Perceived social support and posttraumatic growth among couples coping with gynecological cancer: A cross-sectional survey

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Abstract

Background

Perceived social support was considered to be an essential resource of individual's positive consequences (e.g., posttraumatic growth, PTG) during times of stressful conditions. However, there is no evidence on the relationship between perceived social support and PTG at the couple-based level in cancer research. This study aimed to explore the relationship between perceived social support and posttraumatic growth among couples coping with gynecological cancer.

Methods

A cross-sectional survey was conducted in China, from May 2019 to March 2020 in two comprehensive hospitals. A total of 126 couples, consisting of women diagnosed with gynecological cancer and their spouses, participated. The Multidimensional Scale of Perceived Social Support (MSPSS) and the Posttraumatic Growth Inventory (PTGI) were used to collect data. Paired t-tests, Pearson's correlations and actor-partner interdependence model (APIM) were used to analyze data.

Results

The actor effects of perceived social support on posttraumatic growth were supported ($r = 0.419, p < 0.001; r = 0.467, p < 0.001$); however, the partner effects of perceived social support on posttraumatic growth were not supported ($r = -0.119, p > 0.05; r = 0.130, p > 0.05$). Perceived social support was positively correlated between women diagnosed with gynecological cancer and their spouses ($r = 0.244, p < 0.01$). Furthermore, spouses' perceived social support was positively correlated with women's posttraumatic growth ($r = 0.213, p < 0.05$).

Conclusions

The actor effects of perceived social support on posttraumatic growth in couples coping with GC are supported. The findings also highlight that spouses’ perceived social support are positively correlated with women's perceived social support and women's PTG. Healthcare professionals should provide couple-based interventions that would increase couples’ identification and use of effective social support, and how to promote their PTG should be focused.

Background

Cancer is a major public health problem worldwide, including China [1–3]. Cervical, ovarian, uterine, vaginal, and vulvar cancer, which, together, are referred to as gynecological cancer (GC) [4]. Cancer-related stressors not only influence the woman who has been diagnosed with GC [5, 6], but also affect her
spouse's psychological health [4, 7]. Although the potentially traumatic nature of a diagnosis of GC often places couples on a path towards hopelessness and psychological distress [7–9], posttraumatic growth (PTG) [10] has been found in women diagnosed with GC [11] and their spouses [12, 13].

Social support has been defined as the emotional, instrumental or informational assistance exchanged through interpersonal interactions with others [14]. It was considered to be an essential interpersonal resource of individual's adaptation and positive consequences during times of stressful conditions [15–17]. Empirical studies have shown that social support was positively related to PTG and that social support can help women after a diagnosis of GC strengthen relationships with others and effectively cope with cancer-related stress [18, 19]. Also, Ge et al. [4] revealed that support from other family members, relatives, friends, and healthcare personnel can help spouses of women diagnosed with GC receive support and foster their PTG.

Perceived social support is a frequently-used research variable to assess how much support is available and the quality of this support in cancer-related experiences [20–22]. However, perceived social support depends on the socio-cultural context and individual values [14, 15], and different sources (e.g., family, healthcare professionals, friends, colleagues, neighbors) may have different effects on individuals. For example, Scheepers et al. [21] found that support perceived from significant other had the highest scores, on conversely, this kind of support had the lowest scores and support perceived from family had the highest scores in the study of De et al. [23]. Moreover, to date the relationship between perceived social support and PTG in women diagnosed with GC is inconsistent. For example, in contrast to Zhou et al.’s findings [18], in a recent systematic review by Henson et al. [24], social support does not have a direct effect on individual's PTG.

Spouses are critical resources that can help women to cope with GC [9, 12, 25]. Several studies have explored the reciprocal interaction between dyad members among couples coping with GC based on the actor-partner interdependence model (APIM) [7, 12, 22]. Although the actor and partner effects of self-disclosure on PTG in couples coping with GC were supported [12], other studies did not support the partner effects among couples coping with cancer [26, 27]. Furthermore, there is a lack of evidence on the actor and partner effects of perceived social support on PTG in couples coping with GC. Thus, this study aimed to explore the relationship between perceived social support and posttraumatic growth among couples coping with gynecological cancer.

