

# ความสัมพันธ์ระหว่างความเครียดหลังเหตุการณ์สะเทือนใจ การเจริญเติบโตหลังเหตุการณ์สะเทือนใจ การสนับสนุนทางสังคม ในสตรีหลังทารกตายปริกำเนิด ประเทศจีน

## Relationships between Post-traumatic Stress Disorder, Post-traumatic Growth, and Social Support in Women with Perinatal Loss in China

นิตยสารฉบับ

Original Article

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### บทคัดย่อ

**วัตถุประสงค์:** เพื่อประเมินระดับความเครียดหลังเหตุการณ์สะเทือนใจ การเจริญเติบโตหลังเหตุการณ์สะเทือนใจ การสนับสนุนทางสังคม และทดสอบความสัมพันธ์ของสามปัจจัยนี้ ในสตรีหลังทารกตายปริกำเนิดชาวจีน **วิธีการศึกษา:** ใช้วิธีสุ่มตัวอย่างตามความสะดวกเพื่อคัดเลือกสตรี 131 รายภายใน 6 เดือนหลังทารกตายปริกำเนิด ที่โรงพยาบาล Maternal and Child Health Hospital, Xia Pu County, ประเทศจีน ในช่วงกันยายน 2564 ถึงมิถุนายน 2565 รวบรวมข้อมูลประชากรศาสตร์ ใช้แบบสอบถามประเมินความเครียดหลังเหตุการณ์สะเทือนใจ การเจริญเติบโตหลังเหตุการณ์สะเทือนใจ การสนับสนุนทางสังคม ฉบับภาษาจีน ซึ่งมีค่าสัมประสิทธิ์อัลฟาของครอนบาคเป็น 0.90, 0.85 และ 0.93 ทดสอบและแสดงค่าความสัมพันธ์ของเพียร์สัน **ผลการศึกษา:** พบอัตราการเกิดความเครียดหลังเหตุการณ์สะเทือนใจร้อยละ 55.7 ซึ่งค่อนข้างสูง คะแนนเฉลี่ยของการเจริญเติบโตหลังเหตุการณ์สะเทือนใจอยู่ที่ 36.98 ± 5.11 คะแนน ซึ่งต่ำกว่าการศึกษาที่ผ่านมา คะแนนเฉลี่ยการรับรู้การสนับสนุนทางสังคมอยู่ระหว่าง 37 - 60 อยู่ในระดับปานกลาง พบความสัมพันธ์เชิงบวกระหว่างความเครียดหลังเหตุการณ์สะเทือนใจและการเจริญเติบโตหลังเหตุการณ์สะเทือนใจ ( $r = 0.245$ ,  $P$ -value < 0.01) การเจริญเติบโตหลังเหตุการณ์สะเทือนใจและการรับรู้การสนับสนุนทางสังคม ( $r = 0.173$ ,  $P$ -value < 0.05) แต่ความสัมพันธ์ระหว่างความเครียดหลังเหตุการณ์สะเทือนใจและการรับรู้การสนับสนุนทางสังคมไม่มีนัยสำคัญทางสถิติ ( $r = 0.052$ ,  $P$ -value > 0.05) **สรุป:** ความเครียดหลังเหตุการณ์สะเทือนใจสูงทำให้การเจริญเติบโตหลังเหตุการณ์สะเทือนใจเพิ่มขึ้นด้วย แต่ความเครียดหลังเหตุการณ์สะเทือนใจไม่สัมพันธ์กับการสนับสนุนทางสังคมในสตรีที่สูญเสียทารกปริกำเนิดกลุ่มนี้

**คำสำคัญ:** ทารกตายปริกำเนิด; ความเครียดหลังเหตุการณ์สะเทือนใจ; การเติบโตหลังเหตุการณ์สะเทือนใจ; การสนับสนุนทางสังคม; ชาวจีน

