

# Effect of having a subsequent child on the mental health of women who lost a child in the 2008 Sichuan earthquake: a cross-sectional study

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**Objective** To assess whether having a subsequent child had an effect on the mental health of Chinese mothers who lost a child during an earthquake.

**Methods** A cross-sectional survey of bereaved mothers was conducted 30 to 34 months after the 2008 Sichuan earthquake using individual structured interviews to assess sociodemographic characteristics, post-disaster experiences and mental health. The interviews incorporated standardized psychometric measures of anxiety, depression, post-traumatic stress disorder (PTSD) and complicated grief (CG). Social support was also assessed. An adjusted model taking potential confounders into account was used to explore any association between psychological symptoms and the birth of a subsequent child.

**Findings** The prevalence of psychological symptoms was higher in mothers who did not have a child after losing the first one. In an adjusted model, symptoms of anxiety (odds ratio, OR: 3.37; 95% confidence interval, CI: 1.51–7.50), depression (OR: 9.47; 95% CI: 2.58–34.80), PTSD (OR: 5.11; 95% CI: 2.31–11.34) and CG (OR: 10.73; 95% CI: 1.88–61.39) were significantly higher among the 116 women without a subsequent child than among the 110 mothers who had another child after bereavement. More than two thirds of the mothers with new infants had clinically important psychological symptoms.

**Conclusion** Women who have lost an only child in a natural disaster are especially vulnerable to long-term psychological problems, especially if they have reached an age when conception is difficult. Research should focus on developing and evaluating interventions designed to provide women with psychosocial support and reproductive health services.

Abstracts in **عربي**, **中文**, **Français**, **Русский** and **Español** at the end of each article.

## Introduction

In most natural disasters, one third to one half of the casualties are children.<sup>1</sup> Direct exposure to natural disasters and the loss of a child are extremely stressful life events with long-term health consequences. Among these, increased vulnerability to psychological problems such as depression, anxiety, post-traumatic stress disorder (PTSD) and complicated grief (CG) are specially common.<sup>2</sup> Parents who have lost young or adolescent children are at higher risk for mental disorders than those who have lost adult children.<sup>3,4</sup> Furthermore, bereaved mothers appear to be more vulnerable to psychological illness than bereaved fathers.<sup>5</sup>

Several factors influencing emotional recovery from the loss of a child after a disaster have been identified. First, professional support, including a structured psychological intervention, appears to be effective in reducing psychological morbidity<sup>2</sup> and can improve physical and psychological health and social adjustment after traumatic experiences.<sup>6–8</sup> Second, social support from spouses or one's parents, friends and colleagues is also linked to better post-disaster mental health status among bereaved parents.<sup>2,6</sup> Third, whether or not parents viewed their child's body appears to influence recovery. According to the limited amount of available research, parents who viewed their children's bodies recovered better than those who did not on account of the loss or disfigurement of the body.<sup>5,7,9</sup> Finally, parents who lost a child but who have

at least one surviving child have lower mortality rates<sup>10</sup> and a lower prevalence of psychiatric illness than those who have lost an only child.<sup>11–13</sup>

Some experts have postulated that having a new baby might favourably influence parents' psychological well-being after losing a child. In some cases, having another child has been positively associated with decreased rates of depression in bereaved parents;<sup>14</sup> in others this has not been the case. In an 18-year study of parents who had lost one of their children, no significant association was found between having a subsequent child and recovery from grief or depression.<sup>15</sup> There are currently no systematic population-based studies investigating the psychological effect of having a subsequent baby after losing a child in a natural disaster.

The aim of this study was to compare the psychological state of women who had and had not given birth to a baby after losing a child in the 2008 Sichuan earthquake in China. Most of the children who died were only children, since China has a one-child policy.<sup>16</sup> Three months after the earthquake, the National Health and Family Planning Commission announced the establishment of reproductive health services to help bereaved families to have a subsequent child. The services included free psychological counselling, fertility assessment, cessation of long-term contraception, recanalization surgery, treatment of reproductive tract infections and treatment of infertility with assisted reproductive technologies.<sup>17</sup>

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## Methods

A community-based cross-sectional survey was conducted in Dujiangyan, China, 29 to 34 months after the 2008 Sichuan earthquake. Data were collected from October 2010 to March 2011. Dujiangyan is a city in the province of Sichuan. It is situated 50 kilometres south-west of Wenchuan, the epicentre of the earthquake, which killed nearly 1000 children in Dujiangyan. The project was conducted in collaboration with the Dujiangyan Family Planning and Human Development Bureau (hereafter the Bureau), which provided a list of women who had lost a child in the earthquake in Dujiangyan.

