

Factors Related to Complicated Grief among Bereaved Individuals after the Wenchuan Earthquake in China

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Abstract

Background: The Wenchuan earthquake in China caused shock and grief worldwide. Sudden bereavement caused by the earthquake led to physical disorders as well as psychological disturbances in the bereaved individuals. The bereaved had a high risk for complicated grief (CG), which may have led to significant distress and impairment in their health. However, there was few available studies on CG among disaster-bereaved individuals in China after the disaster. The aim of this study was to identify factors (demographic characteristics and disaster-related variables) associated with symptoms of CG among the bereaved 18 months after the Wenchuan earthquake.

Methods: This study was conducted with a cross-sectional design and a convenience sample of 271 bereaved individuals from three of the hardest hit areas. Data were collected by questionnaires and the instruments used in the study were: General questionnaire and Inventory of CG (ICG). Multivariate linear regression analysis was used to identify factors associated with symptoms of CG.

Results: The mean score on ICG was 52.77 (standard deviation: 10.00). Being female and loss of a child were related to higher level of CG while having another child after the disaster and receiving psychological counseling experience were associated with lower level of CG. Forty-nine percent of the variance of CG was explained by these identified factors.

Conclusions: Eighteen months after the Wenchuan earthquake, the symptoms of CG among the bereaved were higher than the previous studies with bereaved individuals. This study uncovers a vulnerable population of the bereaved at high risk for CG. Early assessments, targeted interventions, and policy support tailored for the disaster-bereaved individuals are necessary to identify and alleviate symptoms of CG and to improve their well-being.

Key words: Associated Factors; Bereaved Individuals; Complicated Grief; Earthquake

INTRODUCTION

During a disaster, loss of life and property is inevitable,^[1] but the loss of family members was a devastating for the disaster victims and increased the risk of mental distress.^[2] The majority of disaster victims can recover from the mental distress with time. However, bereavement has a long-term impact on the mental health of the bereaved, and a long recovery process is needed.^[3] The bereaved are at a high risk for developing complicated grief (CG). It was reported that approximately 14–76% of bereaved populations suffered from CG after disasters.^[4-7] The symptoms of CG include severe yearning for the deceased, troubles in accepting the loss, bitterness, and anger associated with the loss lasting for at least 6 months after the death.^[8] For people with CG, acute grief symptoms persist longer and do not ease over time as usual.^[9] CG is associated with significant impairment and

distress, including work and social disorder,^[10,11] disruption in daily activities,^[12] impairment in relationship,^[13] sleep disorders,^[14] suicidal ideation and behavior,^[15,16] and increased substance abuse.^[17] In addition, CG may worsen symptoms of other mental disturbance, such as panic disorder, suicidal behaviors.^[18] Individuals with CG are at increased risk for chronic diseases, such as cancer, heart disease, and hypertension.^[16] Overall, there has been increased recognition of the significance of CG after disasters.^[19]

On May 12, 2008, a devastating earthquake hit Sichuan Province, South-West China, which caused tremendous losses in both properties and lives.^[20] CG is common after disasters.^[19] Victims who lost their family members in the disaster have a high risk of developing CG. However, to our knowledge, the majority of disaster studies focused on traumatic stress, such as posttraumatic stress disorder (PTSD) and major depressive disorder (MDD).^[21,22] Currently, there are no available studies on CG among the bereaved in China after the earthquake. CG, an attachment disorder, is different from

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PTSD, a function disorder related to exposure to traumatic events.^[23] In addition, CG is different from MDD. For example, CG tends to come in waves while MDD is unremitting and persistent.^[24] The distinctions among PTSD, MDD, and CG exist in both symptoms and treatments.^[25,26] Understanding factors associated CG is important for identifying the bereaved at high risk and providing targeted interventions and treatments. Therefore, it is necessary to better understand CG among the disaster-bereaved population. Factors associated with CG among disaster-bereaved individuals include female gender,^[4,6] loss of a close family member,^[4,6] multiple losses,^[27,28] insufficient social support, and adverse life events.^[29,30]

We hypothesized that the symptoms of CG among the bereaved would be severe and that demographic characteristics and disaster-related variables (i.e. being female, loss of a child, and multiple losses) would be associated with symptoms of CG among the bereaved after the Wenchuan earthquake. As a result, the aims of this study were to (1) investigate the symptoms of CG in bereaved individuals 18 months after the Wenchuan earthquake, (2) identify the factors (demographic characteristics and disaster-related variables) associated with symptoms of CG.