### Abstract

**Objective:** To determine post-traumatic stress disorder (PTSD), post-traumatic growth (PTG), and social support (SS) and examine their relationships in Chinese women after perinatal loss. **Method:** A convenience sampling method was used to recruit 131 women within 6 months after perinatal loss at the Maternal and Child Health Hospital, Xia Pu County, China. It was conducted from September 2021 to June 2022. Four instruments used for data collection included 1-demographic record form, 2-PTSD Checklist - Civilian Version, 3-Chinese Version of Post Traumatic Growth Inventory and 4-Perceived Social Support Scale. Scales numbers 2 - 4 yielded Cronbach's alpha coefficients of 0.90, 0.85, and 0.93, respectively. **Results:** The incidence rate of positive PTSD was about 55.7%, which was relatively high. The average score of PTG was 36.98 ± 5.11 point which was lower than previous studies. SS's average score was between 37 - 60 points, i.e., at the moderate level of perceived social support. There was a positive correlation between PTSD and PTG ( $r = 0.245$ ,  $P$ -value < 0.01), PTG and SS ( $r = 0.173$ ,  $P$ -value < 0.05). There was no significant correlation between PTSD and SS ( $r = 0.052$ ,  $P$ -value > 0.05). **Conclusion:** Heavier PTSD demonstrated stronger PTG among women experiencing perinatal loss. However, PTSD had no association with SS.

**Keywords:** perinatal loss; post-traumatic stress disorder; post-traumatic growth; social support; Chinese

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## Introduction

Perinatal loss can be defined as the fetal or neonatal death events that occur from 20 weeks of pregnancy to 1 month after delivery. According to the World Health Organization (WHO), an estimated 5.1 million stillbirths and neonatal deaths occur annually, with 98% of these incidents happening in low- and middle-income countries in 2019.<sup>1</sup> In China, the statistics showed that there were 949 stillbirths

among 75,132 deliveries from 96 hospitals in 24 (of 34) provinces regions in 2015 - 2016, the incidence of stillbirth was about 1.32%.<sup>2</sup> According to China's Maternal and Child Health monitoring, China's neonatal mortality rate remained at about 3.5‰ in 2019. The main causes of perinatal death comprised fetuses or newborns abnormality (e.g. defect, severe birth trauma, and low birth weight), mothers (e.g.

chronic hypertension, and sexually transmitted diseases) or umbilical cord and placenta (e.g., placenta abruption, and prolapse of the cord).<sup>2</sup> Low education, pre-pregnancy obesity, multiparity, previous pregnancy loss, advanced maternal age, and previous pregnancy loss were significant risk factors associated with intrapartum stillbirth.<sup>2</sup>

Perinatal loss is not rare, especially in developing countries. Perinatal loss will increase the risk of mental health sequelae, and causes great psychological trauma to the whole family, especially to the lost woman.<sup>3,4</sup> Some women who experienced perinatal loss may have a series of psychological disorders such as generalized anxiety disorder, social phobia, obsessive-compulsive disorder and Post-Traumatic Stress Disorder (PTSD).<sup>5</sup> The relationship between couples may break down,<sup>6</sup> thus it has 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 of intrusive, avoidant, hypervigilant symptoms, and negative cognition & psychological symptoms on the stress.<sup>7</sup> The incidence of PTSD among perinatal loss patients in foreign countries could be as high as 60% in 2022.<sup>8</sup> PTSD would give patients with perinatal loss repeated adverse experiences, which will gradually lose their confidence in reproduction, resulting in psychological disorders of reproduction, and more serious cases are self-injury and suicide.<sup>9</sup>

Post-traumatic growth (PTG) represents positive psychological changes that individuals may experience after traumatic events.<sup>10</sup> A systematic review found that women experiencing perinatal loss reported moderate levels of post-traumatic growth. Facilitating factors in the growth experience included deriving meaning from the loss, shifts in core beliefs, employing adaptive coping strategies, engaging in deliberate reflection, maintaining connections with the deceased baby, and receiving social support.<sup>10</sup> It could promote the individual's spiritual growth, improve their self-awareness, enhance relationship with others, prompt them to view the value of life correctly, and reset new life development goals.

