THE RELATIONSHIP BETWEEN POST-TRAUMATIC STRESS DISORDER, POST-TRAUMATIC GROWTH, AND SOCIAL SUPPORT IN WOMEN WITH PERINATAL LOSS

YINGXIA CHEN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR MASTER DEGREE OF NURSING SCIENCE
(INTERNATIONAL PROGRAM)
IN MATERNITY NURSING AND MIDWIFERY PATHWAY
FACULTY OF NURSING
BURAPHA UNIVERSITY
2024

-

YINGXIA CHEN

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ)

คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

2567

THE RELATIONSHIP BETWEEN POST-TRAUMATIC STRESS DISORDER, POST-TRAUMATIC GROWTH, AND SOCIAL SUPPORT IN WOMEN WITH PERINATAL LOSS

YINGXIA CHEN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR MASTER DEGREE OF NURSING SCIENCE
(INTERNATIONAL PROGRAM)
IN MATERNITY NURSING AND MIDWIFERY PATHWAY
FACULTY OF NURSING
BURAPHA UNIVERSITY
2024

The Thesis of Yingxia Chen has been approved by the examining committee to be partial fulfillment of the requirements for the Master Degree of Nursing Science (International Program) in Maternity Nursing and Midwifery Pathway of Burapha University

Advisory Committee

Principal advisor

.....

(Professor Dr. Chintana Wacharasin)

Examining Committee

.....
Principal examiner
(Associate Professor Dr. Sopen Chunuan)

.....
Member
(Professor Dr. Chintana Wacharasin)

.....
Member
(Associate Professor Dr. Punyarat Lapvongwatana)

.....
Dean of the Faculty of Nursing
(Associate Professor Dr. Pornchai Jullamate)

.....

This Thesis has been approved by Graduate School Burapha University to be partial fulfillment of the requirements for the Master Degree of Nursing Science (International Program) in Maternity Nursing and Midwifery Pathway of Burapha University

.....
Dean of Graduate School
(Associate Professor Dr. Witawat Jangiam)

.....

62910094: MAJOR: MATERNITY NURSING AND MIDWIFERY PATHWAY; M.N.S. (MATERNITY NURSING AND MIDWIFERY PATHWAY)
KEYWORDS: PERINATAL LOSS/ POST-TRAUMATIC STRESS DISORDER/ POST-TRAUMATIC GROWTH/ SOCIAL SUPPORT

YINGXIA CHEN : THE RELATIONSHIP BETWEEN POST-TRAUMATIC STRESS DISORDER, POST-TRAUMATIC GROWTH, AND SOCIAL SUPPORT IN WOMEN WITH PERINATAL LOSS. ADVISORY COMMITTEE: CHINTANA WACHARASIN, Ph.D. 2024.

Understanding interrelationship between post-traumatic stress disorder, post-traumatic growth, and social support among women with perinatal loss is important for parturients and those who care for them. The purposes of the study were to describe PTSD, post-traumatic growth (PTG), social support (SS) and their relationship. A convenient sampling method was used to recruit 131 women with prenatal loss, receiving the health care service at the Maternal and Child Health Hospital, Xia Pu County, China. Four instruments used for data collection include demographic record form, PTSD Checklist - Civilian Version, Chinese Version of Post Traumatic Growth Inventory and Perceived Social Support Scale, which yielded reliabilities of 0.90, 0.85, and 0.93, respectively. Data was analyzed by descriptive statistics and Pearson product-moment correlation.

The results of this study showed that in two surveys of 3 months & 6 months after perinatal loss, the mean scores of PTSD, PTG, and SS were 59.01 ±10.40 & 42.79 ± 12.73, 69.98 ± 11.36 & 36.98 ± 5.11, and 45.61± 4.06 & 48.31 ± 4.42 respectively. In the first survey, there was negative correlation between PTSD and PTG ($r = -.227$, $p < .01$). In the second survey, there was positive correlation between PTSD2 and PTG2, PTG2 and SS2 ($r = .245, .173$; $p < .01$, and $< .05$ respectively). PTSD or PTG decrease but SS increases from 3 months to 6 months after perinatal loss ($M = -16.22$ $SD = 11.51$, $p < .001$; $M = -33.00$ $SD = 12.03$, $p < .001$, and $M = -2.69$ $SD = 3.93$, $p < .001$).

The results will help midwives focus on decreasing post-traumatic stress disorder and promoting social support among perinatal bereaved women in hospital and help community nurses with more attention to women suffering perinatal loss to increase PTG and SS.

ACKNOWLEDGEMENTS

In the past 4 years of my graduate studies, I have received a lot of help from people and would like to express my gratitude. First of all, I owe my deepest sincere appreciation to my major advisor Professor Dr. Chintana Wacharasin, who is knowledgeable, responsible, and approachable. She guides me step by step in completing my research projects, including topic selection, data collection, analysis, and paper writing. Her rigorous teaching attitude and warm support always encourage me to revise imperfections time after time. Thanks to her persistent leadership that pull me forward all the time.

Furthermore, I would like to express my gratitude to Associate Professor Dr. Pornchai Jullamate, Dean of the Faculty of Nursing Burapha University Thailand, as well as Professor Dr. Yeqin Yang, who has introduced this graduate program to China, providing us with the opportunity to participate in our studies. Thanks also go to Ms.Rungnapa Yodchot, the staff member of the International Affairs Department. She was very diligent and responsible and helping me complete the process through Master of Nursing Science program.

Finally, great heartful thanks are given to my classmates, family, and colleagues, who accompany me to solve any hard problems and provide selfless support, which enable me to successfully complete the entire learning process.

yingxia chen

TABLE OF CONTENTS

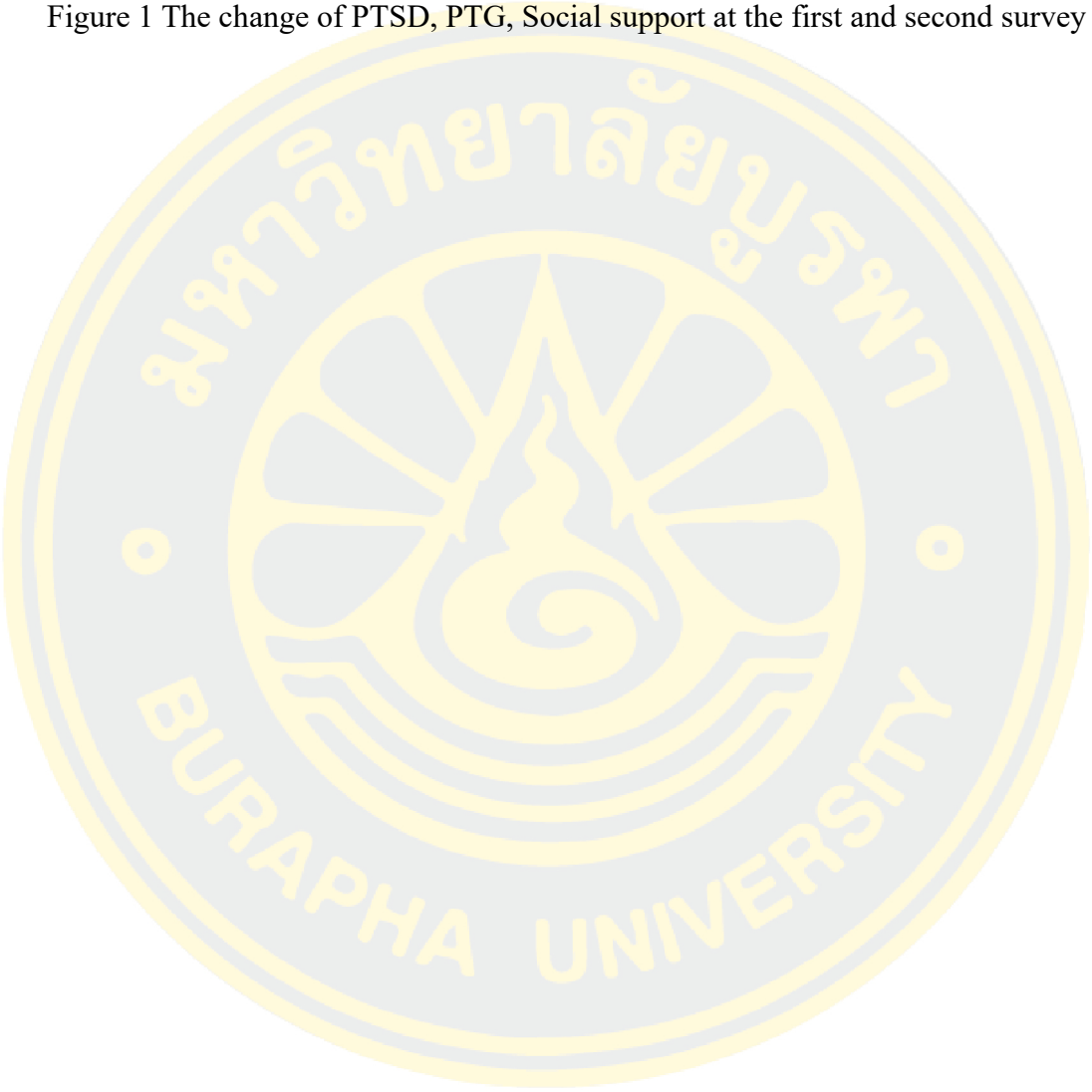
Page

LIST OF TABLES

Page

LIST OF FIGURES

Page



CHAPTER 1
INTRODUCTION

Background and significance of the study

Perinatal loss can be defined as the fetal or neonatal death events that occur after 20 weeks of pregnancy to within 1 month after delivery. According to the WHO report (World Health Organization [WHO], 2018), there were 2.64 million stillbirths and 3 million neonatal deaths worldwide in 2015, about 20% ~ 25% of pregnancies ended in miscarriage, and most of the perinatal loss occurred in low- and middle-income countries (Lawn et al., 2016). In China, the statistics showed that there are 3,956,836 deliveries from 441 hospitals in 326 regions from 2015 to 2018, the incidence of stillbirth was about 8.8% (Zhu et al., 2016). The perinatal loss is not rare, especially in developing countries. The death of infants is a major pain for the parents, and especially the pain of sudden perinatal death to expectant parents is obvious. One of the biggest challenges for human beings is to deal with the pain of sudden death of children (Stroebe, 2010). Studies have shown that the bereaved group is a special group in the death of relatives. Compared with other relatives, the bereaved suffer more pressure and trauma (Hu, Li, Li, & Man, 2014). Perinatal death is a kind of sudden special situation experienced by puerpera. Due to the physical and mental stress, puerpera are prone to loneliness, anxiety, depression and other negative emotions, and some may even have extended suicide (Bai, Luo, Yang, & Liu, 2006).

The birth of a new life is worthy of celebration. No one will expect the occurrence of adverse events such as death. The most common perinatal loss is stillbirth, and the higher natural birth mortality may be related to the natural delivery of stillbirth and stillbirth. The main causes of perinatal death are asphyxia, premature delivery, abnormal fetal position, delivery difficulties and deformities. Perinatal loss will increase risk of mental health sequalae, causes great psychological trauma to the whole family, especially to the lost woman(Roberts, Renati, Solomon, & Montgomery, 2021); Amritha et al., 2016). Among the perinatal loss, the physical and mental health of this population needs to be paid more attention. A study in the United States reported that women who have suffered perinatal loss are often accompanied by intense loss and sadness (Inati et al., 2018). Some women who experienced perinatal loss may have

series of psychological disorder such as generalized anxiety disorder, social phobia, panic disorder, obsessive-compulsive disorder and Post-Traumatic Stress Disorder (PTSD) (Gold et al., 2016). Perinatal loss may also lead to personal coping behaviors, including smoking, alcohol abuse, drug dependence and even suicide (Bhat et al,2016). The relationship between couples may break down because they can't face the reality and have different feelings about the loss (Tseng et al., 2017). Another study found that after the perinatal loss, the next pregnancy is no longer full of joyful expectations, but accompanied by higher level of anxiety, depression (Hutti et al., 2015) leading to an increased risk of adverse pregnancy outcomes again (Lamont et al., 2015), thus forming a vicious circle, which has a huge bad impact on women and their families.

Perinatal loss PTSD is caused by perinatal loss, it is defined as a mental disorder syndrome containing four groups of symptoms: intrusive, avoidant, hypervigilant symptoms, and negative cognition & psychological symptoms on the stress (Yu, & Gu, 2022). Parents who experience fetal or newborn death have a considerably higher risk of reporting symptoms of PTSD compared with parents with live births. The incidence of PTSD in perinatal loss patients in foreign countries ranged from 7% to 60% (Horesh et al., 2018), and the incidence in China from 1.8% to 23.8% (Cao et al., 2016). Lewkowitz et al. (2019) found that mothers with perinatal loss had above four times higher risk (RR = 4.36 [95% CI 2.31–8.24]) than women with live birth to receive a PTSD diagnosis. Due to the inherently delayed nature of PTSD symptoms and the different time points chosen by most researchers, a large number of studies have shown that the highest levels of PTSD in patients with pregnancy loss occur at either 1 or 3 months: in the Netherlands, the prevalence of PTSD in patients with pregnancy loss was 25% at the 1st month and 7% at the 4th month. Due to the delayed nature of PTSD symptoms, most researchers chose different time nodes. Some studies have shown that the highest level of PTSD occurs at 1 month or 3 months in patients with perinatal loss: in the Netherlands (Murphy et al., 2014), the incidence of PTSD in patients with perinatal loss is 25% in the first month and 7% in the fourth month. In the short-term longitudinal study, measurements were obtained at 3- and 6months after stillbirth (Horsch et al., 2015). Symptoms of re-experiencing (e.g., flashbacks and intrusive thoughts), avoidance behavior, and arousal (e.g., difficulty concentrating and hypervigilance) were highest at 3months after SB, before declining

at 6months (the decline in symptoms corresponded to a reduction in Cohen's ds of 0.34–0.52). Summarized, the findings indicate that mothers exposed to perinatal loss are more likely to develop symptoms of PTSD and have a higher prevalence of diagnosed PTSD than mothers with live birth. The symptoms appear to be highest in the immediate postnatal period, followed by a decline as time passes. Due to the delayed nature of PTSD symptoms, most researchers chose different time points. Some studies have shown that the highest level of PTSD occurs at 1 month or 3 months in patients with perinatal loss: in the Netherlands (Murphy et al., 2014), the prevalence of PTSD in patients with perinatal loss was 25% in the first month and 7% in the fourth month. In the short-term longitudinal study, measurements were obtained at 3- and 6months after SB [Horsch et al., 2015]. Every group of Symptoms was highest at 3months after perinatal loss before declining at 6months. All in all, the findings indicate that mothers exposed to perinatal loss are more likely to develop symptoms of PTSD and have a higher prevalence of diagnosed PTSD than mothers with live birth. The symptoms appear to be highest in the immediate postnatal period, followed by a decline as time passes.

In recent years, with the deepening and development of positive psychology theories, researchers have found that in addition to negative psychological experience, positive psychological changes have taken place in post-traumatic people. They can experience positive psychological changes in traumatic events which are called post-traumatic growth (PTG) (Tedeschi & Calhoun, 2004). Perinatal loss is a traumatic event, so, it is necessary to investigate whether women experience positive psychological after experiencing perinatal loss.

Post-traumatic growth (PTG) is a concept represents positive personal change adverse events (L. G. Calhoun, & Tedeschi, R. G, 1998). It is a positive change from a past experience that is the result of struggling with a traumatic event such as a disaster, chronic disease, rape or perinatal loss. These changes may include a shift in perception, feelings, and behavior to a more positive outlook after a traumatic event (Wijoyo, Susanti, Panjaitan, & Putri, 2020). It is an important indicator of dealing with traumatic experiences (Amiri et al., 2021; Dyjakon & Rajba, 2021). Tedeschi and Calhoun (1996) classified three themes of posttraumatic growth. The first theme is a change in self-perception, increased self-confidence, self-reliance and competence in dealing with

difficult situations. Another theme is changing relationships with others. After a traumatic event, people reported that their experience led to the rekindling of lost relationships and the acceptance of social support. A change in life philosophy is the final theme. This theme includes an improved outlook on life, a reassessment of one's importance, an increased appreciation of one's own existence, and stronger spiritual and religious beliefs. The post-traumatic growth refers to a survivor's adjustment from experiencing a traumatic event to challenge one's views and perspectives and result in the process of coping, reappraisal an adaption to the situation (Sattler, Claramita, & Muskavage, 2017). Natural disasters in Indonesia: relationships among posttraumatic stress, resource loss, depression, social support, and posttraumatic growth. Journal of Loss and Trauma, 15325024.2017.1415740.PTG as an indicator has been widely used in war (Maguen, 2006; Pietrzak et al., 2010)), car accident (Salter & Stallard, 2004), diseases (Sawyer, Ayers, & Field, 2010), and violence issues (D Páez, 2010) which can result in PTSD to measure the individuals who suffered these. For now, the study about *PTG* or Post-traumatic growth inventory questionnaire (PTGI) in Chinese women who experienced is still remains absent. As perinatal loss is a traumatic event among Chinese women. PTG is the result of a struggle against traumatic events. It is significant research the relationship between perinatal loss and PTG.

Social support is regarded as a complex construct which has long been suggested to have direct and buffering effects on patients' wellbeing and emotional adjustment to PTSD (Kelly et al., 2017)). Social support plays a buffer role in the occurrence, development and transition of negative emotions. Cross-sectional and prospective studies have shown a positive relationship between social support and psychological adjustment after cancer treatment (Usta, 2012). Other studies have shown that people with good social support have a lower incidence of depression after experiencing major life events, suggesting that social support can protect and buffer against the adverse effects of life events on physical and mental health. Studies have also shown that social support is a powerful influencing factor in the process of PTG. Social support can increase self-resilience, thereby reducing post-traumatic stress disorder and promoting PTG (Prati G, 2009). Thus, social support has been shown to positively impact health outcomes and perinatal loss as an adverse event has dramatically influenced the women's physical and mental health, the study focus on

this subject can bring tremendous improvement for benefit.