**Methods**

**Study design and participants**

This study followed a cross-sectional study design. The inclusion criteria were as follows: 1) the woman and her spouse were > 20 years and in a marital relationship; 2) the woman had undergone surgery and had had a diagnosis of gynecological cancer at least one month ago; and 3) both the woman and her spouse could understand spoken and written Chinese and had agreed to participate in the study. The
woman and her spouse with a history of mental illness or any other kind of cancer were excluded. According to Li and Liu [28], the sample size should be at least 10 times the number of variables, thus, a sample size of at least 80 dyads needed to be included in the present study.

**Measurements**

**Socio-demographic and cancer-related information questionnaire**

The women diagnosed with GC and their spouses provided their own socio-demographic information (i.e., age, employment status, educational level, residence). Cancer-related information (i.e., cancer type, cancer stage, cancer treatment) was obtained by reviewing the woman’s medical records.

**Multidimensional Scale of Perceived Social Support (MSPSS)**

The Chinese version of the MSPSS [29] consists of 12 items, including support from family, support from friends, and support from significant other. In the present study, any other person (e.g., colleague, neighbor, healthcare professional, social worker) except the family and friends can be supposed as a significant other, as was similar with previous studies [23]. A 7-score Likert scale method was used and the total score was 12–84. In this study, the Cronbach’s alpha coefficient was 0.879 in the patient group and 0.897 in the spouse group.

**Posttraumatic Growth Inventory (PTGI)**

The Chinese version of PTGI [30] was used to assess individual growth after a diagnosis of GC in both women and their spouses. It consists of 21 items, including relating to others, new possibility, personal strength, appreciation of life, and spiritual change. A 6-score Likert scale method was used and the total score was 0–105. In this study, the Cronbach’s alpha coefficient was 0.896 in the patient group and 0.903 in the spouse group.

**Data Collection Procedures**

The data were collected in four gynecological wards of two comprehensive hospitals in China, from May 2019 to March 2020. In the present study, 169 eligible couples were recruited by two research assistants, who were responsible for recruiting participants. The eligible participants were offered both written and oral information about the study. If either the woman or her spouse did not agree to participate, the couple was not included in the study. Each participant signed an informed consent form before participating in the investigation. A total of 133 eligible couples completed the questionnaires in a quiet room in the gynecological wards or completed the questionnaires in other places, according to their preference. All data were stored on a password-protected hard drive and used only for this project.
Statistical analysis

Seven couples’ questionnaires were deleted because the woman or her spouse had missing data (e.g., more than 20% of items were unanswered in the whole questionnaire). For those participants who had omitted to answer less than 20% of the items in the whole questionnaire, the scores were analyzed by the mean of non-missing data. Finally, 126 couples were included in the analysis, which was performed using statistical analysis. Figure 1 shows the study flowchart.

SPSS version 24.0 was used. The socio-demographic and cancer-related clinical variables, perceived social support, and PTG were described. Paired $t$-tests were applied to examine the scores of MSPSS and PTGI between women and their spouses. Pearson’s correlations were used to identify correlations between MSPSS and PTGI. The APIM [31] was used to analyze the actor effects (e.g., women’s and spouses’ perceived social support predicting their own PTG) and partner effects (e.g., women’s and spouses’ perceived social support predicting their partners’ PTG). The conceptual actor-partner independence model is presented in Fig. 2. The full model was tested using Structural Equation Modeling (SEM) analysis and reported by presenting analyses and calculations with SE and 95% CI.