Social support (SS) 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.<sup>11</sup> In addition, 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. Previous research has indicated that establishing social support systems for families experiencing perinatal abortions is essential to mitigate negative parental emotional consequences.<sup>12</sup> One study discovered that the security of family relationships and effective partner involvement can alleviate distress and foster post-traumatic growth in women following perinatal abortion, underscoring its significance in their overall post-traumatic growth.<sup>13</sup>

Previous research has explored the relationship between PTSD, PTG, and social support in different populations. The severity of PTSD symptoms, particularly avoidance and hyperarousal symptoms, may contribute to and maintain PTG in individuals.<sup>14</sup> Moreover, previous research has shown that PTG is positively associated with social support in the context of group traumatic events such as COVID-19 and that positive coping styles partially mediate the effect of PTG in social support.<sup>15</sup> Similarly, research has shown that higher perceptions of social support are effective in preventing the onset of PTSD in those who have experienced physical assault, while lower perceptions of social support increase the risk of developing PTSD.<sup>16</sup>

The relationship between PTSD, PTG, and social support of women with perinatal loss is not well-characterized in contemporary literature. 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, but there is no unified conclusion between PTSD and PTG.<sup>17</sup> It has been known that PTSD has a possible negative relationship to SS, PTG has a positive relationship to SS, but the relation between PTSD and PTG is uncertain. Additionally, domestic studies pay less attention to the special population of women with perinatal loss, and the relationship between PTSD, PTG, and SS.<sup>17</sup>

The thesis is that PTSD would have a certain positive relationship with PTG. PTG is the result of a struggle against traumatic events.<sup>18</sup> It helps individuals respond positively to post-traumatic conditions and, in turn, reduces the negative consequences of trauma. Patients receive support from relatives and friends, which can make them experience positively. The sustained post-traumatic growth of parturient cannot be separated from the social support of relatives and friends and the effective personal coping style.

This present research aimed to investigate levels of post-traumatic stress disorder (PTSD), posttraumatic growth (PTG), and social support (SS) in women who suffered perinatal loss and determine the relationship between these three variables. This study could provide scientific evidence for nursing practice. It was hypothesized that among women at 6 months after perinatal loss, PTSD had a positive relationship with PTG and a negative one with SS, and PTG had a positive relationship with SS.

## Methods

In this correlational study, participants were women having perinatal loss at the sixth month and receiving health care service at the Maternal and Child Health Hospital, Xia Pu County, China. It was conducted from September 2021 to June 2022.

To be eligible, the patients had to be 18 years old or older, have no history of mental health problems, be able to read and write in Chinese, and be voluntary to participate in the research.

The sample size was calculated using the G\*power 3.1.9.2.<sup>19</sup> Pearson correlation analysis was used with a type I error of 5%, a power of 80%, and an effect size of 0.25<sup>21</sup> resulting in a sample size of 97. To compensate for an attrition rate as high as 35% in China<sup>20, 21</sup>, the final sample size was 131. A convenient sampling method was used on women coming to the gynaecology clinic at the Maternal and Child Health Hospital, Xia Pu County, China for doctors' reexamination, and the participants were identified according to the inclusion criteria

### Measurement instruments

The measurement tools of this study included as follows. Demographic record form collected participants' age, occupation, education, income, marital status, parity (multiple births), causes, and perinatal loss.

The Post-traumatic Stress Disorder Checklist-Civilian Version (PCL-C) was used to measure PTSD.<sup>22</sup> This questionnaire includes 17 items with three dimensions, specifically increased alertness response, avoidance response, and repeated traumatic experience. The response is 5-point rating scale ranging from 1-not at all to 5-extremely, resulting in a total score ranging from 17 to 85 points. According to the criteria, the positive PTSD is based

on the score 38 points or higher. PCL-C has a good reliability in Chinese adults (Cronbach's alpha coefficient of 0.82).

