Prevalence and risk factors of prolonged grief disorder among bereaved survivors seven years after the Wenchuan earthquake in China: A cross-sectional study

Xin Yi a, b, Jing Gao a, *, Chenxi Wu a, Dingxi Bai a, Yingchun Li a, Ni Tang a, Xiaoyun Liu a

a Academy of Nursing, Chengdu University of Traditional Chinese Medicine, Sichuan, China
b Academy of Medicine and Nursing, Chengdu University, Sichuan, China

Abstract

Background: This study aimed to determine the prevalence and predictive factors of prolonged grief disorder (PGD) among those bereaved by the Wenchuan earthquake in Southwestern China seven years after the event.

Methods: A cross-sectional survey based on census tracts was conducted on the bereaved earthquake survivors. Responses to the questionnaire regarding PGD and its potential associated factors were obtained either through face-to-face or telephone interview. PGD was screened by a validated Chinese version of the PGD questionnaire-13 (PG-13). Bivariate and multivariate regression analyses were used to determine the prevalence and associated risk factors of PGD.

Results: A total of 1464 bereaved earthquake survivors, with a response rate of 97.6%, were included in the study. Of the 1464 respondents studied, 124 (8.47%) were diagnosed with PGD. Multivariate regression analysis demonstrated that PGD in the bereaved earthquake individuals was significantly associated with several factors, including age, economic burden, close kinship with the deceased, and living with the deceased before the loss. Wenchuan earthquake bereaved aged 41–60 years were more likely to develop PGD compared to those aged younger than 40 or older than 60 (OR = 2.075, 95% CI = 1.297–3.319). Those who had a close kinship with the deceased had a higher tendency to develop PGD (OR = 5.144, 95% CI = 2.716–9.740). The odds of PGD among the earthquake bereaved with economic burdens were higher relative to those who did not experience an economic burden (OR = 8.123, 95% CI = 2.657–24.831). Those who living with the deceased before loss also had a higher tendency to develop PGD (OR = 0.179, 95% CI = 0.053–0.602).

Conclusions: This study revealed that a significantly high proportion (8.47%) of the Wenchuan earthquake-bereaved remain grieving seven years after the event. Those diagnosed with PGD should receive appropriate interventions from clinical psychologists. The risk factors identified in this study are crucial for the early screening and prevention of PGD in future nursing and psycho-clinical practices.

1. Introduction

Earthquakes are one of the most devastating natural disasters. An earthquake causes death and injuries to thousands of people within minutes. The Wenchuan earthquake in southwest China on May 12, 2008 was measured at 8.0 on the Richter scale and ranked as the most devastating in China since the 20th century. It affected over 100,000 km² and caused over 100,000 deaths. Apart from the destruction of the natural environment, the Wenchuan earthquake caused long-lasting and widespread psychological injuries among bereaved individuals, resulting in a high risk of psychological morbidity among the earthquake bereaved [1].

Grief is a common reaction to bereavement. Prigerson et al. characterized grief as “a psychological protest against the reality of loss and a general reluctance to make the adaptations to life in the absence of the loved one” [2]. Most individuals can mourn effectively over time. However, for some individuals, grieving can be aggravated and prolonged, which will eventually develop into...
pathological grief or prolonged grief disorder (PGD). Individuals suffering from PGD may have a series of symptoms, such as strong denial of the loss, lowered self-worth, and an inability to form new relationships with others [3,4]. Studies confirmed that these chronic and durable symptoms lead to increased risk of long-term physical, mental, and social functional disturbance [5,6].

To date, with the focusing on different kinds of bereaved individuals among natural disasters or other events, some studies have investigated the prevalence of PGD. Many of these studies were conducted in western countries and reported varied PGD rates. For example, six months to three years after a loss, PGD prevalence among general bereaved individuals varied between 12% and 43% [7–9]; six years after a loss, the value decreased to 10% [10]; and at 10 years, it remained at 7% [11]. Investigations in China revealed that the PGD rate among Chinese general bereaved survivors 1–1.5 years after the loss was 71.1%–79% [12,13]. Moreover, the value still reached up to 13.9% three to four years after a loss, the longest time studied since the occurrence of an earthquake.