### Conceptual model and design

Since the determinants of psychological health are known to be multifactorial, we tested a conceptual model that took into account the potential confounding effects of age, educational level, employment status, psychological treatment, social support and whether or not the body of the deceased child had been viewed. (Fig. 1).

### Participants and sample

Adult women of reproductive age living in Dujiangyan who had been exposed directly to the earthquake and had lost a child 18 years of age or younger in the 2008 Sichuan earthquake were eligible for participation. Women were excluded if they were unable to read or speak Chinese and if their new child was under 6 months of age. To detect a difference of 20% between groups at a significance level of 0.05 and a power of 0.80 (two-sided statistical significance test), at least 93 participants were required in each group (a total sample of 186 women).

### Procedure

The Bureau sent invitation letters with response forms to each woman meeting the inclusion criteria. On the response form, women were invited to endorse one of three choices: (i) interest in participation; (ii) no interest in participation; (iii) a request for further information about the study. Women who asked for more information about the study were contacted by the Bureau. Women who had not returned the response form three weeks after it was mailed were con-

tacted by telephone once to ask whether they had received the letter or whether they wanted more information.

Data were collected during individual structured face-to-face interviews by a native Chinese-speaking female medical graduate. Interviews lasted up to 90 minutes, either at the research office or the participant's home. No formal psychiatric diagnoses were made, since the interviewer was not a trained mental health clinician.

### Data sources

The structured interview schedule included study-specific questions and standardized measures of psychological well-being in three sections: (i) sociodemographic information (age, education, employment and marital status); (ii) post-disaster experiences (whether or not the child's body had been viewed, whether or not a psychological intervention or social support had been received); and (iii) mental health (anxiety, depression, PTSD and CG).

Five widely used standardized scales were incorporated, including four for the mental health outcomes and one appraising social support (Table 1).<sup>18,20,22,24,27</sup> All scales, translated from English into Chinese, have been used in China and have shown high internal consistency (Table 1).<sup>19,21,23,25,26,28</sup>

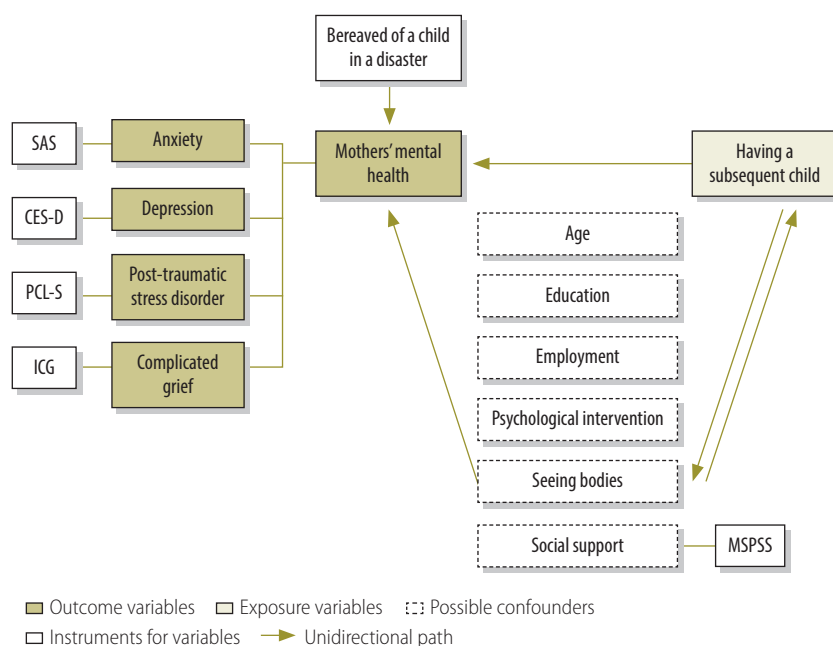
### Data management and analysis

All data analyses were conducted in Stata 11.0 for Mac (StataCorp. LP, College Station, United States of America). Descriptive statistics comparing sociodemographic characteristics, post-disaster experiences and social and professional supports for the groups with and without a subsequent child were calculated and statistically significant differences between the two groups were estimated by using the  $\chi^2$  test. Logistic regression was used to investigate the association between the presence or absence of a subsequent child (with the presence of a subsequent child as the reference category) and mental health. Confounder selection was based on our evidence-informed, theoretical conceptual model (Fig. 1).

