (Antonovsky, 1987).

8.5.2 Comparison with the framework of 'resilience activation'

'Resilience activation' is a conceptual framework that accommodates multidisciplinary inquiries within the concept of resilience, which is mainly applied in post-disaster settings. This framework was developed by a research enterprise that encompassed a four-university consortium of scientists at 13 institutions, and engaged 12 distinct studies, which tested how access to social resources could facilitate positive adaptation or reduced psychological problems among individuals and communities after exposure to the Deepwater Horizon oil spill disaster (Abramson et al., 2015). In this framework, resilience attributes are the characteristics of a community or individual as a system in conserving or marshalling its resources. These attributes were categorised into four types of "capital", which include the

human, economic, social, and political ones. At the individual level, human capital includes temperament, optimism, self-efficacy, coping, psychological, and parenting. Economic capital includes household income, savings, and access to credit or loans. Social capital encompasses family, friends, coworkers, and perceived social support; and political capital covers the ability to vote, and access to people in leadership positions or those distributing resources. These are the resources deployed by individuals to counteract the effects of the disastrous event, as shown in Fig.10.

Fig. 10 Framework of resilience activation (Abramson et al., 2015)

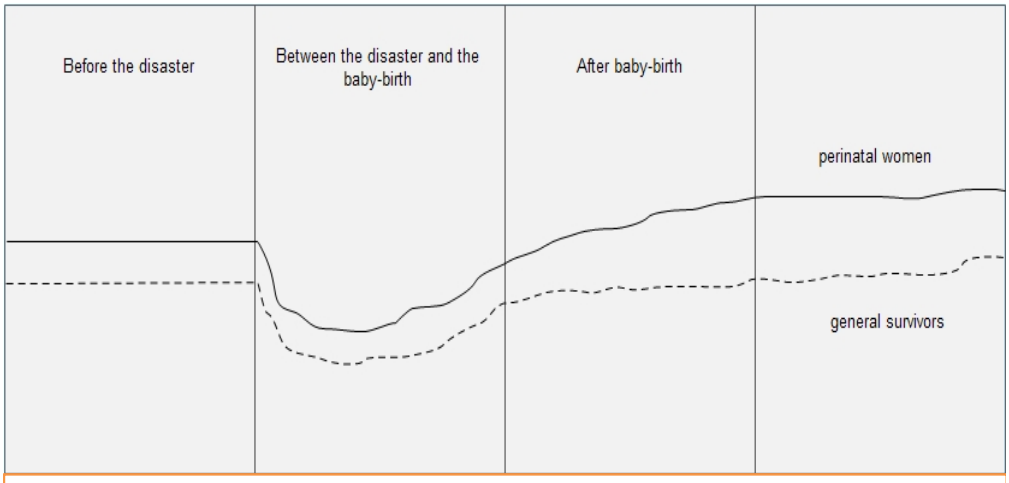


In Abramson et al.'s (2015) framework, it is assumed that most people are inherently resilient or have the ability to be resilient, as these are the individual attributes. After exposure to harm, the access to social resources that represent the community resilience attributes can interact with and activate individual resilience attributes. The process takes place within the context of a sociocultural milieu. And the activation of individual resilience could help people to cope well and promote their mental health. Similar to this framework, 'evolving meaning' has emphasised the women's inherent resilience in helping themselves overcome negative moods and

maintain their mental health. Before the disaster, the women were individually resilient with rich resources, including human, economic, and social capitals. After exposure to the earthquake, their attributes of resilience (e.g. 'being there of the family members' as a social capital) were activated, and helped them to recover considerably well. From the findings of this study, meanwhile, the process of 'evolving meaning' was taking place within a socio-economic-cultural context (as discussed in chapter 7), in which the family helped to activate the individual resilience attributes. The two framework and theory are similar in terms of the individual and contextual factors being mobilized by and for people in face of a disaster and generally speaking, 'evolving meaning' is an extension to the framework developed by Abramson et al. (2015). 'Evolving meaning' specifically represents the unique experience and recovering process of perinatal women. Nevertheless, the findings from 'evolving meaning' indicated that perinatal women concerned less about the broader social context, and the capital provided by the community or government, despite the fact that such external support provided to them was already relatively higher than that provided to ordinary people (see Fig. 11). Perinatal women had to resort to their most relevant resource – the family. The Abramson et al.'s framework (2015) places its major emphasis on the impact of broader community and social resilience attributes, while 'evolving meaning' stresses the role of family as the most relevant context, which is also a type of social resilience attributes but only considered ordinary as the other capitals by Abramson et al. The theory of 'evolving meaning' has supplemented this framework, and on its own right of substantiveness, extends deeper understanding and better implications of the family conditions and impact to the recovery of perinatal women after a major disaster like earthquake. There is good

potential in testing and applying the theory of 'evolving meaning' for empirical research about the support or suitable interventions to perinatal women over the trajectory of their recovery in preparing, living with the aftermath, and getting over a major disaster.

Fig.11 Pattern of social support provided to people at different time points after disaster



Before the earthquake, perinatal women could obtain a higher level of support because of their childbearing role. In Chinese culture, posterity is highly valued, which facilitates higher support for childbearing women (Gao, Liu, Fu & Xie, 2015). After the earthquake, the community and government paid more attention to all survivors, and thus the support for these women and other people in the epicentral area both increased; but as depicted by the pregnant women, support for them was higher than for other survivors. Support for other survivors remained at the same level after the earthquake or declined (as described by local persons rather than those periantal women and their families), while the birth of a baby further increased support for these pregnant women. As such, the hinge that activated the inherent resilience of perinatal women was associated with their baby, in addition to the community support. For perinatal women after the earthquake, the baby was a key activator that

could facilitate their inherent resilience to counteract the disturbances, in addition to allowing them to gain better access to social resources.

8.5.3 Comparison with the recovery process of Taiwanese women after stillbirth

Stillbirth can be a severely traumatic event, because it may cause a high incidence of post-traumatic stress disorder (PTSD) in the bereaved parents (Tseng et al., 2014). The studies that explored the recovery process could help people better understand how perinatal women recover from traumatic events and remain healthy. However, models or theories that describe such a process in non-Western cultures were scarce (Hughes, Turton, Hopper & Evans, 2002; Kelley, Ruben& The GAPPS Review Group, 2010), which hindered a comprehensive understanding of resilience in different cultures. In considering this, the recovery process of Taiwanese women who have experienced stillbirth (Tseng et al., 2014) was identified from the literature for comparison, because of the similar type of participants (perinatal women) affected by traumatic events. There are three stages for the recovery of Taiwanese women after stillbirth (Fig. 12).

Fig. 12 The recovery process of Taiwanese women after stillbirth (Tseng et al., 2014)

The first stage is 'suffering from silent grief', in which the women experienced a shattered maternal role, emotional distance within the couple, feeling stifled within

the family, and the torture of others' concern because of the traumatic event. This stage is quite akin to 'being disturbed' in 'evolving meaning' of the present study. The common effect of traumatic events is disturbing, or even destroys the normal life of the woman. The second phase is 'searching for a way out', which means that women re-interpret the meaning of death, do something for the deceased child, search for a source of strength and seek a new focus in life. Similarly, the perinatal women reflected on their lives and relationships after the earthquake, and also searched for a source of strength. However, the baby, a crucial part in both processes, plays different roles. For the recovery process in women after stillbirth, the baby is actually a source of stress, which would stimulate them to avoid the relevant issues of a baby. Thus the second stage is named as 'a way out' and they would seek a new focus in life rather than the baby. During 'evolving meaning', the continuing pregnancy constituted a source of energy to counteract the disturbance of disaster through love and hope instilled in the women with the experience as such. The different roles of the baby showed different manifestations on the women's behaviours. Women after the earthquake did not become too involved in avoidance behaviours with the earthquake as the stressor, despite their fear. For instance, some women could gather with neighbours, friends and colleagues to talk about the earthquake; and enjoyed their sense of accomplishment in protecting their babies in the dangerous situation of the earthquake. They actively searched for ways to protect their babies and other family members, and accumulated coping experiences by talking and learning. This difference further supported the significance of their baby in affecting how perinatal women during the earthquake period treated and coped with the negative event. For the health of their baby, the women felt energized to cope with other stresses, and

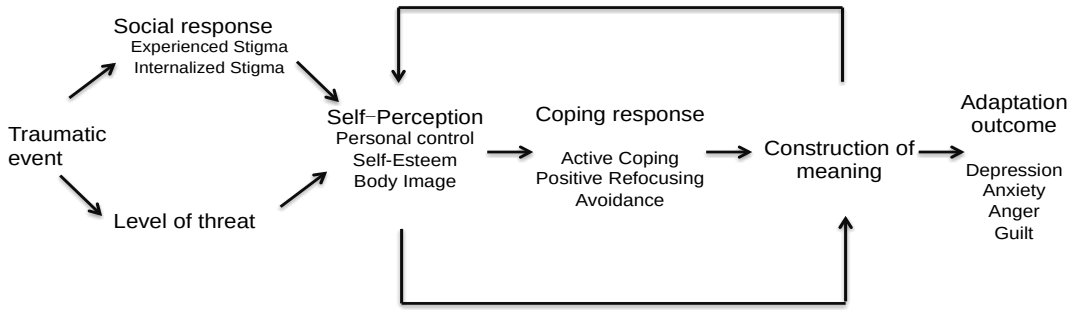
they could smile, even when times were difficult. The third phase for the women after stillbirth of their babies is 'achieving peace of mind'. In this phase, the women feel that the deceased child has gone to a good place and they feel prepared to have another baby. Analogous to this, perinatal women recovered from their negative psychological responses after the earthquake refreshed the meaning of such an experience for themselves out of the traumatic event. The process of 'evolving meaning' indicated that these women obtained new meaning in their views about life, relationships and baby rearing. They thought more deeply with 'changing values' as a result of the traumatic event. Those deeper changing values might have been attributed to the scale of trauma, i.e. the earthquake carries broader coverage and more severe influences, while one stillbirth affected only the parents or a family. The recovery process of women after an earthquake differs from those who experience stillbirth in the role of the baby, and the depth of meanings perceived by them.

8.5.4 Comparison with 'constructing meaning in response to a traumatic life event'

According to symbolic interactionism (Blumer, 1969), an individual acts on the meaning of events, which are derived from and changed by interactions in past and present social processes. Meanings thus are embedded in resilience as a recovery process from a traumatic or life-threatening event. As Hamilton-Mason et al. (2012) identified from the survival experiences of African-American women after Hurricane Katrina, spirituality (which is a way of negotiating and making meaning of the issues, struggles, and forms of oppression that they confront in their daily lives) was intricately involved in their resilience. Some literature also implied the significance of creating meaning in helping people cope with traumatic or critical events (Adler,

Harmaeling & Walder-Biesanz, 2013; Park, 2010; Tavernier & Willoughby, 2012; Tseng et al., 2014). Meaning making is one of the most crucial variables in the resilience of survivors after disasters (Park, 2010). The process of 'evolving meaning' in the current study had also indicated that evolving meanings for perinatal women were the major outcome for their 'growing up', alongside their recovery from their negative psychological responses. Fife (2005) explored the role of constructed meaning in adaptation to life-threatening events, which was similar to other meaning making models (Park, 2010), that such a process could be viewed as representative in a traumatic context. Although Fife's model was developed for people with life-threatening illness, it also contained both the meaning making and the recovery of mental health, which is comparable with 'evolving meaning' (Fig.13).

Fig.13 Model for the role of constructed meaning in response to a traumatic event (Fife, 2005)



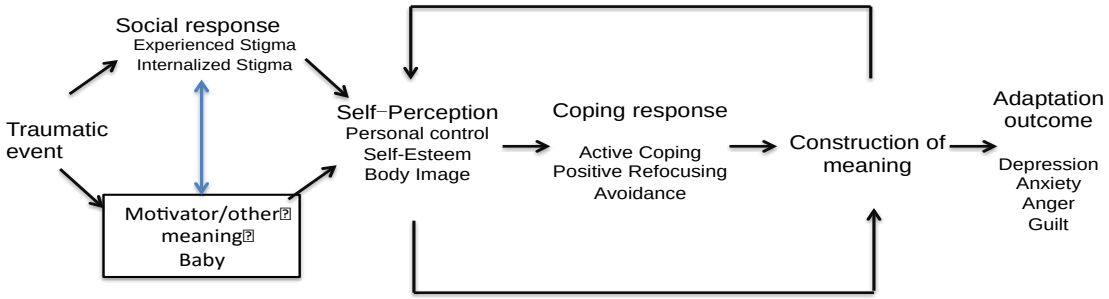
In this model, meaning refers to "*the individual's unique perception of the world as they know it and the ways they perceive the event redefining their world, their place in that world, and therefore their personal identity*" (Fife, 1994). It was developed through a dynamic interpretive process, which consisted of two inextricably linked dimensions (self-perception and social response) in response to the traumatic event (Fife, 2005). Self-perception is the interpreted impact of the crisis on various aspects of one's identity, which includes personal control, self-esteem, and body image. Social

response refers to the specific attributes of the event and life circumstances that surround it as perceived by the individual, and the person's perceptions of others' responses to his/her roles as they are altered by circumstances surrounding the event. These two dimensions constituted an individual's meaning of the event, which evolves as to whether she/he combats to cope with the stress and adapt to the changes. With the new meaning created or constructed, it facilitates adaptation as the outcome and alleviates negative psychological responses (Fife, 1994; 1995; 2005). After verification of the Fife model, 'level of threat' was eventually deleted, because Fife (2005) found that the significance of meaning within the process of adaptation was supported, regardless of illness type.