The Chinese version of Post-Traumatic Growth Inventory (PTGI-C) was used to measure PTG. PTGI-C was developed by Tedeschi and Calhoun.<sup>18</sup> It has 20 items of five dimensions including relationship with others, new possibilities, personal strength, self-change, and philosophy of life. The response is a 6-level scoring scale ranging from 0-not at all to 5-very much. With the possible total score of 0 – 100 points, higher scores indicate stronger PTG. It has a good internal consistency (Cronbach's alpha coefficient of 0.85).

Perceived Social Support Scale (PSSS) was used to measure social support. The original PSSS was developed by foreign researchers and translated into Chinese version by Zhang and Norvilitis.<sup>23</sup> The scale includes 12 self-assessment items with 3 subscales. The response is a 7-point rating scale of 1-strongly disagree to 7-extremely agree. With the possible total scores of 12 - 84 points, levels of social support could be categorized as low, moderate and high (12 – 36, 37 – 60, and 61-84 points, respectively). Internal consistency reliability for the whole scale and 3 individual subscales were acceptable with Cronbach's alpha coefficients of 0.76 to 0.93. The cumulative variance explanation rate of two common factors was 70.4%.<sup>23</sup>

### Instrument quality assurance

The internal consistency reliability was tested in 30 individuals with characteristics comparable to the participants. The reliability was found to be high for PCL-C, PTGI-C, PSSS (Cronbach's alpha coefficients of 0.9, 0.85 and 0.93, respectively).

### Participant ethical protection

This study was approved by Burapha University Institutional Review Board (approval number: IRB3-093/256) and the Research Ethics Committee of the Maternal and Child Health Hospital, Xia Pu County (approval number: IRB 2021-K-01-02). Informed Consent was obtained from the participants after objectives, process, anonymity and voluntary nature of the study were provided for the participants. All information of participants was only used for study and confidentially kept.

### Data collection procedure

Two research assistants who were nurses working in the hospital's maternity clinic were trained for recruiting participants and collecting data. Researcher assistants approached the prospective participants and provided objectives and process of the study. Participants could withdraw from participation at any time with negative consequences on the care they received. After written informed consent was obtained, participants were instructed about how to complete the self-administered questionnaire in a private room. The questionnaire took about 30 minutes. Finally, research assistants checked the questionnaire completion.

### Data analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic and clinical characteristics and psychosocial variables of the participants. Pearson's correlation coefficient (*r*) was used to analyze correlations between psychosocial variables. Normal distribution of all psychosocial variables was met. Statistical significance was set at a type I error of 5% (i.e., *P*-value < 0.05). All statistical analyses were conducted using software program SPSS version 23.

## Results

Of the 131 participants, their average age was 30.82 years (*SD* = 4.57) (Table 1). Most were employed (91.6%). The majority had senior high school/junior college degree (46.6%), had family income between 80000 - 130.000 RMB per year (60.3%), were married (85.5%), and had two children (61.0%). Over half of them (51.1%) did not know the reason for perinatal loss. The top 3 reasons for perinatal loss were pregnancy induced hypertension, intrauterine infection and gestational diabetes mellitus. Most participants suffered first-time perinatal loss (90.1%) (Table 1).

Mean scores of studied variables with subdomains are presented in Table 2. According to criteria<sup>22</sup>, the incidence rate of positive PTSD was about 55.7%, the result was quite a high. SS's average score located between 37-60 at the moderate level of perceived social support.<sup>23</sup>