### Ethics

Permission to conduct the study was obtained from the University of Melbourne's Human Research Ethics Committee (HREC No.1033862) and the

Fig. 1. Model used to assess the relationship between the mental health of bereaved mothers and having had a subsequent child



CES-D, Centre for Epidemiological Studies Depression Scale; ICG, Inventory of Complicated Grief; MSPSS, Multidimensional Scale of Perceived Social Support; PCL-S, PTSD Checklist-Specific; PTSD, post-traumatic stress disorder; SAS, Zung's Self-Rating Anxiety Scale.

Table 1. Instruments used to assess bereaved mothers' mental health after the 2008 Sichuan earthquake, China, October 2010 to March 2011

Instrument	Condition/ factor	No. of items	Likert-type scores <sup>a</sup>	Score range	Score range	Chinese version
Zung's Self-Rating Anxiety Scale <sup>18</sup>	Anxiety	20	1 – A little of the time 2 – Some of the time 3 – A good part of the time 4 – Most of the time	20–80	20–44: normal 45–59: mild to moderate 60–74: marked to severe 75–80: extreme <sup>18</sup>	Cronbach's $\alpha$ : 0.93 Test-retest correlation: 0.81 Cut-off point: 45 <sup>19</sup>
Centre for Epidemiological Studies Depression Scale <sup>20</sup>	Depression	20	0 – Rarely or none of the time 1 – Some or a little of the time 2 – Occasionally or a moderate amount of the time 3 – All of the time	0–60	0–15: normal 16–26: mild depression 27–60: major depression <sup>20</sup>	Cronbach's $\alpha$ : 0.90 Test-retest correlation: 0.49 Cut-off point: 16 <sup>21</sup>
PTSD Checklist-Specific <sup>22</sup>	PTSD	17	1 – Not at all 2 – A little bit 3 – Moderately 4 – Quite a bit 5 – Extremely	17–85	< 44: negative for PTSD ≥ 44: positive for PTSD <sup>22</sup>	Cronbach's $\alpha$ : 0.82 Test-retest correlation: 0.71 Cut-off point: 44 <sup>23</sup>
Inventory of Complicated Grief <sup>24</sup>	CG	19	0 – Never 1 – Rarely 2 – Sometimes 3 – Often 4 – Always	0–76	< 25: negative for CG ≥ 25: positive for CG <sup>24</sup>	Modified in the setting of China. Literature has demonstrated a good validity of the Chinese version Cut-off point: 25 <sup>25,26</sup>
Multidimensional Scale of Perceived Social Support; <sup>27</sup> Questions regarding attitudes and behaviours that people reveal in their close relationships	Social support	12	1 – Very strongly disagree 2 – Strongly disagree 3 – Mildly disagree 4 – Neutral 5 – Mildly agree 6 – Strongly agree 7 – Very strongly agree	12–84	Calculating total score three subscales: family, friends and intimate partners <sup>27</sup>	Cronbach's $\alpha$ : 0.89 Cronbach's $\alpha$ for friend subscale: 0.94 Cronbach's $\alpha$ for family subscale: 0.86 <sup>28</sup>

CG, complicated grief; PTSD, post-traumatic stress disorder.

<sup>a</sup> Wording as it appears in the protocols.

Human Research Ethics Committee of the Chengdu Fourth People's Hospital (Sichuan, China).

## Results

Overall, 509 (81.4%) of the 625 eligible women returned the response forms. Of these women, 415 agreed to participate and 94 refused. In total, 18 women (12 with a subsequent child) were not able to complete the interviews. Four chose to complete the interview in two or three stages but were too busy to return to finish it; five found it too difficult to answer the questions in the mental health section; nine could not answer questions about the quality of support because their husband or another relative remained in the room during the interview. In total, 110 bereaved women with a subsequent child and 116 without a subsequent child provided complete data (Fig. 2).

Fig. 2. Recruitment of bereaved mothers after the 2008 Sichuan earthquake and response rates, China, October 2010 to March 2011