Equivalently for 'evolving meaning', perinatal women had their own meanings constructed towards the world, their lives, relationships, and baby rearing, which occurred before the disaster. These values were changing both during and after the earthquake, and evolved during their process of coping with their stress from the traumatic event. Finally, their new meanings about life, relationships, and baby rearing were established, which were the indicators of 'growing up'. However, baby as a factor in 'evolving meaning' could not be incorporated into or explained by Fife's (2005) model. The presence of the baby is a special existence that cannot be treated as either the social response or self-perception for perinatal women after an earthquake. According to data analysis from the present study, having the new baby carried a special meaning that motivated these women to cope with their difficulties and disturbances through the love and hope instilled in them. During the process of changing values, this factor could help directly relieve negative psychological responses. On the other hand, it triggered both self-perception (being a new mother)

and social response (being vulnerableas a childbearing woman who needs support) that demanded the women recover. For example, during theoretical sampling, both participant F and her husband indicated clearly that the baby meant both hope and the sustenance of life for them. Such meaning for the women motivated them to change their values and adapt / adjust to their psychological responses. In view of this, Fife's model (2005) could be revised to fit the experience of perinatal women after an earthquake (Fig.14).

Fig.14 Revised process of constructing meaning of perinatal women after earthquake



In the revised model, the baby served as a motivator or other meaning for the women, which could interact with both the social response and self-perception, in helping them to construct new meaning and adapt to the aftermath of a disaster. Such a motivator is independent of the presence of self-perception and social response, but it could interact with and affect them to form new meanings. With the new meanings, the women felt they were 'growing up' and on the other hand it helped alleviate their negative psychological responses.

In summary, 'evolving meaning' is different by various degrees from other relevant resilience models in response to traumatic events, in terms of the types of

such events and participants. This process is discovered from the constant comparative analysis of the data collected from perinatal women who experienced an earthquake during pregnancy. 'Evolving meaning' has its uniqueness that represents a special process for perinatal women in the face of disaster. Through comparison with other resilience models, family support (e.g. 'being there of the family members') in alleviating negative psychological responses was more emphasised by 'evolving meaning' than the personality of subjects (Salutogenic Model), or broader social support for these subjects by government or community (resilience activation model). Furthermore, the process of the present study discovered the significant role of a new baby in reducing negative psychological responses and constructing meanings, which provides implications in designing intervention/s for perinatal women and their families over the period of a major disaster such as an earthquake, i.e. integrating baby as the motivator rather than a stressor. The other models ignore the motivating function of the baby, and are thus relatively limited in informing interventions that target enhancing recovery for the women bearing and rearing a new baby during a major earthquake.

8.6 'Evolving meaning' and the experience of general perinatal women

Since the women in the present study had gone through a traumatic event, their experiences from pregnancy until after the birth were different from their counterparts who did not experience a disaster. Some studies identified childbearing as a major life event that could bring challenges (e.g. losing control and feeling incompetent) to the lives of women and their families (Callister, Vehvilainen-Julkunen & Lauri, 2001; Devilly, Gullo, Alcorn & O'Donovan, 2012; Nazroo, Edwards & Brown,

1997; Norbeck, 1984). In those studies, childbearing is viewed as a challenging stressor that influences psychological responses. Nevertheless, childbearing should also be viewed as influenced by social context rather than merely a stressor as with other major life events (Wrede et al., 2006). Other life events may also pose a greater stress on women and distract their attention from childbearing pressure. The earthquake was obviously a critical life event for the pregnant women in this study, which drew their major attention. Nevertheless, from the data analysis and findings, the baby served as an essential motivator that facilitated the alleviation of their negative psychological responses and created meaning, rather than simply being a major life event that would disturb their psychological well-being. There is 'evolving meaning' for the women who treated the childbirth as indispensable; and such an experience was different from the situation of typical childbearing women, who took it as another major event in life. Although there is a large body of literature concerned with specific aspects of childbearing and childbirth (e.g. psychological status of perinatal women at a specific point of time), there is a limited amount of literature that has explored the process of normal perinatal women experiencing their pregnancy until after birth (Darvill et al., 2010; Etowa, 2012; Gibbins & Thomson, 2001; Rijinders et al., 2008; Schneider, 2002; Wilkins, 2006). In order to understand whether 'evolving meaning' is unique and different from the experience of general perinatal women, the body of literature that describes the experiences of childbearing and childrearing women without traumatic events was chosen for comparison.

Darvill et al. (2010) conducted a grounded theory study to investigate psychological factors that impacted women's experiences of first-time motherhood.

They discovered a process of ‘changes in the woman’s self-concept’ that contained three main categories (control, support, and forming a family) to describe their course of childbearing. Early on, at the beginning of a pregnancy, women felt they had lost control over their bodies due to the physical symptoms. They had an impression of being vulnerable and incompetent to take good care of their fetus and themselves, which induced a need for a mentor to guide them. Meanwhile, the women shifted their focus from themselves to the needs of the fetus. Eventually, the women recognised that childbearing transformed them and their partners from individuals into the founding members of a new family (Darvill, 2010). This is a representative process of normal childbearing women because it covered most aspects from pregnancy until after birth, and shared the major themes or categories with the processes developed from others’ studies (Gibbins & Thomson, 2001; Etowa, 2012; Schneider, 2002; Wilkins, 2006).

Different from the process of Darvill et al. (2010), the sense of losing control or insufficiency in ‘evolving meaning’ was derived from the disturbances of the earthquake, and the arrival of the new baby, rather than the physical symptoms of pregnancy and changes in their self-image. According to interviews in the present study, the women rarely mentioned their changes in self-image during pregnancy, which indicated their lack of concern about the symptoms induced by pregnancy. On the contrary, the perinatal women after the earthquake directed more attention to the baby’s safety and the symptoms induced by the disaster (e.g. increased fetal movement with fear), which was depicted in Chapter 4. It can be said that the earthquake, as a major life event, disturbed the normalcy of those women, which included the process of childbearing, and consequently distracted their attention

from self-image and the minor symptoms of pregnancy. Nevertheless, the childbearing experience in this regard should also be viewed in the social context (Wrede et al., 2006) rather than being a major life event, with its mere focus on psychological and physical responses. Perinatal women in the present study adjusted themselves to the disturbances of the earthquake with the dynamics of a type of support external to the women ('being there of the family members') and internal motivator ('love and hope instilled by the baby'), and eventually attained their new meanings as 'growing up'. In spite of the women who gained a similar outcome of 'growing up' by assuming the role of mother (Darvill et al., 2010), the dynamics in an intermediated process and the degree of 'growing up' are different. The external support for the women that normal perinatal women needed the most was the guidance of mentors, who could help them cope with the feeling of losing control and incompetence in caring for their babies. In 'evolving meaning', external support that could help the women cope with their feelings of insufficiency, as induced by the earthquake, was 'being there of the family members' rather than mentoring or expert guidance. Some participants in the present study even indicated increased confidence in coping with childbearing-related issues such as delivery, because the disaster had made them tough. They thought that childbearing-related issues were minor in comparison to the events related to the earthquake. Compared with other perinatal women, participants after the earthquake needed more of the companionship that could instill energy emotionally and spiritually (with/without words) in them, instead of superficially sharing skills or knowledge. Furthermore, 'evolving meaning' was advancing with the dynamics of 'being there of the family members' and 'love and hope instilled by the baby', while the motivating effects of the baby were not

observed in the usual process experienced by perinatal women. In the usual type of situation, support external to the women was emphasised as the main power in pushing them into realising their roles and acquiring related skills and knowledge. Although the baby was the source of their sense of losing control and their guidance seeking behaviours, its function in changing the women's values and the dynamics of social support was not emphasised. This difference indicated that with other life events such as an earthquake, the baby could exert a more important role in helping childbearing women in their transition to maturity, which was actually the "motivator" in the present study. Finally, after the earthquake the perinatal women arrived at more new meanings with changing values than the usual ones because of the traumatic earthquake. The woman who did not experience a traumatic event finally realised their role as a mother and became a member of a new family with her partner. This changing value is limited to the role of being a mother and the definition of a family. In contrast, the experience of the earthquake explicated 'growing up' and 'changing values', which included values about life, relationship, and baby rearing, as described in Chapter 6. There are some participants who bore their second baby during the earthquake. Comparison of outcomes between the first childbearing, which occurred before the earthquake, with the second one revealed the changes in their perceptions of the meaning of life, relationship, and baby rearing.

In summary, 'evolving meaning' differs from the usual process for perinatal women in the position of childbearing (a social context versus a life event), the function and dynamics of the baby over the process, and the degrees of evolving meanings.

8.7 Implications

According to the discussion from sections 8.2 to 8.6, 'evolving meaning' is a unique process of childbearing and childrearing women over the period of a major earthquake, which disclosed how they restored their lives and created new meanings. The uniqueness of this process reminds us of the particularity of this population in a disaster, which provides implications for clinical practice.

8.7.1 Increasing disaster preparedness of perinatal women through childbirth/parenting programmes

The earthquake disturbed the daily lives of women and caused negative psychological responses. The disturbances were more serious than those of ordinary survivors after the disaster (because the perinatal women had special physical and psychological needs). Apart from the destructive impact, lack of adequate preparedness could partly explain the perinatal women's negative psychological responses (many of them believed that the earthquake would not occur near them and hence felt astonished by it). This implied the importance of pre-planning for such a vulnerable population (Ewing, Buchholtz, & Rotanz, 2008; Orlando, Danna, Giarratano, Prepas & Johnson, 2010; Veenema & Ebrary, 2013). The United Nations (UN) also indicated in its global assessment report on disaster risk reduction (UNISDR, 2015) that preparedness is a necessary step in disaster management, which could increase resilience against disasters. Preparedness is actively planning to cope before the disaster occurs, which is specifically suitable for vulnerable people (Veenema & Ebrary, 2013). Perinatal women are a vulnerable population after a disaster, and preparedness is particularly critical for them (Ewing et al., 2008).

Although there are various studies concerned with making improvements in disaster preparedness for perinatal women (Ewing et al., 2008; Giarratano et al., 2010; DeWald & Fountain, 2006; Yasunari, Nozawa, Nishio, Yamamoto& Takami, 2011), all of them suggested the same direction of intervention through education programmes. The United Nations (UNISDR, 2015) also indicates that knowledge and skills acquired through education can build a strong foundation that enables individuals to understand disaster risks and the importance of being prepared. The researcher of this study report realises that education in disaster preparedness can achieve the greatest effect in formal school education. But it is inapplicable for perinatal women in mainland China, because most of them are adults. For instance, all of the perinatal women in the current study finished their school education before their pregnancy. Childbirth/parenting programmes during pregnancy offer the best opportunity to instill awareness of disaster preparedness in women and their families. This additional content such programmes may be particularly effective, because it is easier to incorporate concerns for the health of baby with disaster preparedness during this period. In mainland China, childbirth/parenting programmes are compulsory for women who are over 12-weeks gestation in order to prepare them and their families for maintaining the health of their unborn baby (Shi, 2014). Thus, attendance of pregnant women in these programmes is assured. According to Darvill (2010), women felt that they were most in need of a mentor to guide and help them understand how to take care of the baby at the beginning of pregnancy. And the baby was a significant motivator for the recovery of perinatal women over the period of the earthquake. The women would be actively involved in ensuring the safety and benefits for their babies (as discussed in sections 8.3 and 8.5). Professional health workers should take

the chance to introduce the importance of disaster preparedness during pregnancy; as well as the skills to protect themselves and their babies, such as recognising abnormal signs of pregnancy, escaping from falling objects, and seeking help and support from their surroundings during a disaster. Such a health education programme could help women learn to be more active in applying various coping strategies and living with adversity, targeting positive thoughts and behaviours. Research that studied interventions for disaster preparedness actually identified the significance and effectiveness of disaster instructions that had been taught at birth preparation classes (Ewing et al., 2008; Giarratano et al., 2010; DeWald & Fountain, 2006; Yasunari et al., 2011).

Health education programmes designed to deliver knowledge relevant to disaster and safety can also bring the attention of healthcare professionals to these women, and increase their feelings of confidence in their safety (Giarratano et al., 2015; Orland et al., 2010). Consequently, such programs could help alleviate their negative responses after a disaster. The researcher's professional experience in caring for perinatal women also suggests that including safety knowledge in health education during hospitalisation can enhance the trust of women with healthcare professionals, and increase their sense of safety. After the earthquake, my hospital requires nurses to introduce safety-related knowledge to prenatal women during admission and hospitalisation. The women accepting such education realise that healthcare workers are professionals and they pay attention to various aspects of their safety during a disaster, in addition to the medical issues. It increases the confidence of prenatal women in their safety while under the care of professional healthcare workers, and consequently decreases their anxiety about the baby in

hospital.

In summary, providing disaster instructions during prenatal classes is a feasible and effective measure to increase pregnant women's preparedness, and empower them to alleviate negative psychological responses during an unpredictable disaster. There is no study that attempts to explore the effect of incorporating disaster preparedness into childbirth classes in China. Whether this intervention is substantiated by scientific evidence for Chinese perinatal women remains a topic for further research.

8.7.2 Optimising perinatal services with more focus on psychological health around delivery

As discussed in section 8.3, there was a pattern of decreasing but fluctuating psychological responses after the earthquake, because of the changes in the endocrine system, and the increased fear and anxiety from aftershocks and childbirth. This pattern suggested that the time around the delivery is important for the maintenance of women's mental and psychological health after an earthquake, which should be considered for interventions and preparedness by clinical workers. It is better to involve psychoeduation in the routine care of perinatal women during the perinatal period, especially close to the time of delivery. In contrast to general survivors, the birth of a baby might impose a second impact on postnatal women's psychological health, even some time after the disaster. Although perinatal women in general experience a change in hormones, which may affect their moods, the comprehensive actions of hormones and the disaster striking could make these women lose more control of their emotions and feel distressed and anxious after an

earthquake (Hibino et al., 2009b). The prevalence rate of perinatal depression in the general population ranged from 7% to 19% (Choate & Gintner, 2011; O'Hara & McCabe, 2013), which was lower than the rate after disasters (13.1%-40.8% after an earthquake) (Dong et al., 2008; Hibino et al., 2009a; Qu et al., 2012a; Ren et al., 2015). In China, maternity health care is an obstetrician-led model, in which obstetricians are the primary providers of care for perinatal women (Gu, Zhang, & Ding, 2011). Psychological service is not routine care for them, which could be provided only when a woman manifests with psychological symptoms. According to the findings of this study, perinatal women after the earthquake had a higher risk of poorer psychological health around the time of childbirth. Provision in hospital of more proactive psychological care and support for those women is important and necessary. Even when the routine service of psychologists is unavailable at hospitals in China, promoting the use of perinatal screening tools such as EPDS is feasible. The tool can easily be applied by frontline medical workers, such as obstetricians and nurses, as part of their practice. The screening should be performed for all perinatal women who have experienced a disaster (Segre, Brock, O'Hara, Gorman & Engeldinger, 2011). Meanwhile, obstetricians and nurses should be trained in mental health first aid and provided with an easy referral system to ask for timely assistance from psychologists (Jacobs, Gray, Erickson, Gonzalez & Quevillon, 2016). Availability of special care when required can ensure more comprehensive maternal health for women in a situation of additional stress and demand during the period of a major disaster, such as an earthquake.