METHODS

Study design and sample

A cross-sectional design was adopted in the study. The working definition of the bereaved is to suffer the loss of lineal relatives within three generations. The participants were recruited from three of the hardest hit areas by the convenience sampling, including the county of Mianzhu, Dujiangyan, and Lixian. Each family assigned one bereaved individual to participant in the survey. The inclusion criteria for participants were: (1) The loss of family members within blood relations in three generations in this earthquake, (2) being over 18 years of age, (3) having the willingness to participate in this study. Individuals with cognitive impairments and schizophrenia were excluded.

Procedure

The bereaved individuals were invited to participate in the study via the publicity column of local housing communities. Prior to the study, the investigators were taught effective communication and coping skills by psychologists to minimize participants' emotional distress. A pilot test was carried out on 23 bereaved participants in Mianzu county, and the results displayed the participants could understand the questionnaires and the investigators could collect the data effectively without harming the participants.

Data collection

With the permission of the local government and our university, participants were recruited from November 2009 to February 2010 in rural areas of three of the hardest-hit districts. Data were collected through questionnaires survey. The questionnaires were issued to the participants with uniform instructions to avoid bias during the survey. Participants completed the survey independently according

to their actual status and feelings. For literate participants unable to write due to physical reasons, the responses were recorded objectively. For illiterate participants, the investigators read the questionnaire items and recorded the responses. The investigators retrieved the survey immediately after the completion. Each participant was given a small gift as a reward after completion of the survey.

The following instruments were used: (1) Demographic scale and (2) Inventory of CG (ICG).

General questionnaire

General questionnaire includes demographic characteristics and disaster-related data. The demographic characteristics were: Age, gender, educational level, marital status, and religious beliefs. The disaster-related data were: Financial loss, postdisaster housing condition, postdisaster health status, frequency of entertainment, exposure to the scene of the deceased, whether they found the remains of the deceased, number of loss, type of loss, fecundity intention, fecundity status for those with fecundity intentions, and psychological counseling experience.

Inventory of complicated grief

Complicated grief was measured by the 19 item ICG.^[31] The ICG, a symptom severity rating scale, uses a 5-point scale, with the range from 0 "never" to 4 "always." The total score ranges 0–54. Higher score indicates a higher level of symptoms. The scale has adequate internal consistency reliability and validity. The Cronbach's alpha coefficient and the test-retest reliability coefficient were 0.94 and 0.80, respectively.^[31] A score of 25 is regarded as the criteria to distinguish whether or not the bereaved have the symptoms of CG. The Chinese version of the ICG has adequate reliability and validity in Chinese population.^[32,33] In this study, the internal consistency reliability with Cronbach's alpha coefficient was 0.86.

Ethical statement

The study was approved by the Ethical Committee of Sichuan University. Written informed consents were obtained from all participants. They were informed that they could withdraw from the study at any time.

Data analysis

The SPSS 17.0 statistical analysis package (SPSS Inc., USA) was used. The mean, standard deviation (SD), frequency, and percentages were used to describe demographic characteristics and disaster-related data. Independent samples *t*-test and analysis of variance were used to detect the difference on CG among different subgroups. Multivariate linear regression analysis was used to identify factors associated with CG. The significant factors in the univariate analysis were entered in a multivariate regression model with the score of CG as the dependent variable. Significant demographic characteristics and disaster-related variables were the independent variables for analysis. Some independent variables were transformed into dummy variables to enter in multivariate linear regression, including types of loss (the reference subgroup: Other relatives) and fecundity status (the reference subgroup: Not pregnant). All tests were two-tailed, and $P < 0.05$ was regarded as statistically significant.

RESULTS

Characteristics of demographic and disaster-related variables

Among 287 potential eligible participants we contacted, 13 participants refused due to emotional distress and three individuals were excluded because of cognitive impairment. A total of 271 participants completed the survey and were included in further analysis.