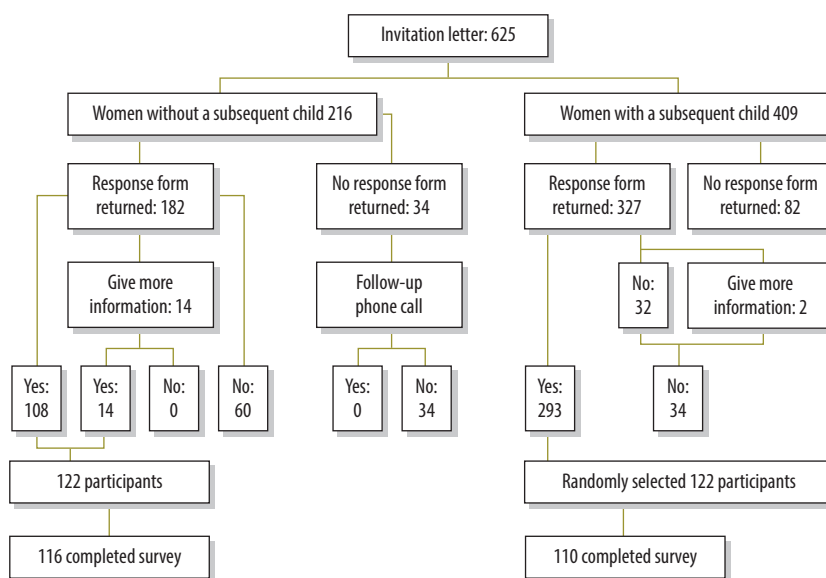


Table 2. **Sociodemographic characteristics and post-disaster experiences in bereaved mothers who did or did not have another child after the 2008 Sichuan earthquake, China, October 2010 to March 2011**

Variables	Value <sup>a</sup> (%)		P
	Women without a subsequent child (n = 116)	Women with a subsequent child (n = 110)	
<b>Age (years)</b>	39.42 (27–46)	40.25 (33–45)	< 0.001
<b>Education</b>			0.192
No schooling	7 (6.03)	2 (1.53)	
Primary education	39 (33.62)	42 (38.53)	
Secondary education	67 (57.76)	62 (56.88)	
Higher education	3 (2.59)	4 (3.06)	
<b>Employment</b>			0.216
Unpaid work – household	97 (83.62)	99 (90.00)	
Unpaid work – voluntary	5 (4.31)	5 (4.55)	
Paid work	14 (12.07)	6 (5.45)	
<b>Marital status</b>			0.453
Married	106 (91.38)	102 (92.73)	
Separated	1 (0.86)	0	
Divorced	1 (0.86)	0	
Widowed	1 (0.86)	0	
Cohabiting	5 (4.31)	3 (2.73)	
Remarried	2 (1.72)	5 (4.55)	
<b>Residential location</b>			0.288
Dujiangyan (> 10 years)	115 (99.14)	107 (97.27)	
Other places	1 (0.86)	3 (2.73)	
<b>Saw their children's bodies</b>			0.091
Yes	104 (89.66)	90 (81.82)	
No	12 (10.34)	20 (18.18)	
<b>Received psychological intervention since the earthquake</b>			< 0.001
Yes	59 (50.86)	31 (28.18)	
No	57 (49.14)	79 (71.82)	

<sup>a</sup> All values in the table represent the number and percentage of women unless otherwise indicated.

Table 3. **Social support received by bereaved mothers who did or did not have another child after the 2008 Sichuan earthquake, China, October 2010 to March 2011**

Instrument/subscale	Mean score (95% CI)	
	Women without a subsequent child (n = 116)	Women with a subsequent child (n = 110)
<b>MSPSS<sup>27</sup></b>		
Support from family members	17.17 (16.12–18.23)	19.44 (16.88–22.01)
Support from friends	16.78 (15.71–17.84)	19.04 (16.45–21.64)
Support from intimate partners	16.28 (15.18–17.39)	19.55 (16.86–22.25)
<b>Total score</b>	<b>50.23 (47.12–53.34)</b>	<b>58.04 (50.48–65.61)</b>

CI, confidence interval; MSPSS, Multidimensional Scale of Perceived Social Support.

### Sociodemographic characteristics

Most participants were married, performed unpaid household or voluntary

work and had lived in Dujiangyan for at least 10 years. All except one woman had lost an only child. Except for age, the sociodemographic characteristics of the

two groups did not differ significantly (Table 2). Although the mean difference was only one year, women without a subsequent child were significantly older than those with a subsequent child.

### Post-disaster experiences

No significant difference was found between the two groups of women in terms of having viewed or not viewed the bodies of their deceased children (Table 2). However, the two groups did differ significantly in both the professional and the social support they had received since the earthquake. A substantially higher proportion of women without a subsequent child had received a psychological intervention (Table 2), but a significantly lower proportion had received social support from family members and friends (Table 3).

### Mental health status

Overall, more than 80% of the participants had clinically significant symptoms of at least one psychological condition. Depression, PTSD and CG were more common than anxiety. Women who had not given birth to a subsequent child were consistently found to have higher symptom scores and higher odds of being symptomatic than those who had given birth to another child. A substantially higher proportion of women without a subsequent child had clinically significant symptoms of all four of the mental conditions examined in this paper than those with another child. In particular, over 90% of women without a subsequent child had clinically significant symptoms of depression or CG (Table 4).