PGD resembles other bereavement-related disorders, such as post-traumatic stress disorder (PTSD) or major depressive disorder (MDD), and it always occurs simultaneously with these disorders (approximately 30%–50% and 21%–54%, respectively) [3,14,15]. At the same time, PGD differs significantly from PTSD and MDD in terms of symptoms and treatment [16]. The known risk factors of PGD include the circumstances of death (cause, location, and unexpectedness of death), the relationship with the deceased, closeness of the kinship, pre-bereavement caregiver burden, the characteristics of the bereaved (religion, quality of social support, and coping style), and concurrent socioeconomic stressors [17]. Lack of knowledge and awareness on PGD makes diagnosis and treatment in China difficult, where it is often diagnosed and treated as PTSD, MDD, or other psychological disorders. Expanding our understanding of PGD is urgently needed to prepare for large-scale natural disasters in the future.

Given this background, the current study aimed to explore the prevalence and risk factors among Chinese earthquake-bereaved individuals. A cross-sectional study using a questionnaire with bereavement-related items was conducted on Wenchuan earthquake-bereaved survivors in severely affected areas in southwest China. Bivariate analysis and multivariate stepwise logistic regression analysis were applied on the collected data. Results indicated a significantly high level of PGD rates among the bereaved, and several predictive factors of PGD were identified. Information obtained from this study extended our understanding of PGD and is valuable for establishing early screening and prevention systems for PGD in routine nursing and clinical practices.

2. Material and methods

2.1. Participants

Participants involved bereaved survivors of the Wenchuan earthquake in southwest China. Individuals who provided incomplete information were excluded. Survivors with obvious suicidal tendency, dementia, or other psychological disorders were also excluded after using relevant detection tools.

2.2. Procedure

An anonymous questionnaire survey was conducted on the earthquake bereaved through face-to-face or telephone interview. We identified three towns in the severely afflicted areas to establish a wide geographic distribution of the samples. We selected 10 census tracts in each of the three target areas and then chose 50 individuals within each census tract. A total of 1500 respondents were confirmed using a stratified two-stage convenient sampling method. After assessment for missing data, the final number of respondents was 1464. The study protocol was approved by the Ethics Committee of the Chengdu University of Traditional Chinese Medicine. All participants provided their consent before joining the study.

2.3. Questionnaire

The questionnaire was composed of two parts, namely, the general information questionnaire and the Prolonged Grief Disorder Questionnaire-13 (PG-13), which can diagnose PGD [18].

The general information questionnaire covered demographic characteristics (e.g., age, gender, and nationality) and bereavement-related clinical characteristics, including their relationship with the deceased, whether they shared a close relationship with the deceased, and whether they were living with the deceased before their loss. The PG-13 was revised from the original version of the Inventory of Complicated Grief (ICG) as developed by Professor Prigerson from Harvard University Medical School to measure PGD lasting over six months since the loss. After obtaining authorization from Professor Prigerson, we began translation into Chinese, and our version was proven to have high reliability and validity [19]. The reliability and validity of the revised PG-13 were confirmed by previous studies [20,21].

PG-13 is a diagnostic tool comprising four dimensions: separation distress; duration criteria; cognitive, emotional, and behavioral symptoms; and impairment criteria, for a total of 13 items. The criteria for diagnosing PGD include the following: (1) event criteria: ensure the respondent has experienced bereavement; (2) separation distress: the respondent must experience the characterizations in PG-13 question #1 or #2 at least daily; (3) timing criteria: duration of at least six months from the onset of separation distress, and question #3 must be answered with “Yes”; (4) cognitive, emotional, and behavioral symptoms: the respondent must experience five of the descriptions in PG-13 questions # 4–12 at least “once a day” or “quite a bit”; and (5) functional impairment: the respondent must have significant impairment in social, occupational, or other important areas of functioning (e.g., domestic responsibilities). Specifically, PG-13 question #13 must be answered with “Yes” [3].