PTSD would give patients with perinatal loss repeated adverse experiences, which will gradually lost their confidence in reproduction, resulting in psychological disorders of reproduction, and more serious cases are self-injury and suicide (Grauerholz et al., 2021) The update China's family planning policy is "one family, three-child" (Chen, 2021). According to the Outline for the Development of Chinese Women (2021-2030), China Women's Development Program (2021-2030), and China Children's Development Program (2021-2030), 2021, it is suggested that the mental health of women of childbearing age should be paid attention to, so it is more urgent to care for women who suffer from perinatal loss.

It has been found that PTG and PTSD can coexist in different populations, and focusing only on the symptoms of PTSD may slow recovery and cover up the potential of PTG (Fellow et al., 2011), but there is no unified conclusion between the two elements (Qian, 2019). Additionally, social support is one of the protective factors for people to cope with traumatic life events (Peirce, 2000). Previous studies have shown that, good social support is particularly important for patients with PTSD (Wang et al., 2020) and improving social support system can improve PTG level (Sun et al., 2013; Meyerson et al., 2011; Zoellner et al., 2008). There are more related studies in foreign countries, focusing on the development of assessment tools, the exploration of inner experience and the degree to which family members are affected. However, domestic studies pay less attention to the special population of women with perinatal loss, and pay less attention to the relationship between PTSD, PTG and social support.

Due to the delayed nature of PTSD symptoms, most researchers have chosen different time points (Chen et al., 2014). Therefore, the highest level of the PTSD symptoms varies across studies. These differences in findings may be related to the different time points of measurement after trauma. Meanwhile, PTG is developed by traumatized individuals during their struggles with it and undergoes a change from nothing to something, an evolving and ultimately stabilizing process, and longitudinal studies are needed to account for the dynamics of the PTG (Du, 2021). But most of these current studies have adopted a cross-sectional study and less of a tracer study paradigm, which makes it impossible to effectively identify the status and relation of PTSD and PTG. In order to describe the relationship between PTSD and PTG more

clearly, it is necessary to examine the relationship between PTSD and PTG from a longitudinal perspective. Domestic and international longitudinal studies are generally (Westby, 2021; Chen et al., 2014; Du, 2021) conducted in four time periods of 1-3 months, 4-6 months, 9-12 months 12-16 months, but there are almost no longitudinal domestic studies on perinatal loss, the perinatal group will be selected as the subjects in this study. Considering the limitations of research time and resources, the purpose of this study was to investigate the interrelationship between PTSD, PTG and SS among women with perinatal loss, in order to provide reference for early intervention of PTSD and PTG and social function adjustment. This study will examine the interrelationship at 3 months and 6 months after occurrence respectively.

In China, due to the effect of Confucianism, death is a taboo subject, and the loss of fetus during pregnancy is often avoided to discussion. Or for loss of fetal women mental protection, avoidance has become the main way to deal with perinatal loss. From the literature review there were only a few studies about perinatal loss in China were published worldwide. Although the literatures showed that strong social support can help to build PTG and minimize the influence of PTSD (Pratig, 2009; Usta, 2012), the mechanism of social support, PTG, PTSD among perinatal loss women is still remain ambiguous. Therefore, it is necessary to investigate the status of post-traumatic stress disorder, posttraumatic growth and social support in women who suffered perinatal loss and explore the relationship between these three varies. It will fulfill the gap and provide scientific evidence for nursing practice and nursing research development aiming to improve mental health for women who suffered perinatal loss. It also is beneficial to understand the role of social support in against the adverse effects of perinatal loss, which can help provide more effective support for women have suffered perinatal loss.

Research objectives

1. To describe post-traumatic stress disorder, post-traumatic growth and social support in women at 3 and 6 months after perinatal loss.

2. To examine the relationship between post-traumatic stress disorder and post-traumatic growth in women at 3 and 6 months after perinatal loss.

3. To examine the relationship between post-traumatic stress disorder and social support in women at 3 and 6 months after perinatal loss.

4. To examine the relationship between post-traumatic growth and social support in women at 3 and 6 months after perinatal loss.

Research hypotheses

1. PTSD has positive relationship with PTG among women at 3 and 6 months after perinatal loss.

2. PTSD has negative relationship with social support among women at 3 and 6 months after perinatal loss.

3. Social support has positive relationship with PTG among women at 3 and 6 months after perinatal loss.

Scope of the study

The aims of this study were to investigate social support, post-traumatic stress disorder and posttraumatic growth in women with perinatal loss, and explore the relationship between these three variables.

Conceptual Framework

PTSD has certain positive relationship with PTG. PTG is the result of a struggle against traumatic events (Tedeschi & Calhoun, (2004). This contributes to PTG formation (L. G. Calhoun & Tedeschi, 2006). PTG is a self-promoting evaluation process. It helps individuals respond positively to post-traumatic conditions, in turn to reduce the negative consequences of trauma. From this point of view, PTG has a positive predictive effect on PTSD. The sustained post-traumatic growth of parturients cannot be separated from the social support of relatives and friends and the effective personal coping style. Social support was positively related to PTG (Pryzgoda, 2005). Social support systems were direct predictors of post-traumatic growth, which can promote individuals to discover the positive side of traumatic events (Schroevers et al., 2000). Patients receive support from relatives and friends, which can make them experience positively.

Definition of terms

Post-traumatic stress disorder (PTSD) is a manifestation of severe mental and behavioral disorders in individuals after suffering from severe disasters or stimulation. The mainly manifested of PTSD include re-experiencing, avoidance, hyperarousal and emotional numbing. In this study, Post-traumatic Stress Disorder Check-list-Civilian Version was used to measure PTSD (Sprang & Silman, 2013).

Post-traumatic Growth (PTG) refers to the changes in the individual's psychology and focuses on the positive psychological changes that individuals may experience after experiencing traumatic events. Chinese version of Posttraumatic Growth Inventory (PTGI-C) (Wang et al., 2018) was used to measure PTG in this study.

Social support is defined as the perceptions of women with perinatal loss about received helping from many sources, such as family, friends, neighbors, and professional medical staff. In this study, social support was measured by Perceived Social Support Scale (PSSS).

CHAPTER 2
LITERATURE REVIEW

This chapter presents the review of the situation of perinatal loss in China, post-traumatic stress disorder (PTSD), post-traumatic growth (PTG), social support, theory related to PTSD and PTG, and relationship between PTSD, PTG, and social support.

Situation of perinatal loss in China

For cultural and other reasons, there is lack of stillbirth related research in China due to the influence of Confucianism and Buddhism and traditional culture. Most of the medical staff in China seldom explicitly and family members of such an event, especially in the face of loss of perinatal bereavement events of this kind. Some people think that public discussion is a kind of blasphemy and contrary to the moral. Many healthcare providers families don't know how to communicate.

The prevalence rate of perinatal loss is not low at all in China. In 2016, a study collected data from 441 hospitals in 326 regions from 2012 to 2014 on the incidence of stillbirth in China. Among 3,956,836 deliveries, the incidence of stillbirth was about 8.8% (Zhu et al., 2016).In 2018, the infant mortality rate in China dropped to 6.1 per thousand of birth. Although the number is on the decline year by year, the care in the area of perinatal loss is still at the beginning(Jia & Ye, 2021). In 2018, China's perinatal mortality rate was 4.26‰, and Shanghai's perinatal mortality rate was 2.38% (National Health Commission, 2019). Data was obtained from the Birth Defects Surveillance System in Hunan Province, China, 2010-2020 (Zhou et al., 2023), which included 1,619,376 fetuses, a total of 18,212 perinatal deaths (including 16,561 stillbirths and 1651 early neonatal deaths) were identified. the total Perinatal mortality rate was 1.12% (95%CI: 1.11-1.14). Birth defects accounted for 42.0% (7657 cases) of perinatal deaths.

The death of a loved one is a major grief, especially the pain that a sudden perinatal death can cause expectant parents. Studies had shown that the bereaved child group was a special kind of family member death group. Also, studies revealed the impacts of perinatal loss on not only post-traumatic stress disorder but also post-traumatic growth.

Post-traumatic stress disorder in women with perinatal loss

PTSD can occur in people experiencing all types of traumatic events in China as followed: the prevalence of PTSD was 7.39% - 26.7% in postoperative breast cancer patients (Du, 2022; Wu et al., 2016), with the highest scores for avoidance symptoms and the lowest scores for hypervigilance symptoms in patients with breast cancer [Li et al., 2015]. The morbidity of PTSD in parturients ranged from 1.13% to 13.14% (Zheng et al., 2022; Nyqvist et al., 2013): Xia Hongwei et al. investigated 973 women in midwifery institutions in Xicheng District, Beijing, and found that 11 cases (1.13%) were diagnosed PTSD 6 weeks after delivery [8 of reference 6]. The positive rate was 13.14% in Xi 'an, Shanxi Province. Avoidance symptoms also had the highest score and hypervigilance symptoms had the lowest score. The incidence of post-traumatic stress disorder in patients with pregnancy loss in China ranged from 1.8% to 23.8% : In Hong Kong, Sham et al. (Grauerholz et al., 2021) found that the incidence of PTSD in early stage patients was statistically adjusted to 1.8%. Cao Shuyin et al. [Yagi et al., 2016] conducted a related study on fetal abnormal induction of labor and believed that 23.8% of the patients were highly likely to be diagnosed with PTSD. Yu Xiaoyan [Yu, 2016] showed that the incidence of PTSD in patients with fetal abnormal induction was 18.2%. In conclusion， there were differences in the above findings, which may be related to the degree of PTSD stressors, the diversity of the sample， diagnostic tools, and the duration of the survey. Although different, they all suggest that patients with various severe trauma are prone to PTSD, and medical personnel should detect it early and intervene accordingly.

Perinatal post-traumatic stress disorder includes prenatal and post-traumatic stress disorder. It is a stress disorder that occurs after a traumatic event. The diagnosis time can be from the beginning of conception to 6 postpartum months. During this period, the symptoms continued for more than one month, represented by intrusive, avoidant and hypervigilant symptoms, and specific negative symptoms and maternal and infant outcomes appeared. Studies have shown that PTSD can cause premature birth and low birth weight infants, and affect the baby’s mood and growth. Compared with other babies, babies whose mothers suffer from PTSD show poorer emotional regulation and behavioral responses, making it more difficult to achieve effective

mother-infant interaction. In addition, PTSD has also seriously affected the health of the mother and the intimate relationship with the partner. Perinatal loss may also cause individuals to cope with bad behaviors after experiencing the loss, including substance abuse behaviors such as smoking, alcoholism, drug dependence, and even suicidal behavior. At the same time, the relationship may be broken due to the inability to face the reality and the loss of feeling differences between the partners. Another study (Maeda & Nagawawa, 2010)found that after experiencing perinatal loss events, the next pregnancy is no longer a joyful expectation, but is accompanied by higher levels of anxiety and depression. This leads to an increased risk of bad pregnancy again, thus forming a vicious circle, has a huge impact on women and families.

The causes of PTSD with perinatal loss

1. Demographic factors: Existing studies have shown that age, race, economic level and other factors have an impact on the occurrence of PTSD symptoms. Bhat et al. (2016) showed that. Age was negatively correlated with the severity of PTSD, that is, the younger the patient, the higher the level of PTSD symptoms. In terms of race, compared with women of other races, Asian women are more likely to suffer from PTSD after pregnancy loss, which may be related to cultural background and religious belief (Hamama, Rauch,Sperlich et al., 2010). Horsch et al. (2015) found that low income was a risk factor for postpartum PTSD in stillborn patients.

2. Post-traumatic growth: as a positive psychological factor, liang et al. (2022) found that each dimension of post-traumatic growth in hospitalized patients was negatively correlated with PTSD avoidance and re-experience scores ($P<0.05$), indicating that the better the post-traumatic growth, the milder the stress disorder symptoms. Moreover, the score of PTSD symptoms 2 months after discharge was lower than that at discharge, and the score of post-traumatic growth was higher than that at discharge, with statistical significance ($P<0.05$). The results showed that with the passage of time, the post-traumatic growth score of patients increased significantly, providing conditions for eliminating stress disorders.

3. Social supporting factor: Social support is a very important protective factor for mental health. According to the study of Chinese scholar Liu's study (2020) showed that social support is significantly negatively correlated with the level of PTSD symptoms, and patients need good social support as a buffer to reduce stress response.

First of all, such patients are in great need of family support, because intimate partner violence will cause them to be unable to get enough family support and then develop PTSD. Reich et al. (2015) respectively conducted a regression analysis on the relationship between physical violence, psychological violence, sexual assault and PTSD, and found that this violence were positively correlated with the occurrence level of PTSD. In addition, Crawley et al. (2013) also pointed out in the study on stillbirth patients and PTSD that the help provided by allied health professionals would significantly reduce the level of PTSD symptoms in stillbirth patients. Zhang Jieqiong (2018) found that peer support could effectively alleviate PTSD symptoms of such patients after constructing intervention strategies for peer support for patients with abnormal fetal labor induction. In conclusion, building a social support network for patients with pregnancy loss may play a significant role in reducing the level of PTSD symptoms.

The impacts of PTSD in women with perinatal loss

PTSD can seriously affect an individual's physical and mental health problems, and studies have found that it is not only related to occupational barriers, resulting in work and learning difficulties (Rona et al., 2009), but also interpersonal difficulties (Dekel & Monson, 2010). In addition, PTSD may trigger depression (Campbell et al., 2007) and substance abuse (Kilpatrick et al., 2003). It has been associated with suicidal ideation (Gradus et al., 2010) and death by suicide (Pompili et al.,2013). Specifically, PTSD would give patients with perinatal loss repeated adverse experiences, which will gradually lost their confidence in reproduction, resulting in psychological disorders of reproduction, and more serious cases are self-injury and suicide [Grauerholz et al., 2021].

Studies have found that the performance of postpartum PTSD is similar to that of postpartum depression, but postpartum PTSD emphasizes trauma during childbirth. The main clinical manifestations are: intrusive symptoms, including periodic and involuntary recollection of the delivery process and intrusive recollection of the delivery process, or flashbacks or nightmares. The most common statement is "every time I close my eyes, I will recall the scene at the time of childbirth." There may also be strong or delayed psychological pain or something that reminds them of a significant psychological reaction during the childbirth experience. To avoid symptoms, after the

mother has experienced traumatic delivery, she will avoid recalling the activities, places or people of delivery, such as medical follow-up visits, delivery hospitals, obstetricians, including babies. It is a negative change in cognition and emotion.

Trauma can lead to negative changes in cognition and emotions, including the inability of the mother to recall important information about the traumatic event, long-term or exaggerated negative expectations of herself, others, and the world, and obviously rarely participate in meaningful activities or have no interest in participating, feelings of being separated from others or feeling strange to others, etc. Changes in alertness and responsiveness; increased anger, irritability, and aggressive behavior, reckless or destructive behavior, increased alertness, exaggerated panic reactions, difficulty concentrating, sleep disturbances, especially difficulty falling asleep, and lack of deep sleep.

Moreover, postpartum PTSD is related to many factors such as biology, psychology, and society, and is the result of the interaction of many factors. Foreign studies have concluded that the influencing factors of postpartum PTSD include prenatal susceptibility factors, childbirth risk factors, and postpartum maintenance factors. O'Donovan et al. (2014) found that trauma history is an important risk factor for postpartum PTSD, and women with a history of trauma are more likely to develop PTSD. The history of mental illness includes depression and anxiety in the perinatal period. Many studies have proved that depression and anxiety in the perinatal period are closely related to postpartum PTSD. Boorman et al. (2014) found that the history of mental illness is a predictor of postpartum PTSD. Cohen et al. (2016) found that depression during pregnancy is the most powerful predictor of postpartum PTSD. In the population with PTSD, primiparous women are far more than those in non-PTSD population. Demographic characteristics mainly include age, economic and cultural factors, self-efficacy, and personality characteristics. Their influence on postpartum PTSD is not absolute and needs further study. Such as age factors, Lev-Wiesel and other studies (2009) found that postpartum PTSD symptoms are inversely proportional to age.

Risk factors for childbirth include pregnancy and complications, level of social support, obstetric factors, subjective trauma of childbirth, and neonatal complications. Adewuya, Ologun & Ibigbami (2006) found that the number of

hospitalizations of pregnant women is an important risk factor for postpartum PTSD. Social support emphasizes the support of medical staff, and the psychological support and information support provided by medical staff have important links with postpartum PTSD. Grekin and O'Hara (2014) found through meta-analysis that the quality of cooperation between women and medical staff is closely related to postpartum PTSD. Emergency hysterectomy, dystocia, prolonged labor, device-assisted delivery, and delivery complications are important risk factors for postpartum PTSD. Modarres et al. (2012) conducted a cross-sectional survey of 400 parturients 6-8 weeks postpartum and found that emergency cesarean section is more traumatic than voluntary cesarean section and natural vaginal delivery and is an important risk factor for postpartum PTSD. Garthus-Niegel et al. (2015) conducted a cohort study on 1473 women and found that the level of social support at 8 weeks postpartum and insomnia are closely related to PTSD symptoms at 2 years postpartum. Many studies have shown that other negative life events and maternal adverse coping are important factors affecting the development of PTSD after delivery.

Theory related to PTSD, PTG and Social support

The stress system model had gradually proposed by Jiang Qianjin since 2000 (Zhang, 2018). The model holds that stress and psychological stress response are not a single relationship, and the relationship between the related variables of psychological stress is complicated. The model points out that the individual is a multi-factor system including life events, cognitive evaluation, coping style, social support, personality characteristics, etc. The factors in the system interact and influence each other; Among them, cognition is the key factor; Personality is the core factor, social support is an important factor, if the imbalance of multiple factors, will produce psychological reactions, although traumatic events will cause negative psychological reactions including PTSD, but people will gain strength and understanding in the process of constantly fighting against traumatic events. Positive psychological reactions occur (Tedeschi, &Calhoun, 1996), such as post-traumatic growth (PTG). In fact, positive psychology pays attention to the positive psychological changes of individuals but does not deny the pain caused by trauma (Joseph et al., 2012). This trend is reflected in the field of trauma psychology, which

shows that post-traumatic growth can occur even in individuals who experience a traumatic event and are at a higher level of distress (Tsai et al., 2015). Therefore, PTSD and PTG, as the typical negative and positive psychological reactions of individuals after experiencing a traumatic event, have co-existing characteristics (Dekel & Solomon,2012; Takuet al, 2008). Once this model was proposed, scholars verified and reasoned in different groups, and the more divergent relationship path was the relationship between mental health, PTG and social support.