Table 5 shows the association between mental health and the presence or absence of a subsequent child in unadjusted and adjusted models. Mothers who had not given birth to a new child had significantly higher odds of having psychological symptoms than those who had. The largest difference between the two groups was found with respect to CG symptoms. Women who did not have a subsequent child had more than 10 times the odds of having such symptoms than women who had given birth to another child ( $P = 0.008$ ).

### Discussion

To our knowledge, this is the first population-based systematic investigation of the effect of having or not having



Table 4. **Mental health status among mothers who lost a child after the 2008 Sichuan earthquake and who did or did not have a subsequent child, China, October 2010 to March 2011**

Symptom/instrument	Score range	No. (%) of women without a subsequent child (n = 116)	No. (%) of women with a subsequent child (n = 110)	P
<b>Anxiety [SAS]<sup>18</sup></b>				0.002
No symptoms	< 45	66 (56.90)	84 (76.36)	
Symptoms	≥ 45	50 (43.10)	26 (23.64)	
Mild to moderate	45 ≤ x < 60	42 (36.21)	19 (17.27)	
Marked to severe	60 ≤ x < 75	6 (5.17)	7 (6.36)	
Extreme	≥ 75	2 (1.72)	0	
<b>Depression [CES-D]<sup>20</sup></b>				< 0.001
No symptoms	< 16	7 (6.03)	33 (30.00)	
Symptoms	≥ 16	109 (93.97)	77 (70.00)	
Mild	16 ≤ x < 27	27 (23.28)	36 (32.73)	< 0.001
Major	≥ 27	82 (70.69)	41 (37.27)	
<b>PTSD [PCL-S]<sup>22</sup></b>				
No symptoms	< 44	26 (22.41)	68 (61.82)	
Symptoms	≥ 44	90 (77.59)	42 (38.18)	
<b>CG [ICG]<sup>24</sup></b>				0.001
No symptoms	≤ 25	5 (4.31)	20 (18.18)	
Symptoms	> 25	111 (95.69)	90 (81.82)	

CES-D, Centre for Epidemiological Studies Depression Scale; CG, complicated grief; ICG, Inventory of Complicated Grief; PCL-S, PTSD Checklist-Specific; PTSD, post-traumatic stress disorder; SAS, Zung's Self-Rating Anxiety Scale.

Table 5. **Association between mental health and not having had a subsequent child after losing a child in the 2008 Sichuan earthquake, China, October 2010 to March 2011**

Psychological condition	OR <sup>a</sup> (95% CI)	
	Unadjusted model	Adjusted model <sup>b</sup>
Anxiety	2.45 (1.38–4.34)	3.37 (1.51–7.50)
Depression	6.67 (2.81–15.87)	9.47 (2.58–34.80)
PTSD	5.60 (3.13–10.03)	5.11 (2.31–11.34)
CG	4.93 (1.78–13.66)	10.73 (1.88–61.39)

CG, complicated grief; CI, confidence interval; OR, odds ratio; PTSD, post-traumatic stress disorder.

<sup>a</sup> The odds of having the condition in women without a subsequent child versus the odds in women with a subsequent child.

<sup>b</sup> Adjusted for age, employment, education, professional support, social support and having viewed or not viewed the deceased child's body.

a subsequent child on the long-term psychological health of women who have lost a child in a natural disaster. By exploring the effects of confounding factors identified in previous research<sup>2</sup> as potential determinants of the long-term mental health of women in this situation, we were able to estimate the association between having a subsequent child after losing one in a natural disaster and recovery after bereavement. These data suggest that, for women who have lost their only child, the birth of a subsequent child is associated with

milder psychological morbidity, especially depression and prolonged grief disorder.

We acknowledge that this study has limitations. First, this was a cross-sectional survey and cause and effect associations cannot be inferred from the findings. Therefore, we cannot conclude that having another child after losing one in a disaster will help women to recover psychologically. Second, we were unable to control for other types of traumatic events caused by the earthquake, such as losing one's parents, house or

livelihood, so separating their effects on mental health from those of the loss of a child was not possible. However, the modest resources we had for this project led us to focus on comparing mental health status in women who had and had not given birth to a new child after the earthquake. Finally, all the psychometric instruments we used are based on self-reporting and yield scores that are indicative of clinically significant symptoms but are not diagnostic. Although these instruments have been widely used in China<sup>29</sup>, none has been formally validated against a gold standard and no local sensitivity and specificity data have been generated. All these three factors could have resulted in an over or underestimation of the association between having a subsequent child and women's mental health. However, since ours was a systematically recruited population-based sample, we have no reason to believe that the prevalence of these conditions was higher in the sample than in the general population. In fact, a previous study has shown that seven to eight months after the 2008 Sichuan earthquake, 80% of bereaved parents had clinically significant symptoms of PTSD and 81.8% had symptoms of depression.<sup>3</sup> These data are consistent with our findings.