Results

Socio-demographic and cancer-related characteristics of the participants

The socio-demographic and cancer-related characteristics of the participants are presented in Table 1. Approximately 56.3% of the women and 30.2% of the spouses reported having no job or were retired. Seventy-one women had a diagnosis of cervical cancer (56.3%), and eighty-nine women had a GC of stage I and stage (70.6%).
Table 1
Socio-demographic and cancer-related characteristics (n = 126)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Women</th>
<th>Spouses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%) or M ± SD</td>
<td>n (%) or M ± SD</td>
</tr>
<tr>
<td>Age (years)</td>
<td>47.4 ± 8.6</td>
<td>48.6 ± 8.6</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>61 (48.4)</td>
<td>31 (24.6)</td>
</tr>
<tr>
<td>Part-time</td>
<td>38 (30.2)</td>
<td>42 (33.3)</td>
</tr>
<tr>
<td>Full-time</td>
<td>17 (13.5)</td>
<td>46 (36.5)</td>
</tr>
<tr>
<td>Retired</td>
<td>10 (7.9)</td>
<td>7 (5.6)</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior school and lower</td>
<td>76 (60.3)</td>
<td>95 (75.4)</td>
</tr>
<tr>
<td>Senior high school</td>
<td>39 (31)</td>
<td>17 (13.5)</td>
</tr>
<tr>
<td>College and higher</td>
<td>11 (8.7)</td>
<td>14 (11.1)</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>31 (24.6)</td>
<td></td>
</tr>
<tr>
<td>Countryside</td>
<td>95 (75.4)</td>
<td></td>
</tr>
<tr>
<td>Cancer type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>71 (56.3)</td>
<td></td>
</tr>
<tr>
<td>Endometrial cancer</td>
<td>11 (8.7)</td>
<td></td>
</tr>
<tr>
<td>Ovarian cancer</td>
<td>39 (31)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5 (4)</td>
<td></td>
</tr>
<tr>
<td>Cancer stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage I</td>
<td>57 (45.2)</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>32 (25.4)</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>29 (23)</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>8 (6.3)</td>
<td></td>
</tr>
<tr>
<td>Cancer treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery only</td>
<td>79 (62.7)</td>
<td></td>
</tr>
<tr>
<td>Chemotherapy after surgery</td>
<td>47 (37.3)</td>
<td></td>
</tr>
</tbody>
</table>
Mean Score Of Perceived Social Support

The mean score of perceived social support of the participants is presented in Table 2. The mean score of MSPSS was 60.6 and 68.0 in women and their spouses, respectively. Women had lower score of perceived social support than spouses did \(p < 0.001\). Perceived social supports were originated from family, significant other and friends (in descending order) in couples coping with GC. The mean score of PTGI was 56.5 and 47.0 in women and their spouses, respectively. Spouses had lower score of PTGI than women did \(p < 0.001\).

### Table 2
Comparisons of the scores of MSPSS \(n = 126\)

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Spouses</th>
<th>Possible range</th>
<th>Paired t-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSPSS</td>
<td>60.6 ± 9.8</td>
<td>68.0 ± 9.9</td>
<td>12–84</td>
<td>-6.849***</td>
</tr>
<tr>
<td>Support from family</td>
<td>24.2 ± 2.7</td>
<td>24.1 ± 3.4</td>
<td>4–28</td>
<td>0.166</td>
</tr>
<tr>
<td>Support from friends</td>
<td>16.9 ± 5.1</td>
<td>20.9 ± 4.6</td>
<td>4–28</td>
<td>-7.05***</td>
</tr>
<tr>
<td>Support from significant other</td>
<td>19.6 ± 3.9</td>
<td>23.0 ± 3.4</td>
<td>4–28</td>
<td>-8.351***</td>
</tr>
<tr>
<td>PTGI</td>
<td>56.6 ± 15.9</td>
<td>47.0 ± 15.4</td>
<td>0–105</td>
<td>4.853***</td>
</tr>
<tr>
<td>Relating to others</td>
<td>19.4 ± 5.9 (55.5)</td>
<td>16.2 ± 6.2 (46.2)</td>
<td>0–35</td>
<td>4.37***</td>
</tr>
<tr>
<td>New possibility</td>
<td>11.2 ± 5.2 (44.7)</td>
<td>9.5 ± 4.7 (37.9)</td>
<td>0–25</td>
<td>2.782**</td>
</tr>
<tr>
<td>Personal strength</td>
<td>12.2 ± 3.5 (61.0)</td>
<td>9.7 ± 3.9 (48.6)</td>
<td>0–20</td>
<td>5.169***</td>
</tr>
<tr>
<td>Appreciation of life</td>
<td>10.0 ± 2.9 (66.5)</td>
<td>8.5 ± 2.5 (56.4)</td>
<td>0–15</td>
<td>4.692***</td>
</tr>
<tr>
<td>Spiritual change</td>
<td>3.8 ± 2.3 (37.6)</td>
<td>3.2 ± 1.9 (31.7)</td>
<td>0–10</td>
<td>2.184*</td>
</tr>
</tbody>
</table>