2.4. Statistical analysis

We exploited different statistical tools to analyze the factors included in the survey. Chi-square test was used to examined gender, economic burden, relationship with the deceased, close kinship with the deceased, and confiding to relatives/friends about the deceased after loss. Fisher’s exact test was used to investigated nationality, living with the deceased before loss, and religious belief. The Wilcoxon rank sum test was used to evaluated age and educational status. Bivariate analysis was also conducted to identify factors possibly associated with the presence of PGD. Multivariate stepwise logistic regression analysis (forward: Likelihood Ratio Test) was performed with the presence of PGD as the dependent variable and factors with significant correlation (as confirmed by the simple factor analysis above) as independent variables. All the P-values were two-tailed, and the level of statistical significance was set at P < 0.05. All statistical analyses were performed using SPSS version 19.0 software (SPSS Inc., Chicago, IL, USA).

3. Results

Of the 1464 earthquake-bereaved respondents, 124 were diagnosed with PGD by clinical psychologists using PG-13. Hence, the
prevalence of PGD among the earthquake bereaved seven years post loss was 8.47%. The demographic and clinical characteristics of the earthquake bereaved are shown in Table 1.

Bivariate analysis was conducted to identify the demographic and clinical characteristics associated with PGD. Factors including gender ($P = 0.036$), age ($P < 0.001$), educational status ($P = 0.046$), economic burden ($P = 0.005$), relationship with the deceased ($P < 0.001$), close kinship with the deceased ($P < 0.001$), living with the deceased before loss ($P = 0.035$), and confiding to relatives/friends about the loss ($P = 0.001$) were found to be significantly associated with PGD. Other factors, including nationality and religious belief, were not correlated with PGD. Table 2 presents the connection between the demographic and clinical characteristics of the earthquake bereaved with PGD.

Of the 1464 earthquake-bereaved respondents, 279 lost their children and 202 lost their spouse. Among them, 40 of the 279 and 23 of the 202 were diagnosed with PGD, resulting in 14.34% and 11.39% of PGD rates in the earthquake bereaved who lost their child or spouse, respectively. For those who did not give birth to other children or rebuild a marriage, the respective PGD rates were 15.82% and 14.44%, significantly higher than those who did (8.45% and 8.93%, respectively). The detailed association analysis of these factors with PGD is shown in Table 3.

The test of multicollinearity of intra-predictor variables revealed that the variable relationship with the deceased has collinearity with the variables of close kinship with the deceased, age, and living with the deceased before loss. Therefore, the multivariate logistic regression was assessed by removing the variable of relationship with the deceased. With the above significant variables in the binary analysis entered as independent variables and the presence of PGD as the dependent variable, the multivariate regression analysis demonstrated that PGD was associated with age, economic burden, close kinship with the deceased, and living with the deceased before loss (Table 4). Specifically, Wenchuan earthquake bereaved aged 41–60 years were more likely to develop PGD compared to those aged younger than 40 or older than 60 ($OR = 2.075, 95\%CI = 1.297–3.319$). Those who had a close kinship

Table 1
Demographic and clinical characteristics of the earthquake bereaved.