Curiously, women without a subsequent child had more severe psychological problems, on average, than women who went on to have another child, even though more women in the former group had received psychological treatment. This finding is in contrast to the results of a study by Li et al., whereby bereaved parents who had been exposed to professional psychological intervention were found to have better mental health status than those who had not.<sup>12</sup> One possible explanation lies in the type of intervention received, which we were unable to ascertain. It may have been ineffective because of its content or because it was not long enough. However, it is also possible that women who longed to conceive another child were too distressed over this to find relief in mental health interventions. The Chinese central government changed the family planning policy immediately after the earthquake, particularly for women who had lost a child, and provided free comprehensive reproductive health services to couples wanting to conceive. This departure from the one-child policy appears to have benefited many

couples but may have failed to meet the reproductive needs of women whose age made it difficult to conceive, even with assisted reproductive technologies. Furthermore, in China bloodlines are centrally important when it comes to maintaining cultural traditions. Families without a child are viewed as incomplete and unfortunate. In China's male-dominated culture, women are often blamed for the couple's infertility. Because all but one of the deceased children in this study were only children, their mothers may have felt pressured by their families to give birth to another child. Women who did not have another child may have experienced greater pressure than other women.

This study suggests that women who have decreased fertility by virtue of their age and who have lost their only child in a natural disaster are especially vulnerable to long-term psychological problems. It is clear that much more

evidence is required in this relatively under-researched field. Future research should focus on the development and systematic evaluation of interventions designed to assist families in the circumstances described. Social and family support is clearly important to women's post-disaster recovery.<sup>2</sup> The data presented here indicate that communities need guidance on how to strengthen social support activities, in addition to mental health care.

Although women who had another child had lower odds of experiencing psychological symptoms, at least two out of three such women had clinically important symptoms of depression and CG. Thus, most of the children born to women in this category were being cared for by mothers with poor mental health. Research on the development of children born in these circumstances is needed. The data suggest that in bereaved women who are pregnant or

have recently given birth to another child, perinatal mental health care is essential to reduce psychological morbidity, strengthen the mother-infant relationship and facilitate optimal infant development. ■

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**Competing interests:** None declared.

#### ملخص

تأثير ولادة طفل في وقت لاحق على الصحة النفسية للنساء اللاتي فقدن طفلاً في زلزال سيشوان عام 2008: دراسة متعددة القطاعات

من 1.51 إلى 7.50) والاكئاب (نسبة الاحتمال: 9.47؛ فاصل الثقة 95٪: من 2.58 إلى 34.80) واضطراب الإجهاد اللاحق للصدمات (نسبة الاحتمال: 5.11؛ فاصل الثقة 95٪: من 2.31 إلى 11.34) والحزن المعقد (نسبة الاحتمال: 10.73؛ فاصل الثقة 95٪: من 1.88 إلى 61.39) أعلى بدرجة كبيرة فيما بين النساء البالغ عددهن 116 سيدة اللاتي لم يلدن طفلاً في وقت لاحق عنه فيما بين الأمهات اللاتي ولدن طفلاً آخر بعد فقدان الطفل الأول. وقد أصيب ما يزيد عن ثلثي الأمهات اللاتي ولدن أطفالاً جديداً بأعراض نفسية مهمة سريريا.

الاستنتاج النساء اللاتي فقدن طفلهن الوحيد في كارثة طبيعية عرضة بالأخص للإصابة بمشكلات نفسية طويلة الأجل، لاسيما عند بلوغهن سنًا يصعب فيه الحمل. وينبغي أن تركز الأبحاث على وضع التدخلات، المصممة لتقديم الدعم النفسي والخدمات الإنجابية إلى النساء، وتقييمها.

الغرض تقييم ما إذا كان لولادة طفل في وقت لاحق تأثير على الصحة النفسية للأمهات الصينيات اللاتي فقدن طفلاً خلال زلزال.