Post-traumatic growth in women with perinatal loss

Post-traumatic growth (PTG) is a new point of view put forward by scholars such as Tedeschi and Calhounn (1996). It is also known as stress-related growth, active growth. Traumatic events mainly refer to the disability and mental trauma caused by various events. PTG refers to the fact that traumatic events are not all negative, but sometimes it promotes the individual's spiritual growth, improves their self-awareness, enhances the individual's relationship with others and society, prompts them to view the value of life correctly, resets new life development goals, change. As a representative of the negative and positive psychological reactions commonly found in individuals after trauma, the relationship between PTSD and PTG has always been one of the focuses of researchers. Some studies have found a positive correlation between PTSD and PTG (Shechory Bitton & Laufer, 2017). Some studies have found a negative correlation between PTSD and PTG (Whealin et al., 2020). Other studies have found that the correlation between PTSD and PTG is not significant (Gorman et al., 2020). In order to more clearly describe the relationship between PTSD and PTG, research should analyze the relationship pattern between PTSD and PTG from a longitudinal perspective. Some studies have found that the initial PTSD can positively predict the subsequent PTG (Erbes, Everly, Dikel, Johnsen, Harris & Engdahl, 2018), it found that the initial PTSD level can significantly positively predict the PTG level 5 years later. Tedeschi and Calhoun (2004) believe that PTG is the result of fighting against traumatic events. The psychological stress caused by traumatic events stimulates people's cognitive processing. When this kind of thinking turns to constructive processing, the individual will think about and realize the post-traumatic self, others and the world, which helps the formation of PTG from this point of view, PTSD in women with

perinatal loss has a positive predictive effect on women with perinatal loss.

There are many factors of PTG in women with perinatal loss as following.

1. Positive re-evaluation and sense making. Studies have shown that positive re-evaluation is very significantly positively correlated with the personal growth reported by trauma experiencers, and positive meaning seeking is also positively correlated with reported personal growth. These two are considered to be the most important ways for individuals to obtain PTG. The multiple evaluation theory in the theory is the best interpretation of this indicator.

2. Hardiness and sense of coherence. Resilience refers to promise, challenge, and control. Consistency refers to the world is understandable, manageable, and meaningful. The study by Waysman et al. (2001) showed that the toughness of trauma experiencers is associated with higher positive changes after trauma, and the sense of agreement is also significantly positively correlated with PTG. Toughness and consistency are important predictors, reflecting the openness or plasticity of the individual's existing cognitive structure. The higher the tenacity and consistency indicate the higher the possibility of accepting and accommodating new stimuli.

3. Dispositional optimism. Research shows that optimists are more flexible, adopt problem-focused responses, and use reconstruction or acceptance responses in uncontrollable situations. There is a moderate positive correlation between optimism and PTG, which can predict PTG well. Optimists respond more positively to disasters than pessimists.

4. Internal locus of control. Studies have shown that perceived PTG is significantly related to internal and external control, and internal control traits are significantly related to the illusion of PTG self-enhancement. This is consistent with our daily feeling that those who are internally controlled (believe that they can control their own destiny, believe that the success or failure of things are people who they can control), look or act as if they have grown from trauma (experience or maturity), but in fact this kind of growth is more of an illusion of self-enhancement.

5. Rumination. Rumination refers to the constructive thinking automatically or deliberately by the trauma experiencer after the trauma. Rumination is a rational reaction process. The internal connection between Rumination and PTG has been fully explained by the aforementioned biopsychosocial evolution theory. Existing research

also shows that for college students who have experienced multiple major traumas, their early Rumination is significantly positively correlated with later PTG. It should be noted that the meditation related to PTG mainly refers to those deliberate constructive thinking, excluding those automatic thinking related to traumatic events.

6. Social support. Post-traumatic growth is closely related to individual trait factors, especially positive re-evaluation and meaning seeking, but these personal trait factors really play a role, it has a lot to do with environmental support. There is a close relationship between good social support and positive growth after trauma.

Social support for women with perinatal loss

In China, perinatal loss support programs are mainly concentrated in the field of post-abortion care, and rarely involve stillbirths and neonatal deaths. Since 2011, the China Women's Development Foundation, the Family Planning Branch of the Chinese Medical Association, and the National Population and Family Planning Commission Institute of Science and Technology have begun to establish post-abortion care clinics nationwide and establish a standardized post-abortion care service model. They provide assistance to women and families undergoing induced abortion operations to avoid the harm caused by induced abortion to women, thereby reducing the rate of unintended pregnancy induced abortion and repeated abortion. At present, 734 medical institutions in 300 prefecture-level cities in 30 provinces, autonomous regions, and municipalities have set up post-abortion care clinics. More than 6,000 consultants have received professional training, and more than 7.5 million abortion women have benefited from them.

Countries that have lost support for the early stages of production in the country's periphery include Australia, the United Kingdom, and the United States. Some of these useful practices are worth learning. Including the stillbirth and neonatal death care project of the Perinatal Society of Australia and New Zealand, the project aims to reduce the incidence of stillbirths and neonatal deaths, and through the promotion of high-quality collaborative research and best clinical practices, to ensure that families with perinatal loss have access to the best care and support. The organization formulated the third edition of the clinical practice guidelines for stillbirth and neonatal death in March 2018. The guidelines provide recommendations for the

loss of psychosocial support during the perinatal period, medical examinations and treatment measures for the fetus and newborns after death. The sub-projects of the project also include the project of improving perinatal outcomes through education, that is, improving the quality and outcome of care for perinatal deaths through education and training of health care personnel. The UK's stillbirth investigation and guidance medical staff training project for comprehensive perinatal loss was launched in 2013. A total of 35 parents and 22 obstetricians and midwives participated in the project. Through case interviews, expert working group discussions, etc. to guide and support the construction of the project, including the identification of symptoms and signs, notification of bad diagnosis, selection of stillbirth delivery methods, support for the delivery process, rights enjoyed by the family after delivery, training of medical professionals. The United States includes the establishment of a multidisciplinary Fetal Demise Task Force (FDTF). The task of the working group is to formulate a unified and standardized perinatal loss family support program, which is divided into subgroups according to work tasks. The clinical document recording and processing subgroup, which includes bedside nurses, obstetricians and gynecologists, clinical nursing specialists, and ward care managers, etc.; the education and training subgroup, whose main task is to provide medical treatment for those who have lost care during the perinatal period. Caregivers are educated and trained to ensure the updating of knowledge and skills; the family information support subgroup, including clinical nursing experts, nursing educators, and ward nursing managers, is mainly to provide support to families who have lost their lives and meet development needs.

The relationship among PTSD, PTG, and social support

The relationship between PTSD and PTG

PTSD has certain positive predictive effects on PTG. The study of war veteran found that the initial PTSD level can significantly positively predict the PTG level after 5 years (Erbes et al.(2005). Tedeschi and Calhoun(2004) stated that PTG is the result of a struggle against traumatic events and psychological stress from traumatic events stimulates cognitive processing. When this thinking turns to constructive processing, individuals think and understand the post-traumatic self, others and the world. This contributes to PTG formation (L. G. Calhoun & Tedeschi, 2006). From this point of

view, PTSD has certain positive predictive effect on PTG.

PTG has a negative predictive effect on PTSD. Frazier, Conlon and Glaser (2001) study of 171 sexually abused women found that PTG of 2 weeks and 12 months after sexual assault can significantly negatively predict the PTSD. Park and Folkman (1997) consider PTG to be a meaningful coping strategy. This strategy can effectively alleviate the negative consequences of traumatic stress. It helps individuals respond positively to post-traumatic conditions, can also reduce the negative consequences of trauma. From this point of view, PTG has a negative predictive effect on PTSD.

Some studies had found that initial PTSD can positively predict subsequent PTG (Dekel, Ein-Dor, & Solomon, 2012); Erbes et al. (2005) to the traumatic events. The study found that the initial level of PTSD can significantly positively predict the PTG level after five years. Tedeschi and Calhoun (2004) believed that PTG was the result of the struggle against traumatic events. The psychological stress caused by traumatic events stimulates people's cognitive processing. When such thinking turns to constructive processing, individuals will think and understand the post-traumatic self, others and the world, which is conducive to the formation of PTG (Calhoun & Tedeschi, 2006). From this point of view, PTSD has a certain positive correlation on PTG. This research will study the relationship of PTSD and PTG at 3 and 6 months.

The relationship between PTSD and social support

Post-traumatic stress disorder (PTSD) referring to long-term negative psychological impacts of disasters (Wijoyo et al., 2020). PTSD is a major public health problem due to its frequency, chronicity and the disability it causes in daily life. PTSD has been known by military psychiatrists and early psychoanalysts since ancient times, but today it is more of a hot-spot issue than ever, such as terrorist attacks or weather disasters. Traumatic events and their consequences are often hidden or minimized by the sufferer due to reasons related to the disease itself (difficulty expressing, shame, depressed thoughts, fear of stigmatization, etc.). The pathognomonic sign of PTSD is re-experiencing the traumatic scene with the same distress, perceptions, emotions and dissociation that were originally experienced (Auxéméry, 2018). The disorder is characterized by four main aspects: re-experience, avoidance, over arousal, and cognitive and emotional disorders (Nohales & Prieto, 2018). The results (Bourassa et al., 2020; Price et al., 2018) showed that increased social support during treatment was

associated with a larger reduction in PTSD symptoms during treatment. Social support also increased during treatment. PTSD symptoms did not slow the increase in social support during treatment. These findings suggest that social support and PTSD symptoms are related throughout the treatment process. Social support moderated changes in PTSD symptoms, while PTSD symptoms did not moderate changes in social support. In summary, there is negative relationship between social support and PTSD.

The relationship between PTG and social support

Social support system is a direct predictor of PTG, which can promote individuals to find the positive side of traumatic events. Support from family and friends can lead to positive experiences for patients (Schroevers, Helgeson, Sanderman, & Ranchor, 2010). The study found that the continuous maternal PTG cannot be separated from the social support of relatives and friends and the effective personal coping style (Wang, Zhang, & Tang, 2015). Individuals in traumatic events began to experience the pain of more easier to express emotion, the more feel others to support the importance of so as to make full use of the once ignored the social support system, accept the help of others because of the 14 respondents said their relatives and friends meticulous care and encouragement to keep away from the pain, in communication and encourage myself with others constantly get psychological comfort and balance, and active treatment with their disease, strive for an early recovery. A study conducted among Wenchuan earthquake survivors illustrates that PTG and social support play important roles on the association between PTSD and suicidality and are important contributing factors to understanding this relationship. Another study's (Ajoudani, Jafarizadeh, & Kazamzadeh, 2019)results confirmed that social support and spirituality were significant predictors of PTG. Spirituality partially mediated the relationship between social support and PTG. The mediating role of the spirituality suggests that social support increases PTG, both directly and indirectly. Nursing staff can carry out related education to the families of purpera, such as relatives try to accompany puerpera, the significance of social support for puerpera to ease the pain of emotion, so that puerpera get more growth experience (Wang et al., 2015). It can conclude that social support has positive relationship with PTG.

In conclusion, PTSD has a certain positive predictive effect on PTG when social support increases PTG both directly and indirectly. This research aims to evaluate

analyze the value of the positive predictive effect of PTSD and social support to promote the PTG of women who experienced the perinatal loss.

CHAPTER 3
RESEARCH METHODOLOGY

Research design

This study was a prospective study and correlational study design. Data was collected two times at 3 and 6 months after perinatal loss.

Research setting

Xiapu is one of the historical counties in Ningde region, Fujian province, it has a population of approximately 530 thousand. The study was conducted in the the Maternal and Child Health Hospital of Xiapu county, the hospital is grade-A of second – class. Its main responsibilities are: to implement the laws and regulations on maternal and child health formulated by the national and provincial governments, to formulate maternal and child health measures and plans according to the actual situation in our county, and to provide local maternal and child health conditions to the competent government departments. Xiapu Maternal and Child Health Hospital has only 20 beds in the delivery room, but the other three hospitals combined have nearly 200. The hospital has four outpatient clinics, 17 doctors and 25 nurses. There are more than 6,000 pregnant women in the county, and the hospital accounts for one-third of the county, of which induction of labor and neonatal deaths account for 3-5%. Perinatal follow-up is conducted at the maternal and child obstetric clinic every 42 days, every 3 months, and again at 6 months of pregnancy preparation.

Population and participants

Populations were women having perinatal loss (their fetal or newborn death occurred after 20 weeks of pregnancy to 1 month after delivery). They received the health care service at the Maternal and Child Health Hospital, Xia Pu County, China.

Participants compose of women having perinatal loss after 3 and 6 months, receiving health care service at the Maternal and Child Health Hospital, Xia Pu County, China. Inclusion criteria: age > 18 years old, no history of mental health problems, can read and write in Chinese, and voluntarily participating in research.

Sample size and Sampling methods

The sample size was calculated using the G*power 3.9.1.4 (Faul, Erdfelder, Buchner, & Lang, 2009). Pearson correlation analysis was used as type of statistic test with an alpha of .05, a power of .85 (1-β), β =.25, the effect size = 0.25. Sample size was 123. This study was a prospective study which collect data 2 time with 3 months a part, the attrition rate might be high as 33%, the total participants will be 164 women. In view of the withdrawal of some subjects from the first to the second survey, the real sample size was 164 in the first survey but 33 subjects did not take part in the second survey, therefore, the effective size was 131.

A convenient sampling method was used in this study. At the first step, women came to gynecology clinic at the Maternal and Child Health Hospital, Xia Pu County, China around 3 months after perinatal loss for physicians' reexamine; secondly, According to the inclusion criteria, the researchers identified the participants; lastly, Approximately 1-2 people were recruited per day and data collection continues until a sufficient sample size was obtained.

Research instruments

The measurement tools of this study included demographic record form, Perceived Social Support Scale (PSSS), PTSD Checklist - Civilian Version, and Chinese Version of Post Traumatic Growth Inventory.

1. Demographic record form included age, occupation, education, income, marital status, parity (multiple births), causes of pregnancy loss, gestational loss occurring in the first week, number of perinatal loss, and time of perinatal loss to date.

2. Post-traumatic Stress Disorder Checklist-Civilian Version (PCL-C) was used to measure PTSD (Sprang & Silman, 2013). It was developed by the Behavioral Science Division of the PTSD Research Center in the United States based on the Diagnostic and Statistical Manual of Mental Disorders (4^{th}Ed.) (2013). This questionnaire includes three dimensions: increased alertness response, avoidance response, and repeated traumatic experience. Each item is scored on a scale of 1 to 5 points. The possible score is 17-85 points. The higher scores indicate the more likely the occurrence of PTSD. PCL-C has a good reliability and validity in Chinese adults (Yang, et al., 2007): on one hand, factor structure of the scale based on the principal

component analysis of 186 survey data, the contribution rate of the first principal component is the largest, and the first principal component is represented by the total score. The contribution of the 17 questions to the first principal component (total score) is basically the same. It also shows that the total score can reflect the measurement results well. On the other hand, the Cronbach's α coefficient was .82. According to the criteria for diagnose of PTSD, no lower than score 38 (Wu, Chen, Tan, & Liu, 2017)

3. Chinese version of Post-Traumatic Growth Inventory (PTGI-C) was used to measure post-traumatic growth. PTGI-C was developed by Tedeschi and Calhounn (1996) and revised in Chinese by Wang et al. (2015). It includes five dimensions: relationship with others, new possibilities, personal strength, self-change, and philosophy of life. The questionnaire has a total of 20 items, using a 6-level scoring method, from "not at all" to "very much", and the score is 0-5. The total score is 0-100. The higher the score indicates higher PTG. Relevant experts were invited to review the content of the scale. According to the research purpose, language and culture were adjusted to make it conform to the expression habits of Chinese people and exploratory factor analysis showed the KMO of the model was 0.859, and 5 factors with feature roots >1 were obtained. The cumulative contribution rate is 56.40%. The Cronbach's α coefficient was .85.

4. Perceived Social Support Scale (PSSS) was a social support scale (Zhang and Norvilitis (2002)) that emphasizes individual self-understanding and self-perception. The original PSSS was developed by. This study adopted the Chinese version translated by (Zhang and Norvilitis (2002). The Comprehension Social Support Scale includes 12 self-assessment items, 3 subscales, and use a scoring method from 1 to 7, which is divided into strongly disagree, strongly disagree, slightly disagree, neutral, slightly agree, very agree, and extremely agree to seven levels. The total score ranges from 12 to 84 points. Higher scores indicate higher social support. The internal consistency coefficient was .93, the internal consistency reliability of family support in the scale was .83, and the internal consistency reliability of friend support and other supports were .82, and .76, respectively, which has reached the psychometric standard. The item analysis showed that the items were positively correlated with the total scores (0.65 - 0.79, $p < 0.001$). Two common factors were extracted by exploratory factor analysis, and the cumulative variance explanation rate was 70.437%. Specifically, it can

be divided into 12-36 points for low level, 37-60 points for intermediate level, and 61-84 points for high level (Ye, & Zhu, 2022).

Psychometric properties of research instruments

Validity

All the research instruments used in this research have Chinese version, were not tested for their validities since all the instruments were extensively used and their validities had been established.

Reliability

Reliability testing was conducted by a pilot study with 30 women with perinatal loss have same characteristics of the study sample at the Maternal and Child Health Hospital, Xia Pu County, China. These women were not participated in the main study. The reliability of instrument were used Cronbach's alpha coefficients to determine the reliability of each questionnaire. First, the variable PTSD was tested for reliability using the Post-traumatic stress disorder checkbook-civilian Version (PCL-C) with a test result of 0.9. Then, The reliability test of variable PTG was conducted, and the result was 0.85 by using the Chinese version of Post-Traumatic Growth Inventory (PTGI-C) tool. Finally, using Perceived Social Support Scale (PSSS), the reliability of the test variable SS is 0.93.