8.7.3 Creating or strengthening the atmosphere of 'being there of family members'

According to the significant functions of 'being there of the family members' as found in this study, recommendations for clinical practice based on this key force should be made in order to improve the health of perinatal women in China after a disaster. Since 'being there' is a mutual need for both perinatal women and their family members after an earthquake, more family time should be considered in the clinical care of such women. Especially during the stage immediately after an earthquake, creating a space for the gathering of family members could make them feel relaxed and secure. However, there are some limitations, such as space and resources for family members in hospitals (Bernard & Mathews, 2008) to actualise the gathering of family members after disasters. For instance, most wards in public hospitals are six-person and even eight-person rooms, and the distance between two beds is only one metre. Such a limited amount of space could accommodate no more than two other persons, and private space is not guaranteed. Creating a special ward for perinatal women from the epicentral areas might be considered in the hospitals that receive survivors. The researcher is a senior nurse in a busy tertiary hospital, which received perinatal women in both the 2008 Wenchuan earthquake and 2013 Lushan earthquake. During the first earthquake, women from the epicentral area were hospitalised with other, ordinary pregnant women, and their family members had very limited gathering time because of the restrictions on space. There were some perinatal women after the earthquake who argued over space with medical workers and with other perinatal women not from the epicentre, which indicated their irritation and dissatisfaction. Based on the experience of the first earthquake, the hospital created two special wards for pregnant women in the 2013 earthquake

(and the findings of this study support the benefits of doing so). In spite of the available space in the wards, which was still limited, their family members (at least two family members) could stay with the perinatal women. The researcher witnessed the recovery of a woman with severe depression with the presence and help of her family members in the special ward, which actually triggered the researcher's interest in exploring the family interactions of perinatal women after a major earthquake. Although there were only two wards created for the women from the disaster areas, the effect was obvious in that there was no conflict or argument, and many of them praised the hospital for providing such a special arrangement. Creating a special space for the family to be there with the pregnant women is a feasible way to support these women for better recovery, and to comfort these women and their family members after a disaster.

In addition to creating a special space for family gatherings, involving husbands in the activities of daily living (AOL) of pregnant women is also advantageous for those women. As described in the findings chapter, pregnant women after the earthquake preferred the presence and companionship of their husbands very much. Involving the husbands into the AOL of pregnant women could create more time for their being there with each other, and strengthen their emotional attachment (Aguiar & Jennings, 2015; Behruzi et al., 2010; Qing, 2015; Zheng & Wu, 2009). However, there seemed to be difficulties for husbands to be involved in their wives' activities with regard to the pregnancy. Bhatta (2013) found that the percentage of males involving in the antenatal care of their partners was near 40%, which had not covered half the population of pregnant women. The husbands thought they needed to spend more time making money than participating in pregnancy-related activities. Such a paternal

involvement rate was even lower (32%) in a developing country in Africa (Iliyasu, Abubakar, Galadanci & Aliyu, 2010). Nevertheless, apart from the willingness of husbands to be present with their pregnant wives, institutional rules and strategies limited their companionship during delivery in Japan (Behruzi et al., 2010). This culture and practice is similar to China's, constituting a barrier to husbands' companionship to their wives. In order to facilitate the 'being there of husband', nurses could inform the husbands through health education of the importance and advantages of 'being there' with their perinatal wives after the earthquake. Iliyasu et al. (2010) suggested a peer-led, culturally-sensitive education programme to increase husbands' recognition of the importance of being there with their wives. Nurses can also promote the time of 'being there' by allowing for 'couple time' or 'couple space', when their time together is protected from interruptions by healthcare workers. If possible, government and community cooperation and support may be sought, to assure husbands' availability after the earthquake, in order to facilitate their being there for their wives.

8.7.4 Increasing family preparedness for disaster to ensure the quality of family support

During the 'being disturbed' phase, the earthquake not only broke the normal lives of perinatal women, but also decreased their family support, by curtailing family reserved resources and energy for support. Both the literature (Badakhsh et al., 2010; Bokszczanin, 2008; Ren et al., 2014; Xiong et al., 2008) and findings from the current study indicated that family support was associated with perinatal women's psychological responses after a disaster. The present study further suggested that

family had exerted a greater function in helping those women than the community or government after the earthquake (Chapter 7). In short, if the family had prepared sufficiently for disaster with appropriate resources, family support would be affected only slightly, and this could reduce the sense of 'being disturbed' and negative psychological responses. Increasing the family's disaster preparedness is particularly important for perinatal women in advance of a disaster. Similar to the improvement of individual preparedness, nurses or clinical health care workers could help families increase their preparedness through parenting classes and in-hospital health education. With the combination of benefits for the baby's health, family members could more easily accept the suggestions for preparedness, because the baby is the centre for perinatal women and their families. During this education, nurses and clinical workers could instill the awareness of preparedness and help them make their contingency plans. The contingency plan, as Ewing et al. (2008) suggested, includes reliable local contacts, places to meet with family members, evacuation methods, child care, clothing, meals, and emergency equipment and supplies for the home. The present study also confirmed the importance of such a comprehensive family plan. For instance, participants who lost contact with family members after the disaster felt anxious and agitated. Having a plan in advance for reliable contact could assure women with information from family members. For instance, participant N felt better because her family packed necessities for the baby, which lowered her anxiety levels. In a nutshell, the consequence of blending the provision of information for family disaster preparedness with prenatal health education is meaningful step to reduce the disturbances of a disaster on perinatal women and their families, and this should be attempted in future practice in order to improve women's psychological health in

the face of both disaster and childbirth.

8.7.5 Application of 'evolving meaning' in a generic way

Although the core category 'evolving meaning' is discovered from the data of childbearing and childrearing women over a major earthquake, representing family dynamics and the experience of those women after an earthquake, there is still a need to further validate this substantive theory for wider application, in order to better serve perinatal women after various types of disaster. According to the literature review of the present study, there is a very limited number of studies that investigate family dynamics and the experience of perinatal women after disasters. It is difficult to identify whether the resultant process or theory of this study also represents the experience of other populations during different types of disasters. Only a grounded theory study (Badakhsh et al., 2010) disclosed the experience of childbearing women after a hurricane as 'disruption of life during pregnancy', which is similar to the phase, 'being disturbed'found in the present study. Nevertheless, as discussed in section 8.2, perinatal women after the earthquake were more taxed than women in general after other disasters. While the first phase of 'evolving meaning' (being disturbed) may be applicable to perinatal women during other disasters, the degree of disturbance that would vary according to the types and extent of disaster deserve our attention. Apart from the current study, no other study has discovered or investigated the 'evolving meaning' of pregnant women after other types of disaster. It is necessary for nurses and researchers to further conduct research in extending the fitness of this substantive theory with other disaster situations. Quantitative research may be the next step in verifying the resultant substantive

theory.

In conclusion, the present study provides implications for clinical practice, which include incorporating disaster-related information into childbirth/parenting classes in order to increase individual and family disaster preparedness for perinatal women; promoting professionals' emphasis on safety and the establishment of a trusting nurse-mother relationship; paying more attention to the psychological health of perinatal women around the time of delivery after an earthquake; training obstetric personnel with mental health first aid in order to optimise perinatal services; and allowing special time and space for family gatherings, and encouraging the involvement of husbands in the AOL of pregnant women through strengthening the atmosphere of 'being there of the family members'. All of these measures could contribute to reducing the negative impact of an earthquake and increasing the resilience of perinatal women in the face of disaster, which is beneficial for the health of both women, their babies, and families overall. In addition to the significance for practice improvement, these measures also suggest future research directions and questions that have not been verified at the practice level for their usefulness in helping such a population in the context of an earthquake in the Chinese culture.

8.8 Limitations

This study aimed to examine the experience and feelings of pregnant women during, and having given birth after, a major earthquake; hence the targeted participants were those who were pregnant at any gestation age during the disaster. However, during the first trimester of pregnancy, a woman might not realise she was pregnant or have a clear image of motherhood before the initiation of a prenatal

examination (Lin, 2011). In Chinese hospitals, the prenatal examination is ordinarily initiated at 12 -week gestation age, which is the end of the first trimester. And this might be prolonged later for those living in rural areas (Ni & Xiao, 2010). The feelings of women during the first trimester, which might be similar to general survivors without pregnancy, might not have clearly represented the actual experience targeted by this study, thus reducing the quality of data in spite of the consumption of time and resources for recruiting and analysing them. Also, this study was a PhD project, which did not have unlimited time or resources, as the research had to consider the cost-effectiveness of the entire study. This group of first trimester women was therefore precluded for better focus and quality of data. Since these women were precluded in this study, it is difficult to say whether they had significantly different experiences from those in the second or third trimester, or had special needs, after the disaster. This specific point actually provides a research direction to follow after this study.

Women who had serious psychological disorders were excluded from this study, because their unstable psychological status and pathologically disturbed thoughts might have affected the accuracy of information that they could provide (Cohen, Mcgovern, Dinzeo & Covington, 2014; Freed et al., 2015; Leposavic, Leposavic & Gavrilovic, 2010). Furthermore, people with serious psychological problems are more prone to refusing to participate in such a study, because they are feeling ashamed to disclose their situation (Black, Curran & Dyer, 2013; Reynders, Kerkhof, Molenberghs & Van Audenhove, 2014). Consequently, the study might have closed the door to approach such women whose psychological status had deteriorated into serious disorders, and missed their particular stories (negative cases). As Frank (1998)

summarised, there were mainly three types of stories for deeply unwell persons, which could serve as examples for explaining people's experiences after traumatic events. The three types of stories included 'restitution', 'chaos story', and 'quest story'. 'Restitution' refers to a story that describes how deeply unwell persons return to healthy status, which is similar to that of participants in the current study. 'Chaos story' narrates a situation in which the illness deteriorates and the person falls into chaos, which is contrary to 'restitution'. 'Quest story' describes a process in which an ill person's quest for new meaning through the experience of deep illness, finally results in new values and meanings. The results of 'evolving meaning' bear similarities with 'restitution' and the 'quest story', yet is missing the 'chaos story'. Although the experience and social processes of perinatal women after an earthquake may differ from deeply unwell persons in terms of the disparities in the types of traumatic event and health status (perinatal women are relatively healthy), it is difficult to identify whether the perinatal women would have a 'chaos story' that the women with serious psychological conditions, who had been precluded, would have had. As a PhD study with limited time and resources, it is not feasible to explore the vast extent of experiences, even with theoretical sampling, that may or may not exist. This shortfall may also become a research direction to investigate in future works.

There was a limitation on the researcher's interviewing skills during the time of initial data collection. The researcher is a student who began to approach qualitative research and grounded theory method in the period since she became a PhD student. Her interview skills were developing over the research process. The original interviews were not the best to elucidate clear and important information. For example, there was a participant who almost always gave the comment "*I didn't have*

a feeling about that". Although I felt a little dismayed, I reflected on this frequent response, and attributed the situation to my poor skills in establishing trust between researcher and participants. Then I attended a training program about psychological consultation and learned about interpersonal communication skills, such as facial expressions and gestures during an interview, opening remarks for establishing a good first impression, etc. I also asked a psychologist, who made comments on my skills, to observe one of my interviews. In addition, I refreshed my skills again and again through more interviewing. The point I thought to be important was showing my concern to the participants, and my sincerity in listening to them through the study. Sometimes, I might share my own experience, which could make them feel the reciprocity between us. Nobody wants to expose herself/himself to another without knowing more about the other. I also realise that the skill of interviewing matches the principle of 'co-constructing' for the constructive grounded theory, because the meaning could be co-constructed through the interactions between me, as the researcher, and the participants. Fortunately, they allowed me to interview them again when I refreshed my skills, which did not affect the final quality of information.

Limitations are also noted with regard to sampling. The sample size was 24, which included 22 perinatal women and two husbands. This was a relatively small sample size from a quantitative point of view, which might limit the generalisation of outcomes to a broader scope of the population. However, this is a grounded theory study, which aimed to explore deep information about the experiences and interactions of these perinatal women. As Morse (2000) suggested, 20-50 participants are acceptable for a grounded theory study.

There exists a limitation for theoretical sampling of family members and others

as well. Coding of the initial five participants indicated that their close family members, e.g. husbands and children, were particularly important for the women. The following data collection should therefore include them, as many as possible, for theoretical saturation. However, only two husbands agreed to participate in the study and provide their stories, while others could not appear either because they had left their hometown to work, or because they were busy or too shy to talk, etc. The smaller number of family members in this study might reduce the quality of information for better theoretical saturation and representation. A matter for rejoicing was that the backgrounds of the two husbands represented two different situations surrounding the tentative categories for theoretical sampling, which provided relatively comprehensive and copious supplementary information for developing and discovering the resultant process. Apart from husbands, no other family members, such as parents and older children, were invited to participate in the study. The perinatal women were young, ranging in age from 23 to 39. It was hard to find women with children over 18. Thus the experiences from older children could not be collected as supplementary data. In regard to parents, most participants did not live with their parents either during or after the earthquake, which to a certain degree limited the usefulness of information provided by them, as related to their interactions with the perinatal women. According to the descriptions of perinatal women in the present study, husbands and babies were key members of a family, who superseded any other persons, including parents. The lack of opinions from parents may not necessarily affect the representative findings of this study. In addition, the parents who lived with the women after the earthquake (participants A, F, K, M, and V) had relatively low education levels (illiteracy or primary school) that those women

refused their parents' participation out of fear of their parents' insufficient ability to express themselves clearly. Although the parents-in-law of participant U, who lived with her after the disaster, had a higher level of education (high school), they could not attend the study because they were busy with work. Participant L, whose mother-in-law lived with her after the disaster, sat beside her and made very few comments throughout the interview. In such an overall situation, the information supplemented by family members was limited, which might affect the attainment of theoretical saturation. However, Strauss and Corbin (1998) argued that it was almost impossible to arrive at definite saturation; as for available resources and participants in this PhD project, relative saturation was attained through constant comparative analysis among all the available data. Nevertheless, the researcher could continue to follow up this project and include more participants to reach a level closer to better saturation.