Notes: MSPSS, Multidimensional Scale of Perceived Social Support; PTGI, Posttraumatic Growth Inventory; M, mean; SD, standard deviation. * \(p < 0.05\), ** \(p < 0.01\), *** \(p < 0.001\).

Correlation Between Perceived Social Support And PTG

The results (Table 3) revealed that perceived social support was positively correlated with PTG \((r = 0.447, p < 0.01; r = 0.412, p < 0.01)\) in women diagnosed with GC and their spouses, respectively. Perceived social support was positively correlated between women diagnosed with GC and their spouses \((r = 0.244, p < 0.01)\). In addition, spouses’ perceived social support was positively correlated with women's PTG \((r = 0.213, p < 0.05)\).
### Table 3
Correlation between perceived social support and PTG \( (n = 126) \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Perceived social support (women)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 PTG (women)</td>
<td></td>
<td>0.447**</td>
<td></td>
</tr>
<tr>
<td>3 Perceived social support (spouses)</td>
<td></td>
<td>0.244**</td>
<td>0.213*</td>
</tr>
<tr>
<td>4 PTG (spouses)</td>
<td>-0.007</td>
<td>0.003</td>
<td>0.412**</td>
</tr>
</tbody>
</table>

Notes: PTG: posttraumatic growth. * \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \).

### Actor And Partner Effects Of Perceived Social Support On PTG

The data were found to be an adequate fit with the Structural Equation Modeling (CFI = 0.974, RMSEA = 0.066, \( X^2(N = 126) = 24.773, X^2/df = 1.548 \)). The actor and partner effects of perceived social support on PTG among couples coping with GC by using APIM were presented in Table 4. The depicting significant pathways were presented in Fig. 3. As evident from Fig. 3, the actor effects of perceived social support on PTG were significant \( (r = 0.419, p < 0.01; r = 0.467, p < 0.01) \) in women diagnosed with GC and their spouses, respectively. However, none of the partner effects of perceived social support on PTG were significant \( (r = -0.119, p > 0.05; r = 0.130, p > 0.05) \). Further, the results revealed that the couples’ covariance path was significant \( (r = 0.260, p < 0.05) \).

### Table 4
The actor and partner effects of perceived social support on PTG \( (n = 126) \)

<table>
<thead>
<tr>
<th>Effect</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived social support in women→ PTG in women (actor effect)</td>
<td>0.420</td>
<td>0.075</td>
<td>(0.274,0.567)</td>
</tr>
<tr>
<td>Perceived social support in women→ PTG in spouses (partner effect)</td>
<td>-0.115</td>
<td>0.083</td>
<td>(-0.277,0.04)</td>
</tr>
<tr>
<td>Perceived social support in spouses→ PTG in spouses (actor effect)</td>
<td>0.440</td>
<td>0.075</td>
<td>(0.292,0.587)</td>
</tr>
<tr>
<td>Perceived social support in spouses→ PTG in women (partner effect)</td>
<td>0.110</td>
<td>0.081</td>
<td>(-0.049,0.269)</td>
</tr>
</tbody>
</table>

Notes: PTG, posttraumatic growth; B = standardized estimate; SE, standard error; CI, confidence interval.