Human right protection

This study was approved by the IRB Burapha University (IRB3-093/256) and the Research Ethics Committee of the Maternal and Child Health Hospital, Xia Pu County (IRB 2021-K-01-02). Informed Consent was signed to obtain the agreement from the participants as respect for bioethical principle of autonomy. The confidentiality and privacy of data are kept. Participants had the opportunity, both verbally and in writing, to refuse to participate or leave the study at any time. The researcher asked permission from women to participate in the study and to sign on consent form.

All information of participants was only used for study and keep confidential: Printed questionnaires were locked in file drawer and computer files were protected by password. It will be destroyed after publication. Results of the

study were illustrated in overview data, nothing will be linked to individual participants.

Data collection procedures

Data were collected in Puxia Maternal and Child Health Hospital from September in 2021 to June in 2022. The data collection procedures in the study were conducted by the researcher and two research assistants as follows:

Firstly, the research has been approved by IRB of BUU in Thailand and hospital of China. Secondly, two research assistants were nurses who had bachelor's degree and worked at the maternity clinic, they were trained to have ability to recruit the participants and collect data. The training contents included research objectives, recruitment, the inclusion criteria, notes for filling in the questionnaire. Thirdly, at the maternity clinic the Maternal and Child Health Hospital subjects were found by sampling technique for 3 months after perinatal loss in the first survey. Then, researcher introduced the purpose of study and get consent form. The researcher or research assistants introduced the questionnaire answering method, which were the self-administrative questionnaires. The questionnaires were distributed to women who agreed to participate in the study. The participants answered the questionnaire and data was collected in a private room. It took about half an hour to complete the data collection. Finally, the telephone interview was used at the second time of data collection, 6 months after perinatal loss.

Data analysis

SPSS software was used for data entry to describe demographic data. A descriptive analysis of the quantitative data was carried out through measures of central tendency (means and standard deviations), in addition to the frequencies and percentages. The Pearson's correlation coefficient (r) was used to analyze correlation between post-traumatic stress disorder and post-traumatic growth. It also was used to analyze the correlation between social support and post-traumatic growth in women with perinatal loss. The normal distribution of each variable was tested to meet assumptions of the Pearson's correlation statistics.

CHAPTER 4
RESULTS

This chapter presented the results of the study including description of demographic characteristics of the sample and variables in the study (PTSD, PTG and social support), and correlation between PTSD, PTG and social support at the first survey and second survey.

Description of demographic characteristics of the sample

The demographic characteristics of the participants were presented in Table 1. 131 women with perinatal loss responded. Most of the participants were around 28-32 years old (42%), employment (91.6%), undergraduate education (31.3%), family income during 80000-130000 RMB per year (60.3%). The majority of them got married (85.5%) and having the second child (61%). Most of them (51.1%) didn't know the reason for perinatal loss. Majority of women were first-time perinatal loss (90.1%).

Table 1 Demographic characteristics of women with perinatal loss

Characteristics	**Number（*n*）**	**Percentage (%)**
Age (Years)		
18-22	2	1.5
23-27	34	26.0
28-32	55	42.0
33-37	30	22.9
38-42	10	7.6
(*Min*=21, *Max*=42, *M*=30.82, *SD* =4.57)		
Occupation		
Employment	120	91.6
Unemployment	11	8.4

Table 1 (Continued)

Characteristics	**Number（*n*）**	**Percentage (%)**
Education		
Junior high school	17	13.0
Senior high school	33	25.2
Undergraduate	41	31.3
Graduate and above	12	9.2
Other	28	21.3
Family income（RMB/year）		
< 30,000	8	6.1
30,000-80,000	43	32.8
80,000-130,000	79	60.3
> 130,000	1	0.8
Marital status		
Unmarried	9	6.9
Married	112	85.5
Divorce	10	7.6
Parity		
One	17	13.0
Two	80	61.0
Three	34	26.0
Reason for perinatal loss		
Gestational diabetes mellitus	15	11.5
Severe fetal malformation	10	7.6
Pregnancy induced hypertension	18	13.7
Intrauterine infection	17	13.0
Thalassemia	4	3.1
Unknow	67	51.1
Number of perinatal loss		
One	118	90.1
Two	13	9.9

Description of study variables

The variables studied in this study were post-traumatic stress disorder (PTSD), post-traumatic growth (PTG), and social support. The description of these variable and its subscales were showed in table 2.

Descriptive analysis results of each variable and their subscales displayed that participants of first survey had mean scores of PTSD as 59.01 (*SD* = 10.40, range = 32-81), its three subscales were Increased Alertness Response (*M* = 17.18, *SD* = 3.49, range = 8-25), Avoidance Response (*M* = 7.34, *SD* = 1.51, range = 3-10), and Repeated Traumatic Experience (*M* = 16.49, *SD* = 3.36, range = 8-23), Social dysfunction response (*M* = 18.00, *SD* = 3.31, range = 10-25). According to the criteria for diagnose of PTSD higher than score 38 (Wu, Chen, Tan, & Liu, 2017). The incidence rate of PTSD in the three months and six months of this study was about 97.7% and 55.7%. Both the results were quite a high. The mean score of PTG was 69.98 (*SD* = 11.36, range = 47-91), its five subscales were Philosophy of life (*M* = 21.90, *SD* = 3.74, range = 13-28), Personal strength (*M* = 10.08, *SD* = 1.92, range = 7-14), New possibilities (*M* = 13.92, *SD* = 2.43, range = 9-19), Relationship with others (*M* = 10.82, *SD* = 1.98, range = 7-15), Self-change (*M* = 13.25, *SD* = 2.79, range = 7-20). The mean score of Social support was 45.61 (*SD* = 4.06, range = 36-51), its three subscales were Family support (*M* = 14.81, *SD* = 1.83, range = 12-17), Friends support (*M* = 15.56, *SD* = 1.89, range = 12-18), and other support (*M* = 15.24, *SD* = 1.41, range = 12-19). The participants of second survey had mean values of PTSD as 42.79 (*SD* = 12.73, range = 23-78), its three subscales were Increased alertness response (*M* = 12.95, *SD* = 3.72, range = 6-22), Avoidance response (*M* = 4.66, *SD* = 2.10, range = 2-10), Repeated traumatic experience (*M* = 12.76, *SD* = 4.14, range = 6-24), Social dysfunction response (*M* = 18.00, *SD* = 3.31, range = 10-25). The mean values of PTG as 36.98 (*SD* = 5.11, range = 27-51), its five subscales were Philosophy of life (*M* = 11.71, *SD* = 1.96, range = 8-16), Personal strength (*M* = 5.66, *SD* = 1.44, range = 3-9), New possibilities (*M* = 7.55, *SD* = 1.70, range = 5-14), Relationship with others (*M* = 5.60, *SD* = 1.14, range = 3-8), Self-change (*M* = 6.47, *SD* = 1.13, range = 5-9).The mean values of Social support as 48.31 (*SD* = 4.42, range = 37-55), its three subscales were Family support (*M* = 16.01, *SD* = 1.96, range = 12-19), Friends support (*M* = 16.09, *SD* = 1.83, range = 12-19), and others support (*M* = 16.21, *SD* = 1.55, range = 13-19). In the study, the mean

scores of total social support (SS) in the 3rd month and 6th month were 45.61 ± 4.06 & 48.31 ± 4.42 respectively, Both scores located between 37-60, the range means at the moderate level of perceived social support (Li, & Zhang, 2014).

Table 2 Mean and standard deviation of the study variables

Variables	Possible Range	Actual range of each survey		First Survey (N1 = 131)		Second Survey (N2 = 131)	
		First	Second	*M*	*SD*	*M*	*SD*
PTSD	17-85	32-81	23-78	59.01	10.40	42.79	12.73
PTG	0-100	47-91	27-51	69.98	11.36	36.98	5.11
Social support	12-84	36-51	37-55	45.61	4.06	48.31	4.42

There was the change of PTSD, PTG and Social support at the first and second survey (Figure 1). This graph showed the change of different Mean (SD) for PTSD, PTG, Social Support at the first survey (3 months after perinatal loss) and the second survey (6 months after perinatal loss). Compared to first survey, the mean score of PTSD and PTG decreased from 3 months to 6 months, while Social support increased from 3 months to 6 months.

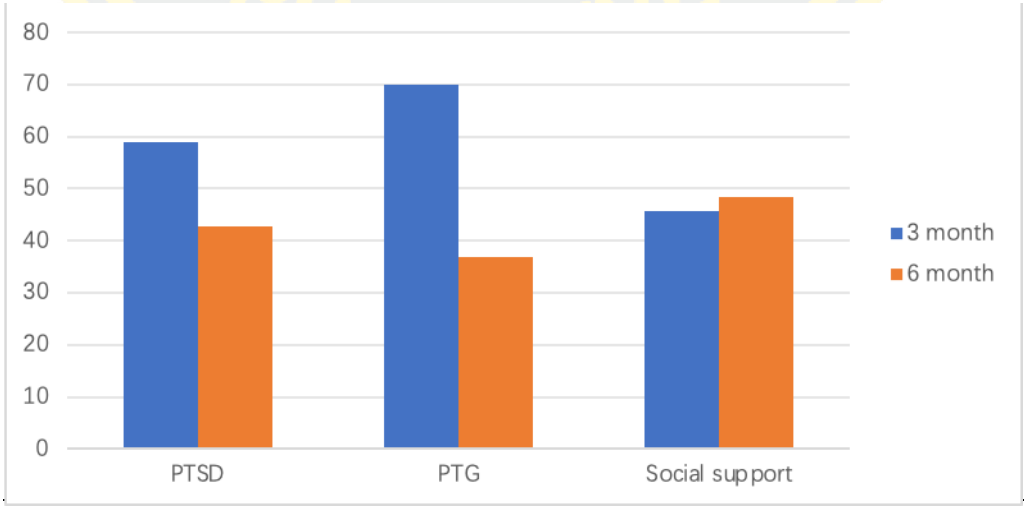


Figure 1 The change of PTSD, PTG, Social support at the first and second survey

Paired samples test was used for the evaluation of variables among 6 months compared with 3 months. There was statistically significant difference between 3 months and 6 months among PTSD, PTG and social support (p<.001).

The relationship between PTSD, PTG and Social support among women with perinatal loss

To examine the relationship between PTSD, PTG and Social support, Pearson product moment correlation was used for analysis. This statistical method had a testing assumption which is normal distribution that had to be met. The histogram and the Normal P - P plot showed the 4 variables were distributed normally. When the assumption was met, Pearson product moment correlation was performed. Its results were demonstrated in Table 3.

Table 3 Correlation among PTSD, PTG and Social support at 3 and 6 months after perinatal loss (N1 = 131, N2 = 131)

	PTSD1	PTSD2	PTG1	PTG2	SS1	SS2
PTSD1	1.000	.520**	-.227**	.069	.102	.014
PTSD2		1.000	.032	.245**	.009	.052
PTG1			1.000	.091	-.104	-.011
PTG2				1.000	-.009	.173*
SS1					1.000	.573**
SS2						1.000

Notes: **$P < .01$, *$P < .05$
PTG1 = PTG at 3 months, PTG2 = PTG at 6 months
PTSD1 = PTSD at 3 months, PTSD2 = PTSD at 6 months
SS1 = Social support at 3 months, SS2 = Social support at 6 months

As shown in table 3, Pearson correlation analysis showed that there were significant correlations among PTSD, PTG and Social support in first survey and second survey. In first survey, there was negative correlation between PTSD1 and PTG1 (r = -.227, p <.01). In second survey, there was positive correlation between PTSD2 and PTG2, PTG2 and SS2 (r = .245, .173; p <.01, and <.05 respectively).

CHAPTER 5
CONCLUSION AND DISCUSSION

This chapter presents the conclusion and discussion of the study as follows: 1) the relationship between post-traumatic stress disorder, post-traumatic growth, and social support in women with perinatal loss. 2) the impact of time on these variables. Also, its implication, limitation, and future research recommendations are introduced.

Summary of the findings

The objectives of the correlational study were to describe the level of post-traumatic stress disorder (PTSD), post-traumatic growth (PTG), and social support (SS) among Chinese parturient after loss's three months and six months and to identity the relationship between PTSD, PTG, and social support. The conceptual framework of the study was based on literature review. Convenient sampling was applied to choose 131 participants within the third month and the sixth month after perinatal loss at the maternity ward of Maternal and Child Health Hospital, Xiapu County, China in 2021. The instruments of the study included demographic record form, Post-traumatic Stress Disorder Check-list-Civilian Version, Perceived Social Support Scale (PSSS), and Chinese Version of Post Traumatic Growth Questionnaire, for the three latter instruments, the reliabilities were high (≥0.85). Data were analyzed by descriptive statistics, Pearson's correlation coefficient (r).

The research found that Among 131 women with perinatal loss in the first survey, their average age was 30.82 years (SD = 4.57), 91.6% worked as employees, about two-thirds graduated in senior high school and higher (65.7%), similarly, 60.3% of families gained income between 80000 and 130.000 RMB per year. The majority of subjects got married (85.5%) and had two children (61.0%). Over half of them (51.1%) didn't know the reason for perinatal loss, besides, the top 3 reasons for perinatal loss were pregnancy induced hypertension；intrauterine infection and gestational diabetes mellitus. Nearly all subjects suffered first-time perinatal loss. The demographic characteristics in the second survey were the same as the first survey.

In the first & second surveys, the mean scores of PTSD, PTG, and SS were

59.01 ±10.40 & 42.79 ± 12.73, 69.98 ± 11.36 & 36.98 ± 5.11, and 45.61± 4.06 & 48.31 ± 4.42 respectively. In the first survey, there was negative correlation between PTSD and PTG (r = -.227, p <.01). In the second survey, there was positive correlation between PTSD2 and PTG2, PTG2 and SS2 (r = .245, .173; p <.01, and <.05 respectively). PTSD in the first survey was positively correlated with the same variable in the second survey (r =.520, p<.01). Similarly, SS in the 3rd month was positively relation to the 6th month (r = .573, p<.01), whereas the relation of PTG between the two times was not significant (r =.091, p >.05). There was statistically significant difference from 3 months to 6 months after perinatal loss for each variable of PTSD, PTG, and social support, respectively (*M*= -16.22 *SD* = 11.51, p < .001; *M*= -33.00 *SD* = 12.03, p < .001, and *M*= -2.69 *SD* = 3.93, p < .001).

Discussion

Post-traumatic stress disorder

In the study, the average scores of post-traumatic stress disorder (PTSD) in the 3 months and 6 months after perinatal loss were 59.01 ±10.40 & 42.79 ± 12.73, respectively. In addition, according to the criteria for diagnose of PTSD higher than score 38 (Wu, Chen, Tan, & Liu, 2017). The incidence rate of PTSD in the three months and six months of this study was about 97.7% and 55.7%. Both the results were much higher than that of the research targeted for general parturient which score was 26.82 ± 10.23 (Zheng, Wang, Du, & Liu, 2022). It illustrates that natal loss was likely to be focus stressor (Zheng, Wang, Du, & Liu, 2022) among parturient. PTSD in this study was higher than the previous studies, which participants were parents experiencing quarantine or isolation during pandemic disasters such as H1N1 or SARS (46.67) (Sprang & Silman, 2013), the domestic studies aimed to flood survivors (28.77) (Wu, Chen, Tan, & Liu, 2017）and workers experienced the tornado (25.1%). However, lower than breast cancer patients (72.5%) (Liu, Tu, Xiong, Liu, & Zhao, 2011). It could be explained by the severity degree of different stressors. Perinatal loss in this study could contain higher severity than environmental stressors like pandemic disasters, flood, and tornado etc., but lower than personal terminal disease. Environmental stressors could be easier for people to be understood than personal stressors.

The 97.7% incidence rate of PTSD in the third month of this study is much

higher than any current abroad and research domestic reports: developed countries such as Holland and England or developed areas of China such as Hongkong and Hangzhou. (7% ~ 60%) (Yu, & Gu, 2022). One possible reason is that participants in this study are from countryside in low family income, the poor living area and family income are risk factors affecting PTSD (Liu, Tu, Xiong, Liu, & Zhao, 2011; Hui, 2000), the other possible reason is related to the limited sample size of this study or different standards and measurements to judge PTSD.

This study revealed the sample had high PTSD within the third month before declining obviously at the 6th month after perinatal loss. The longitudinal studies found symptoms of PTSD to be at its highest the closer to the natal loss they were measured, with a declining trajectory with time (Westby, Erlandsen, Nilsen, Visted, &Thimm, 2021). These results suggest that fetal loss may perhaps best be characterized as an acute stressor temporarily impacting their mental health. PTSD is more pronounced in patients with severe illnesses that seriously impair organ functioning in the body and are momentarily unacceptable to the patient. Symptoms of post-traumatic stress disorder are evident in the early stages of the disease. However, the longest follow-up time in these studies was only 6 months, it was too short to make a whole diagnose. One domestic study found the PTSD levels on parturient women were investigated in three periods after delivery:1-3 months, 4-6 months, and 7-12 months and the process of changes was high, low, and high, they were identified as one high-risk group with delayed onset of PTSD (Wang, Du, & Zheng, 2023). Thus, future studies with longer follow-ups are needed to illuminate how symptoms persist and develop after this.

Post-traumatic growth

In the current study, the average score of post-traumatic growth **(**PTG) in the 3rd month was 69.98, which was higher than previous studies (Li et al. 2019; Qian, 2020). The mean of PTG among the women with the same condition (58.45±14.24 and 59.98±1.61) in two big cities, which was similar to Li, Sun, Hua, & Jing (2011), who also presented that participants who lost their loved ones within 2 years had their average PTG score 58.69±20.10. The mean score of posttraumatic growth was 59.45±12.19 in cases with preterm premature rupture of membranes (Lei, Dong, Song, & Yang, 2022), 58.88±16.55 with unintentional trauma (Du, 2021), 51.70±15.14 for infertility women (Zhang, 2017). It probably indicates the growth of

woman with the death of perinatal fetal after the trauma is at the high level compared with most diseases, even if the same condition. The explanations for the difference can be enumerated in terms of the degree of city. The current study was conducted in small city where women can experience less stresses than metropolis.

The highest of five dimensions of PTG variable in two timepoints was philosophy of life. The possible reason is that women would be filled with negative emotion such as sorrow, extreme frustration, or hopelessness when they face the death of their loved one. Furthermore, they stay in hospital surroundings related to health and diseases. Thus, subjects' concentration would be drawn on meaning of the lost fetal life for them and form some positive idea for self-health, life or family.

