

## Perceived Family Functioning and Depression in Bereaved Parents in China After the 2008 Sichuan Earthquake

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### ABSTRACT

This study examined perceived family functioning and depression in bereaved parents 18 months after the 2008 Sichuan earthquake. This was a cross-sectional study with 190 bereaved parents sampled using a multistage stratified sampling method. The instruments used in the study included Family APGAR Index and Hamilton Depression Rating Scale-17. The results indicated that the prevalence of family dysfunction was 59.5%. All the respondents experienced depression with 79.5% of the respondents reporting very severe depression. Being female, being at an advanced age, being divorced or widowed, being directly exposed to the death of their children, not having another baby after the earthquake, and poorer family functioning were significant predictors for more severe depression. Strategies can be designed in post-disaster recovery programs for bereaved parents at high risk for more severe depression, particularly for those with poorer family functioning.

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Natural disasters such as hurricanes, earthquakes and floods can occur rapidly leading to great loss of human lives and properties, and many victims may suffer from severe physical impairment and mental distress after disasters, such as insomnia, somatic symptoms, anxiety, depression and post-traumatic stress disorder (PTSD) (Kim, Plumb, Gredig, Rankin, & Taylor 2008; Van Kamp et al. 2006). For example, Mason, Andrews, and Upton (2010) found that the prevalence of PTSD, anxiety and depression among survivors after the floods in the UK were 27.9, 14.5 and 35.1%, respectively (Mason et al. 2010). Similarly, Papanikolaou, Adamis, Mellon, and Prodromitis (2011) suggested that survivors exposed to the wildfire disaster in Greece reported significantly higher scores on paranoia, somatization, hostility, anxiety, depression and phobic anxiety than those not exposed (Papanikolaou et al. 2011).

Depression is defined as a depressed mood and/or loss of interest or pleasure in life activities for at least 2 weeks accompanied by at least three to four (for a total of five or more) specific symptoms of significant unintentional weight loss or gain, insomnia or sleeping too much, fatigue or loss of energy, feelings of worthlessness or guilt,

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agitation or psychomotor retardation, suicide ideation, or difficulty in thinking, concentrating or making decision (American Psychiatric Association 2000). Depression is regarded as one of the most common psychological problems after disasters. For instance, approximately half of the survivors (49.6%) experienced depression 1 year after the Sichuan earthquake (Zhang, Shi, Wang, & Liu 2011). The prevalence of mild depression and severe depression in survivors 18 months following a massive flood in Korea were 53.0 and 17.0%, respectively (Heo et al. 2008). Four years following the Turkey earthquake, 11% of the survivors reported depressive symptoms (Kiliç et al. 2006). A review of relevant literature indicates that known predictors for depression in disaster survivors include such demographic characteristics as gender, age, educational level, marital status and employment status (Chen et al. 2007; Zhang et al. 2011); and such disaster-affected variables as damage to personal properties, being injured and feeling of fear during disasters, and relocation from pre-earthquake residence (Kiliç et al. 2006; Kristensen, Weisaeth, & Heir 2009). Meanwhile, less social support and poorer family coping styles have been identified as significant risk factors for depression (Lau, Yu, Zhang, Mak, Choi, & Lui 2010; Vigil & Geary 2008). In addition, many studies have explored the negative effects of depression on poor self-rated health and health-related quality of life after disasters (Jia, Tian, He, Liu, Jin, & Ding 2010; Kim et al. 2008; Ruggiero et al. 2009).

Family functioning reflects the extent to which a family operates as a unit to cope with stressors (Panganiban-Corales & Medina 2011). The Circumplex model of marital and family systems holds that family functioning includes family cohesion and family adaptability (Olson 1993). Family cohesion represents the emotional bonding among family members. Family adaptability reflects the ability of a family

system to change its leadership, relationship rules and role relationships in response to developmental changes or situational stressors (Olson 2000). Adaptive family functioning has been identified as a protective factor for various disaster-induced psychological problems in previous studies. For instance, it was reported that low family resilience was a significant risk factor for psychological distress in child survivors after the cyclone Larry in Australia (McDermott, Cobham, Berry, & Stallman 2010). Family conflict predicted levels of PTSD in adolescent survivors after a huge flood in Poland (Bokszczanin 2008). Positive family functioning reduced mothers' depression in Tsunami-affected families (Wickrama & Wickrama 2008).

Bereavement caused by disasters often result in long-term effects on psychopathological symptoms among disaster survivors (Norris, Friedman, Watson, Byrne, Diaz, & Kaniasty 2002). It was reported that 25.0% of bereaved survivors experienced major depression 2 years after the hurricane Tsunami (Kristensen et al., 2009). The prevalence of major depression in bereaved survivors after the 2008 Sichuan earthquake was 65.5% and loss of a child was the strongest risk factor for psychopathological symptoms (Chan et al. 2012). ABC-X model of family stress points out that whether families survive or fall into X (the crisis) when dealing with stressors depends on three factors, A (the event), B (the family's crisis-coping resources), and C (the family's evaluation of the event) (Hill 1958). Because bereavement caused by disasters is a traumatic experience, it is probable for disaster-affected families without sufficient crisis-coping resources (e.g., positive family functioning) to experience negative emotional outcomes. However, until now, no study has examined perceived family functioning and its relationship with depressive symptoms in bereaved parents after disasters.