### Discussion

This study explored the relationship between perceived social support and PTG among couples coping with GC. The actor effects of perceived social support on couples’ PTG are supported, while, the partner
effects are not supported. Furthermore, there is a statistically significant correlation of perceived social support between women diagnosed with GC and their spouses. In addition, women have lower score of perceived social support than spouses, and spouses have lower score of PTG than their partners. All of these findings provide a broader understanding of the influence that women's and spouses' perceived social support has on their own PTG and their partners' PTG.

The actor effects of perceived social support on PTG (i.e., effects of individuals’ perceived social support on their own PTG) are supported in the present study. A potential explanation for this finding is that the need for receiving appropriate social support in adversity is an intrinsic part of human nature that contributes to health and well-being [32]. Another potential explanation for this finding is that increased relationships with others is often reported in spouses of women diagnosed with GC [4]. However, the partner effects of perceived social support on PTG (i.e., effects of individuals’ perceived social support on their partners' PTG) are not supported in the present study. This finding is similar to those found in several previous studies that have not shown a significant partner effects between cancer patients and their spouses [20, 22].

In the present study, spouses' perceived social support was positively correlated with women's perceived social support and women's PTG, which supports the evidence that there is a mutual dependency among couples coping with cancer [33]. For example, support received from spouse is woman's most important source for enhancing their coping capacity after a diagnosis of GC [4, 34]. This finding is consistent with Tedeschi et al. [17], who proposed that positive changes in relationships between dyads and groups (e.g., social support networks, and getting involved with a peer support group) after experiencing the crisis could influence individual PTG. This finding is also aligned with GC being a “we-disease” for couples [4, 13] because support provided in the context of the couple relationship often influences each other partner in the dyad [26].

In the present study, support from family received the highest score for both women and their spouses, which was consistent with Qu et al. [35]. Although social support is a distinct cultural phenomenon [36], similar findings have emerged in other studies [26, 27]. A potential explanation is that the assistance received from other family members (e.g., visiting, offering food, and psychological and emotional support) was a critical resource for helping women diagnosed with GC to effectively balance their own needs, make decisions during uncertainty, cope with the situation, and manage emotions [6, 8, 9]. Another potential explanation is that the assistance received from other family members can help spouses of women diagnosed with GC effectively manage emotions, balance their own needs, make decisions during uncertainty, cope with the situation, and alleviate caregiving burden [4].

In the present study, women had lower score of perceived social support than spouses. The possible reason is that women diagnosed with GC needed help and support from their spouses in multiple ways [13]. These women also needed specific information about their diseases as well as support from health care professionals [5, 6, 34]. Nevertheless, asking questions of health professionals is difficult, because women are afraid of being considered incompetent if they ask for clarification about important
information [6]. Previous studies have shown that more than 35% of women diagnosed with GC have unmet supportive care needs [34] and are not satisfied with the perceived information during and after their cancer treatment [37]. Thus, more research is required to explore the unmet supportive care needs in these women. Further studies of identifying the sources of perceived support, promoting the maintenance and enhancing the beneficial support in different samples are still needed [23].

In addition, spouses had lower score of PTG than their partners in the present sample, in contrast to the work of Lim [27]. A possible reason may be due to a lack of systematic support being provided to spouses of cancer patients, as previously reported by Andersen et al. [33]. Another possible reason is that men may be less susceptible than women to sharing their experiences with others when confronted with adversity [24]. This assumption was supported by the results of a study by Ge et al. [4], where spouses of women with GC seldom disclosed their feelings/needs and were less likely to ask for help, thus, their supportive care needs were not well recognized or addressed by health care professionals. According to Tedeschi et al. [17], disclosure (e.g., talking to others about stressful or traumatic events), is relevant to PTG as it alleviates the initial emotional distress related with the experience, and fosters cognitive processing, etc. Therefore, it is suggested that, by encouraging spouses to increase disclosure and communication with other family members, health care professionals could help spouses effectively manage emotions, balance their needs, cope with the situation, and alleviate the caregiving burden.