The statistics showed that the sample's PTG decreases significantly in the period from the third month to the sixth month after fetal loss. This result is similar to one study with breast cancer (Chen, Wu, Zeng, Zhou, & Xiong, 2014). This is possibly related to self-reflection (Hamama-Raz, Pat-Horenczyk, Roziner, et al., 2019). In the first three months, patients tend to receive satisfied treatment and good care by family or friends, which might help rekindle their faith in life. This would increase coping ways with the stressor and decrease PTSD. In the next three months, not only PTSD becomes lower, and the stressor disappears, but also the preparation is for the next pregnant, they reduce the cognitive processing of self-reflection for the stressor and coping strategies, thus PTG decreases.

Social Support

In the study, the mean scores of total social support (SS) in the 3rd month and 6th month were 45.61 ± 4.06 & 48.31 ± 4.42 respectively, Both scores located between 37-60, the range means at the moderate level of perceived social support (Li, & Zhang, 2014). The level is similar to Zhang, Zhou, Fu, and Gan (2022)'s study in Sichuan province and Li (2020)'s study in Hu Nan province (48.82 ± 7.41). It is lower than other kinds of participants, for example: adolescents in Guizhou province (58.11±16.07) in Ye and Zhu (2022)'s study and women in Late Pregnancy (64.62 ± 15.12) in Chang (2018)'s study. It could be explained that low social support may promote the occurrence of perinatal loss.

The above facts show that social support is unexpected low for women suffering perinatal loss. Women are eagerly anticipating the arrival of a new life, but it

is accompanied by an uncontrollable termination of pregnancy, which can easily cause serious psychological impact on women and require support from family, friends, and medical staff, rather than being "socially isolated" or "marginalized" in a state of avoidance. For bereaved individuals, social support plays an important role in treating trauma and alleviating stress (Zhang, Zhou, Fu, & Gan, 2022).

The relationship between PTSD and PTG

In the study, negative correlation was found between PTSD and PTG ($r = -.227$, $p < .01$) at the 3rd month. Some scholars have also found in empirical studies that there is a negative relationship between PTSD and PTG (Liu, Wang, Li, Gong, & Liu, 2017; Frazier, Conlon, & Glaser, 2001; Hall, Saltzman, Canetti, & Hobfoll, 2015). They asserted that PTSD and PTG appear to be two opposing posttraumatic reactions but are two ends of the same continuum. Their relationship is ebb to flow, and Nelson (2011) states that too much psychological stress may put a strain on an individual's active thinking and be detrimental to their growth. That is, to some extent PTSD can negatively predict PTG. Another possible explanation is that higher PTG tends to alleviate PTSD symptoms, the results reported three dimensions including philosophy of life, relationship with others and self-change are integrated to impact on PTSD, specifically, high appreciation for life would make Negative idea and pessimistic attitude in women turn into positive and optimistic, strong relationship with other would help women become more relaxation, calmer and powerful, all these could impel women continuously to take effective coping strategies with stressors and PTSD symptoms would become lighter and lighter (Li et al., 2018).

In contrast, positive correlation between PTSD and PTG was reported at the 6th month ($r = .245$; $p < .01$). Different relations of PTSD to PTG in two timepoints are likely to be made by two separate mechanisms. Network analysis could be used to examine the internal structure of PTSD and PTG in a coexistence network (Tan, 2022). One study showed that nightmares, reckless behavior, and avoidance of trauma-related thoughts were the core symptoms of PTSD, while valuing relationships and discovering the beauty of humanity were the growth components of PTG. PTSD and PTG formed two relatively independent clusters in the coexistence network. The lack of interconnected bridging nodes between the two clusters suggests that PTSD and PTG in

breast cancer patients are two separate psychological responses.

The association in the second survey was the same with Qian's research (Qian, 2020) for women with fetal abnormalities requiring pregnancy termination during the period of knowing the diagnosis of fetal abnormalities to 1 month after discharge in Hangzhou city of Zhejiang province In the second survey, Wang's research (Wang, Zhao, Zhang, &Tang, 2019) for 187 Patients with unintentional bone fractures to be pre-discharged after surgery and a few other researches for samples suffering breast cancers or earthquake (Barskova & Oestereich, 2009; Xu & Liao, 2011). Tedeschi and Calhoun (2004) argued that PTG was the outcome of the posttraumatic psychological struggle, whereby stress-induced cognitive rumination was transformed into constructive processing such that individuals engaged in renewed consideration and revision of attending to changes within the self, in attempts to understand the event, and in the rebuilding of core beliefs about the world. These changes, in turn, initiated the development of psychological growth. This emphasized the notion that growth was not simply the same as a decrease in distress or an increase in well-being (Tedeschi & Calhoun, 2004) but that greater levels of PTG may also be related to higher levels of PTSD symptoms. Accordingly, people with high levels of PTG should not be ignored, but rather, they should continue to receive help to alleviate their PTSD symptoms. The current study was also found that two dimensions including personal strength and philosophy of life played important active role to coordinate with PTSD. PTSD may trigger to bereavement and cognitive rumination to appreciate life and empower women following fetal loss. Above all, the focus should be on accelerating PTG especially in three ways such as philosophy of life, relationship with others and self-change within the first three months after perinatal loss, while on controlling symptoms of PTSD during the second three months.

The relationship between PTSD and SS

This study identified no significant association of PTSD with SS at the 3rd and 6th months after perinatal loss. It is different with a wide range of research in which social supports could negatively associate with PTSD levels among a wide range of samples from college students (Ren, Chen, & Pan, 2023) to preterm mothers and fathers (Xu, 2023), bone fractures (Liu, 2020), breast cancers (Tan, 2022), and patients with stillbirth (Crawley, Lomax, & Ayers, 2013). The result of the present study is the same

as Adriana et al. (2013)'s research for adult earthquake survivors in Northwestern Pakistan and one domestic research for the perinatal loss (Xu, 2023).

The relationship between PTG and SS

The current study showed that there was no relation between PTG and SS in the 3rd month while positive relations between PTG total score, philosophy of life, relationship with others and SS total score, family support, others' support in the 6th month. The result in the first survey was probably affected by two factors, one is about the limited time of the study, the other is formed because women with stillbirth or fetal death focus on their internal psychological change and ignore environment. They have no conscious feeling the help of people around them. As time goes, samples could draw from inner world and begin to reactive with surroundings consisting of natural and social support.

The result in the second survey was positive relationship between PTG and SS. It is similar to some researches for breast cancers (Bozo et al., 2009; Yeng & Lu, 2018), those for patients suffering unintentional bone fractures (Wang, Zhao, Zhang, &Tang, 2019), and other samples such as myocardial infarction (Rahimi, Heidarzadeh, & Shoaee, 2016). Because perinatal loss brings about shocking bereavement and patients are more sensitive to social support and tend to look for more social support. Some studies have shown that social factors play an important influence in the process of changing psychological states (Knobf, 2011). The present theories also support such a view, and a theory named social conditioning of cognitive processing emphasizes the role of social support as an environmental factor that creates a safe environment and climate for individuals and helps traumatized individuals to cope more positively with traumatic events (Holtzman, Newth, & Delongis, 2004), providing the conditions for the emergence of PTG. The Crisis-Growth Model (Schaefer & Moos, 1992) suggests that social support serves as not only a safe surrounding but also adequate external resources. Though perinatal loss is a severe family stress event, family's comforts or medical staff's treatments would help women recover positive psychological strength and be aware of importance of interpersonal relationships, these are useful to raise PTG. In other words, social support may impact on PTG positively. The result suggests that clinical workers should strengthen the construction of social support system to improve participants' PTG level.

Implications for nursing

The finding of this study might be applied to several areas as follows:

Nursing practice

This study contributes to widen nursing content. Obstetrics and gynecology nurses could pay more attention to PTSD and SS of patients with perinatal loss in hospital. PTSD and SS conditions should be appraised as soon as patients enter the hospital. For decreasing PTSD, nurses could focus on not only their body but also psychology and spirit to alleviate bereavement. For increasing SS, nurses could hold in charge of family meeting to promote family support. Community nurses could implement continuing care on them. they would spend more time on visiting them. Women could be encouraged to take part in psychological education and spiritual exercises in the company of their family to form optimistic life reflection and increase PTG. Their family health could be promoted in order for better social support.

Nursing administration

Nursing leaders would strengthen the importance of psychological nursing for patients with perinatal loss and add this indicator into nursing quality. Adequate nursing resources and nurse workforce should be ensured to make clinical nurses better work for patients with perinatal loss.

Limitations of the study and recommendations for future research

Limitations include the recruitment of a sample of convenience, a modest sample size and bias due to collecting data. The subjects of this study were from a small second-class hospital and most of them were from suburban area, the scope of the survey was limited. The sample size was relatively small. Interpret of questionnaire items by researchers especial in telephone interview may have answer bias because of interference with the subjects' independence.

Future studies should expand the sample size and widen sampling areas. Causal relationships studies should be conducted to find out reasons affecting PTSD, PTG and SS. in addition, studies with longer follow-ups are needed to illuminate how symptoms persist and develop after this.

Conclusion

The finding of this study show that the incidence rate of PTSD is high, PTG decreases from the 3rd month to 6th month, SS is in moderate level, some of the relationship between PTSD, PTG and SS at the 3rd or 6th month is effective. The results will help midwives focus on post-traumatic stress disorder and social support in perinatal bereaved women in hospital and help community nurses with more attention to women with perinatal loss to increase PTG and SS. Also, this study could provide information to support the development of intervention measures in the future.

REFERENCES

Adewuya, A. O., Ologun, Y. A., & Ibigbami, O. S. (2006). Post-traumatic stress disorder after childbirth in Nigerian women: prevalence and risk factors. *Bjog, 113*(3), 284-288. doi:10.1111/j.1471-0528.2006.00861.x

Adewuya, A. O., Ologun, Y. A., & Ibigbami, O. S. (2006). Post-traumatic stress disorder after childbirth in Nigerian women: prevalence and risk factors. *Bjog, 113*(3), 284-288. doi:10.1111/j.1471-0528.2006.00861.x

Adriana, F., Samoon, A., Elisa, J. L., Julia, E. M., Ritika, S., Bruce, W. S., et al. (2013). Coping and PTSD symptoms in Pakistani earthquake survivors: Purpose in life, religious coping, and social support. *J Affect Disord*, 147(1-3):156-63. doi: 10.1016/j.jad.2012.10.027.

Ajoudani, F., Jafarizadeh, H., & Kazamzadeh, J. (2019). Social support and posttraumatic growth in Iranian burn survivors: The mediating role of spirituality. *Burns, 45*(3), 732-740. doi:10.1016/j.burns.2018.10.013

Amiri, H., Nakhaee, N., Nagyova, I., Timkova, V., Okhovati, M., Nekoei-Moghadam, M., & Zahedi, R. (2021). Posttraumatic growth after earthquake: A systematic review and meta-analysis. *The International journal of social psychiatry*, 20764021995856. doi:10.1177/0020764021995856

Auxéméry, Y. (2018). Post-traumatic psychiatric disorders: PTSD is not the only diagnosis. *Presse Med, 47*(5), 423-430. doi:10.1016/j.lpm.2017.12.006

Ayers, S., Bond, R., Bertullies, S., & Wijma, K. (2016). The aetiology of post-traumatic stress following childbirth: a meta-analysis and theoretical framework. *Psychol Med, 46*(6), 1121-1134. doi:10.1017/s0033291715002706

Bai, P., Luo, H., Yang, X., & Liu, X. (2006). Effect of psychological nursing intervention on the remodeling of maternal role in maternal separation. *Chinese Journal of Practical Nursing, 22*(31), 72-73.

Bhat, A., & Byatt, N. (2016). Infertility and Perinatal Loss: When the Bough Breaks. *Curr Psychiatry Rep, 18*(3), 31. doi:10.1007/s11920-016-0663-8

Barskova, T. & Oestereich, R. (2009). Post-traumatic growth in people living with a serious medical condition and its relations to physical and mental health: A systematic review[J]. *Disabil Rehabil*, 31(21), 1709-1733.

Boorman, R. J., Devilly, G. J., Gamble, J., Creedy, D. K., & Fenwick, J. (2014). Childbirth and criteria for traumatic events. *Midwifery, 30*(2), 255-261. doi:10.1016/j.midw.2013.03.001

Bourassa, K. J., Smolenski, D. J., Edwards-Stewart, A., Campbell, S. B., Reger, G. M., & Norr, A. M. (2020). The impact of prolonged exposure therapy on social support and PTSD symptoms. *J Affect Disord, 260*, 410-417. doi:10.1016/j.jad.2019.09.036

Bozo, O., Gundogdu, E., & Buyukasik-Colak, C. (2009). The moderating role of different sources of perceived social support on the dispositional optimism-posttraumatic growth relationship in postoperative breast cancer patients. *Journal of Health Psychology*, 14(7),1009-1020. https://doi.org/10.1177/13591053093342295.

Calhoun, L. G., & Tedeschi, R. G. (1998). Posttraumatic growth: Theory and research on change in the afrermath of crisis In C. L. P. R. G. Tedeschi, & L. G. Calhoun (Ed.), *Posttraumatic growth Future directions* (pp. 215-238). Mahwah, NJ: Lawrence Erlbaum.

Calhoun, L. G., Cann, A., Tedeschi, R. G., & McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *J Trauma Stress, 13*(3), 521-527. doi:10.1023/a:1007745627077

Calhoun, L. G., & Tedeschi, R. G. (2006). The foundations of posttraumatic growth: An expanded framework.

Cao, S.Y., Li, J.Q., Wang, H., et al. (2016) Post-traumatic stress reaction of pregnant women with abnormal fetal induction and its correlation with Big Five personality [J]. Chinese Journal of Practical Nursing, 32(2), 81-85.

Campbell, D. G., Felker, B. L., Liu, C. F, Yano, E. M., Kirchner, J. E., Chan, D., Rubenstein, L. V., & Chaney, E. F. (2007). Prevalence of depression-PTSD comorbidity: implications for clinical practice guidelines and primary care-based interventions. J Gen Intern Med, 22(6), 711-718.

Chang, S. (2018). *Relationships between pregnancy stress, perceived social support, and depressive tendencies among women in late pregnancy: a study of the mediating roles of self-efficacy and self-esteem.* Master's Dissertation,

Department of Public health, China Medical University.

Chen, J.L., Wu, X.C., Zeng, P.P., Zhou, Xiu & Xiong, G.Y. (2014). The relationship between PTSD and PTG: Evidence from a follow-up study of a teacher population. *Psychological Development and Education* 30(01), 75-81. doi:10.16187/j.cnki.issn1001-4918.2014.01.010.

Chen, W. (2021) China's low fertility rate and three-child policy is based on the seventh national Analysis of census data [J]. Population and Economy, 5, 25-35.

China Women's Development Program (2021-2030) & China Children's Development Program (2021-2030). (2021). State Council Gazette, Retrieved September 8, 2021, from www.gov.cn.

Cirino, N. H., & Knapp, J. M. (2019). Perinatal Posttraumatic Stress Disorder: A Review of Risk Factors, Diagnosis, and Treatment. *Obstet Gynecol Surv, 74*(6), 369-376. doi:10.1097/ogx.0000000000000680

Cohen, S., Gianaros, P. J., & Manuck, S. B. (2016). A Stage Model of Stress and Disease. Perspect Psychol Sci, 11(4), 456-463. doi:10.1177/1745691616646305

Crawley, R., Lomax, S., & Ayers, S. (2013). Recovering from Stillbirth: The Effects of Making and Sharing Memories on Maternal Mental Health. *Journal of Reproductive and Infant Psychology*, 31(2),195-207. DOI:10.1080/02646838.2013. 795216.

D Páez, B., N. , Ubillos, S. , & JL González-Castro. (2010). Social sharing, participation in demonstrations, emotional climate, and coping with collective violence after the march 11th Madrid bombings. *Journal of Social Issues, 63*(2), 323-337.

de Graaff, L. F., Honig, A., van Pampus, M. G., & Stramrood, C. A. I. (2018). Preventing post-traumatic stress disorder following childbirth and traumatic birth experiences: a systematic review. *Acta Obstet Gynecol Scand, 97*(6), 648-656. doi:10.1111/aogs.13291

Dekel, R., & Monson, C. M. (2010). Military-related post-traumatic stress disorder and family relations: Current knowledge and future directions. Aggression and Violent Behavior, 15(4), 303-309.

Dekel, S., Ein-Dor, T., & Solomon, Z. (2012). Posttraumatic growth and posttraumatic distress: A longitudinal study. *Psychological Trauma Theory Research Practice*

& Policy, 4(1), 94-101.

Du, Y. S. (2021). *A longitudinal study of post-traumatic growth in young and middle-aged ischemic stroke patients*. Master's Thesis, Nursing school, Xinxiang Medical College. https://link.cnki.net/doi/10.27434/d.cnki.gxxyc.2021.000058.

Du, X. M. (2022) A study on the relationship between fear of disease progression, self-management efficacy and post-traumatic stress disorder in breast cancer patients after surgery. Master's dissertation. Shanxi Medical University.

Dyjakon, D., & Rajba, B. (2021). Post-traumatic Growth: Longitudinal Study on Battered Women in Close Relationships after Both They and Their Partners Undergo Therapy. *Journal of interpersonal violence*, 886260521997932. doi:10.1177/0886260521997932

Erbes, C., Eberly, R., Dikel, T., Johnsen, E., Harris, I., & Engdahl, B. (2005). Posttraumatic Growth among American Former Prisoners of War. *Traumatology, 11*(4), 285-295.

Faul, F., Erdfelder, E.,Buchner, A., & Lang, A-G. (2009). Statistical power analyses using g*power3.1: tests for correlation andregression analyses. Behavior Research Methods.

Frazier, P., Conlon, A., & Glaser, T. (2001). Positive and negative life changes following sexual assault. *Journal of C consulting and Clinical Psychology,* 69(6),1048-1055.