As a novice in qualitative research, the researcher posed possible limitations to the study through the process of sampling and data analysis. Some of the researcher's experiences could be positively summarised for future studies and other new qualitative research students, who target answering their research questions with a similar design and methods. At the beginning of the data analysis, I coded the interviews word-by-word and sentence-by-sentence according to my early understanding of the procedures, as described in classic books about grounded theory. The coding was rich in detail and similar to the original sentences, which produced a large amount of initial codes (over 2,000) from the transcripts with a total of 100,000 words. Many of the initial codes were found to carry the same meaning as others (duplicated codes). Meanwhile, in the beginning I did not pay much attention

to constant comparison and memo writing, because I believed that the subcategories and categories could emerge during the accumulation of codes through the use of qualitative software (NVivo) like the rationale of using statistics. However, the aim of coding, as explaining the meaning underneath the words of participants, was initially neglected, which made me lose my way in the forest of data and initial codes, and unable to find a direction. A simultaneous problem with my quantitative frame of thinking was to sample the participants according to their demographic variations, such as age, educational background, or family financial status. These problems in data collection and data analysis handicapped my process towards discovering the essence of the women's experience, distressing me in my research during that period. With help from my supervisor and other experienced grounded theory researchers, I performed the initial coding again with detailed and thoughtful memo writing. I recorded what I thought during the coding of each participant. In addition, I made a summary whenever I had interviewed five more participants, which required me to review the initial codes and merge the duplicated ones. This measure reduced duplicated codes and facilitated the sub- or under-subcategories to emerge in the process of data collection and data analysis, which also led to better theoretical sampling. It did take me a rather long time to realise my limitations, which I think would be helpful to share with novices in this field. The key points for me on the road to grounded theory study were: coding as explaining the meaning underneath the participants' words; practising a qualitative way of thinking with constant comparison; recording and reflecting on anything one comes up with through memo writing and summarising them in a timely manner; and communicating with experienced supervisors and researchers for advice.

In summary, there are some limitations that need improvement in future studies. The major one was to theoretically sample and recruit more participants, including the perinatal women in the earthquake and their family members, to supplement the constant comparisons and to concurrently refresh the process from time to time. Some experiences in data collection and data analysis were also summarised, which could enlighten other researchers for future research with similar questions and/or levels of research experience through the grounded theory.

Chapter 9 Conclusions

This study aimed to explore the experiences of childbearing and childrearing women and the process under which they interacted with their family over the period of a major earthquake. The roles and dynamics that families played in relation to the mental health of these women were investigated, and a substantive theory that captured realistic accounts of their experiences and interactions with their families as a process within two years after an earthquake was developed. Although existing literature reported either the negative psychological impact of disaster on perinatal women and survivors, or the family interactions of perinatal women without the experience of disaster, this is the first time a grounded theory was conducted in-depth to explore the experience and family interactions of perinatal women in the context of a major earthquake. Under the constructivist perspective (Charmaz, 2006; 2014), the researcher studied the experiences of both perinatal women and their close family members (husbands) with data collected from semi-structured interviews, as well as observations of their interactions. Study results indicated that perinatal women felt relieved after the disaster and were recovering from negative psychological responses. They attained a new meaning of life in their family and social relationships, and sustained personal growth from rearing their babies through the process of changing values. The overall process was represented by a core category, 'evolving meaning'. The meanings of those women that evolved over this process developed from 'being disturbed', through 'alleviating disturbances', to 'growing up' under the interactions of two categories as 'being there of the family members' (a type of support external to the women) and 'love and hope instilled by the baby' (an internal motivator). Through these interactions, the women were empowered and

gradually recovering from their psychological disturbancesin the face of ‘changing values’. ‘Being there of the family members’ is the most crucial and mutual need among all of the external support for both perinatal women and their family members, which could alleviate negative psychological responses by ‘strengthening emotional attachment’, ‘obtaining daily care’, ‘reassuring’, ‘being beneficiary for baby growth’, ‘venting negative emotions’, and ‘gaining courage when facing dangers’. The baby, no matter whether unborn or newborn, served as the internal motivator that could instill new meanings of love, hope, and courage in the mothers, which helped them actively cope with the adversities of disaster. With the experience of earthquake, childbirth, ‘being there of the family members’ and ‘love and hope instilled by the baby’ in the process, the women changed some of their life values as well as their relationships with others, and treasured raising their babies. This revealed their growth and evolution in meaning in life. Therefore, ‘evolving meaning’ represents the essence of the entire experience since the occurrence of the earthquake. It is the core category that captures the process the perinatal women have been going through. Through this process, the perinatal women were being changed within themselves, as well as together with their family members and friends in the community.

In contrast with other resilience models that demonstrate the recovery process after traumatic events, ‘evolving meaning’ describes and explains in depth a process with the focus on a particular population (childbearing and childrearing women) in the context of a specific disaster (earthquake). In connection with the severity of earthquake, perinatal women may experience greater disturbances than survivors of other disasters, e.g. hurricane, or those who have not experienced any disasters. The process discovered from the present study places more emphasis on family support

(especially close companionship) than the personalities of individual women and broader social support provided by the government and community. A significant role is also played by the baby in alleviating negative psychological responses, as well as facilitating the construction of meaning, for those women in the process of 'evolving meaning'.

Implications can be made from this study for both clinical practice and future research, in order to help the more vulnerable population of perinatal women and their families after disasters. Incorporating disaster-related information into childbirth/parenting classes will not only increase the disaster preparedness of perinatal women and their families, it can also be beneficial in establishing and strengthening the nurse-woman relationship through professional emphasis on knowledge and skills development to maintain safety. Paying more attention to the psychological health of women and providing professional help (e.g. psychological screening and mental health first aid) around the time of delivery after an earthquake may contribute to an improved quality of psychological services and caring for these women in hospitals. The focus of supportive interventions may also be placed on facilitating the evolving of life meaning and growth for these women and their families. The importance of 'being there of the family members' implied that creating a special space for family gathering and presence, and encouraging the involvement of husbands in pregnancy-related activities, could greatly reassure perinatal women and be beneficial for their health after a disaster. These implications also inform researchers about directions for future studies, and trigger thoughts on research interests about the experiences and support for perinatal pregnant women during a disaster.

There are limitations in this study with the restrictions in available time and resources as a PhD project. Limitations of this study, nevertheless, also suggest implications for future research. The major challenge encountered in this study was recruitment of participants and sampling, which may be optimised by including childbearing women who experienced an earthquake during the first trimester; better strategies and resources in recruiting family members, such as husbands, parents, and even adult children; and also sampling women with clear negative outcomes such as depression. On the other hand, competence in interpersonal skills in expressing concerns and sincerity to the study participants is essential for qualitative researchers in order to build better rapport and trust, so that more robust data collection through interviewing can be achieved. The experience of the researcher of this study in data collection and analysis also suggests the essential need to paying thorough attention and make constant effort in all levels of coding, in order to carefully discover a representing explanation of the meaning underneath the data, and strengthening the qualitative frame of thinking and constructivist approach of constant comparison. This can be achieved by exploiting the advantages of memo writing as much as possible; practicing rigorous and constant reflection throughout the constant comparative data analysis process; and seeking timely help from experienced researchers.

As an epilogue, I would like to quote the expression of participant S that captured integral parts of the essence of the perinatal women's experiences, feelings, and recognitions over the process of the earthquake and subsequent childbirth:

When there is an earthquake, because there was one, I think for friends, in particular when it is during the quake or a short time later, we've to

treasure them very much. Because they are able to actively think of you. Very cherishing of them indeed. When the earthquake was over, my first feeling was a kind of great appreciation of them. The second feeling was about my daily life. That is, in this place, everybody is not just looking after their own. We care about each other and we have a harmonious relationship … For my baby, it means the one for whom I must try my best to protect her, and even more when the earthquake strikes. She is the pulling force of my family cohesion (Second interview _ Line 23-33).

This study discovered that for "friends" and "companions", they could be family members (including the babies) and all those who are able to 'be there' with the women over the time of a major disaster, such as an earthquake. For the women, it is most meaningful and inspiring in their new perspectives on life triumphing over turmoil.

Appendices

Appendix I

Table of Evidence for Literature Review

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 1: Allen, D., Feinberg, E., & Mitchell, H. (2013). Bringing life course home: a pilot to reduce pregnancy risk through housing access and family support. *Maternal And Child Health Journal, 18*, 405-412.						
To evaluate the experience of women referred to the Healthy Star in Housing program and the effect of the program in reducing stress due to housing insecurity among low-income, pregnant women	130 pregnant women referred to the program between Oct 1, 2011 and March 30, 2012	1) Cross-sectional survey 2) Not mention the sampling method 3) N=130 4) The program was to offer housing units to pregnant women at risk of adverse birth outcomes	Quantitat-ive analysis: statistical analysis	1) Among eligible women, 58 % had medical conditions, 56 % mental health conditions, and 14 % prior adverse outcomes; 30 % had multiple risks. 2) 41% of them had symptoms consistent with PTSD. 3) The experience of the program confirms the salience of daily social experience to women's health and the importance of addressing stressors and stress in women's lives	1) No comparable group 2) Non-randomly sampling 3) Did not compare the pretest and posttest results	Provide information about the impact of family resources (housing) on the health of pregnant women

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 2: Birmes, P., Raynaud, JP., Daubisse, L., Brunet, A., Arbus, C., Klein, R., … Schmitt, L. (2009). Children's enduring PTSD symptoms are related to their family's adaptability and cohesion. Community Mental Health, 45, 290-299.						
To identify the relationship between Children's enduring PTSD symptoms and their family's adaptability and cohesion after a huge explosion occurred in a petrochemical plant	1st year junior high school pupils that attended school in an area close to the plant	1) Cross-sectional survey 2) Not mention the sampling method 3) N=100 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Enmeshed family cohesion or rigid family adaptability were more frequently found in children with low PTSD 2) PTSD symptoms in the mother, living in a family of 3 or more children, and being female were significantly associated with PTSD symptoms in the children	1) No description of sampling method 2) Only junior pupils were recruited 3) No comparable groups	Provide the information about the impact of children's family adaptability and cohesion on their enduring PTSD symptoms
Study 3: Blanchard, A., Hodgson, J., Gunn, W., Jesse, E., & White, M. (2009). Understanding social support and the couple's relationship among women with depressive symptoms in pregnancy. Issues in Mental Health Nursing, 30, 764-776.						
To qualitatively explore the couple's experience of depressive symptoms during pregnancy	Women with depressive symptoms and their partners were recruited. Setting was Concord Hospital's	1) Pheno-menological study; 2) Purposive sampling; 3) Seven women and their partners 4) No intervention	Colaizzi's pheno-menolog-ical data analysis method	Five themes were yielded: 1) Challenges and stressors associated with depressive symptoms during pregnancy 2) Pregnancy's effect on mood states 3) Relationship dynamics that influence moods 4) Pregnancy and the influence of mood on relationship dynamics 5) Reliance on external sources of	1) There was a theoretical framework for the study which may bring certain preconception to the study and destroy reflection 2) The setting is only one family	Provides additional data on the experience of couples who face depression during pregnancy

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
	Family Health Center which was a family practice residency clinic			support	health centers which may not provide all varieties of participants that could make thematic saturation available	
Study 4: Brandon, A.R., Ceccotti, N., Hynan, L.S., Shivakumar, G., Johnson, N., & Jarrett, R.B. (2012). Proof of concept: partner-assisted interpersonal psychotherapy for perinatal depression. *Archives of Women's Mental Health, 15*(6), 469-480.						
To test safety, acceptability, and feasibility of Partner-Assisted Interpersonal Psychotherapy (PA-IPT), an intervention that includes the partner as an active participant throughout treatment	Women over 12 weeks gestational age and less than 12 weeks postpartum, and fulfill DSM-IV criteria for major depressive disorder and moderate symptom severity	1) Quasi-experimental study 2) Non-randomly sampling 3) N=10 4) Intervent-ion: eight acute phase sessions and a 6-week follow-up assessment	Quantitat-ive analysis: statistical analysis	1) There were no study related adverse events, and no women had symptomatic worsening from intake to session eight 2) All partners attended all sessions, no couples dropped out of treatment, and all reported positive treatment satisfaction 3) 9 of 10 women met the criteria for clinical response at the conclusion of acute phase treatment, and 8 of the 9 presenting at a 6-week follow-up assessment met criteria for symptomatic recovery	1) Sample size is small 2) Non-randomly sampling 3) No comparison group 4) No blinding and concealment	Suggest that the PA-IPT is effective in helping pregnant women; Suggest partner can play a key role in helping pregnant women to recover from mental disorders

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 5: Cairo, S., Darwiche, J., Tissot, H., Favez, N., Germond, M., Guex, P., … Despland, J.-N. (2012). Family interactions in IVF families: change over the transition to parenthood. *Journal of Reproductive and Infant Psychology, 30*(1), 5-20.						
To study the change over time in the family interactions of couples who conceived through in-vitro fertilization (IVF)	Couples from a fertility centre in French-speaking Switzerland	1) Observat-ional and longitudinal study 2) Non-randomly sampling; 3) N=31 couples 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Family alliance, marital satisfaction and parental attachment scores in the IVF sample were all similar to or higher than those in the reference sample during pregnancy. At nine months postnatally, the family alliance scores were lower 2) No association was observed between the pre- and postnatal scores. 3) Neither prenatal marital satisfaction nor parent-foetus attachment predicted the postnatal family alliance	1) Sample size is small 2) Use quantitative method to scale the observation outcomes may lost some key information	It is the first to provide observational data on father-mother-baby triadic interactions in fertility research. It is indicated that supporting couples who become parents using IVF, not just during medical treatment, but also after the birth of their child is important because a couple's difficulties cannot be