الطريقة تم إجراء مسح متعدد القطاعات للأمهات التكاالي بعد زلزال سيشوان 2008 بفترة من 30 إلى 34 شهراً باستخدام مقابلات منظمة فردية لتقييم الخصائص الاجتماعية والديمغرافية وخبرات ما بعد الكارثة والصحة النفسية. وتضمنت المقابلات القياسات النفسية الموحدة للقلق والاكئاب واضطراب الإجهاد اللاحق للصدمات (PTSD) والحزن المعقد (CG). كما تم كذلك تقييم الدعم الاجتماعي. وتم استخدام نموذج معدل مع الأخذ في الحسبان العوامل المؤثرة المحتملة لاستكشاف أي ارتباط بين الأعراض النفسية وولادة طفل في وقت لاحق.

النتائج كان معدل انتشار الأعراض النفسية أعلى لدى الأمهات اللاتي لم تلدن طفلاً بعد فقدان الطفل الأول. وفي نموذج معدل، كانت أعراض القلق (نسبة الاحتمال: 3.37؛ فاصل الثقة 95٪:

#### 摘要

再生育对 2008 年汶川地震中丧子妇女心理健康的影响：横断面研究

目的 评估再生育孩子对地震中失去孩子的中国母亲是否产生心理健康的影响。

方法 在 2008 年四川地震之后 30 至 34 个月使用单独结构化访谈对失去孩子的母亲进行横断面调查，评估社会人口特征、灾后体验和心理健康。面访结合了焦虑、抑郁、创伤后应激障碍 (PTSD) 和复杂性悲伤 (CG) 的标准化心理测量量度。对社会支持也进行了评估。使用考虑潜在混杂因素的调整后模型探讨心理症状和

再生育之间的任何关联。

结果 在失去第一个孩子但是没有再生育的母亲中，心理症状发病率更高。在调整模型中，116 名没有再生育的妇女焦虑 (优势比, OR : 3.37;95% 置信区间, CI : 1.51 - 7.50)、抑郁 (OR : 9.47;95% CI : 2.58 - 34.80)、PTSD (OR : 5.11;95% CI : 2.31 - 11.34) 和 CG (OR : 10.73;95% CI : 1.88 - 61.39) 的症状显著高于失去孩子之后又生育的 110 名妇女。超过三分之二新生育宝宝

的妈妈具有临床上重要的心理症状。

**结论** 在自然灾害中失去独生子女的妇女尤其容易发生长期的心理问题，特别是已经达到难以再生育年龄的

女性。研究应关注于制定和评估专门设计的干预措施，为女性提供心理支持和生育服务。

## Résumé

### Effet de la naissance d'un nouvel enfant sur la santé mentale des femmes qui ont perdu un enfant lors du tremblement de terre au Sichuan de 2008: une étude transversale.

**Objectif** Évaluer si la naissance d'un nouvel enfant a eu un effet sur la santé mentale des mères chinoises qui ont perdu un enfant pendant un tremblement de terre.

**Méthodes** Une étude transversale sur des mères endeuillées a été menée 30 à 34 mois après le tremblement de terre au Sichuan de 2008, en faisant appel à des entretiens structurés individuels permettant d'évaluer les caractéristiques sociodémographiques, ainsi que les expériences et la santé mentale après la catastrophe. Ces entretiens comprenaient des mesures psychométriques normalisées de l'anxiété, de la dépression, des troubles de stress post-traumatique (TSPT) et du deuil compliqué (DC). Le soutien social a également été évalué. Un modèle ajusté tenant compte des facteurs perturbateurs potentiels a été utilisé pour étudier toute association entre les symptômes psychologiques et la naissance d'un nouvel enfant.

**Résultats** La prévalence des symptômes psychologiques était supérieure chez les mères qui n'ont pas eu d'autre enfant après avoir

perdu le premier. Dans un modèle ajusté, les symptômes d'anxiété (rapport des cotes, RC: 3,37; intervalle de confiance, IC de 95%: 1,51–7,50), de dépression (RC: 9,47; IC de 95%: 2,58–34,80), de TSPT (RC: 5,11; IC de 95%: 2,31–11,34) et de DC (RC: 10,73; IC de 95%: 1,88–61,39) étaient significativement plus élevés chez les 116 femmes qui n'ont pas eu un autre enfant que chez les 110 mères qui en ont eu un autre après le décès du premier. Plus des deux tiers des mères qui ont eu un nouvel enfant présentaient des symptômes psychologiques cliniquement importants.