As shown in Table 1, among the 271 participants, the average age was 44.87 (SD = 13.08). The majority were

female (54.61%) and were married (90.03%). Most of the participants (67.16%) had no religious beliefs. More than half (53.88%) had the educational level of primary school or below. The majority (72.33%) reported a severe financial loss in the disaster. The majority (89.67%) perceived moderate health status or better. Most of them (73.43%) rarely had entertainment after the earthquake. The majority (88.19%) had not directly been exposed to the scene of the deceased. Most participants (88.93%) found the remains of the deceased. The majority (71.96%) lost one family member. The main type of loss (61.49%) was the loss of a child. The

Table 1: Characteristics of participants and the differences on CG among different subgroups of demographic and disaster-related variables (n = 271)

Variables	n (%)	CG Mean (SD)	Test (T/F) value	P
Demographic characteristics				
Gender				
Female	148 (54.61)	54.82 (10.16)	3.805 [‡]	0.000 [†]
Male	123 (45.39)	50.29 (9.26)		
Age (years)				
<40	108 (39.85)	53.52 (8.06)	0.235 [§]	0.872
40–49	84 (31.00)	52.49 (10.49)		
50–59	29 (10.70)	52.35 (12.35)		
≥60	50 (18.45)	52.28 (10.57)		
Educational level				
Illiteracy	62 (22.88)	54.79 (9.83)	3.315 [§]	0.071
Primary school	84 (31.00)	52.77 (10.02)		
Junior high school or above	125 (46.12)	52.17 (10.00)		
Marital status				
Yes	244 (90.03)	52.51 (9.87)	-1.171 [‡]	0.251
No	27 (9.97)	55.11 (11.07)		
Religious beliefs				
Yes	89 (32.84)	54.38 (9.32)	1.867 [‡]	0.063
No	182 (67.16)	51.98 (10.25)		
Disaster-affected variables				
Financial loss				
Slight	36 (13.28)	51.64 (10.79)	1.431 [§]	0.063
Moderate	39 (14.39)	52.15 (9.56)		
Severe	196 (72.33)	53.42 (9.32)		
Postdisaster house conditions				
Reconstruction houses	105 (38.75)	52.19 (10.24)	-1.203 [‡]	0.23
Temporary houses	166 (61.25)	53.69 (9.58)		
Health status after disaster				
Good	122 (45.02)	53.55 (8.99)	3.503 [§]	0.027 [*]
Moderate	121 (44.65)	55.40 (8.85)		
Poor	28 (10.33)	57.39 (10.79)		

Table 1: Contd...

Variables	n (%)	CG Mean (SD)	Test (T/F) value	P
Frequency of entertainment after disaster				
Never	49 (18.08)	54.36 (8.70)	3.902 [§]	0.022 [*]
Occasionally	150 (55.35)	52.16 (14.01)		
Sometimes	55 (20.30)	50.55 (8.66)		
Constantly	17 (6.27)	47.71 (10.01)		
Number of loss				
One family member	195 (71.96)	51.96 (11.22)	-0.489 [‡]	0.625
More than one family member	76 (28.04)	52.73 (9.31)		
Type of loss (n = 309 for multiple losses)				
Other relative	88 (28.48)	49.14 (11.63)	7.858 [§]	0.000 [†]
Spouse	31 (10.03)	52.77 (9.02)		
Children	190 (61.49)	57.91 (9.09)		
Direct exposure to the death of relatives				
No	239 (88.19)	50.43 (11.73)	-1.406 [‡]	0.160
Yes	32 (11.81)	53.08 (9.73)		
Finding the remains of the deceased				
No	30 (11.07)	50.42 (11.51)	-2.399 [‡]	0.023 [*]
Yes	241 (88.93)	53.33 (9.68)		
Fecundity intentions				
Yes	177 (65.31)	53.51 (8.86)	1.640 [‡]	0.104
No/not suitable	94 (34.69)	51.11 (12.07)		
Fecundity status for the bereaved with fecundity intentions (n = 177)				
Not pregnant	72 (40.68)	55.40 (7.95)	4.872 [§]	0.009 [†]
Having pregnant	81 (45.76)	53.10 (8.41)		
Having another child	24 (13.56)	49.21 (10.73)		
Psychological counseling experience				
Yes	84 (31.00)	51.86 (10.36)	-2.556 [‡]	0.020 [*]
No	187 (69.00)	54.80 (8.85)		

*P<0.05, †P<0.01, ‡T = Statistic from a t-test analysis; §F = Statistic from an analysis of variance. CG: Complicated grief; SD: Standard deviation.

Contd...

majority (65.31%) had fecundity intentions. Among the participants with fecundity intentions ($n = 177$, 65.31%), the fecundity statuses were not pregnant (40.68%), currently pregnant (45.76%), and having another child (13.56%), respectively. The majority (69%) had never received psychological counseling after the earthquake.