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
						anticipated
Study 6: Cao, X., Jiang, X., Li, X., Lo, M.J.H., & Li, R. (2013). Family functioning and its predictors among disaster bereaved individuals in China: eighteen months after the Wenchuan earthquake. *PLoS ONE 8*(4): e60738.						
To examine perceived family functioning and its predictors in disaster bereaved individuals 18 months after the 2008 Wenchuan earthquake	The parents who lost a biological child in the earthquake	1) Cross-sectional survey 2) Convenient sampling 3) N=264 4) No intervention	Quantitative analysis: statistical analysis	1) The rates of moderate and severe family dysfunction in bereaved individuals were 37.1% and 12.9% 2) Less financial loss during the earthquake was a significant predictor for positive family function. 3) Better self-rated health status after the earthquake was related to positive family function, cohesion, and adaptability 4) The ability to give birth to another baby of bereaved parents was a significant predictor for positive family function and cohesion 5) Poorer family function, cohesion and adaptability were related to greater loneliness	1) Non-randomly sampling 2) No comparison groups	Identify perceived family functioning and its predictors in bereaved parents
Study 7: Cao, X., Jiang, X., Li, X., Lo, M.J.H., Li, R., & Dou X. (2013). Perceived family functioning and depression in bereaved parents in China after the 2008 Sichuan earthquake. *Archives of Psychiatric Nursing, 27*, 204-209.						
To examine perceived family functioning and depression in	The parents who lost a biological child in the	1) Cross-sectional survey 2) Cluster	Quantitative analysis: statistical	1) The prevalence of family dysfunction was 59.5% 2) All the respondents experienced depression with 79.5% of the them	1) No comparison group	Gave information about the correlation

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
bereaved parents 18 months after the Sichuan earthquake	earthquake	sampling 3) N=190 4) No inter-vention	analysis	reporting very severe depression 3) Being female, being at an advanced age, being divorced, being directly exposed to the death of their children, not having another baby and poorer family function were predictors for severe depression		between family function and depression in bereaved parents after a major earthquake
Study 8: Chang, H. L., Chang, T. C., Lin, T. Y., & Kuo, S. S. (2002). Psychiatric morbidity and pregnancy outcome in a disaster area of Taiwan 921 earthquake. *Psychiatry and Clinical Neurosciences, 56*(2), 139-144.						
To investigate the prevalence of minor psychiatric morbidity (MPDs) and the perinatal outcome of pregnant women	Women who attended antenatal care at the hospital from March to August 2000 and who lived in the earthquake area	1) Cross-sectional survey; 2) Conven-ient sampling; 3) N=171; 4) No intervention	Quantitat-ive analysis: statistical analysis	1) The prevalence of MPDs in pregnant women was 29.2% 2) Women with starvation experience, higher negative attitude scores about the influence of earthquake on pregnancy and more casualties among relatives were significantly correlated with high CHQ 3) There was a significant positive correlation between the MPM and PTSD scores 4) There were 7.8% low birth weight neonates 5) Spouse casualty was the only significant factor that predicts neonatal low birth weight	1) Sampling is Convenient; 2) No comparison group 3) The reliability and validity of the Posttraumatic Stress Reaction Checklist and CHQ were not provided	Provide the clue for the relationship between pregnancy in disaster and birth outcome

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 9: Chen, Y.F. (2010). Psychological impact of the Yushu earthquake in Qinghai on pregnant and postpartum women and the interventions to related risks. *Journal of High Altitude Medicine, 20*(2), 36-37.						
Investigate the psychological impact of the Yushu earthquake on pregnant and postpartum women in the affected area	Pregnant or postpartum women who experienced the Yushu earthquake and those who did not experience the earthquake; The setting is the epicenter of the earthquake and the hospital	1) Comparat-ive cross-sectional survey 2) Conven-ient sampling 3) Earth-quake group N=40 and control group N=40 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Prevalence rate of depression in earthquake group was 42.5%, compared with control group was 5%; 2) Prevalence of anxiety of earthquake group was 57.5%, the control group was 10%	1) Non-randomly sampling 2) Sample size is small 3) No description of evidence of acceptable psychometrics	Provide information about the psychological impact of the Yushu earthquake on ethnic pregnant women
Study 10: Domian, E.W. (2001). Cultural practices and social support of pregnant women in a Northern New Mexico community. *Journal of Nursing Scholarship, 33*(4), 331-336.						
To describe the experience of social support in Hispanic families during pregnancy	The pregnant Hispanic women who have generational roots in	1) Ethno-graphical study 2) Purposive sampling	Thematic analysis in qualitative study	1) Pregnancy outcomes were positive because of a socialization process that helped pregnant Hispanic women and family members adapt and change to support the pregnancy	The author let participants know when the next visit would occur, which may cause "Hawthorne	Provide the information about the experience of pregnant women to

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
	northern New Mexico Setting was Rio Arriba county with homogene-ous Hispanic population	3) N=20 4) No intervention		2) The mutual shaping of socialisation process and pregnancy outcomes helped reinforce the family structure, integrate cultural belief, define roles for both mother and family members, define the nature of mother-child and family-child relationships and facilitate a positive process with a supportive orientation	effect"	social support in the context of Hispanic culture
Study 11: Dong, X., Qu, Z., Liu, F., Jiang, X., Wang, Y., Chui, C. H. K., … Zhang, X. (2013). Depression and its risk factors among pregnant women in 2008 Sichuan earthquake area and non-earthquake struck area in China. *Journal of Affective Disorders, 151*(2), 566-572.						
To analyse whether the earthquake continued to affect pregnant women's mental health 4 years after the disaster	Pregnant women at 13 to 28 weeks' gestation 4 years after the Wenchuan earthquake Setting is hospitals	1) Com-parative cross-sectional survey; 2) Conven-ient sampling; 3) Earth-quake group N=254 Control group N=276 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) The prevalence rate of depressive symptoms of pregnant women in the earthquake area was 34.5%, and the rate of control area which was not struck by earthquake was 39.5% (score $\geqslant$10) 2) There was no statistical significance between earthquake area and non-earthquake area 3) Sleep quality, social support from husband and parents, stress of pregnancy, life satisfaction, marital satisfaction, thoughts and feelings regarding the marriage and one's spouse and agreement on	1) There were differences between earthquake group and control group which made the baseline unequal 2) Convenient sampling	Provide evidence about the impact of earthquake on the depression of pregnant women in a long run

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
				relationship matters were found to be related to depression		
Study 12: Duan, C., & Fan, L. (2007). The influence of marital quality and family function on pregnant mental health. *China Maternal and Child Health, 22*, 3374-3375.						
To explore the influence of marital quality and family function on pregnant and delivery anxiety, and on the pregnant outcomes	The pregnant women who gave birth in the gynecological and obstetric hospitals in Beijing	1) Cross-sectional survey 2) Not mention the sampling method 3) N=200	Quantitat-ive analysis: statistical analysis	1) The family function and marital quality is worse in the group with anxiety than that without anxiety; 2) There was no statistical difference in obstetric outcomes in two groups (with or without anxiety)	1) Not randomly sampling 2) Comparability of two groups is not assessed 3) No evidence of acceptable psychometrics	Suggest the correlation between marital quality, family function and anxiety of pregnant women
Study 13: Ehrlich, M., Harville, E., Xiong, X., Buekens, P., Pridjian, G., & Elkind-Hirsch, K. (2010). Loss of resources and hurricane experience as predictors of postpartum depression among women in southern Louisiana. *Journal of Women's Health, 19*(5), 877-884.						
To assess the influence of loss of resources after disaster on postpartum depression	Women in southern Louisiana who were pregnant during or directly after Hurricane Katrina	1) Long-itudinal study 2) Not mention the sampling method 3) N=208 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Both tangible and nontangible loss of resources (LOR) were associated with depression cross-sectionally and prospectively. 2) Severe hurricane exposure was associated with depression. 3) LOR-associated depression was	1) Non-randomly sampling 2) No comparable group 3) No evidence of acceptable reliability and	1) Suggest LOR and disaster experience play a large role in psychological distress of pregnant women

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
	Setting were two hospitals in southern Louisiana			explained almost entirely by nontangible rather than tangible factors 4) Nontangible LOR explained some of the associated between severe hurricane exposure and depression.	validity for the instrument of Hurricane Experience 4) Hospital based	2) Suggest restoring psychological resources could reduce the psychological impact of earthquake
Study 14: Felix, E., You, S., Vernberg, E., & Canino, G. (2013). Family influences on the long term post-disaster recovery of Puerto Rican youth. *Journal of Abnormal Child Psychology, 41*, 111-124.						
To explore the roles of the characteristics of the family environment in mediating the relationship between disaster exposure and the presence of symptoms that met DSM-IV diagnostic criteria for symptom count and duration for an internalizing	Children aged 4 to 17 years and their primary caretakers Setting is Puerto Rican's health reform areas (urban vs. rural areas)	1) Cross-sectional survey 2) Randomly sampling 3) N=1886 including caregivers and children 4) No intervention	Quantitat-ive analysis: statistical analysis	1) For children (4-10 years old), parenting variables were related to internalizing psychopathology, but did not mediate the exposure-psychopathology relationship 2) For youth (11-17 years old), some parenting variables attenuated the exposure-psychopathology relation; 3) Family environment may play a meditational role in psychopathology postdisaster among youth, compared to an additive role for children 4) Hurricane exposure had a relation to family environment for families without parental history of mental health problems	1) No comparison group 2) Participants were children with diagnostic mental disorders, whose information may not good enough	Provide information about the roles of family environment in mediating the disaster exposure-psychopatho-logy relationship and help to design intervention which may consider the family environments

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
disorder in children						
Study 15: Fu, J., Zhao, Y., Song, H., Huang, M.J., Zhou, R., Wang, Z., & Hu, L.N. (2008). Posttraumatic stress disorder of women after Wenchuan earthquake. *Journal of Practical Obstetrics and Gynecology, 24*(12), 744-746.						
To explore the impact of earthquake on the PTSD of pregnant women	Pregnant women and non-pregnant women, who experienced the earthquake and came to the hospital for care	1) Com-parative cross-sectional survey 2) Sampling method was not mention-ed 3) Pregnant women N=46; Non-pregnant women N=54 4) No intervention	Quantitat-ive analysis: statistical analysis	1) There was no significant difference between pregnant and non-pregnant group in the total scores of PCL-C 2) The rate of high risk for PTSD in pregnant group was 15.2% compared with non-pregnant group which was 33.3%, RR was 0.359 3) The score of MSPSS in pregnant group was 63.93±7.9 which was significantly higher than control group(58.89±9.13) 4) Pregnant women received higher support from society and family showed lower rate of high risk of PTSD	1) The sampling method is not clear 2) Sample size is small 3) Hospital based 4) The baseline of earthquake group and control group was not compared	Provide information about the impact of earthquake on the PTSD of pregnant women and the function of social support in protecting the mental health of pregnant women
Study 16: Glynn, L. M., Wadhwa, P. D., Dunkel-Schetter, C., Chicz-Demet, A. & Sandman, C. A. (2001). When stress happens matters: effects of earthquake timing on stress responsivity in pregnancy. *American Journal of Obstetrics and Gynecology*, *184*(4), 637-42.						
To check whether the timing of the earthquake was related to an affective	Pregnant women but the actual sample who experienced	1) Quasi-experimental study 2) Sampling method was	Quantitati ve analysis: statistical analysis	1) The rating of stress was rated as most stressful if it occurred during the first trimester (mean =3.40), and least stressful during the third trimester (mean=2.38)	1) Non-randomly sampling 2) No allocation concealment and	Reinforce the evidence of a relation between stress and pregnancy

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
response to the earthquake and to length of gestation	earthquake in the first, second, and third trimester	not mention-ed 3) 29 pregnant women 4) The scale of earth-quake is the intervention		2) The timing of the earthquake during pregnancy was related to the affective response	blinding 3) Recall bias: the women who experienced earthquake during the 1st and 2nd trimester reported their responses at 32 weeks' gestation	outcome. Demonstrate that the timing of stress in human pregnancy is important in determining its impact on appraisals and length of gestation
Study 17: Hackbarth, M., Pavkov, T., Wetchler, J., & Flannery, M. (2012). Natural disasters: an assessment of family resiliency following hurricane Katrina. *Journal of Marital and Family Therapy, 38*(2), 340-351.						
To explore the role of family characteristics in the coping process of a family after having experienced hurricane Katrina to gain an understanding of the relationship between family	The survivors of Hurricane Katrina	1) Cross-sectional survey 2)Convenient sampling 3) N=452 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Female participants' family coping scores, scores of overall spirituality/religiosity were higher than male participants 2) There was a relationship between hope, family hardiness and spirituality, and the criterion variable, family coping	1) Non-randomly sampling 2) No comparison group 3) One source of data is internet and the reliability of data cannot be assured	1) Provide information about family coping after Hurricane Katrina 2) Give inform-ation about the relationship between family resilience, hope, family hardiness and

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
resilience, hope, family hardiness, and spirituality for survivors						spirituality for survivors
Study 18: Hakulinen, T. & Paunonen, M. (1995). The family dynamics of childbearing and childrearing families in Finland. *Journal of Advanced Nursing, 22*(5), 830-834.						
To describe the family dynamic of childbearing and childrearing families in Finland, and to study changes in family dynamics after childbirth	Families who were clients of antenatal clinics in Kuopio	1) Long-itudinal study 2) Convenient sampling 3) N=118 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Childbearing and childrearing families were believed to function quite well. 2) Pregnant women described their family dynamics in more positive terms than fathers, reporting greater flexibility and clearer communication. 3) Mothers reported more individuation and mutuality than fathers 4) First-time expectant families reported more mutuality than families expecting their second child 5) The birth of a child affected family dynamics by bringing about various changes such as role conflict, etc.	1) Non-randomly sampling 2) High drop-out rate	Give information about the family dynamics of childbearing and childrearing families in Finland
Study 19: Hibino, Y., Takaki, J., Kambayashi, Y., Hitomi, Y., Sakai, A., Sekizuka, N.,… Nakamura, H. (2009a). Health impact of disaster- related stress on pregnant women living in the affected area of the Noto Peninsula earthquake in Japan. *Psychiatry and Clinical Neurosciences, 63*(1), 107-115.						
To assess the	Women who	1) Long-	Quantitat-	1) The EPDS scores of the women	1) No	Made an