Garthus-Niegel, S., Ayers, S., von Soest, T., Torgersen, L., & Eberhard-Gran, M. (2015). Maintaining factors of posttraumatic stress symptoms following childbirth: A population-based, two-year follow-up study. *J Affect Disord, 172*, 146-152. doi:10.1016/j.jad.2014.10.003

Gold, K. J., Leon, I., Boggs, M. E., & Sen, A. (2016). Depression and Posttraumatic Stress Symptoms After Perinatal Loss in a Population-Based Sample. *J Womens Health (Larchmt), 25*(3), 263-269. doi:10.1089/jwh.2015.5284

Gorman, I., Belser, A. B., Jerome, L., Hennigan, C., Shechet, B., Hamilton, S., . . . Feduccia, A. A. (2020). Posttraumatic Growth After MDMA-Assisted Psychotherapy for Posttraumatic Stress Disorder. *J Trauma Stress, 33*(2), 161-170. doi:10.1002/jts.22479

Gradus, J. L., Qin, P, Lincoln, A. K., Miller, M, Lawler, E., Sorensen, H. T., & Lash, T. L. (2010). Posttraumatic stress disorder and completed suicide. Am J Epidemiol, 171(6), 721-727.

Grauerholz, K. R., Berry, S. N., Capuano RM, et al. (2021) Uncovering Prolonged Grief Reactions Subsequent to a Reproductive Loss: Implications for the Primary Care Provider[J]. Front Psychol, 12, 673050. D0I:10.3389/fpsyg.2021.673050.

Grekin, R., & O'Hara, M. W. (2014). Prevalence and risk factors of postpartum posttraumatic stress disorder: a meta-analysis. *Clin Psychol Rev, 34*(5), 389-401. doi:10.1016/j.cpr.2014.05.003

Guo, J., Liu, C., Kong, D., Solomon, P., & Fu, M. (2018). The relationship between PTSD and suicidality among Wenchuan earthquake survivors: The role of PTG and social support. *J Affect Disord, 235*, 90-95. doi:10.1016/j.jad.2018.04.030

Hall, B. J., Saltzman, L. Y., Canetti, D., & Hobfoll, S. E. (2015). Longitudinal investigation of the relationship between posttraumatic stress symptoms and posttraumatic growth in a cohort of Israeli Jews and Palestinians during ongoing violence. *PloS'one*,10(4), e0124782. doi:10.1371/journal.pone.0124782.

Hamama, L., Rauch, S.A., Sperlich, M., et al.(2010) Previous Experi-ence of Spontaneous or Elective Abortion and Risk forPosttraumatic Stress and Depression during SubsequentPregnancy[J]. Depress Anxiety, 27(8):699-707.DOI:10.1002/da.20714.

Hamama-Raz, Y., Pat-Horenczyk, R., Roziner, I., Perry, S., & Stemmer, S. M. (2019). Can posttraumatic growth after breast cancer promote positive coping? -A cross-lagged study. Psycho-oncology, 28(4), 767–774. https://doi.org/10.1002/pon.5017.

Holtzman, S., Newth, S., & Delongis, A. (2004). The role of social support in coping with daily pain among patients with rheumatoid arthritis. *Journal of Health Psychology*, 9(5), 677-695. https:// doi.org/10.1177/1359105304045381.

Horsch, A., Jacobs, l., McKenzie-McHarg, K. (2015) Cognitive predictors and risk factors of maternal posttraumatic stress disorder following stillbirth: a longitudinal study. J Reprod Infant Psychol. 33, E22-3.

Horesh, D., Nukrian, M., Bialik, Y. (2018) To Lose an Unborn Child: Post Traumatic

Stress Disorder and Major Depressive Dis-order Following Pregnancy Loss among Israeli Women[J].Gen Hosp Psychiatry, 53, 95-100. DOI: 10.1016/j. genhosppsych.2018.02.003.

Hui, W. L. (2000). Epidemiological Study of Risk Factors for Post-Traumatic Stress *Disorder*. Ph.D. Dissertation, Fourth Military Medical University.

Hutti, M. H., Armstrong, D. S., Myers, J. A., & Hall, L. A. (2015). Grief intensity, psychological well-being, and the intimate partner relationship in the subsequent pregnancy after a perinatal loss. *J Obstet Gynecol Neonatal Nurs, 44*(1), 42-50. doi:10.1111/1552-6909.12539

Hu, X., Li, X., Li, R., & Dou, X. (2014). A study on loneliness among people who lost their children in disaster area of 5.12 Earthquake. *Journal of Central South University(Medical Science), 39*(12), 1279-1284.

Inati, V., Matic, M., Phillips, C., Maconachie, N., Vanderhook, F., & Kent, A. L. (2018). A survey of the experiences of families with bereavement support services following a perinatal loss. *Aust N Z J Obstet Gynaecol, 58*(1), 54-63. doi:10.1111/ajo.12661

Jia, Z., & Ye, H. (2021). Research progress on perinatal loss of family palliative care. *Health Care Guide*(1), 297-298.

Joseph, S., & Linley, P. A. (2012). Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress. https://doi.org/10. 1002/9781118269718

Kelly, M. E., Duff, H., Kelly, S., McHugh Power, J. E., Brennan, S., Lawlor, B. A., & Loughrey, D. G. (2017). The impact of social activities, social networks, social support and social relationships on the cognitive functioning of healthy older adults: a systematic review. *Syst Rev, 6*(1), 259. doi:10.1186/s13643-017-0632-2

Kilpatrick, D. G., Ruggiero, K. J., Acierno, R., Saunders, B. E., Resnick, H. S., & Best, C. L. (2003). Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: results from the National Survey of Adolescents. J Consult Clin Psychol, 71(4), 692-700.

Knobf, M. T. (2011). Clinical update: Psychoso cial responses in breast cancer survivors. *Seminars in Oncology Nursing*, 27(3), e1-e14. https://doi.org/10.1016/ j.soncn.2011.05.00l.

Lamont, K., Scott, N. W., Jones, G. T., & Bhattacharya, S. (2015). Risk of recurrent stillbirth: systematic review and meta-analysis. *Bmj, 350*, h3080. doi:10.1136/bmj.h3080

Lawn, J. E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., . . . Cousens, S. (2016). Stillbirths: rates, risk factors, and acceleration towards 2030. *Lancet, 387*(10018), 587-603. doi:10.1016/s0140-6736(15)00837-5

Lei, F. F., Dong, Y. N., Song, Q. H. & Yang, Y. (2022). The relationship between psychological resilience, post-traumatic growth and social support in patients with preterm premature rupture of membranes.*Chinese Sexuality Science*. 31(04), 130-134.

Lev-Wiesel, R., Chen, R., Daphna-Tekoah, S., & Hod, M. (2009). Past traumatic events: are they a risk factor for high-risk pregnancy, delivery complications, and postpartum posttraumatic symptoms? *J Womens Health (Larchmt), 18*(1), 119-125. doi:10.1089/jwh.2008.0774

Lewkowitz, A. K., Rosenbloom, J. I., Keller, M., Lopez, J. D., Macones, G. A., Olsen, M. A., et al. (2019) Association between stillbirth ≥ 23 weeks gestation and acute psychiatric illness within 1 year of delivery. Am J Obstet Gynecol.221-491. e1-e22.

Li, C. C. (2020). The relationship between stress perception and state anxiety in women during the 6 months postpartum. Master's Dissertation, Department of Applied Psychology, Nanjing Normal University. https://link.cnki.net/doi/10.27245/d.cnki.gnjsu.2020.001780.

Li, H., Zhang, C., He, Y., Han, W., Hua, L., Gao, W., et al. (2019). Effects of self-efficacy, personality traits on post-traumatic growth in women with perinatal death. *Journal of PLA Nursing*, 36 (06), 26-29.

Li, J., Sun, Y. H., & Wang, J. M. (2011). Can bereaved parents' guilt promote posttraumatic growth: a double-edged sword. Chinese Journal of Clinical *Psychology* 29(01), 93-97. Doi: 10.16128/j.cnki.1005-3611.2021.01.019.

Li, N., Zhou, Z. Y., Yang, Y. H., et al. (2018). Posttraumatic growth and trauma in patients with hip fractures Correlation analysis between post injury stress disorder and quality of life, [J] *Qilu Nursing Journal*, 24 (18): 94-96.

Li, W. J., Ma, L. L., Li, X. J. (2015) Investigation of post-traumatic stress disorder and its influencing factors in inpatients with breast cancer [J]. Nursing Research, 29(02), 174-178.

Liang, Y. C., Qiu C. Y., Rong T.Q. Liang C.S, (2022) Correlation Study of Post-traumatic Growth with Post-traumatic Stress Disorder Symptoms. Medical Innovation of China, 19(33), 134-137.

Liu, A. N., Wang, L. L., Li, H. P., Gong, J., & Liu, X. H. (2017) Correlation Between Posttraumatic Growth and Posttraumatic Stress Disorder Symptoms Based on Pearson Correlation Coefficient: A Meta-Analysis. The Journal of Nervous and Mental Disease, 205(5), 380-389. DOI: 10.1097/NMD.0000000000000605.

Liu, J.C., Tu, F. M., Xiong, X. Y., Liu, P. P., & Zhao. C. X. (2011). A study of the risk factors for post-traumatic stress disorder in breast cancer patients. Meta-analysis of risk factors for post-traumatic stress disorder in breast cancer patients. Journal of Nursing Management, 1-6.

Liu, W. Q. (2020). The correlation between social support, self-perceived burden, and posttraumatic stress disorder in fracture patients, Master's Dissertation, Department of Nursing, Yanbian University. https://link.cnki.net/doi/10.27439/d.cnki.gybdu.2020.00005

Maeda, K., & Nagawawa, T. (2010). Loss of FHR variability diagnosed by frequency analysis. *J Perinat Med, 38*(2), 197-201. doi:10.1515/jpm.2010.036

Maguen, S., Vogt, D. S. , King, L. A. , King, D. W. , & Litz, B. T. (2006). Posttraumatic growth among gulf war I veterans: the predictive role of deployment-related experiences and background characteristics. *Journal of Loss and Trauma, 11*(5), 373-388.

Meyerson, D. A., Grant, K. E., Carter, J. S.,et al. (2011) Post traumatic growth among children and adolescents: A systematic review [J]. Clin Psychol Rev, 31(6), 949-964.

Modarres, M., Afrasiabi, S., Rahnama, P., & Montazeri, A. (2012). Prevalence and risk factors of childbirth-related post-traumatic stress symptoms. *BMC Pregnancy Childbirth, 12*, 88. doi:10.1186/1471-2393-12-88

Murphy, S., Shevlin, M., Elklit, A. (2014) Psychological Consequences of Pregnancy

Loss and Infant Death in a Sample of Be-reaved Parents[J]. J Loss Trauma, 19(1), 56-69. DOI:10.1080/15325024.2012.735531.

National Health Commission. (2019) China Health Statistical Yearbook [M]. Beijing: China Union Medical College Press, 2019, 218.

Nelson, S. D. (2011). The posttraumatic growth path: An emerging model for prevention and treatment of trauma-related behavioral health conditions. *Journal of Psychotherapy Integration*, 21(1),1-14.

N. Sattler, D., Claramita, M., & Muskavage, B. (2018). Natural Disasters in Indonesia: Relationships Among Posttraumatic Stress, Resource Loss, Depression, Social Support, and Posttraumatic Growth. *Journal of Loss and Trauma, 23*(5), 351-365. doi:10.1080/15325024.2017.1415740

Nohales, L., & Prieto, N. (2018). [What's the post-traumatic stress disorder (PTSD)?]. *Rev Prat, 68*(1), 92-96.

Nyqvist, F., Forsman, A. K.,Giuntoli, G., et al. (2013) Social capital as a resource for mental well-being in older people: a systematic review[J]. Aging &. Mental Health, 17(4), 394-410.

O'Donovan, A., Slavich, G. M., Epel, E. S., & Neylan, T. C. (2013). Exaggerated neurobiological sensitivity to threat as a mechanism linking anxiety with increased risk for diseases of aging. *Neurosci Biobehav Rev, 37*(1), 96-108. doi:10.1016/j.neubiorev.2012.10.013

Park, C. L., & Folkman, S. (1997). Meaning in the Context of Stress and Coping. *Review of General Psychology, 1*(2), 115-144.

Peirce, R. S., Frone, M. R., Russell M., et al. (2000) A longitudinal model of social contact, social support, depression, and alcohol use[J]. Health Psychology, 19(1), 28-38. DOI:10.1037//0278-6133.19.1.28.

Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Rivers, A. J., Johnson, D. C., Morgan, C. A., 3rd, & Southwick, S. M. (2010). Posttraumatic growth in Veterans of Operations Enduring Freedom and Iraqi Freedom. *J Affect Disord, 126*(1-2), 230-235. doi:10.1016/j.jad.2010.03.021

Pompili, M, Sher, L., Serafini, G., Forte, A., Innamorati, M., Dominici, G., Lester, D., Amore, M., & Girardi, P. (2013). Posttraumatic stress disorder and suicide risk

among veterans: a literature review. J Nerv Ment Dis, 201(9), 802-812.

Prati G, P. L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: a meta-analysis. *J Loss Trauma [Internet], 14*(5), 364-388.

Price, M., Lancaster, C. L., Gros, D. F., Legrand, A. C., van Stolk-Cooke, K., & Acierno, R. (2018). An Examination of Social Support and PTSD Treatment Response During Prolonged Exposure. *Psychiatry, 81*(3), 258-270. doi:10.1080/00332747.2017.1402569

Pryzgoda, J. (2005). Positive growth following a traumatic life event: An analysis of cognitive responses coping and social support.

Qian J. L. (2019). Study on the post-traumatic growth psychological trajectories of women with fetal abnormalities requiring pregnancy termination and the efficacy of expressive writing intervention. Master's dissertation. Zhejiang University.

Qian, JL. (2020). An intervention effect study of post-traumatic growth trajectory and expressive writing in women with induced abortion for fetal anomalies. Master's Dissertation, Department of Nursing, Zhejiang University. https://link.cnki.net/doi/ 10.27461/ d.cnki.gzjdx.2020.003171 doi:10.27461/d.cnki.gzjdx.2020.003171.

Rahimi, R., Heidarzadeh, M., & Shoaee, R. (2016). The relationship between posttraumatic growth and social support in patients with myocardial infarction. *Canadian Journal of Cardiovascular Nursing*,26(2),19-24.

Reich, C. M., Jones, J. M.,Woodward, M. J., et al. (2015) Does Self-Blame Moderate Psychological Adjustment Following Inti-mate Partner Violence?[J]. J Interpers Violence, 30(9), 1493-1510. doi:10.1177/0886260514540800.

Ren, C. H., Chen, X. F., & Pan, R. Y. (2023). Association of social support and psychological resilience with posttraumatic stress disorder in college students. *School Health in China*, 44 (03), 407-410. doi:10.16835/j.cnki.1000-9817.2023.03.020.

Ren, C. H., Chen, X. F., & Pan, R. Y. (2023). Association of social support and psychological resilience with posttraumatic stress disorder in college students.

School Health in China, 44 (03), 407-410. doi:10.16835/j.cnki.1000-9817.2023.03.020.

Roberts, L., Renati, S., Solomon, S., & Montgomery, S. (2021). Perinatal Grief Among Poor Rural and Urban Women in Central India. *International journal of women's health, 13*, 305-315. doi:10.2147/ijwh.s297292

Rona, R. J., Jones, M., lversen, A., Hull, L., Greenberg, N., Fear, N. T, Hotopf, M., & Wessely, S. (2009). The impact of posttraumatic stress disorder on impairment in the UK military at the time of the Iraq war. J Psychiatr Res, 43(6), 649-655.

Salter, E., & Stallard, P. (2004). Posttraumatic growth in child survivors of a road traffic accident. Journal of traumatic stress, 17(4), 335-340. doi:10.1023/b:jots.0000038482.53911.01

Sattler, D. N. , Claramita, M. , & Muskavage, B. . (2017). Natural disasters in indonesia: relationships among posttraumatic stress, resource loss, depression, social support, and posttraumatic growth. Journal of Loss and Trauma, 15325024.2017.1415740.

Sawyer, A., Ayers, S., & Field, A. P. (2010). Posttraumatic growth and adjustment among individuals with cancer or HIV/AIDS: a meta-analysis. *Clin Psychol Rev, 30*(4), 436-447. doi:10.1016/j.cpr.2010.02.004

Schaefer, J. A., & Moos, R. H. (1992). Life Crises and Personal Growth. In B. N. Carpenter (Ed.) Personal Coping: Theory, Research, and Application (pp. 149-170). Westport, CT T: Praeger.

Schroevers, M. J., Helgeson, V. S., Sanderman, R., & Ranchor, A. V. (2010). Type of social support matters for prediction of posttraumatic growth among cancer survivors. Psychooncology, 19(1), 46-53. doi:10.1002/pon.1501

Schroevers, M. J., Helgeson, V. S., Sanderman, R., & Ranchor, A. V. (2010). Type of social support matters for prediction of posttraumatic growth among cancer survivors. Psycho Oncology, *19*(1), 46-53.

Shechory Bitton, M., & Laufer, A. (2017). PTSD and PTG among Israeli mothers: Opposite facets of exposure to terrorism. Stress Health, 33(5), 676-683. doi:10.1002/smi.2754

Sprang, G., & Silman, M. (2013). Posttraumatic stress disorder in parents and youth

after health-related disasters. Disaster Med Public Health Prep, 7(1), 105-110. doi:10.1017/dmp.2013.22

Stroebe, M. s. (2010). Bereavement in family context: Coping with the loss of a loved one. Family Science*, 1*(3), 144-151. doi:10.1080/19424620.2010.576081

Sun, X. P., Cui, J., Deng, G. H., et al. (2013) Wenchuan earthquake 4 years after the disaster area after the trauma of middle school students Correlation analysis between growth and post-traumatic stress disorder [J]. Journal of the Third Military Medical University, 35(24), 2705-2708.

Taku, K., Calhoun, L. G, Cann, A., & Tedeschi, R. G. (2008). The role of rumination in the coexistence of distress and posttraumatic growth among bereaved japanese university students. Death Studies, 32(5), 428-444. https://doi.org/10.1080/07481 180801974745

Tan, R. Y. (2022). Posttraumatic stress disorder and growth in breast cancer patients: coexistence and influence mechanism. Master's Dissertation, Department of Applied Psychology, Zhejiang University. https://link.cnki.net/doi/10.27461/d.cnki.gzjdx.2022.000803.