| Variable                      | Total | Prolonged grief disorder |
|-------------------------------|-------|--------------------------|
| Gender                        |       |                         |
| Male                          | 604   | 41.26                    |
| Female                        | 860   | 58.74                    |
| Age (years)                   |       |                         |
| ≤40                           | 345   | 23.57                    |
| 41–60                         | 542   | 37.02                    |
| ≥61                           | 577   | 39.41                    |
| Education status              |       |                         |
| Elementary school and below   | 864   | 65.85                    |
| Secondary school              | 425   | 22.20                    |
| High school and upper         | 175   | 11.95                    |
| Economic burden               |       |                         |
| Yes                           | 915   | 62.50                    |
| No                            | 549   | 37.50                    |
| Nationality                   |       |                         |
| Han                           | 328   | 22.40                    |
| Qiang                         | 1136  | 77.60                    |
| Relationship with the deceased|       |                         |
| Child                         | 279   | 19.06                    |
| Spouse                        | 202   | 13.80                    |
| Parents                       | 352   | 24.04                    |
| Others                        | 631   | 43.10                    |
| Close kinship with the deceased|     |                         |
| Yes                           | 556   | 37.98                    |
| No                            | 908   | 62.02                    |
| Rebirthed a child             |       |                         |
| Yes                           | 142   | 44.51                    |
| No                            | 177   | 55.49                    |
| Rebuilt a marriage            |       |                         |
| Yes                           | 90    | 45.00                    |
| No                            | 110   | 55.00                    |
| Living with the deceased before loss| |                         |
| Yes                           | 898   | 61.34                    |
| No                            | 566   | 38.66                    |
| Confiding to relatives/friends about the deceased after loss | | |
| Yes                           | 788   | 53.83                    |
| No                            | 676   | 46.17                    |
| Religious belief              |       |                         |
| Yes                           | 358   | 24.45                    |
| No                            | 1106  | 75.55                    |

Table 2
Bivariate analysis of demographic and clinical characteristics of the earthquake bereaved and their association with PGD.

| Variable                                | Total | Prolonged grief disorder |
|-----------------------------------------|-------|--------------------------|
| Gender                                  |       |                         |
| Male                                    | 40    | 6.62                     |
| Female                                  | 84    | 9.77                     |
| Age (years)                              |       |                         |
| <40                                      | 25    | 7.25                     |
| ≥41–60                                   | 70    | 12.92                    |
| ≥61                                      | 29    | 5.03                     |
| Education status                         |       |                         |
| Elementary school and below             | 62    | 7.18                     |
| Secondary school                         | 40    | 9.41                     |
| High school and upper                   | 22    | 12.57                    |
| Economic burden                         |       |                         |
| Yes                                      | 92    | 10.05                    |
| No                                       | 32    | 5.83                     |
| Nationality                             |       |                         |
| Han                                      | 32    | 9.76                     |
| Qiang                                    | 92    | 8.10                     |
| Relationship with the deceased          |       |                         |
| Child                                    | 40    | 14.34                    |
| Spouse                                   | 23    | 11.39                    |
| Parent(s)                                | 31    | 8.81                     |
| Others                                   | 30    | 4.75                     |
| Close kinship with the deceased          |       |                         |
| Yes                                      | 72    | 12.95                    |
| No                                       | 52    | 5.73                     |
| Living with the deceased before loss     |       |                         |
| Yes                                      | 87    | 9.69                     |
| No                                       | 37    | 6.54                     |
| Confiding to relatives/friends about the deceased after loss | | |
| Yes                                      | 52    | 6.60                     |
| No                                       | 72    | 10.65                    |
| Religious belief                        |       |                         |
| Yes                                      | 30    | 8.38                     |
| No                                       | 94    | 8.50                     |

Table 3
Bivariate analysis of the variables give birth to other child and rebuild a marriage among the earthquake bereaved and their association with PGD.

| Variable                                | Total | Prolonged Grief Disorder |
|-----------------------------------------|-------|--------------------------|
| Give birth to other child               |       |                         |
| Yes                                     | 279   | 14.34                    |
| No                                       | 142   | 12                       |
| Rebuilt a marriage                      |       |                         |
| Yes                                     | 202   | 13.80                    |
| No                                       | 177   | 28                       |
| Living with the deceased before loss    |       |                         |
| Yes                                     | 898   | 61.34                    |
| No                                       | 566   | 38.66                    |
| Confiding to relatives/friends about the deceased after loss | | |
| Yes                                     | 788   | 53.83                    |
| No                                       | 676   | 46.17                    |
| Religious belief                        |       |                         |
| Yes                                     | 358   | 24.45                    |
| No                                       | 1106  | 75.55                    |