**Conclusion** Les femmes qui ont perdu leur enfant unique dans une catastrophe naturelle sont particulièrement vulnérables aux problèmes psychologiques à long terme, surtout si elles ont atteint un âge où il est difficile de concevoir. La recherche devrait se concentrer sur le développement et l'évaluation des interventions destinées à apporter aux femmes un soutien psychosocial et des services de santé génésique.

## Резюме

### Влияние рождения последующего ребенка на психическое здоровье женщин, потерявших ребенка во время землетрясения в провинции Сычуань в 2008 году: перекрестное исследование

**Цель** Определить, оказало ли влияние рождение последующего ребенка на психическое здоровье китайских матерей, потерявших ребенка во время землетрясения.

**Методы** Для оценки социально-демографических характеристик, состояния и психического здоровья женщин, потерявших ребенка в ходе стихийного бедствия, было проведено перекрестное исследование этих женщин на основе индивидуального систематизированного опроса по истечении 30–34 месяцев со дня землетрясения в провинции Сычуань в 2008 г. Опрос включал в себя стандартные психометрические характеристики для оценки уровня тревоги, депрессии, посттравматического стрессового расстройства (ПТСР) и осложненного горя (ОГ). Также оценивалась социальная поддержка. Для изучения связей между психологическими симптомами и рождением последующего ребенка использовалась скорректированная модель, учитывающая возможные дополнительные факторы.

**Результаты** Распространенность психологических симптомов была выше у матерей, которые не завели второго ребенка

после потери первого. В скорректированной модели симптомы тревоги (отношение рисков, ОР: 3,37; 95% доверительный интервал, ДИ: 1,51–7,50), депрессия (ОР: 9,47; 95% ДИ: 2,58–34,80), ПТСР (ОР: 5,11; 95% ДИ: 2,31–11,34) и ОГ (ОР: 10,73; 95% ДИ: 1,88–61,39) были значительно выше у 116 женщин, не родивших последующего ребенка, чем у 110 матерей, которые завели после утраты еще одного ребенка. Более чем у двух третей матерей, родивших последующего ребенка, имелись клинически важные психологические симптомы.

**Вывод** Женщины, потерявшие единственного ребенка в результате стихийного бедствия, особенно подвержены долговременным психологическим проблемам, особенно если они достигли возраста, когда зачатие становится проблематичным. Исследования должны быть сосредоточены на разработке и оценке мер, направленных на предоставление женщинам психологической поддержки и услуг по охране репродуктивного здоровья.

## Resumen

### El efecto de tener un hijo posterior para la salud mental de las mujeres que perdieron a un hijo en el terremoto de Sichuan en el año 2008: un estudio transversal

**Objetivo** Evaluar si tener un hijo posterior tuvo algún efecto en la salud mental de las madres chinas que perdieron a un hijo durante el terremoto.

**Métodos** Se llevó a cabo un estudio transversal de madres en duelo entre 30 y 34 meses después del terremoto de Sichuan del año 2008, para lo que se realizaron entrevistas estructuradas de carácter individual con el fin de evaluar sus características sociodemográficas, sus experiencias tras el desastre y su salud mental. Las entrevistas incluyeron la medición

psicométrica estandarizada de la ansiedad, la depresión, el trastorno de estrés postraumático (TEPT) y el duelo complicado, y también se evaluó el apoyo social. Se empleó un modelo ajustado que tomaba en consideración posibles factores para examinar cualquier relación entre los síntomas psicológicos y el nacimiento del siguiente hijo.

**Resultados** La prevalencia de los síntomas psicológicos fue mayor en las madres que no tuvieron otro hijo tras perder al primero. En un modelo ajustado, los síntomas de ansiedad (cociente de posibilidades, OR: 3,37;

intervalo de confianza del 95%, IC: 1,51–7,50), depresión (OR: 9,47; IC del 95%: 2,58–34,80), TEPT (OR: 5,11; IC del 95%: 2,31–11,34) y duelo complicado (OR: 10,73; IC del 95%: 1,88–61,39) fueron notablemente superiores entre las 116 mujeres sin un hijo posterior que entre las 110 mujeres que habían tenido otro hijo tras el duelo. Más de dos terceras partes de las madres con bebés recientes presentaban síntomas psicológicos clínicamente relevantes.

**Conclusión** Las mujeres que han perdido a un hijo único en un desastre natural son especialmente vulnerables a los problemas psicológicos a largo plazo, en particular cuando han alcanzado una edad en la que es difícil concebir de nuevo. La investigación debería centrarse en el desarrollo y la evaluación de intervenciones diseñadas para proporcionar a las mujeres apoyo psicológico y servicios de reproducción.

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