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: measuring the positive legacy of trauma. *J Trauma Stress, 9*(3), 455-471. doi:10.1007/bf02103658

Tedeschi, R. G., & Calhoun, L. G. (2004). Conceptual foundations and empirical evidence.

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry,* 15(1), 1-18.

Tsai, J., Armour, C., Southwick, S. M., & Pictrzak, R. H. (2015). Dissociative subtype of DSM-5 posttraumatic stress disorder in U.S. veterans. Journal of Psychiatric Research, 66, 67-74. https://doi.org/10. 1016/j.jpsychires.2015.04.017

Tseng, Y. F., Cheng, H. R., Chen, Y. P., Yang, S. F., & Cheng, P. T. (2017). Grief reactions of couples to perinatal loss: A one-year prospective follow-up. J Clin Nurs, 26(23-24), 5133-5142. doi:10.1111/jocn.14059

Usta, Y. Y. (2012). Importance of social support in cancer patients. Asian Pac J Cancer Prev, 13(8), 3569-3572. doi:10.7314/apjcp.2012.13.8.3569

Wang, L., Chen, S., Liu, P., Zhu, C., Hu, M., Li, Y., . . . Zhu, X. (2018). Posttraumatic Growth in Patients with Malignant Bone Tumor: Relationships with Psychological Adjustment. Asian Pac J Cancer Prev, 19(10), 2831-2838. doi:10.22034/apjcp.2018.19.10.2831

Wang, M. F., Du, J., & Zheng, W. K. (2023). A longitudinal study of postpartum posttraumatic stress disorder trajectories and influencing factors. Nursing Research, 37 (04), 584-589.

Wang, X., Zhang, G., & Tang, Y. (2015). A qualitative study of post-traumatic growth experience in patients with accidental traumatic amputation. *Journal of Nursing Science, 30*(006), 89-90,99.

Wang, X., Zhao, Q. H., Zhang, G. H., &Tang, Y. L. (2019). A study on the correlation between stress disorder, social support, and post traumatic growth in patients with accidental trauma. *Journal of Nurse Continuing Education*, 34(06), 565-568 Doi: 10.16821/j.cnki.hsjx.2019.06.026

Wang, X. G., Wang M. F., Li X. M. (2020) Maternal neurotic personality and postpartum post-traumatic stress disorder[J]. Journal of PLA Nursing, 37(1), 51-55.

Waysman, M., Schwarzwald, J., & Solomon, Z. (2001). Hardiness: an examination of its relationship with positive and negative long term changes following trauma. *J Trauma Stress, 14*(3), 531-548. doi:10.1023/a:1011112723704

Westby, C.L., Erlandsen, A.R., Nilsen, S.A., Visted, E.,&Thimm, J.C. (2021). Depression, anxiety, PTSD, and OCD after stillbirth: A systematic review. *BMC Pregnancy Childbirth* (21), 782.

Whealin, J. M., Pitts, B., Tsai, J., Rivera, C., Fogle, B. M., Southwick, S. M., & Pietrzak, R. H. (2020). Dynamic interplay between PTSD symptoms and posttraumatic growth in older military veterans. *J Affect Disord, 269*, 185-191. doi:10.1016/j.jad.2020.03.020

Wijoyo, E. B., Susanti, H., Panjaitan, R. U., & Putri, A. F. (2020). Nurses' perception about posttraumatic growth (PTG) after natural disasters. *BMC Proc, 14*(Suppl 13), 19. doi:10.1186/s12919-020-00199-9

World Health Organization. (2018). Newborns: reducing mortality.

Wu, X., Wang, J., Cofie, R., et al. (2016) Prevalence of Posttraumatic Stress Disorder among Breast Cancer Patients: A Meta -analysis [J]. Iran J Public Health, 45 (12), 1533-1544.

Wu, X., Chen, L., Dai, W.J., Tan, H.C., & Liu, A.Z. (2017). Relationship between personality traits and prognosis of post-traumatic stress disorder in people with positive post-traumatic stress disorder symptoms. *Chinese Journal of Mental Health*,31(04), 268-273.

Xu, D. M. (2023). The current situation and influencing factors of post-traumatic stress disorder in parents of premature infants. Master's Dissertation, Department of Nursing, Youjiang Ethnic Medical College. https://link.cnki.net/doi/10.27908 /d.cnki.gymzy.2023.000110.

Xu, J., & Liao, Q. (2011). Prevalence and predictors of posttraumatic growth among adult survivors one year following 2008 Sichuan earthquake. *J Affect Disord*, 133(1-2), 274-280.

Yagi, J., Fujiwara, T., Yambe, T., et al. (2016) Does social capital reduce child behavior problems? Results from the great East Japan earthquake follow-up for children study [J]. Social Psychiatry and Psychiatric Epidemiology, 51 (8), 1117-1123.

Yang, X. Y., Yang, H.A., Liu, Q.G., & Yang, L.Z. (2007). The Research on the Reliability and Validity of PCL-C and Influence Factors. China Journal of Heath psychology, 15(1).

Ye, Q., & Zhu, L. y. (2022). Understand the applicability of the Social Support Scale in the youth population Education Observation, 11(02), 29-32 Doi: 10.16070/ j.cnki.cn45-1388/g4s.2022.02.009.

Yeung, N. C.Y., & Lu, Q. (2018). Perceived stress as a mediator between social support and posttraumatic growth among Chinese American breast cancer survivors. *Cancer Nursing*, 4l(1), 53-61.https://doi.org/10.1097/NCC.0000000000000422.

Yu, D.P., & Gu, S. Q. (2022). Advances in the Study of Posttraumatic Stress Disorder in Patients with Pregnancy Loss. Journal of Nursing, 29(12), 33-38. doi:10.16460/j.issn1008-9969.2022.12.033.

Yu, X.Y. (2016) Study on psychological characteristics and influencing factors of pregnant women with fetal abnormalities. Master’s dissertation. Zhejiang

University.

Zhang, J., & Norvilitis, J. M. (2002). Measuring Chinese psychological well-being with Western developed instruments. *J Pers Assess, 79*(3), 492-511. doi:10.1207/s15327752jpa7903_06

Zhang, J. Q. (2018). Implementation and effect evaluation of peer support program for pregnant women with fetal abnormalities. Master's dissertation. Shihezi university.

Zhang, Q. X., Qin, C. X., Xie, J. Y., Li, X., Zeng, L. H., Wang, Y., ... & Pang, H. T. (2023). Effects and pathways of induced labor stigma on preinduction depressive symptoms in pregnant women with fetal anomalies. *Journal of Central South University (Medical Edition)*, 48(03), 435-443.

Zhang, Q., Zhou, S., Fu, J., & Gan, X. Z. (2022). A study on the status of social support for women with perinatal loss and its relationship with grief reactions. *Journal of Nursing Management*, 22(04), 256-260.

Zhang, T. T. (2017). A study on the correlation between psychological resilience, post-traumatic growth and quality of life in female infertility patients. Master's Dissertation, Department of Nursing, Jilin University.

Zheng, W. K., Wang, M. F., Du, J., & Liu, X.M. (2022). Analysis of the current status of post-traumatic stress disorder and its influencing factors. General Practice Nursing, 20(35), 4897-4901.

Zhou, X., Xie. D. H., He, J., et al. (2023) Perinatal deaths from birth defects in Hunan Province, China, 2010–2020. BMC Pregnancy and Childbirth, 23, 790-798.

Zhu, J., Liang, J., Mu, Y., Li, X., Guo, S., Scherpbier, R., . . . Ronsmans, C. (2016). Sociodemographic and obstetric characteristics of stillbirths in China: a census of nearly 4 million health facility births between 2012 and 2014. *The Lancet Global Health, 4*(2), e109-e118. doi:10.1016/s2214-109x(15)00271-5

Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. *J Pers Assess, 55*(3-4), 610-617. doi:10.1080/00223891.1990.9674095

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology - a critical review and introduction of a two component model. *Clin Psychol Rev,*

26(5), 626-653. doi:10.1016/j.cpr.2006.01.008

Zoellner T, Rabe S, Karl A, et al. (2008) Post-traumatic growth in accident survivors: openness and optimism as predictors of its constructive or illusory sides[J].J Clin Psychol, 64(3), 245-263.

APPENDIX

APPENDIX A

Instruments (English version)

Instruments (English version)

Please read the question carefully and fill in your information truthfully. For questions with options, please click ☐ Tick √ inside, if there are others, please indicate the specific situation	
Name	
Age	
Occupation	
Education	☐junior middle school ☐ High school ☐ university ☐ Graduate and above ☐ other
Income （RMB/year）	☐Below30,000 ☐30,000-80,000 ☐80,000-130,000 ☐Over130,000
Marital status	☐Unmarried ☐ Married ☐divorce ☐ Widowed ☐other
Parity (multiple births)	☐once ☐ twice ☐ Three times ☐ More than three times ☐Number of multiple births
Causes of pregnancy loss,	
Number of perinatal loss	☐once ☐ twice ☐Three times ☐More than three times

人口统计学资料

请仔细阅读下问题，如实填写您的情况。有选项的问题请在对应的□内打 √，若有其他请写明具体情况	
姓名	
年龄	
职业	
教育程度	□初中 □高中 □大学 □研究生及以上 □其他
年收入（人民币）	□30,000以下 □30,000-80,000 □80,000-130,000 □130,000以上
婚姻状况	□未婚 □已婚 □离异 □丧偶 □其他
怀胎次数	□一次 □两次 □三次 □三次以上 □多胞胎次数
妊娠丧失原因	
围产丧失次数	□一次 □两次 □三次 □三次以上

Chinese version of Post-traumatic Growth Inventory

Please read carefully the following is a list of 20 questions, behind each question there are six options, respectively, respectively, to the extent of the change for you.

No.	Please type "V" on the following most consistent option according to your actual situation since the illness.	none	very small degree	small degree	moderate degree	great degree	great degree
1	I changed my priorities in life	0	1	2	3	4	5
2	I have a more positive view of the value of my life	0	1	2	3	4	5
3	I developed new interests	0	1	2	3	4	5
4	I feel more dependent on myself	0	1	2	3	4	5
5	I understand more about things in the spiritual world	0	1	2	3	4	5
6	I know that I can rely on others when I am in trouble	0	1	2	3	4	5
7	I built a new way of life	0	1	2	3	4	5
8	I feel closer to other people	0	1	2	3	4	5
9	I'm more willing to express my feelings	0	1	2	3	4	5
10	I know I can handle difficulties better	0	1	2	3	4	5
11	I can do better things with my life	0	1	2	3	4	5
12	I'm more comfortable with the end result of anything	0	1	2	3	4	5
13	I will cherish every day better	0	1	2	3	4	5
14	I have new opportunities that I didn't have before	0	1	2	3	4	5

No.	Please type "V" on the following most consistent option according to your actual situation since the illness.	none	very small degree	small degree	moderate degree	great degree	great degree
15	I'm more compassionate toward others	0	1	2	3	4	5
16	I put more effort into relationships	0	1	2	3	4	5
17	I'm more inclined to change things that need to be changed	0	1	2	3	4	5
18	I found myself stronger than I thought	0	1	2	3	4	5
19	I realized how good life was	0	1	2	3	4	5
20	I can accept that I need help in some situations	0	1	2	3	4	5

中国版创伤后成长清单

请仔细阅读下面是20个问题的列表，每个问题后面有六个选项，分别是，对你的变化程度。

	请根据您自患病以来的实际情况，在以下最一致的选项上键入“V。	不	很少	更少	有一些	更多	很好
1	我改变了我的生活重点	0	1	2	3	4	5
2	我对我的人生价值有一个更积极的看法	0	1	2	3	4	5
3	我发展了新的兴趣	0	1	2	3	4	5
4	我觉得更依赖自己	0	1	2	3	4	5
5	我更了解精神世界中的事物	0	1	2	3	4	5
6	我知道当我遇到困难时，我可以依靠别人	0	1	2	3	4	5
7	我建立了一种新的生活方式	0	1	2	3	4	5
8	我觉得更接近别人	0	1	2	3	4	5
9	我更愿意表达我的感受	0	1	2	3	4	5
10	我知道我能更好地处理困难	0	1	2	3	4	5
11	我可以用我的生活做更好的事情	0	1	2	3	4	5
12	我对任何事情的最终结果都比较满意	0	1	2	3	4	5
13	我会更珍惜每一天	0	1	2	3	4	5
14	我有以前没有的新机会	0	1	2	3	4	5
15	我对别人更有同情心	0	1	2	3	4	5
16	我在人际关系上付出了更多的努力	0	1	2	3	4	5
17	我更倾向于改变需要改变的事情	0	1	2	3	4	5
18	我发现自己比我想象的要坚强	0	1	2	3	4	5

	请根据您自患病以来的实际情况，在以下最一致的选项上键入“V。	不	很少	更少	有一些	更多	很好
19	我意识到生活是多么美好	0	1	2	3	4	5
20	我可以接受在某些情况下我需要帮助	0	1	2	3	4	5

Post-traumatic Stress Disorder Check-list-Civilian Version

The following is a list of reactions and feelings that people may have when they encounter stressful life experiences. Please read each question carefully, depending on the last one you have. Stressful events include caring for all kinds of patients, doctor's abuse and so on.

No.	Items	Not at all	A little bit	Mode - rately	Quite a bit	Extre -mely
1	Recurring disturbing memories, thoughts, or images of stressful events.					
2	Repeated disturbing dreams about stressful events					
3	To act or feel as if a stressful event were happening again					
4	When certain events remind you of stressful events, you feel bad					
5	Physical reactions occur when certain events remind you of a stressful event (e.g. rapid heart rate, difficulty breathing, sweating)					
6	Avoid thinking about or talking about stressful events or experiences associated with them					
7	Avoid activities or situations that are reminiscent of stressful events					
8	You may have trouble recalling important parts of stressful events					
9	Loss of interest in activities you used to enjoy					
10	Feeling alienated or isolated from others					
11	Emotional numbness or inability to feel loving feelings for those close to you					

No.	Items	Not at all	A little bit	Mode - rately	Quite a bit	Extre -mely
12	I felt that my future was somehow shortened					
13	Inability to fall asleep or to sleep at rest					
14	Easily provoked, or often angry					
15	Difficulty in concentrating					
16	Excessive vigilance or caution					
17	Be easily frightened					

创伤后应激障碍检查清单-平民版本

以下是人们在遇到压力生活经历时可能会有的反应和感受的列表。 请仔细阅读每一个问题，取决于你最后一个问题。 压力事件包括照顾各种病人、医生的虐待等。

	项目	一点也不	有一点	中度的	相当程度的	极度的
1	反复出现的令人不安的记忆、想法或压力事件的图像。					
2	关于压力事件的反复令人不安的梦					
3	表现或感觉好像一个紧张的事件又发生了					
4	当某些事件提醒你有压力的事件时，你会感到难过					
5	当某些事件提醒你有压力的事件时，身体反应就会发生(例如。 心率快，呼吸困难，出汗)					
6	避免思考或谈论与他们相关的压力事件或经历					
7	避免让人联想到压力事件的活动或情况					
8	你可能很难回忆压力事件的重要部分					
9	对你过去喜欢的活动失去兴					

	项目	一点也不	有一点	中度的	相当程度的	极度的
	趣					
10	感到与他人疏远或孤立					
11	情感麻木或无法感受到对你身边的人的爱的感觉					
12	我觉得我的未来不知怎么地缩短了					
13	无法入睡或无法休息					
14	容易被激怒，或经常生气					
15	很难集中注意力					
16	过分警惕或谨慎					
17	容易被吓到					

Social support scale

Instructions: This questionnaire contains 12 questions that can reflect the support you have received in the society. Each question is followed by 7 views. Please choose the one that best fits your actual situation and mark "V".

No.	Items	strong-ly dis-agree	dis-agree	slight-ly dis-agree	neu-tral	some-what agree	agree	stron gly agree
1	Some people when I encounter problems (leadership, relatives and colleague) will	1	2	3	4	5	6	7
2	I can and some people (leadership, relatives, colleagues) to share happiness and	1	2	3	4	5	6	7
3	My family was able to help me in concrete ways	1	2	3	4	5	6	7
4	When needed I can get emotional help and support from family □ □	1	2	3	4	5	6	7
5	When I have difficulty in some (leadership, relatives, colleagues) is the true source of	1	2	3	4	5	6	7
6	My friends can really help me	1	2	3	4	5	6	7
7	I can count on my friends in times of trouble	1	2	3	4	5	6	7
8	I can talk about my problems with my own family	1	2	3	4	5	6	7
9	My friends can share happiness and sorrow with me	1	2	3	4	5	6	7
10	In my life have some (leadership, relatives, co-workers) care about my feelings □ □	1	2	3	4	5	6	7
11	My family is willing to assist me in making decisions	1	2	3	4	5	6	7
12	I can discuss my problems with my friends	1	2	3	4	5	6	7

社会支持量表

说明：本问卷包含12个问题，可以反映你在社会上得到的支持。 每个问题后面有7个观点。 请选择最符合您实际情况的一个，并标记“V”。

		非常赞同	很不同意	有点不同意	中立的	有点同	完全同	很赞同
1	当我遇到问题时，有些人（领导、亲戚和同事）会出现在我身边．．．．	1	2	3	4	5	6	7
2	我可以和一些人（领导、亲戚、同事）分享快乐和抑郁．．	1	2	3	4	5	6	7
3	我的家人能够以具体的方式帮助我	1	2	3	4	5	6	7
4	当需要的时候，我可以得到家庭．．。的	1	2	3	4	5	6	7
5	当我遇到一些困难时（领导，亲戚，同事）才是安慰我的真正来源．．．．	1	2	3	4	5	6	7
6	我的朋友真的能帮我	1	2	3	4	5	6	7
7	我可以指望我的朋友在困难的时候	1	2	3	4	5	6	7
8	我可以和我自己的家人谈谈我的问题	1	2	3	4	5	6	7
9	我的朋友可以和我分享快乐和悲伤	1	2	3	4	5	6	7
10	在我的生活中有一些（领导，亲戚，同事）关心我的感受．．	1	2	3	4	5	6	7
11	我的家人愿意帮助我做决定	1	2	3	4	5	6	7
12	我可以和我的朋友讨论我的问题	1	2	3	4	5	6	7

APPENDIX B

IRB Approval, letter for data collection, and consent form

IRB Approval, letter for data collection, and consent form

สำเนา

ที่ IRB3-093/2564

เอกสารรับรองผลการพิจารณาจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยบูรพา

คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา ได้พิจารณาโครงการวิจัย

รหัสโครงการวิจัย : G-HS054/2564
โครงการวิจัยเรื่อง : The relationship between post-traumatic stress disorder, post-traumatic growth, and social support in women with perinatal loss
หัวหน้าโครงการวิจัย : MRS.XIA CHEN YING
หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

BUU Ethics Committee for Human Research has considered the following research protocol according to the ethical principles of human research in which the researchers respect human's right and honor, do not violate right and safety, and do no harms to the research participants.