Table 4
Bivariate analysis of the variables give birth to other child and rebuild a marriage among the earthquake bereaved and their association with PGD.

| Variable                                | Total | Prolonged Grief Disorder |
|-----------------------------------------|-------|--------------------------|
| Give birth to other child               |       |                         |
| Yes                                     | 279   | 14.34                    |
| No                                       | 142   | 12                       |
| Rebuilt a marriage                      |       |                         |
| Yes                                     | 202   | 13.80                    |
| No                                       | 177   | 28                       |
| Living with the deceased before loss    |       |                         |
| Yes                                     | 898   | 61.34                    |
| No                                       | 566   | 38.66                    |
| Confiding to relatives/friends about the deceased after loss | | |
| Yes                                     | 788   | 53.83                    |
| No                                       | 676   | 46.17                    |
| Religious belief                        |       |                         |
| Yes                                     | 358   | 24.45                    |
| No                                       | 1106  | 75.55                    |
with the deceased had a higher tendency to develop PGD \((OR = 5.144, 95\% CI = 2.716–9.740)\). Moreover, the odds of PGD among the earthquake bereaved with economic burdens were higher relative to those who did not experience an economic burden \((OR = 8.123, 95\% CI = 2.657–24.831)\). Living with the deceased before loss was another predictor of PGD among the earthquake bereaved \((OR = 0.179, 95\% CI = 0.03–0.602)\).

## 4. Discussion

The long-term prevalence of PGD and its association with other factors among earthquake-bereaved individuals have rarely been studied in China. We employed a questionnaire to identify the percentage of individuals suffering from PGD and the demographic and clinical factors associated with the disorder.

Results from this study indicated that the prevalence of PGD was 8.4% among the surveyed individuals seven years after the event. Our data suggested that the decrease of PGD rate with time is extremely slow. A significant number of survivors continue to suffer from the psychological impact of the disaster. The result overturned our previous hypothesis that the prevalence of PGD among the Wenchuan earthquake bereaved should decrease to a lower percentage with the time since loss \([22,23]\). In general bereaved survivors, the prevalence varies between 12% and 43% after loss for six months to three years \([7,9,30]\). In community-dwelling survivors, the prevalence ranges from 18.6% to 31.1%, and the years post loss ranging from 10.4 to 16.4 \([25–27]\).

These results were also consistent with another study focusing on general bereaved individuals \([28]\).

Generally, PGD prevalence rates vary with the type of event and decrease with the time since the occurrence of the event. A systematic review reported that the average prevalence of PGD is 9.8% among general bereaved individuals \([29]\). In general bereaved survivors, the prevalence varies between 12% and 43% after loss for six months to three years \([7,9,30]\). In community-dwelling individuals, after loss for six years, the value decreases to 10% \([10]\), whereas after 10 years, the value remains at 7% \([11,11]\). In addition to sample diversity and time, cultural differences and the criteria used for diagnosing PGD also affect its prevalence rate \([32]\).

The current study employed the latest revised version of Prigerson’s criteria (PG-13), including four dimensions, namely, separation distress, duration of more than six months, traumatic distress, and clinically significant impairment \([33]\). The criteria utilized in the current study differed from those of Horowitz and Shear’s BGQ \([34,35]\). In future studies, evaluating PGD with different criteria may be informative for exploring the persistence of PGD over a longer time among earthquake bereaved or other bereaved samples.

PGD diagnosis can be relatively easy among the earthquake bereaved, and the identification of the risk factors of PGD is critical for early screening and prevention. Bivariate analysis found gender, age, educational status, economic burden, relationship with the deceased, close kinship with the deceased, living with the deceased before loss, and confiding to relatives/friends about the loss were significantly associated with PGD. In contrast to previous studies \([10,12,23,36,37]\), nationality and religious belief were not associated factors of PGD in the present research. Most likely, this outcome is because of the relatively consistent ethical and religious background in the Wenchuan earthquake affected areas.