**Limitations**

There are several limitations. First, this study was performed by recruiting a convenience sample and the majority of the women participants had only undergone surgery, which limits the generalizability of the results to other couples who are coping with GC, including all stages of the disease. A larger sample of more diverse couples may provide a more robust view of perceived social support and how it predicts women's and their spouses’ PTG. Second, this study verified the actor effects of perceived social support on PTG by using cross-sectional data, thus, the explanation of causal relationships cannot be presented. Given that couples may experience different perceived social support and PTG over time, a longitudinal study, designed to fully explore causal models and determine how to enhance existing perceived social support in couples and ultimately improve couples’ PTG, is needed in future research.

**Conclusions**

The actor effects of perceived social support on PTG are supported in this sample. Although the partner effects are not supported, spouses’ perceived social support is positively correlated with women’s PTG. This study also highlights the significantly positive correlation of perceived social support between women diagnosed with GC and their spouses. These findings supports the conclusion that perceived social support has directly and indirectly effects on posttraumatic growth in women diagnosed with gynecological cancer and their spouses. It is recommended that healthcare professionals should provide couple-based interventions that would increase couples’ identification and use of effective social support, especially in women diagnosed with GC, and how to promote their PTG should be focused.
Clinical Implications

The findings highlight the significance of social support for women’s and their spouses’ PTG. The findings from this investigation provide several implications for clinical practice. First, improving perceived social support is an important pathway to enhancing couples’ PTG in both women diagnosed with GC and their spouses. Healthcare professionals must provide supportive care interventions (e.g., encouraging women to ask questions, positive listening, expressing empathy, maintaining trust) for both cancer patients and their spouses, although it was difficult to communicate their concerns or feelings openly on cancer and cancer-related issues in couples coping with GC. By providing supportive care interventions based on the couples’ supportive care needs, healthcare professionals should facilitate couples in coping with GC effectively and in communication within the family and to cope with the challenges related to the disease. Second, support received from spouses may be helpful to women’s PTG, therefore, healthcare professionals should be mindful that support received from spouses may interfere with their ability to provide care to their partners and to help spouses to perceive more support by providing emotional, information, and psychological support to spouses, based on their care needs. Particularly, the results suggest that, by encouraging spouses to increase disclosure and communication with other family members, healthcare professionals could help spouses to effectively manage emotions, balance their needs, cope with the situation, and alleviate caregiving burden, which could help to improve spouses’ perceived social support and PTG. Finally, receiving support from their partners may be helpful to spouses’ PTG because perceived social support was significantly correlated between women diagnosed with GC and their spouses. Therefore, healthcare professionals should help women diagnosed with GC to perceive more social support and develop couple-based interventions among couples coping with GC.

Declarations

Ethical Approval

The questionnaire and methodology for this study was approved by the Ethics Committee of Anhui Medical University (No. 2018005).

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Consent for publication

Participants were informed of the intent to publish in the Explanatory Statement.

Competing interests

The authors declare no competing interests.
Authors' contributions

Lihua Zhou wrote the main manuscript text. Ziye Li and Yu Dai collected the data. Margaretha Stenmarker, Maria Henricson, Jingfang Hong and Maria Browall gave suggestions of revision of manuscript. All authors reviewed the manuscript.

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https://doi.org/10.1002/pon.4742

**Figures**

![Flowchart Diagram]

- **Approached eligible couples**
  - $N=169$

  - Declined study ($n=36$)
    - Not interested ($n=12$)
    - Too busy ($n=15$)
    - No reason given ($n=9$)

- **Obtained consent from couples**
  - $N=133$

  - Missing data ($n=7$)
    - Women only ($n=1$)
    - Spouses only ($n=4$)
    - Women and spouses ($n=2$)

- **Valid rate: 94.7%**

- **Provided valid data for study variables**
  - $N=126$

*Figure 1*
The study flowchart

Figure 2

Actor-partner independence model of perceived social support and PTG.

Notes: PTG: Posttraumatic Growth; e1–e3: residual errors on perceived social support for women; e4–e6: residual errors on perceived social support for spouses; e7 and e8: residual errors on PTG for women and spouses, respectively.

Figure 3

Effects of perceived social support on PTG in couples coping with GC.