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
health impact of stress on pregnant women during or immediately after a major earthquake	were pregnant during or immediately after the major earthquake in Japan Setting is the hospital in Japan	itudinal survey without a comparative group 2) Con-venient sampling 3) N=99 4) No inter-vention	ive analysis: statistical analysis	before and after delivery were3.9±4.1 and 3.8±4.1. The percentage of high risk individuals (total score<9) was 13.1%; 2) Sense of coherence, earthquake-related factor “Existing anxiety about an earthquake”, socio-demographic factor “nulliparous”, and depression during pregnancy were positively related to postpartum depression	comparative group; 2) Non-randomly sampling 3) Sample size is small	important contribution to the under-standing of the impact of a natural disaster upon pregnant women
Study 20: Hibino, Y., Takaki, J., Kambayashi, Y., Hitomi, Y., Sakai, A., Sekizuka, N.,… Nakamura, H. (2009b). Relationship between the Noto Peninsula earthquake and maternal postnatal depression and child- rearing. *Environmental Health and Preventive Medicine, 14*(5), 255-260.						
To explore the relationship between a medium-scale earthquake and maternal depression	Women who were pregnant during and gave birth after the major earthquake in Japan Setting is the hospital in Japan	1) Cross-sectional survey without comparison group; 2) Con-venient sampling; 3) N=155 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) The mean EPDS scores was 4.2±4.2, and the rate of higher risk (score ⩾9) was 11.6%; 2) The EPDS scores were significantly correlated with increased “trouble with infant care”, increased artificial “lactation”, decreased “satisfaction with delivery”, increased “anxiety about earthquake”, and “birth history”	1) No comparative group; 2) Non-randomly sampling 3) Sample size is small 4) Hospital basis: selection bias	Made an important contribution to the under-standing of the impact of a natural disaster upon women who were pregnant during and gave birth after an earth-quake
Study 21: Jeong, H.G., Lim, J.S., Lee, M.S., Kim, S.H., Jung, I.K., & Joe, S.H. (2013). The association of psychosocial factors and obstetric history						

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
with depression in pregnant women: focus on the role of emotional support. *General Hospital Psychiatry, 35*, 354-358.						
To investigate risk factors for antenatal depression with a focus on emotional support	Pregnant women visiting a local division of the public health center	1) Cross-sectional 2) Con-venient sampling 3) N=1262	Quantitat-ive analysis: statistical analysis	1) Antenatal depression was associated with various biopsychosocial correlates such as marital status, education level and low income, etc. 2) Lack of current emotional support from partners increased risk for depression by more than twofold.	1) Non-random sampling 2) Hospital based 3) No evidence of reliability and validity for support assess	Highlight the role of emotional support as a potentially effective strategy for preventing antenatal depression
Study 22: Jones, S.M., Bogat, G.A., Davidson, W.S., Eye, A.V., & Levendosky, A. (2005). Family support and mental health in pregnant women experiencing interpersonal partner violence: an analysis of ethnic differences. *American Journal of Community Psychology, 36*, 97-108.						
To investigate the relationship between family support and mental health of pregnant women experiencing interpersonal partner violence	110 women experiencing IPV who were recruited by public areas and hospital or domestic violence program poster	1) Cross-sectional survey 2) Con-venient sampling 3) N=110 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Black women had better mental health than white women 2) Ethnicity was not a significant predictor of family support in the lives of physically abused women as well as the need to incorporate cross cultural perspectives	1) Non-randomly sampling 2) Sample size is small for cross sectional survey	Provide information about the relationship between family support and depression of pregnant women in America
Study 23: Kershaw, T., Murphy, A., Divney, A., Magriples, U., Niccolai, L., & Gordon, D. (2013). What's love got to do with it: relationship functioning and mental and physical quality of life among pregnant adolescent couples. American *Journal of Community Psychology, 52*, 288-301.						
To describe	Young	1) Cross-	Quantitat-	1) 61% of couples had at least one	1) No randomly	Suggest that

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
relationship adjustment and its association with mental and physical quality of life for young couple expecting a baby; To assess how relationship factors of both the person and partner are associated with relationship adjust	pregnant couples from urban obstetric clinics and from an ultrasound clinic in four university-affiliated hospitals in Connecticut	sectional survey 2) Con-venient sampling 3) N=296 4) No inter-vention	ive analysis: statistical analysis	member with moderate or severe relationship distress 2) Lower attachment avoidance, lower attachment anxiety, higher relationship equity, lack of intimate partner violence, feelings of love, perceived partner attractiveness, and family support of the relationship related to better relationship adjustment. 3) Better relationship adjustment related to more positive mental and physical quality of life	sampling 2) Hospital based: selection bias 3) No comparison group	secure attachments, equitable relationships, feelings of love, and a lack of violence may be important in having strong relationships and improved mental and physical health
Study 24: La, J., Sun, W., & Yu, X. (2010). The analysis of 31 pregnant women's obstetric outcomes in earthquake area. *High Altitude Medicine, 20*(2), 38-39.						
To investigate the physical trauma and obstetric outcomes of pregnant women after an earthquake	Pregnant women who received health care from the red cross hospital after Yushu earthquake	1) Cross-sectional survey 2) Con-venient sampling 3) N=31 4) No inter-vention	Quantitat-ive summar-ize the frequency of each outcome	1) Incidence of physical trauma in pregnant women was 90.32% 2) All women during 1st and 2nd trimester (11) reported vaginal bleeding; 40% of women during 3rd trimester report the symptoms of preterm 3) Incidence of fetal distress was 58.06%	1) Sample size is small 2) Sampling is convenient, not randomization 3) No comparison group 4) Hospital based	To provide information about the physical impact of earthquake on pregnant women

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
				4) Other common obstetric outcomes include PROM, abortion and intrauterine growth retardation		
Study 25: Lau, Y., Yin, L., & Wang, Y. Q. (2011). Severe antenatal depressive symptoms before and after the 2008 Wenchuan earthquake in Chengdu, China. *Journal of Obstetric Gynecologic and Neonatal Nursing, 40*(1), 62-74.						
To assess the prevalence and correlates of severe antenatal depressive symptoms among pregnant women before and after the earthquake	Pregnant women 3 months before the earthquake and 3 months after the earthquake	1) Cross-sectional survey 2) Con-venient sampling 3) N=1545 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) The prevalence rate of depression of pregnant women (score >14) before and after the earthquake were 9.2% and 7.1% respectively; 2) Shorter staying time, multiparous, poor marital relationship and poor social support were associated with depression after the earthquake	1) Non random sampling 2) The representative-ness of setting is not good 3) The participants were 12 to 24 weeks	Provide evidence about the impact of the earthquake on the severe antenatal depressive symptoms among pregnant women
Study 26: Lei, H.J., Sun, H.B., & Liao, Z. (2009). A survey of emotional status of pregnant women after an earthquake. *Chinese Journal of Practical Gynecology and Obstetrics, 25* (10), 789-790.						
To investigate the depression and anxiety of pregnant women immediately after the earthquake	Pregnant women who experienced the Wen-chuan earth-quake and received health care in the hospitals	1) Com-parative cross-sectional survey 2) Randomly sampling 3) Earth-quake group	Quantitat-ive analysis: statistical analysis	1) Prevalence of anxiety of earthquake group was 56% (mainly mild one) which was higher than control group (29%) 2) Prevalence of depression of earthquake group was 46% (mainly moderate and severe ones) which was higher than control group (25%) 3) Gestation weeks, death of	1) The randomization was not described clearly 2) Hospital based 3) The control group was not representative because they also	Provide the information about the impact of earthquake on the depression and anxiety of pregnant women

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
	of the authors	N=100, control group N=100 4) No intervention		immediate dependent and sleep disturbance were related to depression and anxiety of pregnant women immediately after an earthquake	experienced the earthquake	immediately after the earthquake
Study 27: Li, D., Xu, X., Liu, J., & Wu, P. (2013). Life event and pregnant pressure: the mediating effect of mental health and husband support. *Journal of Psychological Science, 36*(4), 876-883.						
To explore the relationship between life event and pregnant pressure and the mediate function of psychological status and partner support on the pregnant pressure	The pregnant women at 24 to 33 weeks' gestation, who went to a hospital in Shanghai to give birth	1) Cross-sectional survey 2) Con-venient sampling 3) N=403 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) The pregnant pressure was higher in women of unplanned pregnancy than those of planned pregnancy 2) The life events were positively associated with pressure and negatively associated with mental health of pregnant women 3) The mental health of pregnant women and partner support played a mediate role for the relationship between life event and pregnant pressure	1) Non-randomly sampling 2) Hospital based 3) gestation week is just from 24-33 which cannot represent the population in all gestation week	Provide the information about the correlation among function of life event, psychological status, partner support and pregnant pressure
Study 28: Liu, H.X., Jiao, W.H., Wang, X.R., & Wang, H.L. (2008). Follow-up study on psychological status of pregnant women in disaster area after earthquake. *Academic Journal ofPLA Postgraduate Medical School*, *29*(5), 390-391.						
To evaluate the psychological status of pregnant women in disaster area after earthquake	Pregnant women who experienced the Wenchuan earthquake	1) Cross-sectional survey; 2) Randomly sampling; 3) N=88	Quantitat-ive analysis: statistical analysis	The score in total and of psychology and idiosoma were higher after earthquake than before, but decreased after therapy (gave suggestion about psychological adaptation, hand out brochure and	1) The actual method of randomisation was not described 2) No comparison	Provide the information about the impact of the Wenchuan earthquake on

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
		4) No intervention		booklet for knowledge of psychology and pregnancy)	group 3) No evidence of acceptable psychometrics	depression and anxiety of pregnant women
Study 29: McDermott, B.M., & Cobham, V.E. (2012). Family functioning in the aftermath of a natural disaster. *BMC Psychiatry, 12*, 55. Available: http://www.biomedcentral.com/1471-244X/12/55						
To investigate whether family functioning in the post-disaster environment would be impaired relative to a non-exposed sample and potential correlates with family functioning such as disaster-related exposure and child posttraumatic mental health symptoms	School children in the design-ated disaster zone and parents of children attending catholic elementary schools were participants Setting was North Queensland, Australia	1) Cross-sectional survey 2) Con-venient sampling 3) N=803 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) 28.3% of children met criteria for dysfunction on the family adjustment device, double the frequency in a community sample 2) The dysfunction group was significantly more likely to have experienced more internalizing symptoms 3) An adjusted logistic regression model this group were not more likely to have elevated disaster-related exposure nor did children in these families validate more PTSD symptoms	1) No comparison group 2) Non-randomly sampling	Provide information about the correlation between family function and child posttraumatic mental health symptoms
Study 30: Nygaard, E., Wentzel-Larsen, T., Hussain, A., & Heir, T. (2011). Family structure and posttraumatic stress reactions: a longitudinal study using multilevel analyses. *BMC Psychiatry, 11*, 195-204.						

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
To study the effects of marital and parental statuses on posttraumatic stress reactions after the 2004 southeast Asia tsunami and whether persons in the same household had more shared stress reactions than others	A tourist population of Norwegian adult citizens	1) Long-itudinal study 2) No sampling method 3) N=641 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Adults living in the same household reported levels of posttraumatic stress that were more similar to one another than adults who were not living together. 2) Between households, disaster experiences were closely related to the variance in posttraumatic stress symptom levels 3) Within households, disaster experiences were less related to the variance in symptom level at 2 years than at 6 months	1) No sampling method 2) No comparison group 3) High drop-out rate	Provide information about the effect of marital and parental status on PTSD after tsunami and support the importance of taking group levels into account when analyzing results
Study 31: Pan, W. (2008). The impact of age, educational degree and family support on mental health of primigravid. *Journal of North China Coal Medical University, 10*(4), 454-455.						
To analyze the impact of age, educational level and family support on the mental health of primigravid women	1) The primigravid women who received the routine care in a hospital in Ma'an Shan 2) The setting is in the	1) Cross-sectional survey 2) Con-venient sampling 3) N=219 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) There were differences in mental health status between pregnant women and normal women. 2) The symptoms of obsession, depression and anxiety was higher in pregnant women over 28 weeks' gestation than normal women, was lower in those under 28 weeks' gestation than normal women 3) There was difference in scores of	1) Non-randomly sampling 2) The com-parability of primigravid group and normal women was not assured	Provide data about the impact of gestation age, educational level and family support on the mental health of primigravid women

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
	obstetric clinics			obsession, somatic and anxiety symptoms between 28 weeks' and 37 weeks' gestation	3) Hospital based	
Study 32: Proctor, L.J., Fauchier, A., Oliver, P.H., Ramos, M.C., Rios, M.A., & Margolin, G. (2007). Family context and young children's responses to earthquake. *Journal of Child Psychology and Psychiatry, 48*(9), 941-949.						
To examine the influence of pre-disaster observed parenting behaviors and post-disaster parental stress on young children's distress following an earthquake	Two-parent families from Los Angeles area with a 4- to 5-year-old child at the time of the pre-earthquake assessment	1) Long-itudinal study 2) Not mentioned the sampling method 3) N=117 families 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Earthquake impact and children's distress symptoms were moderately correlated, but certain pre-earthquake parental behaviors moderated the relationship 2) The dose-response association between earthquake impact and children's symptoms did not hold for families in which fathers showed high levels of negative behaviors with daughters, or mothers showed low levels of positive behaviors with sons	1) No description of sampling method 2) No comparison group 3) Instrument for measuring earthquake impact was shown good quality	Provide information about the impact of observed parenting behaviors before the disaster and parental stress after the disaster on children's stress
Study 33: Qu, Z., Tian, D., Zhang, Q., Wang, X., He, H., Zhang, X.,… Xu, F. (2012a). The impact of the catastrophic earthquake in China's Sichuan province on the mental health of pregnant women. *Journal of Affective Disorders, 136*(1–2), 117-123.						
To assess impact of the earthquake on the mental health	women who were pregnant after the	1) Cross-sectional survey	Quantitati ve analysis: statistical	1) The rate of PTSD symptoms was 12.2% 2) The rate of major depressive	1) No comparable groups 2) The lack of	Provide the information about the long-term impact of