The Sichuan earthquake, which occurred on May 12, 2008, was one of the most severe natural disasters in China with damaged regions exceeding 100,000 km<sup>2</sup> (Central People's Government of the People's Republic of China 2008). It was reported that 5335 children died or were missing in the disaster-affected regions (Sichuan Provincial People's Government 2009). A great number of parents lost their loved children in the catastrophic event, and bereavement may have generated more proximal secondary disaster risks, such as post-disaster family problems and psychological distress. According to one-child policy in China, a couple is allowed to have one child only (State Council of the People's Republic of China 1982). An entire family's fate hinges on the single child. Because a child is their only hope, to lose a child is to lose everything for Chinese parents. Therefore, death of a child brings horrific grief and intolerable cruelty for many of the bereaved parents, resulting in disruption of family structure and psychological disorder. However, to our knowledge, few studies have examined the prevalence of depression in bereaved parents and no study has analyzed the relationship between perceived family functioning and depression in bereaved parents after natural disasters.

Therefore, the aims of this study were as follows: (1) to examine perceived family functioning and depression in bereaved parents 18 months after the 2008 Sichuan earthquake; (2) to analyze the relationship between perceived family functioning and depression; (3) and to explore the effects of demographic characteristics, disaster-affected variables and perceived family functioning on depression, with a focus on the effect of perceived family functioning because it can be effectively modified in the future.

## METHODS

Ethical approval was obtained from the Human Subjects Ethics Sub-committee of Sichuan University. Prior to the investigation, informed consent was obtained from each participant. They were assured of anonymity, confidentiality and their rights to withdraw from the study at any time.

## Participants

This was a cross-sectional study employing a multistage stratified sampling method. First, two cities were randomly selected from 10 hardest-hit cities in the 2008 Sichuan earthquake (Ministry of Civil Affairs of the People's Republic of China 2009). Second, two villages were randomly selected from each of the two cities. The randomization mentioned above was accomplished by a computer random number generator according to the cities and villages' names which were arranged in alphabetical order independently. Third, all the households where a biological child died in the earthquake were chosen from the four selected villages. Finally, one of the biological parents (father or mother) in bereaved families was randomly selected by flipping a coin done by the investigator (Figure 1). If the bereaved parents were single, divorced or widowed, they were directly included in the sample. The inclusion criteria were: (1) loss of a biological child in this earthquake; and (2) being willing to participate in the study. Participants were excluded if they were deaf, blind or mute, or suffered from cognitive impairment. The Mini-Mental State Examination (MMSE) was used to evaluate the cognitive functioning of the potential participants (Folstein, Folstein, & McHugh 1975). According to the results of the Chinese MMSE, three different cut-off points are used depending on the respondent's educational level with a score >17 (illiteracy), >20 (primary school), and >24 (junior high school or above) indicating no cognitive impairment (Zhang et al. 1990). Potential participants who suffered from cognitive impairment were excluded based on their MMSE scores. As a result, 201 potential participants participated in the study and a total of 11 potential participants (6 bereaved fathers and 5 bereaved mothers) were

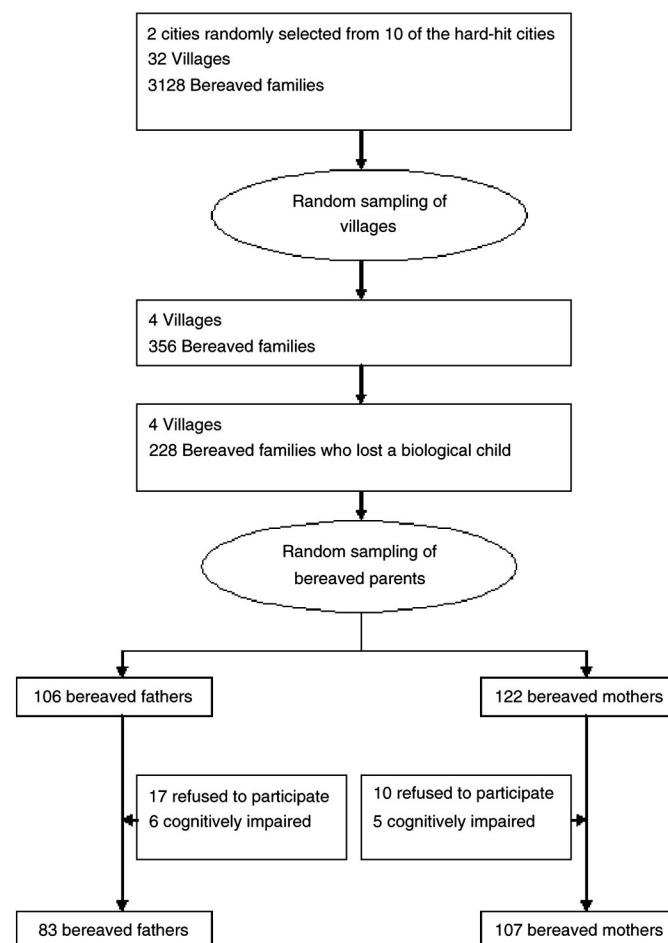


Fig 1. Sample procedure.

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