Symptoms of complicated grief among the bereaved

As shown in Table 2, the mean score on ICG was 52.77 (SD = 10.00). The majority of the participants (79%) had symptoms of CG.

Complicated grief differences in different subgroups of participants' demographic characteristics and disaster-related variables

The univariate analysis showed there were significant differences in CG among different subgroups of participants' demographic characteristics and disaster-related variables, including gender, postdisaster health status, frequency of entertainment, type of loss, whether finding the remains of the deceased or not, fecundity status, and psychological counseling experience. Participants with female gender, poor health status, those never participating in entertainment, those who lost their children, those finding the remains of the deceased, those not pregnant, and those with no psychological counseling experience had higher level of CG [Table 1].

Multivariate linear regression analysis of complicated grief

Multivariate linear analysis was used to detect associated factors of CG, with CG as the dependent variable and significant variables from the univariate analysis as independent variables. Gender ($B = 0.246$, $P < 0.01$), loss of a child ($B = 0.160$, $P < 0.05$), having another child ($B = -0.254$, $P < 0.01$) and psychological counseling experience ($B = -0.151$, $P < 0.05$) were associated with CG. Forty-nine percent of the variance of CG was explained by these identified significant factors [Table 3].

Table 2: Score on ICG in bereaved individuals ($n = 271$)

Variables	Mean (SD)	Number (%)
Scores of complicated grief	52.77 (10.00)	271 (100)
Negative for symptoms of CG (≤ 25)		57 (21.0)
Positive for symptoms of CG (> 25)		214 (79.0)

SD: Standard deviation; ICG: Inventory of Complicated Grief.

Table 3: Multivariate analysis to identify predictors for CG ($n = 271$)

Variables	<i>B</i>	SE	<i>B</i> [*]	<i>t</i>	<i>P</i>
Gender	4.297	1.308	0.246	3.286	0.001*
Loss of a child	2.776	1.218	0.160	2.281	0.024*
Having another child	-6.258	1.911	-0.245	-3.275	0.001†
Psychological counseling experience	-2.954	1.341	-0.151	-2.203	0.029*

* $P < 0.05$, † $P < 0.01$. ^{*}*B*: Standardized coefficient. $R^2 = 48.7$. SE: Standard of error; CG: Complicated grief.

DISCUSSION

In the study, ICG was used to examine the symptoms of CG among disaster-bereaved individuals 18 months after the Wenchuan earthquake. Scores of more than 25 on ICG were regarded as having CG symptom.^[31] According to the criteria, approximately 79% of the bereaved individuals had symptoms of CG 18 months after the earthquake in our study, which was higher than the previous studies. For instance, the percentage of CG among disaster-bereaved individuals was 47.7% 2 years after the 2004 South-East Asian tsunami.^[9] In addition, the mean score of CG in this study was higher than other previous studies among bereaved individuals caused by illness and incidents.^[24,34] The severe symptoms of CG among the bereaved may be accounted for by the following factors. First, the devastating Wenchuan earthquake caused huge loss of property and lives. Unlike other scenarios where distress decreases over time, bereavement events have a huge impact on the psychological disorder and take a long process to recovery.^[3] In addition, different from other bereaved individuals caused by illness, the disaster bereaved suffered huge and multiple losses in a sudden without preparation, which might lead to higher level of mental distress. Moreover, the majority of the bereaved lost their children in this study. Victims who lost a child had a higher level of CG compared with other type of loss.^[35] As a result, the bereaved in our study had a high level of CG.

Female gender was associated with CG in this study. Female gender increases the risk for mental disorders.^[4] Our finding was consistent with the previous study, which showed that bereaved female individuals experienced a higher level of CG than the male bereaved.^[36] Females have lower self-efficacy compared with males when facing natural disasters.^[37] Individuals with low self-efficacy are not confident with their ability to deal with challenges, more likely to focus on the negative and to experience failures more easily. Hence, those with weak self-efficacy may develop emotional distress more readily. Meanwhile, our study was conducted in rural areas. The main task for females in rural areas is to take care of their family rather than working outside the home. Social isolation is associated with maladjustment after a sudden loss.^[38] Therefore, lack of social interaction among female bereaved in this study may increase the symptoms of CG. High symptom of CG is associated with hospitalization and impairment in health for female bereaved.^[36] As a result, more strategies specific to females who are bereaved should be taken to reduce the symptoms of CG, including organizing more activities in the community, offering support groups, and providing health education and coping skills training.