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
of pregnant women in an earthquake stricken area	2008 earthquake in Sichuan, China	2) Random sampling 3) N=351 4) No intervention	analysis	symptoms was 40.8% (score ⩾10) 3) Factors that influenced PTSD were age, severity of earthquake experience and the stressors of pregnancy (witnessed people being trapped and experienced the death of family member since the earthquake), 4) Factors associated with depression were the quality of the family relationship and the stress of pregnancy (fear about significant people disliking the baby, fears about birth defects, fears about delivery complications)	evidence in acceptable reliability and validity 3) Hospital based 4) Can only explain the impact on women who became pregnant after the earthquake	the Sichuan earthquake on the mental health of pregnant women in the earthquake stricken area.
Study 34: Qu, Z., Wang, X., Tian, D., Zhao, Y., Zhang, Q., He, H., … Guo, S. (2012b). Posttraumatic stress disorder and depression among new mothers at 8 months later of the 2008 Sichuan earthquake in China. Archives *of Women Mental Health, 15*(1), 49-55.						
To assess the impact of Sichuan earthquake on the PTSD and depression of new mothers	New mothers who had delivery within 1 week at the time 8 weeks after the earthquake	1) Cross-sectional survey without comparison group 2) Randomly sampling 3) N=317 4) No	Quantitat-ive analysis: statistical analysis	1) The total rate of PTSD symptoms was 19.9%, among which 9.5% met the criteria for full PTSD 2) 29% of participants had depressive symptoms, among those 14.2% met the criteria of severe depression 3) Earthquake experience in the past 4) Family income, employment, sleep hours were associated with	1) The scale for the measurement of earthquake experience was not clearly defined and lack of evidence for supporting its reliability and validity	Provide some evidence about the impact in terms of PTSD and depression of women who were pregnant during and gave birth after the earthquake

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
		intervention		mental health of mothers	2) No comparison group	
Study 35: Rosand, GMB., Slinning, K., Eberhard-Gran, M., Roysamb, E., & Tambs, K. (2011). Partner relationship satisfaction and maternal emotional distress in early pregnancy. *BMC Public Health, 11*: 161-173.						
To identify risk factors for maternal emotional distress during pregnancy with focus on partner relationship satisfaction. To assess interaction effects between relationship satisfaction and predictors	Mothers undergoing their first routine prenatal ultrasound examination Setting is hospitals in Norwegian	1) Cross-sectional survey 2) No sampling method 3) N=49425 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Relationship dissatisfaction was the strongest predictor of maternal emotional distress 2) Other predictors of maternal emotional distress include dissatisfaction at work, somatic disease, work related stress and maternal alcohol problems in the preceding year 3) Relationship satisfaction appear to buffer the effects of some risk factors	1) Non-randomly sampling 2) Hospital based	Provide information about the impact of partner relationship satisfaction on the maternal emotional distress in early pregnancy
Study 36: Rose, L., Alhusen, J., Bhandari, S., Soeken, K., Marcantonio, K., Bullock, L., & Sharps, P. (2010). Impact of intimate partner violence on pregnant women's mental health: mental distress and mental strength. *Issues in Mental Health Nursing, 31*(2), 103-111.						
To enhance understanding of the impact of setting (urban vs. rural) on wo-men's experience with support	The pregnant women screened positive for current abuse or in the year prior	1) Qualitative study 2) Purposive sampling 3) N=27	Coding process	1) Two major categories emerged from the data analysis: women's perceptions of self" and " parenting/protecting children" 2) Women's changing perceptions of self was related to mental distress,	1) Only purposive sampling: may not arrive at saturation 2) No definite qualitative	Provide in-depth information about the impact of setting on pregnant

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
seeking and coping with intimate partner violence (IPV); to understand the responses to the IPV in the context of pregnancy	to pregnancy	4) No intervention		mental health, or both mental distress and mental health	method was described	women's experience with IPV and about their responses to the IPV
Study 37: Sekizuka, N., Sakai, A., Aoyama, K., Kohama, T., Nakahama, Y., Fujita, S., … Nakamura, H. (2010). Association between the incidence of premature rupture of membranes in pregnant women and seismic intensity of the Noto Peninsula earthquake. *Environmental Health and Preventive Medicine, 15*, 292-298.						
To evaluate the association between the incidence of peripartum abnormalities and seismic intensity of an earthquake	Pregnant women who lived in the earthquake area	1) Cross-sectional survey 2) Not mention the sampling method 3) N=126 4) No intervention	Quantitat-ive analysis: statistical analysis	1) 7.9% of the participants had a premature rupture of membranes (PROM), with the percentage being significantly higher in the group that experienced a seismic intensity of 6 than in that experienced a seismic intensity of 5; 2) Other abnormalities were found not statistically related to the earthquake	1) Not mention the sampling method; 2) Hospital based which may lead to selection bias;	Provided the information about the impact of different seismic in-tensity of earthquake on the peripartum abnormalities
Study 38: Stapleton, L.R.T., Schetter, C.D., Westling, E., Rini, C., Gynn, L.M., Hobel, C.J., & Sandman, C.A. (2012). Perceived partner support in pregnancy predicts lower maternal and infant distress. *Journal of Family Psychology, 26*(3), 453-463.						
To investigate mothers' relationships with partners during	Pregnant women at least 18 years old who were	1) Long-itudinal study 2) Not men-	Quantitat-ive analysis: statistical	1) Mothers who perceived stronger social support from their partners mid-pregnancy had lower emotional distress postpartum after controlling	1) Not mention the sampling method	Provide information about the impact of

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
pregnancy and test the hypotheses that perception of prenatal partner support is a predictor of changes in maternal emotional distress and cause maternal rating of infant distress	at 18 weeks' singleton gestation or less at enrollment and were able to speak English Setting is prenatal clinics	tion the sampling method 3) N=272 4) No inter-vention	analysis	for their distress in early pregnancy and their infants were less distressed in response to novelty 2) Partner support mediated the effects of mothers' interpersonal security and relationship satisfaction on maternal and infant outcomes	2) Hospital based: selection bias 3) No evidence of reliability and validity for assessing the population	prenatal partner support on the maternal distress and maternal rating of infant distress
Study 39: Stuchbery, M., Matthey, S., & Barnett, B. (1998). Postnatal depression and social supports in Vietnamese, Arabic and Anglo-Celtic mothers. *Social Psychiatry and Psychiatric Epidemiology, 33*(10), 483-490.						
To examine which deficits in components of their social support network are associated with postnatal depression in women from a non-English-speaking	Women who went to antenatal clinics at four public hospitals in South Western Sydney. Women were interviewed	1) Cross-sectional survey 2) Not mention the sampling method 3) 105 Anglo-Celtic, 113 Vietnamese and 98 Arabic	Quantitat-ive analysis: statistical analysis	1) For Anglo-Celtic women, low postnatal mood was associated with perceived need for more emotional support from partners and mothers. 2) For Vietnamese women, low postnatal mood was associated with poor quality of relationship with partner and a perceived need for more practical help from him.	1) Sampling method was not mentioned; 2) The assessment of social support did not use tools with acceptable psychometrics 3) Sample size is small as for cross-	Discuss the association of social support and postnatal depression in different culture and indicated that culture may contribute to a woman's

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
background	in their homes at 6 weeks post-delivery	mothers 4) No intervention		3) For Arabic women, low postnatal mood was associated with perceived need for more emotional support from partners	culture survey	expectations of self-reliance and her subsequent feelings of failure
Study 40: Sun, H.B., Lei, H.J., & Liao, Z. (2009). Adverse effects of earthquake on psychological state and pregnancy outcome of pregnant women. *Journal of Occupational Health and Damage, 24*(4), 225-227.						
To investigate the adverse effects of earthquake on psychological state and pregnancy outcome of pregnant women	Pregnant women who experienced the Wenchuan earthquake and those who did not experienced the earthquake	1) Com-parative cross-sectional survey 2) Randomly sampling 3) Earth-quake group N=68; Control group N=95 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) The prevalence of anxiety in earthquake group was 54.4% (one month) and 44.1% (three months), control group was 29.5%(one month) and 23.2% (three month) 2) The prevalence of depression in earthquake group was 45.6% (1 month) and 38.2%, control group was 29.5% (1 month) and 21% (3 months) 3) The decrease of anxiety of earthquake group had significant difference.	1) Did not describe the method of sampling 2) Hospital based: selection bias 3) No evidence of acceptable psychometrics	Provide information about the impact of earthquake on the depression and anxiety of pregnant women
Study 41: Tammentie, T., Paavilainen, E., Astedt-Kurki, P., & Tarkka, M.T. (2004). Family dynamics of postnatally depressed mothers-discrepancy between expectations and reality. *Journal of Clinical Nursing, 13*, 65-74.						
To ascertain families' experiences of	Families (mothers, fathers)	1) Grounded theory study	Strauss and Cobin's	1) There was great discrepancy between expectations and reality in the depressed mothers' families	1) Convenient sampling is not very suitable for	Provide the information about families'

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
family dynamics when the mother suffers from postnatal depression	where the mother had displayed symptoms of postnatal depression Setting was the Pirkanmaa region, southern Finland	2) Con-venient sampling 3) 9 mothers, 5 fathers and one child 4) No inter-vention	coding process for data analysis	2) Parents, especially mothers, strove for perfection, perceived the infant to tie them down and had high expectations of family life	grounded theory study; 2) Whether theoretical saturation cannot be identified; 3) A 9-year-old child was selected as interviewee. The reliability of information provided by him cannot be assured. 4) The data analysis process seemed more like a description than analysis	experiences of family dynamics when the mother suffers from postnatal depression. Suggested that women need a great deal of information about mood changes after childbirth and the opportunity to discuss the changes brought about by the birth of a child
Study 42: Tammentie, T., Tarkka, M.T., Astedt-Kurki, P., Paavilainen, E., & Laippala, P. (2004). Family dynamics and postnatal depression. *Journal of Psychiatric and Mental Health Nursing, 11*, 141-149.						
To examine family dynamics at 2 months postpartum and to compare these	The parents from families with an infant born between	1) Cross-sectional survey 2) Random sampling;	Quantitat-ive analysis: statistical analysis	1) Of the families, 13% of the mothers suffered from PND symptoms 2) As a whole, family dynamics were reported to be rather good;	1) Response rate was low of 39%; 2) Although use random	1) Describe the family dynamics state in the family after childbirth;

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
in families where the mother suffered from postnatal depression with those in families where the mother had no depressive symptoms	December 1998 and February 1999 Setting is the catchment area of one Finnish university hospital	3) N=389 mothers and 314 partners 4) No intervention		3) Mothers having depressive symptoms reported more negative family dynamics compared with other families. 4) With the exception of individuation, mothers with PND reported more negative family dynamics than their partners 5) With the exception of role reciprocity, non-depressed mothers reported more positive family dynamics than their partners	sampling, did not describe the actual method for randomization	2) Provide information about the association between the mother's mood and family dynamics
Study 43: Tomlinson, B., White, M.A., & Wilson, M.E. (1990). Family dynamics during pregnancy. *Journal of Advanced Nursing, 15*(6), 683-688.						
To measure the family dynamics of women in the third trimester of pregnancy	The women in the third trimester of pregnancy	1) Cross-sectional survey 2) Quota sampling technique 3) N=160 4) No intervention	Quantitat-ive analysis: statistical analysis	1) Statistically significant relationships were found between the sociodemographic variables of marital and social status, and several dimensions of family dynamics 2) Families in which couples were married and who enjoyed a higher social status had more positive family dynamics in the dimensions of individuation, stability, flexibility, mutuality, and communication. 3) Race, maternal age and parity were not related to level of family dynamics	1) Non-randomly sampling 2) Participants were only the women in the trimester of pregnancy	Provide two major cues useful for nurses in their assessment of families: family social status and marital status

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 44: Torche, F. & Kleinhaus, K. (2012). Prenatal stress, gestational age and secondary sex ratio: the sex-specific effects of exposure to a natural disaster in early pregnancy. *Human Reproduction, 27*(2), 558-567.						
To study the sex-specific effect of earthquake on the duration of pregnancy and the observed sex ratio	7,035 pregnant women who experienced the 2005 Chilean earthquake and 6,954 pregnant women who did not experience the earthquake	1) Quasi-experimental study 2) Not men-tion the sampling method 4) N=13989 5) The intervention is earthquake	Quantitat-ive analysis: statistical analysis	1) Earthquake exposure in months 2 and 3 of gestation led to a significant decline in gestational age and increase in preterm delivery 2) The probability of preterm birth for female baby increased by 0.038 in month 2 and by 0.039 in month 3 3) There was a decline in the male-to-female ration in month 3 of exposure	1) Sampling method is not described	1) Highlight the need the need for future translational research into the sex-specific pathophysiolog y of preterm delivery 2)Provide a foundation for the development of novel interventions to reduce preterm
Study 45: Turner, R.J., Grindstaff, C.F., & Phillips, N. (1990). Social support and outcome in teenage pregnancy. *Journal of Health and Social Behavior, 31*(1), 43-57.						
To explore the significance of perceived social support for infant outcome, and fro mother outcome	Pregnant adolescents living in Middlesex County in southwestern Ontario	1) Long-itudinal study 2) Not mention the sampling method	Quantitat-ive analysis: statistical analysis Regression analysis	1) The parity, living with parents, partner support, friend support, family support and birth outcome were associated with the depression of mother 2) Smoking and family support were	1) Non-randomly sampling 2) Drop-out rate was high 3) The index for	Gave inform-ation on the role and significance of social support for the occur-ence of health