Multivariate logistic analysis further indicated that age, economic burden, close kinship with the deceased, and living with the deceased before loss were significant risk factors of PGD in the earthquake bereaved. Similar to our finding, He et al. described age as an associated factor to PGD in a study on the Chinese general bereaved \([36]\). The PGD rate for those who had a close kinship with the deceased was determined to be 12.95%, compared to 5.73% for those who did not have such relationship. This observation is in line with results from other studies, which reported that the relationship with the deceased was associated with PGD among the bereaved \([10,13,36]\).

Our finding also indicated that living with the deceased before loss was another predictor of PGD among the earthquake bereaved \((OR = 0.179, 95\% CI = 0.03–0.602)\). Although the association of PGD with such factor was rarely reported, the observation can be explained by the close kinship while living with the deceased.

We observed that the relationship with the deceased had multicollinearity with the three predictors above (age, close kinship with the deceased, living with the deceased before loss). Thus, it can be interpreted that the relationship with the deceased was also a significant predictor of PGD among the earthquake bereaved. This result was supported by other research conducted on different bereaved samples \([30,36,37]\). Considering earthquake-bereaved individuals who lost their child or spouse, the bivariate analysis showed that giving birth to other children and rebuilding a marriage were protective factors for developing PGD. This result is in accord with another study also conducted among Wenchuan earthquake bereaved in China \([12]\).

PGD is a mental disorder with long-term effects. More and more studies focus on the intervention of PGD, and some effective methods have been established. Simon and colleagues proposed targeted psychotherapy as an effective treatment for PGD \([38]\). Macallum reported that 10 weeks of group therapy and 4 weeks of individual cognitive behavioral therapy, including psycho-education, and discussing positive and negative memories of the deceased were beneficial for PGD \([39]\). Rather than treating patients diagnosed with PGD, establishing early screening and prevention methods is probably a more effective way to promote the mental health of the bereaved. Early screening and prevention will only be possible if we know the factors that contribute to the development of PGD. Our work and those of others identified several potential risk factors for PGD. Individuals with these risk factors should be closely monitored after the events and receive extra psychological care and social and economic support to prevent the development of PGD.

Our work is also valuable to the nursing practice, especially in China, as many of the PGD patients are underdiagnosed, resulting in being treated as sufferers of other mental disorders and receiving the necessary psychological care and support.
inappropriate nursing care. Our findings clearly confirmed that the PGD prevalence rate remains high seven years after the event, and special attention must be paid to the potential sufferers during clinical and nursing practices.

5. Conclusion

The prevalence of PGD among the earthquake bereaved has rarely been studied, especially after considerable time post event. This study revealed that the earthquake-bereaved individuals were still grieving seven years post loss, with an unexpected prevalence of PGD rate at 8.47%. We also identified age, economic burden, closeness kinship with the deceased, and living with the deceased before loss as potential predictive factors for PGD. Our work provided valuable information for the early screening and prevention of PGD in clinical and nursing practices, especially for the earthquake bereaved in China.

Funding

This work was supported by funding from the Chengdu University of Traditional Chinese Medicine (Grant no: RWQN1410).

Conflicts of interest

The authors declare no conflicting interests.

Acknowledgments

We deeply appreciate the contribution from all the participants and investigators. We are especially grateful to Dr. Guanjian Liu from the West China Center of Medical Sciences of Sichuan University for helping us with data analysis and to Dr. Jian Li from Chengdu University for language editing.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijnss.2018.04.001.