Our study found that the loss of a child was associated with CG. The findings were consistent with previous studies.^[5,7] The attachment to the deceased is of great importance for the bereaved.^[39] Close kinship increases the risk for CG after natural disasters.^[5,7] Those who lost a child are the most vulnerable group to develop CG.^[35] A study conducted on

301 bereaved individuals reported the causes of death and types of loss had a significant relationship to CG.^[40] Those who lost a child and those who lost a family member caused by natural disaster suffered the most.^[40] Children are the main source of hope for the whole family, especially in the context of “one child” policy in China. Sudden loss of a child is a devastating nightmare for the parents and the whole family.^[41] In addition, in Chinese traditional culture, one of the aims of raising a child is caring for the aging parents.^[42] Bereaved individuals who lost their child may feel they lost their hope and guarantee in their aged life, especially for those in the rural areas. As a result, the bereaved parents expressed a high level of CG.

Corresponding with the loss of a child, having another child was associated with CG. The majority of the deceased were adolescents and children in the Wenchuan earthquake.^[20] Under the affection of Confucianism, no heir is the largest Chinese filial piety. Individuals with no heirs perceive more stress in the context. As a result, bereaved parents who had another child experienced a lower level of CG than those not. The bereaved parents could perceive the hope, joy, and purpose from the birth of a baby to help them recover from the bereavement. In addition, a child is the link between the family and society.^[43] It is an important way of social interaction for bereaved parents to contract and communicate with the communities and other ties for the children’s growing up. These social interactions contributed to alleviate CG. As a result, the bereaved parents who had another child expressed lower CG. After the disaster, the central and local governments had made many targeted policies and strategies for the bereaved parents to ease their agony. For example, the bereaved parents were allowed to bear another child and received free fecundity service. Lots of bereaved parents benefited from those policies and services. In this study, more than half of the participants with fecundity intentions had another child or been pregnant within 18 months after the disaster. However, long-term relief mechanism should be strengthened to help bereaved parents to recover from the difficult losses. Strategies include providing long-term targeted policies, fecundity services, financial support, and endowment insurance.

Psychological counseling experience was associated with CG in this study. Sudden and violent deaths in natural disasters were followed by a tough bereavement course. Most of the bereaved individuals could recover from the difficult losses. However, some bereaved will suffer from mental disorders in the aftermath of the bereavement.^[44] Grief counseling is effective for the bereaved with symptoms of CG.^[45] In addition, treatment interventions such as cognitive-behavioral intervention, grief-specific treatment, and exposure techniques,^[46] are effective methods to reduce symptoms of CG.^[47] However, the majority of the bereaved in this study had not received professional counseling and aid after the disaster. CG symptom will not fade over time without professional treatment. As a result, more professional medical resources and supports should be

provided to alleviate symptoms of CG and to improve the health of the bereaved. Strategies include offering training to the medical staff in disaster areas for early assessments, establishing long-term follow-up system for the bereaved at high risks for CG, and providing the professional counseling and treatments for those with symptoms of CG.

The results were limited by some factors. First, a cross-sectional design study makes it difficult to identify the causal relationship among all the factors. As a result, a longitudinal study is recommended. Second, convenience sampling from only three of the hard-hit areas might have led to sample bias; therefore, the results should be interpreted with caution and a larger sample from multi-site are needed for further study. Third, although the demographic characteristics and disaster-related variables were accounted for in the analysis, some additional factors, such as social support, self-efficacy, coping style, and family relationship should be included in future studies.

In conclusion, despite those limitations, our study has provided multiple insights. This study identified factors associated with symptoms of CG among the disaster bereaved individuals after the Wenchuan earthquake. The results have unique implications for the relief work among the bereaved population in Wenchuan earthquake and other disasters. According to our findings, 18 months after Wenchuan earthquake, the symptoms of CG among the bereaved were higher than previous studies with bereaved individuals. Female gender, loss of a child, having another child, and the psychological counseling experience are associated with symptoms of CG. The results of the study also inform strategies suitable for the bereaved after Wenchuan earthquake, including early assessment for the bereaved at high risk for CG, targeted intervention programs for the bereaved with CG, long-term fecundity techniques services and endowment insurance specific for the bereaved parents, and support group for the female bereaved individuals.

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