**Table 1** Demographic and clinical characteristics of the participants (N = 131).

Characteristics	N	%
<b>Age (years) (M = 30.82, SD = 4.57, Range = 21- 42)</b>		
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
<b>Occupation</b>		
Employment	120	91.6
Unemployment	11	8.4
<b>Education</b>		
Junior high school	17	13.0
Senior high school/junior college	61	46.6
Undergraduate	41	31.3
Graduate and above	12	9.1
<b>Family income (RMB/year)</b>		
< 30,000	8	6.1
30,000 - 80,000	43	32.8
80,000 - 130,000	79	60.3
> 130,000	1	0.8
<b>Marital status</b>		
Unmarried	9	6.9
Married	112	85.5
Divorce	10	7.6
<b>Parity</b>		
One	17	13.0
Two	80	61.0
Three	34	26.0
<b>Causes of perinatal loss identified</b>		
Yes	64	48.9
No	67	51.1
<b>Reasons for perinatal loss</b>		
Pregnancy induced hypertension	18	28.1
Intrauterine infection	17	26.6
Gestational diabetes mellitus	15	23.4
Severe fetal malformation	10	15.6
Thalassemia	4	6.3
<b>Number of perinatal loss</b>		
One	118	90.1
Two	13	9.9

**Table 2** Mean scores of study variables (N = 131).

Variables	Possible range	Actual range	Mean	SD
<b>PTSD</b>	17 - 85	23 - 78	42.79	12.73
Increased alertness response	5-25	6-22	12.95	3.72
Avoidance response	2-10	2-10	4.66	2.10
Repeated traumatic experience	5-25	6-24	12.76	4.14
Social dysfunction response	5-25	10-25	18.00	3.31
<b>PTG</b>	0 - 100	27 - 51	36.98	5.11
Philosophy of life	0-30	8-16	11.71	1.96
Personal strength	0-15	3-9	5.66	1.44
New possibilities	0-20	5-14	7.55	1.70
Relationship with others	0-15	3-8	5.60	1.14
Self-change	0-20	5-9	6.47	1.13
<b>Social support</b>	12 - 84	37 - 55	48.31	4.42
Family support	4-28	12-19	16.01	1.96
Friends support	4-28	12-19	16.09	1.83
Other support	4-28	13-19	16.21	1.55

Note: PTSD = Post-traumatic stress disorder; PTG = Post-traumatic growth.

There were significantly positive correlations between PTSD and PTG ( $r = 0.245$ ,  $P$ -value  $< 0.01$ ) and PTG and social support ( $r = 0.173$ ,  $P$ -value  $< 0.05$ ). A positive correlation between PTSD and social support was found with no statistical significance ( $r = 0.052$ ,  $P$ -value  $> 0.05$ ).

## Discussions and Conclusion

The sociodemographic characteristics among women with perinatal loss in this study were younger age, lower both education level and family income, compared with those in metropolis and developed cities such as Beijing and Shanghai.<sup>25</sup> The result is similar to the research for the whole country.<sup>2</sup> The possible reason is related to this study setting located in Xiapu county, which is more undeveloped than other cities in the same province.<sup>24</sup> Over half of them did not know the reason for perinatal loss. It is likely caused by insufficiencies of antenatal examination, due to their limited cognition or backward local medical level. Some women still have resistance to prenatal examination and poor compliance, resulting in frequent adverse pregnancy outcomes.<sup>25</sup> Therefore, it is necessary to strengthen prenatal management and provide health education with the importance of normal prenatal examination and the harm of perinatal loss for the vulnerable women.

In this present study, the average scores and prevalence of PTSD in the 6th month after perinatal loss was  $42.79 \pm 12.73$  and 55.7%, respectively. The prevalence is similar to 58.3% from a Chinese study and 60% from research conducted among women after perinatal loss in England.<sup>25</sup> However, it is much higher than that of the research in the general parturient of which the mean score was  $26.82 \pm 10.23$ .<sup>20</sup> It illustrates that fetal or newborn loss was likely to be higher stressor among parturient. However, the result was higher than those of domestic studies among flood survivors ( $28.77$ )<sup>20</sup> and lower than individuals experiencing breast cancer (72.5%).<sup>26</sup> It could be explained by the severity degree of different stressors. Perinatal loss in this study could contain higher severity than environmental stressors like flood, and tornado etc., but lower than terminal disease. Environmental stressors could be easier for people to understand and accept than personal stressors.