References

[1] Olay F, Hatipoglu S, Aydin H. Effectiveness of psychoeducation intervention on post-traumatic stress disorder and coping styles of earthquake survivors. J Clin Nurs 2008;17(5):677–87.
[2] Prigerson HG, Vanderwerker LC, Maciejewski PK. A case for inclusion of prolonged grief disorder in DSM-V: Handbook of bereavement research and practice: advances in theory and intervention. Washington, DC, US: American Psychological Association; 2008b. p. 156–85.
[3] Prigerson HG, Horowitze MJ, Jacobs SC, Parkes CM, Goodkin K, et al. Prolonged grief disorder: psychometric validation of criteria proposed for DSM-V and ICD-11. PLoS Med 2009;6(8); e1000121.
[4] Sung SC, Dryman MT, Marks E, Shear MK, Ghesquiere A, Fava M, et al. Complicated grief among individuals with major depression: prevalence, comorbidity, and associated features. J Affect Disord 2011;134(1–3):453–8.
[5] Jacobsen J, Vanderwerker L, Block S, Friedlander R, Maciejewski P, Prigerson H. Depression and demoralization as distinct syndromes: preliminary data from a cohort of advanced cancer patients. Indian J Palliat Care 2006;12(1):1–8.
[6] Ott CH, Lueger RJ, Kelber ST, Prigerson HG. Spousal bereavement in older adults: common, resilient, and chronic grief with defining characteristics. J Nerv Ment Dis 2007;195(4):332–41.
[7] Hargrave PA, Leathem JM, Long NR. Peritraumatic distress: its relationship to posttraumatic stress and complicated grief symptoms in sudden death survivors. J Trauma Stress 2012;25(3):344–7.
[8] Tomarken A, Roth A, Holland J, Ganz O, Schachter S, Kose G, et al. Examining the role of trauma, personality, and meaning in young prolonged griever. Psycho Oncol 2012;21(7):771–7.
[9] Coldsmith B, Morrison RS, Vanderwerker LC, Prigerson HG. Elevated rates of prolonged grief disorder in African Americans. Death Stud 2008;32(4):352–65.
[10] Schaal S, Richter A, Elbert T. Prolonged grief disorder and depression in a German community sample. Death Stud 2014;38(6–10):476–81.
[11] Kersting A, Brahler E, Glaesmer H, Wagner B. Prevalence of complicated grief in a representation-based population-sample. J Affect Disord 2011;131(1–3):339–43.
[12] Xu HL, Li XL, Dou XM, Li R. Factors related to complicated grief among bereaved individuals after the Wenchuan earthquake in China. Chinese Med J 2015;128(11):1438–43.
[13] Li J, Chow AY, Shi Z, Chan CL. Prevalence and risk factors of complicated grief among Sichuan earthquake survivors. J Affect Disord 2015;175:218–23.
[14] Barnes JR, Dickstein BD, Maguen S, Neria Y, Litz BT. The distinctiveness of prolonged grief and posttraumatic stress disorder in adults bereaved by the attacks of September 11th. J Affect Disord 2012;136(3):366–9.
[15] Golden AM, Dalgleish T. Is prolonged grief distinct from bereavement-related posttraumatic stress? Psychiatr Res 2010;178(2):336–41.
[16] Shear K, Frank E, Housck PR, Reynolds 3rd CF. Treatment of complicated grief: a randomized controlled trial. Jama 2005;293(21):2601–8.
[17] Stroebe M, Schut H, Stroebe W. Health outcomes of bereavement. Lancet 2007;370(9603):1965–73.
[18] Prigerson HG, Maciejewski PK, Reynolds 3rd CF, Bierhals AJ, Newsom JT, Fasickza A, et al. Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. Psychiatr Res 1995;59(2–3):65–79.
[19] Xin Y, Jia G, Chen X, Ni T, Ying CY. The reliability and validity test of the Chinese version of Prolonged Grief -13 questionnaire. J Chongming Med 2016;45(7):943–6.
[20] Johnson JC, Vanderwerker LC, Bornstein RF, Zhang B, Prigerson HG. Development and validation of an instrument for the assessment of dependency among bereaved persons. J Psychosom Behav Med 2006;28(4):261–70.