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
		3) N=268 4) No intervention		associated with infant outcome (birth weight)	mother and infant outcome was not comprehensive	and birth problems among adolescent mothers and their babies
Study 46: Wickrama, K.A.S., & Kaspar, V. (2007). Family context of mental health risk in Tsunami-exposed adolescents: findings from a pilot study in Sri Lanka. *Social Science & Medicine, 64*, 713-723.						
To investigate influences of Tsunami exposure and subsequent psychosocial losses on adolescent depressive and PTSD symptoms	Tsunami-exposed adolescents and mothers from two villages in southern Sri Lanka	1) Cross-sectional survey 2) Con-venient sampling 3) N=325 4) No intervention	Quantitat-ive analysis: statistical analysis	1) The influence of Tsunami exposure on adolescent mental health operates partially through Tsunami-related psychosocial losses 2) Positive mother-child relationships provide a compensatory influence on both depressive and PTSD symptoms of adolescents 3) High levels of depressive symptoms among mothers increases the detrimental influence of other Tsunami-related psychosocial losses on adolescent mental health	1) No comparison group 2) Non-randomly sampling 3) Some instruments were not given reliability and validity	Suggest ways to improve ongoing re-covery and reconstruction programs and assist in form-ulating new programs for families exposed to both Tsunami and other natural disasters
Study 47: Xiong, R., & Ma, Z. (2009). A survey on the destruction of family structure and long term quality of life in an earthquake. *Nursing Practice and Research, 6*(6), 118-120.						
To investigate the influences of the	The survivors aged over 60	1) Cross-sectional	Quantitat-ive	1) The quality of life scores in old survivors of Tangshan earthquake	1) No comparison group	Provide information

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
destruction of family structure in earthquakes on the long term quality of life	of Tangshan earthquake Setting is Tangshan City	survey 2) Stratified cluster ran-dom sampling 3) N=649 4) No inter-vention	analysis: statistical analysis	was lower than reference value 2) The quality of life scores in old survivors who have family members died in the earthquake was lower than those without family members' death	2) The timing of study is long from the earthquake which increase recall bias 3) No evidence of reliability and validity for questionnaire	about the impact of family destruction caused by earthquake on the quality of life in a long run
Study 48: Yang, K.C., Liu, M., & Ren, X.Q. (2011). Psychological status of females repregnant or rebearing a child after a loss in Wenchuan earthquake disaster. *Journal of Nursing Science (Surgery Edition), 26*(22), 83-84.						
To investigate the depression and anxiety of repregnant or rebearing females in earthquake area	Repregnant or rebearing women who lost their sons and daughters in earthquake Setting is in the hospital	1) Cross-sectional survey 2) Con-venient sampling 3) N=60 4) No inter-vention	Quantitat-ive analysis: statistical analysis	1) Prevalence rate of depression in repregnant and rebearing female was 11.67% and the rate of anxiety was 68.33% 2) Worries about the accident and health of fetus, worries about difficult birth were related to the depression and anxiety of repregnant females after an earthquake	1) Non-randomly sampling 2) Sample size is small 3) No comparison group 4) No description of evidence of acceptable psychometrics	Provide information about the psychological status of repregnant women after a major earthquake
Study 49: Yuan, L., Zhang, Y., Long, C., Sun, L., & Ren, Y. (2008). The comparative study about the impact of Wenchuan earthquake on the prognosis of pregnancy. *Medical Journal of National Defending Forces in Southwest China, 18*(6), 856-858.						
To investigate the influences of earthquake on the prognosis of	Pregnant women who experienced the	1) Com-parative cross-sectional	Quantitat-ive analysis: statistical	1) There were significantly differences between earthquake group and control group in the incidence of preterm delivery and	1) Sampling is convenient 2) Setting is	Provide the data about the influences of earthquake on

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
pregnancy	Wenchuan; Setting is in the hospital in Dujiangyan which was the epicenter	survey 2) Con-venient sampling; 3) Earth-quake group N=108 Control group N=187; 4) No inter-vention	analysis	postpartum infection; 2) There were significantly differences between earthquake group and control group in the incidence of fetal death and fetal asphyxia palace	hospital which may destroy the representative-ness of participants	the prognosis of pregnant women and their babies
Study 50: Zhang, L., Fan, F., & Geng, F. (2013). The relationship between adverse life event, parenting styles and anxious symptoms of Dujiangyan's youth 18 months after an earthquake. *Journal of Psychological Science, 36*(2), 395-400.						
To explore the influences of secondary adverse life event, parenting styles after an earthquake on the anxiety of youth in Dujiangyan	Junior students in Dujiangyan's high school	1) Cross-sectional survey 2) No sampling: recruit whole population 3) N=1021 4) No intervention	Quantitat-ive analysis: statistical analysis	1) The anxiety symptoms in Dujiangyan's adolescents were serious 18 months after the earthquake 2) Overprotection from parents and less fathers' care could positively predict the anxiety of adolescents 3) Adverse life events can increase anxiety of the youths, but overprotection from mothers and autonomy from fathers could mediate the influences	1) Participants were junior high school students who cannot represent all adolescents 2) No sampling may increase the cost 3) No comparison group	Provide information and cues for prevention and intervention on the anxiety symptoms of adolescents after a major earthquake

Aims	Population/ setting	Methods	Data analysis method	Results	Limitations	Implications of the study
Study 51: Zheng, D.Y., Qiao, L.Y., Jiao, W.H., Cao, M., Fu, C.H., Zhang, Q.Y., & Wang, X.R. (2008). Influence of earthquake on mental status of pregnant women and nursing interventions. *Nursing Journal of Chinese PLA, 25*(8A), 1-2, 18.						
To investigate the impact of earthquake on depression and anxiety of pregnant and postpartum women	Pregnant and postpartum women in earthquake area who received care from the army hospital	1) Comparative cross-sectional survey 2) Not mention the sampling method 3) Earthquake group N=70 and control group N=70 4) The intervention was not described clearly	Quantitative analysis: statistical analysis	1) The prevalence rate of depression for earthquake group was 41.43% which was significantly higher than the control group (4.29%); 2) The prevalence rate of anxiety for earthquake group was 68.57% which was significantly higher than the control (11.43%) 3) Education level of pregnant and postpartum women, the trauma and death of their direct relatives, the degree of trauma of themselves were related to mental health of pregnant women	1) Sample size is small 2) No description of sampling method 3) Hospital based	Provide the information about the impact of earthquake on depression and anxiety of pregnant women

Appendix II

Semi-structure Questions Guide for Interviews

Participant	Semi-structured questions
Women who were pregnant during, and gave birth, after the earthquake	1. Please talk about your physical status during the earthquake last year? What is the gestation week?請談一下地震發生時您的身體情況（懷孕的情況）？孕多少周或幾個月？ 2. What were your feelings, thinking or experience of the earthquake from the time of earthquake until delivery of the baby?由地震發生以後至到寶寶出生，你的感覺是什麼，有什麼想法或體會？ 3. What are the influences of earthquake on your daily life? 地震發生后你的日常生活受到了什麼影響？ 4. What are the things you need most from the earthquake until the baby birth? 地震發生以後到寶寶出生之前，你覺得你最大的需要有哪些？ 5. Who were the ones that you expected most to give help or support to you? Why? What ways did you expect him/her to support you? 當時你最期望是誰能夠給予你幫助，爲什麼？他/她應該以什麼樣的方式給予你幫助？ 6. Who actually supported you from the earthquake until the baby birth? How is the relationship between you and the support person? What did they do to impress you? Give me some examples, please.從地震發生以後到寶寶出生之前，誰是實際給予你支持的人？關係如何？這些支持你的人做了些什麼讓你記憶深刻的？舉些實際的例子吧。 7. What are the impact or influences of their support on you at that time? Give me some examples for that, please 你覺得這些人當時給予你的支持對你後來有什麼影響？能舉點例子來說明一下嗎？ 8. If the interviewee talks about any physical discomfort during the earthquake, I can ask her to give examples of physical discomfort and what are feelings or experiences of the discomfort?如果在第一個問題中談到身體受到影響，出現身體的不適或異常，接下來問：當時有哪些身體不適，你對這些身體的不適情況有什麼感受？ 9. If the interviewee responds 'husband or family members' as an answer to question 6, I will askher further if there were also other people, apart from family members, who supported her in terms of materials, emotions, psychological needs, work and/or social network. And what did those people do that impressedyou?Please give some examples.如果第六個問題，對方給出了丈夫或家人的答案，接下來問：除了這些人以外，還有什麼人參與了你的支持（包括物質，情感、心理、工作以及你的社會網絡等等）？這些人做了什麼讓你記憶深刻？請用實際的例子加以說明。

Participant	Semi-structured questions
Family members of women	1. What were you doing when the earthquake occurred? What was your feeling or experience about yourself? What was your feeling or experience about the pregnant women? 地震發生時你在做什麼？當時你自己的感受是怎樣的？你對孕婦的感受是怎樣的？ 2. How was the relationship between you and the pregnant woman from the earthquake until baby-birth? How did you support her? Please give examples from material, emotional, and psychological perspectives. 地震發生以後到寶寶出生之前，你和孕婦之間的感情如何？你是怎樣支持她的？請分別從物質上，情感上及精神上的層面舉例。 3. How was the relationship between you and the pregnant woman from the baby-birth until now? How did you support her? Please give examples from material, emotional, and psychological perspectives. 寶寶出生到現在，你和孕婦之間的感情如何？你是怎樣支持她的？請分別從物質上，情感上及精神上的層面舉例。 4. From the earthquake until baby-birth, what kind of support did you obtain from the pregnant woman? How did you feel about that? From the baby-birth until now, what kind of support did you obtain from the pregnant woman? How did you feel about that? 從地震發生到寶寶出生，孕婦給了你什麼樣的支持？你感受如何？從寶寶出生到現在，新媽媽又給你什麼樣的支持？你感受如何？ 5. Please specify how you interacted with the pregnant woman after the earthquake with examples, e.g. communication, support, or something else. 請舉例說明地震發生以後你跟孕婦之間是如何互動的，比如溝通，支持或其他。 6. From the earthquake until baby-birth, what did you care or need most? From the baby-birth until now, what do you care about or need most? 地震發生以後到寶寶出生之前，你最關心什麼和需要什麼？從寶寶出生以後到現在，您最關心什麼和需要什麼？

Appendix III

Examples of coding from initial to focused ones

Highest level of focused codes	Third level of focused codes	Second level of focused codes	First level of focused codes	Initial codes (line-by-line) / Categorized initial codes	
Being disturbed of life	Affecting health	Concerning wellness of the baby	Abnormal fetal movement	Increased fetal movement	Giving birth
				Decreased fetal movement	
				Uterine contraction	
		Affecting psychological health	Being nervous	Nervous to shaking	
			Being fearful	Being fearful of the frightening scenes	
				Being fearful of the injuries or deaths of family members	
			Irritating	Losing control of emotions	
			Worrying	Worrying about collapsing house	
		Disturbing medical services	Disturbing medical services	Rushing and confusing medical staff	
	Disturbing daily lives	Poor living conditions	Poor living supplies	Space (limited)	Social capital
				Food supply (poor)	
				Clothing (poor)	
			Limited social life	Social engage-ment (limited)	Disturbed work
				Reduced leisure activities	Neighbor
					Friends
		Altered symptoms of pregnancy	Altered symptoms of pregnancy	Body	
		Being	Being	Giving birth	

Highest level of focused codes	Third level of focused codes	Second level of focused codes	First level of focused codes	Initial codes (line-by-line) / Categorized initial codes
		disturbed of the birth plan	disturbed of the birth plan	
Common couple interactions (A code finally excluded because it was unrelated to the specific experience of women and family interactions after earthquake)			Couple disputes	Different personalities
Normal to concern about the baby (a code finally excluded because it was unrelated to the specific experience and family interactions of perinatal women after earthquake)		Regret about dietary control during pregnancy	Regret	Diet control
		Work is beneficial for natural delivery	Work is beneficial for natural delivery	Natural delivery

Appendix IV

Examples of my reflection on theoretical sampling

Participants	Reflections
First five participants (A, B, C, D, E)	All of them indicated that accompaniment by family members, especially their husband, was the most important thing during the earthquake. Could I find some more participants whose family members were not accompanying them by their side to explore the needs of being accompanied? Then participant F, G, and H were recruited. The ex-husband of F was not accompanying her by her side during the first earthquake, but her current husband accompanied her during and after the second earthquake. The husbands of G and H were working in a distant place during the earthquake. I should explore their feelings with the absence of husbands and identify any other things that could counteract the possible negative feelings.
Participant F and G	Participant F experienced two earthquakes in 2008 and 2013. Over the two earthquakes, she experienced "being there by side" and "no sense of being there" of her ex-husband and in-laws. Participant G experienced the "being there by heart" because her husband did not return after the earthquake. Is "being there"the only need of women from their husband and family members? I may explore the presence and companionship of other family members and the attitudes around them.
Participant H	This participant obtained great support from her daughter. According to the interview with her, "being there by side" of other family members rather than her husband could also provide a significant sense of support. She appreciated her daughter very much forher companionship, and this changed her values of rearing children. Until now, all of them passively accepted the accompaniment of family members, are there any situations in which they actively wanted to be present to other people after the earthquake?
Participant J	Her husband was severely injured during the earthquake. She accompanied him actively. She implied that "being there" was also the pregnant women's supporting behaviour for her family members. I wanted to find some husbands to learn about their feelings of being-there by their wives. However, participant J's husband refused to be interviewed, because he was still recovering from his injury. So I tried to search for other husbands. Many husbands were unavailable becausetheir workplaceswere far away from their hometowns. Finally the two husbands (of F and S) were

Participants	Reflections
	recruited because of their availability and representativeness of different backgrounds (including educational level, occupation, the status of accompanying during the earthquake).
Husbands of participant F and S	In order to explore the experience of "being there" as discovered from the experience of participant J, husbands of F & S were recruited. They were asked about their feelings towardstheir wives during and after the earthquake. Both husbands indicated that they appreciated their wives "being there" no matter by their side or at heart. And from the husbands' perspectives, being there is a mutual need, and this could help people alleviate their negative responses to a disastrous event.

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