Therefore, the research protocol is approved (See attached)

1. Form of Human Research Protocol Submission Version 3 : 1 August 2021
2. Research Protocol Version 2 : 11 July 2021
3. Participant Information Sheet Version 3 : 1 August 2021
4. Informed Consent Form Version 1 : 20 May 2021
5. Research Instruments Version 1 : 20 May 2021
6. Others (if any) Version - : -

วันที่รับรอง : วันที่ 5 เดือน สิงหาคม พ.ศ. 2564
วันที่หมดอายุ : วันที่ 5 เดือน สิงหาคม พ.ศ. 2565

ลงนาม *นางสาวรมร แย้มประทุม*
(นางสาวรมร แย้มประทุม)
ประธานคณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา
ชุดที่ 3 (กลุ่มคลินิก/ วิทยาศาสตร์สุขภาพ/ วิทยาศาสตร์และเทคโนโลยี)

霞浦县妇幼保健院伦理委员会审查批件

批件号：伦审(2021-K-01-02)

科室：产前门诊	主要研究者：陈迎霞		职称：副主任护师
项目名称	围产期损失妇女的创伤后应激障碍、创伤后生长和社会支持之间的关系		
申办单位	霞浦县妇幼保健院		
审查类别	复审	审查方式	简易审查
审查日期	2021年7月20日	审查地点	/
审查委员	陈兰、陈颖		
审查材料	1.临床课题研究复审申请 2.试验方案(版本号：2.0；版本日期：2021.08.13) 3.知情同意书(版本号：2.0；版本日期：2021.08.13)		
审查意见	经过我院医学伦理委员会审查，审查结果为：同意		
年度/定期跟踪审查	审查频率为该研究批准之日起每12月一次，首次请于2022年8月19日前1个月递交“定期/年度研究进展报告”。 本伦理委员会有根据实际进展情况改变跟踪审查频率的权利。		
批件有效期	2021年8月20日——2022年8月19日(逾期未实施，自行废止)		
主任或副主任委员签字： 日 期：2021年8月20日 霞浦县妇幼保健院 医学伦理委员会(盖章)			

เอกสารชี้แจงผู้เข้าร่วมโครงการวิจัย

(Participant Information Sheet)

รหัสโครงการวิจัย : ……..

(สำนักงานคณะกรรมการพิจารณาจริยธรรมในมนุษย์ มหาวิทยาลัยบูรพา เป็นผู้ออกรหัสโครงการวิจัย)

โครงการวิจัยเรื่อง : …The relationship between post-traumatic stress disorder, post-traumatic growth, and social support in women with perinatal loss

Dear participants

I am Mrs. Yingxia Chen, a student in Master of Nursing Science (International Program) Faculty of Nursing, Burapha University Thailand. My study is “The relationship between post-traumatic stress disorder, post-traumatic growth, and social support in women with perinatal loss”. The objectives are To describe post-traumatic stress disorder, post-traumatic growth and social support of women with perinatal loss.To examine the relationship between social support and post-traumatic growth in women with perinatal loss. To examine the relationship between post-traumatic stress disorder and post-traumatic growth in women with perinatal loss.

This study will be a survey study. Participating in this study is voluntary. If you agree to participate in this study, you will answer the following questionnaires, which will take approximately 30-40 minutes. data will be collected two times at 3 and 6 months after perinatal loss. (The telephone interview will be used at the second time of

data collection, 6 months.)During the data collection period, the researcher will clarify any questions posed by the participants for clarity regarding the language or content. You will not get any direct benefits by participating in this study. However, the information you provide will be valuable to deepen the understanding of the relationship between post-traumatic growth and social support, to provide reference and theoretical evidence for maternal psychological care and intervention, to enhance the understanding and attention of clinical nurses to perinatal deaths, to promote the early return of mothers to society and to improve the quality of life.

Because this is a public welfare society research The questionnaire won't take up too much time.We will communicate with the participants before the experiment.However, the information participants provide will be valuable to deepen the understanding of the relationship between post-traumatic growth and social support, to provide reference and theoretical evidence for maternal psychological care and intervention, to enhance the understanding and attention of clinical nurses to perinatal deaths, to promote the early return of mothers to society and to improve the quality of life.There will be no identified physical and psychological risk to the person participating in the study and no risk to the society. You have the right to end your participation in this study at any time, and no necessary to inform the researcher. Any information collected from this study, including your identity, will be kept confidential. A coding number will be assigned to you and your name will not be used. Findings from the study will be presented as a group of participants and no specific information from any individual participant will be disclosed. All data will be accessible only to the researcher which will be destroyed one year after publishing the findings. You will receive a further explanation of the nature of the study upon its completion, if you wish.

The research will be conducted by Ms. Yingxia Chen under the supervision of my major-advisor, Associate Professor Dr. Chintana Wacharasin. If you have any questions, please contact me at mobile number: +8613959377266 or by email 1245817168@qq.com and/or my advisor's e-mail address chintana@buu.ac.th. Or you may contact Burapha University Institutional Review Board (BUU-IRB) telephone number (+66-38-10-2620). BUU IRB's email address "buuethics@buu.ac.th".Your cooperation is greatly appreciated. You will be given a copy of this consent form to keep.

Yingxia Chen

知情同意书

项目研究代码:G-HS054/2564

研究课题：围产期丧失妇女的创伤后应激障碍、创伤后成长和社会支持之间的关系

尊敬的_____女士：

我是陈迎霞，是泰国布拉法大学护理学院护理学硕士(国际项目)的学生。我的研究题目是“围产期丧失妇女的创伤后应激障碍、创伤后成长和社会支持之间的关系”。目的是描述围产儿丧失妇女的创伤后应激障碍、创伤后成长和社会支持，研究围产期丧失妇女的社会支持与创伤后成长之间及创伤后应激障碍与创伤后生长的关系。

这项研究将是一项调查研究。参加这项研究是自愿的。如果您同意参加本次研究，您将回答以下问卷，这大约需要30-40分钟。数据将在围产期丢失后3个月和6个月收集两次。(电话访谈将在第二次收集数据时进行，耗时6个月。)在数据收集期间，研究者将澄清参与者提出的关于语言或内容的任何问题。参加本次研究不会给您带来任何直接的好处。然而，您提供的信息对于加深对创伤后成长与社会支持之间关系的理解，为孕产妇心理护理和干预提供参考和理论依据，增强临床护士对围产期死亡的理解和关注，促进母亲早日回归社会，提高生活质量具有重要价值。

因为这是一个公益社会的研究，问卷不会占用太多的时间。我们会在实验前与参与者进行沟通。然而，参与者提供的信息将有助于加深对创伤后成长与社会支持关系的认识，为产妇心理护理和干预提供参考和理论依据，增强临床

护士对围产期死亡的认识和关注，促进母亲早日回归社会，提高生活质量。对参与研究的人不会有确定的生理和心理风险，对社会也不会有风险。您有权在任何时候终止参与本次研究，无需通知研究人员。从本次研究中收集的任何信息，包括您的身份，都将被保密。您将被分配一个编码号码，您的名字将不会被使用。研究结果将作为一组参与者呈现，任何参与者的具体信息都不会被披露。所有数据将只对研究人员开放，并在发表研究结果一年后销毁。如果您愿意，您将在研究完成后收到关于研究性质的进一步解释。

该研究将由陈迎霞在专业导师Chintana Wacharasin博士的指导下进行。如果您有任何问题，请联系我的手机号码:+8613959377266或通过电子邮1245817168@qq.com和/或我的导师的电子邮件地址chintana@buu.ac.th。或者您可以联系Burapha大学机构审查委员会(BUU-IRB)的电话+66-38-10-2620或电子邮件地buuethics@buu.ac.th，非常感谢您的合作。您将得到一份本同意书的副本作为留底。

陈迎霞

เอกสารแสดงความยินยอม

ของผู้เข้าร่วมโครงการวิจัย (Consent Form)

รหัสโครงการวิจัย : ……..

(สำนักงานคณะกรรมการพิจารณาจริยธรรมในมนุษย์ มหาวิทยาลัยบูรพา เป็นผู้ออกรหัสโครงการวิจัย)

โครงการวิจัยเรื่อง ……The relationship between post-traumatic stress disorder, post-traumatic growth, and social support in women with perinatal loss.……

Date of data collection ……Month…..…….……Year …….

Before giving my signature below, I have been informed by researcher, Mrs. Yingxia Chen, about the purposes, method, procedures, benefits and possible risks associated with participation in this study thoroughly, and I understood all of the explanations. I consent voluntarily to participate in this study. I understand that I have the right to leave the study any time I want.

The researcher Mrs. Yingxia Chen has explained to me that all data and information of the participants will be kept confidential and only be used for this study. I have read and understood the information related to participation in this study clearly and I am signing this consent form.

Signature ……Participant

(……)

知情同意书

项目研究代码: G-HS054/2564

研究课题：围产期丧失妇女的创伤后应激障碍、创伤后成长和社会支持之间的关系

数据收集日期 ：_____年_____月_____日

数据收集的日期 ..... 月 .....……一年 .....

在我签名之前，研究员陈迎霞已经向我详细介绍了参与这项研究的目的、方法、程序、益处和可能存在的风险，并且我理解了所有的解释。本人同意自愿参加本次研究。我明白我有权随时离开研究。

研究员陈迎霞已向我解释，所有参与者的数据和信息将被保密，仅用于本次研究。我已阅读并清楚了解参与本次研究的相关信息，并在此同意书上签字。

签名：

_____年____月____日

APPENDIX C

Statistical analysis results

Table 4 Mean and standard deviation of the study variables and its subscales

Variables	Possible Range	Actual range of each survey		First Survey (N1 = 131)		Second Survey (N2 = 131)	
		First	Second	*M*	*SD*	*M*	*SD*
PTSD	17-85	32-81	23-78	59.01	10.40	42.79	12.73
-Increased alertness response	5-25	8-25	6-22	17.18	3.49	12.95	3.72
-Avoidance response	2-10	3-10	2-10	7.34	1.51	4.66	2.10
-Repeated traumatic	5-25	8-23	6-24	16.49	3.36	12.76	4.14
experience	5-25	10-25	10-25	18.00	3.31	18.00	3.31
-Social dysfunction response							
PTG	0-100	47-91	27-51	69.98	11.36	36.98	5.11
-Philosophy of life	0-30	13-28	8-16	21.90	3.74	11.71	1.96
-Personal strength	0-15	7-14	3-9	10.08	1.92	5.66	1.44
-New possibilities	0-20	9-19	5-14	13.92	2.43	7.55	1.70
-Relationship with others	0-15	7-15	3-8	10.82	1.98	5.60	1.14
-Self-change	0-20	7-20	5-9	13.25	2.79	6.47	1.13
Social support	12-84	36-51	37-55	45.61	4.06	48.31	4.42
-Family support	4-28	12-17	12-19	14.81	1.83	16.01	1.96
-Friends support	4-28	12-18	12-19	15.56	1.89	16.09	1.83
-Others support	4-28	12-19	13-19	15.24	1.41	16.21	1.55

Table 5 Correlation among PTSD and PTG at 3 months

item	Increased alertness response		Avoidance response		Repeated traumatic experience		Social dysfunction response	
	r	P	r	P	r	P	r	P
Philosophy of life	-.211	.016	-.180	.040	-.225	.010	-.181	.039
Personal strength	-.090	.308	-.098	.267	-.096	.276	-.134	.126
New possibilities	-.099	.261	-.161	.066	-.087	.325	-.129	.142
Relationship with others	-.225	.010	-.249	.004	-.201	.021	-.240	.006
Self-change	-.224	.010	-.209	.017	-.194	.027	-.254	.003

As shown in table 5, Pearson correlation analysis showed that there was negative correlation between Philosophy of life and Increased alertness response ($r = -.211$, $p < .05$), Relationship with others and Increased alertness response ($r = -.225$, $p < .05$), Self-change and Increased alertness response ($r = -.224$, $p < .05$), Philosophy of life and Avoidance response ($r = -.180$, $p < .05$), Relationship with others and Avoidance response ($r = -.249$, $p < .05$), Self-change and Avoidance response ($r = -.209$, $p < .05$), Philosophy of life and Repeated traumatic experience ($r = -.225$, $p < .05$), Relationship with others and Repeated traumatic experience ($r = -.201$, $p < .05$), Self-change and Repeated traumatic experience ($r = -.194$, $p < .05$), Philosophy of life and Social dysfunction response ($r = -.181$, $p < .05$), Relationship with others and Social dysfunction response ($r = -.240$, $p < .05$), Self-change and Social dysfunction response

(r =-.254, p <.05).

Table 6 Paired samples test of PTSD, PTG, Social support

Pair	*M*	*SD*	t	*P*
PTSD1-PTSD2	-16.22	11.51	-16.13	<.001
PTG1-PTG2	-33.00	12.03	-31.41	<.001
SS1-SS2	2.69	3.93	7.85	<.001

PTG1 = PTG at 3 months, PTG2 = PTG at 6 months

PTSD1 = PTSD at 3 months, PTSD2 = PTSD at 6 months

SS1 = Social support at 3 months, SS2 = Social support at 6 months

Table 7 Correlation among PTG and social support at 3 months

item	Family support		Friends support		Others support	
	r	P	r	P	r	P
Philosophy of life	.034	.697	.022	.803	-.061	.490
Personal strength	-.184	.036	-.146	.095	-.113	.201
New possibilities	-.153	.080	-.089	.311	-.097	.269
Relationship with others	-.128	.144	-.062	.481	-.045	.609
Self-change	-.096	.276	-.044	.616	-.109	.214

As shown in table 6, Pearson correlation analysis showed that there was negative correlation between Personal strength and Family support (r =-.184, p <.05).

Table 8 Correlation among PTSD and social support at 3 months

item	Family support		Friends support		Others support	
	r	P	r	P	r	P
Increased alertness response	.074	.400	.023	.796	.066	.456
Avoidance response	.129	.141	.193	.027	.174	.047
Repeated traumatic experience	-.047	.592	-.003	.971	.093	.292
Social dysfunction response	.057	.517	.113	.199	.187	.032

As shown in table 7, Pearson correlation analysis showed that there was positive correlation between Avoidance response and Friends support ($r = .193$, $p < .05$), Avoidance response and Others support ($r = .174$, $p < .05$), Social dysfunction response and Others support ($r = .187$, $p < .05$).

Table 9 Correlation among PTSD and PTG at 6 months

item	Increased alertness response		Avoidance response		Repeated traumatic experience		Social dysfunction response	
	r	P	r	P	r	P	r	P
Philosophy of life	.182	.037	.232	.008	.172	.049	-.038	.668
Personal strength	.336	.000	.342	.000	.280	.001	.091	.303
New possibilities	.142	.106	.149	.090	.108	.219	.042	.631
Relationship with others	.089	.310	.114	.196	.004	.964	-.023	.799
Self-change	-.005	.956	.038	.664	.019	.828	-.125	.154

As shown in table 8, Pearson correlation analysis showed that there was positive correlation between Philosophy of life and Increased alertness response ($r = .182$, $p < .05$), Personal strength and Increased alertness response ($r = .336$, $p < .05$), Philosophy of life and Avoidance response ($r = .232$, $p < .05$), Personal strength and Avoidance response ($r = .342$, $p < .05$), Philosophy of life and Repeated traumatic experience ($r = .172$, $p < .05$), Personal strength and Repeated traumatic experience ($r = .280$, $p < .05$).

Table 10 Correlation among PTG and social support at 3 months

item	Family support		Friends support		Others support	
	r	P	r	P	r	P
Philosophy of life	.224	.010	.123	.161	.205	.019
Personal strength	.039	.657	.000	.997	.049	.575
New possibilities	.026	.765	-.021	.810	.044	.616
Relationship with others	.174	.047	.140	.110	.179	.041
Self-change	.102	.245	.053	.546	.163	.062

As shown in table 9, Pearson correlation analysis showed that there was positive correlation between Philosophy of life and Family support ($r = .224$, $p < .05$), Relationship with others and Family support ($r = .174$, $p < .05$), Philosophy of life and Others support ($r = .205$, $p < .05$), Relationship with others and Others support ($r = .179$, $p < .05$).

Table 11 Correlation among PTSD and social support at 3 months

item	Family support		Friends support		Others support	
	r	P	r	P	r	P
Increased alertness response	.038	.667	-.174	.046	.189	.031
Avoidance response	.010	.910	-.082	.351	.190	.030
Repeated traumatic experience	.010	.912	-.111	.207	.239	.006
Social dysfunction response	-.002	.979	.005	.954	.197	.024

As shown in table 10, Pearson correlation analysis showed that there was positive correlation between Increased alertness response and Others support (r =.189, p <.05), Avoidance response and Others support (r =.190, p <.05), Repeated traumatic experience and Others support (r =.239, p <.05), Social dysfunction response and Others support (r =.194, p <.05). There was negative correlation between Increased alertness re sponse and Friends support (r =-.174, p <.05).

BIOGRAPHY

NAME	Yingxia Chen
DATE OF BIRTH	April 7, 1971
PLACE OF BIRTH	Xiapu County,Fujian Province,PRC
PRESENT ADDRESS	301, building 6, century Jinyuan, Songgang street, Xiapu County,Fujian Province,PRC
POSITION HELD	Health Supervision Institute of Xiapu County Municipal Health Bureau
EDUCATION	Undergraduate