[21] Ogrodniczuk JS, Piper WE, Joyce AS, Weideman M, Azim HF, et al. Differentiating symptoms of complicated grief and depression among psychotherapeutic outpatients. Can J Psychiatr Revue canadienne de psychiatrie 2003;48(2):87–93.
[22] Heeke C, Stammel N. Knaevelsrud C. When hope and grief intersect: rates and risks of prolonged grief disorder among bereaved individuals and relatives of deceased persons in Colombia. J Affect Disord 2015;173:59–64.
[23] Schaal S, Jacob N, Dusingenemugu J-P, Elbert T. Rates and risks for prolonged grief disorder in a sample of orphaned and widowed genocide survivors. BMC Psychiatry 2010;10(1):55.
[24] Li J, Prigerson HG. Assessment and associated features of prolonged grief disorder among Chinese bereaved individuals. Compr Psychiatry 2016;66:16–26.
[25] Kersting A, Kroeker K, Horstmann J, Ohrmann P, Boecke A, Rott, et al. Complicated grief in patients with unipolar depression. J Affect Disord 2009;118(1–3):201–4.
[26] Simon NM, Pollack MH, Fischmann D, Perlman CA, Murphy AC, Moore CW, et al. Complicated grief and its correlates in patients with bipolar disorder. J Clin Psychiatry 2005;66(9):1105–10.
[27] Piper WE, Ogrodniczuk JS, Azim HF, Weideman R. Prevalence of loss and complicated grief among psychiatric outpatients. Psychiatr Serv 2001;52(8):1147–49.
[28] Fujisawa D, Miyashita M, Nakajima S, Ito M, Kato M, Kim Y. Prevalence and determinants of complicated grief in general population. J Affect Disord 2010;127(1–3):352–8.
[29] Lundorf M, Holmgren H, Zacharias R, Farver-Vestergaard L, O’Connor M. Prevalence of prolonged grief disorder in adult bereavement: a systematic review and meta-analysis. J Affect Disord 2017;212:138–49.
[30] Rajkumar AP, Mohan TS, Tharayan P. Lessons from the 2004 Asian tsunami: nature, prevalence and determinants of prolonged grief disorder among tsunami survivors. South Indian coastal villages. Int J Soc Psychiatry 2015;61(7):645–52.
[31] Simon NM, Shear KM, Thompson EH, Zalta AK, Perlman C, Reynolds CF, et al. The prevalence and correlates of psychiatric comorbidity in individuals with complicated grief. Compr Psychiatry 2007;48(5):395–9.
[32] Fromme D, Sierck A, Maercker A. Comparison of two diagnostic systems for Complicated Grief. J Affect Disord 2007;99(1–3):203–11.
[33] Prigerson HG, Shear MK, Jacobs SC, Reynolds 3rd CF, Maciejewski PK, Davidson JR, et al. Consensus criteria for traumatic grief. A preliminary empirical test. Br J Psychiatr : J Ment Health 1999;174:67–73.
[34] Ito M, Nakajima S, Fujisawa D, Miyashita M, Kim Y, Shear MK, et al. Brief measure for screening complicated grief: reliability and discriminant validity. PLoS One 2012;7(2), e31209.
[35] Horowitz MJ, Siegel B, Holen A, Bonanno GA, Milbrath C, Stinson CH. Diagnostic criteria for complicated grief disorder. Am J Psychiatr 1997;154(7):904–10.
[36] He L, Tong S, Yu W, Xu X, Xie Q, Wang J. The prevalence, comorbidity and risks of prolonged grief disorder among bereaved Chinese adults. Psychiatr Res 2014;219(2):347–52.
[37] Stammel N, Heeke C, Beckers E, Chihun S, Taing S, Wagner B, et al. Prolonged grief disorder three decades post loss in survivors of the Khmer Rouge regime in Cambodia. J Affect Disord 2013;144(1–2):87–93.
[38] Simon NM. Treating complicated grief. JAMA 2013;310(4):416–23.
[39] Macallum F, Bryant RA. Autobiographical memory following cognitive behaviour therapy for complicated grief. Beh J Hosp Palliat Care 2011;4(2):26–31.