In the current study, the average score of PTG in the 6<sup>th</sup> month after perinatal loss was  $36.98 \pm 5.11$  points, which was far lower than previous studies in women with the same

condition in China ( $59.98 \pm 1.6$  and  $60.08 \pm 13.4$  points).<sup>23</sup> The obvious contrast could be caused by various timepoints after the loss. The timepoint is at the sixth month after perinatal loss in this study but it is around one month in previous studies. In other words, the PTG in early stage after mother lost their "babies" is likely to be higher than that in later stage. This is possibly related to self-reflection.<sup>27</sup> In the later stage, not only PTSD becomes lower but also the preparation is for the next pregnancy. They reduce the cognitive processing of self-reflection for the stressor and coping strategies, thus PTG decreases.

The present study found that women who experienced perinatal loss reported moderate level. The level is the same as other study, but with lower scores ( $48.31 \pm 4.42$  points) compared with women in late pregnancy ( $64.62 \pm 15.12$  points).<sup>28</sup> It could be explained that low social support may promote the occurrence of perinatal loss. It is worth noting that perinatal loss can easily drive women to suffer serious psychological problem and require support from family, friends, and medical staff, rather than being socially isolated. For bereaved individuals, social support plays an important role in treating trauma and alleviating stress.<sup>29</sup>

In this present study, a positive association was observed between PTSD and PTG, which is consistent with findings from previous studies in women with fetal abnormalities requiring pregnancy termination. Research by Tedeschi and Calhoun found that PTG was the outcome of the posttraumatic psychological struggle.<sup>18</sup> 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. This was to understand the event, and in the rebuilding of core beliefs about the world.<sup>18</sup> These changes initiated the development of psychological growth. This emphasized 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. They should continue to receive help to alleviate their PTSD symptoms.

This present study identified no significant association of PTSD with social support among women with perinatal loss. It is different with previous studies which revealed supports especially from healthcare professionals or family could reduce PTSD levels among women experiencing perinatal loss.<sup>28</sup> The possible reason might be small sample size,

convenience sampling or different questionnaire to measure social support in other studies.

There was a positive relationship between PTG and social support. It is similar to some researches for breast cancers.<sup>26</sup> Some studies have shown that social factors play an important influence in the process of changing psychological states.<sup>26</sup> A theory named social conditioning of cognitive processing emphasizes 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 providing the conditions for the emergence of PTG.<sup>29</sup> The Crisis-Growth Model suggests that social support serves as not only a safe surrounding but also adequate external resources.<sup>30</sup> Even 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 which are useful to raise PTG. In other words, social support may impact on PTG positively.

This present study implies that obstetrics and gynecology nurses should prioritize the assessment of PTSD and social support among patients experiencing perinatal loss upon admission to the hospital. To mitigate PTSD symptoms, nurses should address not only patients' physical needs but also their psychological and spiritual well-being to alleviate grief. To enhance social support, nurses could facilitate family meetings to foster familial involvement and support. Nurses could appraise PTSD and social support of patients with perinatal loss in hospital and at home. For decreasing PTSD, nurses could focus not only on their body but also psychology and spirit to alleviate bereavement. For increasing social support, nurses could hold family meeting to promote family support. 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. Nursing leaders would strengthen the importance of psychological nursing for patients with perinatal loss and add this indicator into nursing quality.

Limitations of this study include bias related to participant recruitment through convenience sampling, a modest sample size and data collection. The participants of this study were from a small second-class hospital and most of them were from suburban area. With the limited

demographic characteristics, generalization could be limited. In addition, the sample size was relatively small.

In conclusion, the current study fills the research gap by exploring profiles of the relationship between post-traumatic stress disorder, post-traumatic growth and social support among women with perinatal loss. Women with perinatal loss reported higher levels of post-traumatic stress disorder as well as low levels of post-traumatic growth and social support. Moreover, the present study suggests that aborting mothers with higher levels of post-traumatic stress disorder may exhibit higher post-traumatic growth, and that good social support will contribute to higher post-traumatic growth. The finding of this study will be helpful for healthcare providers in developing interventions to improve the psychological well-being of women with perinatal loss.

#### Conflicts of interest

All the contributing authors declare no conflicts of interest.

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