



# 行政院國家科學委員會專題研究計畫成果報告

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## 一、中文摘要

台灣地區於民國八十八年九月二十一日發生芮氏規模七點三級的強烈地震(921大地震)，此次921大地震以台中縣、南投縣全縣受創甚深，民眾生命、身體及財產蒙受重大損失。地震是本世紀以來常見的最嚴重的天災，它的影響是長遠的。地震所產生的心理問題常見的有焦慮、失眠、作惡夢、解離症狀、創傷後壓力症狀群(PTSD)及較多的身體症狀等。

本研究研究對象來自南投縣損失相當嚴重的兩個村，對18歲以上之成人人口隨機抽樣出300人為本研究之最終樣本。測驗工具包括：基本資料及其他多種測驗工具。

本研究之目的為：1. 探討921地震一年後嚴重災區民眾之精神疾病，尤其是PTSD及PTSS(subthreshold of PTSD)之盛行率。2. 探討罹患這些精神疾病之危險因子(risk factors)。3. 探討與PTSD合併(comorbidity)存在之精神疾病類型及其百分比。4. 探討地震災民之失能(disability)、社會支持、心理調適之彈性度、自殺意念及自殺行為之狀況。

研究結果顯示有10.3%罹患PTSD，19.0%罹患幾乎達到PTSD診斷之PTSS。而且PTSD組與PTSS組在許多變項非常類似，這兩組與對照組比較有顯著較多之女性、綜合創傷指數、廣泛性焦慮症、第一軸之精神科診斷、工作及社會功能之障礙及身體之問題。與PTSS比較，PTSD有顯著較多之重度憂鬱症、與創傷有關之喪

失生命及對抗壓能力有障礙。

在921地震10個月後仍有為數眾多之災民罹患PTSD及其他精神疾病，我們將會繼續追蹤以了解其精神疾病之變化。

**關鍵詞：**地震、創傷後壓力症狀群、精神疾病

## Abstract

**Objective:** Survivors of the September 1999 earthquake in central Taiwan were interviewed 10 months after the disaster to assess the posttraumatic impact of the earthquake on psychiatric health and psychosocial functioning. **Methods:** Subjects (n=252) were randomly selected from two rural communities located near the epicenter of the earthquake. Information obtained in the interview included: demographics and other scales. Three diagnostic groups were identified with regard to trauma-related symptoms (full posttraumatic stress disorder (PTSD), partial PTSD (PTSS), and controls (non-PTSD/PTSS)), prevalence rates were calculated, and bivariate comparisons were performed on each of the variables. **Results:** The prevalence rate for PTSD was 10.3% (n=26) and 19.0% for PTSS (n=48). The PTSD and PTSS groups were very similar and differed significantly from controls on most variables, with greater likelihood of the following: female gender; total trauma exposure; generalized anxiety disorder; suicidality; any axis I disorder; disability (work, social, leisure); and impaired

wellbeing. Few differences were observed between the PTSD and PTSS groups, although greater likelihood for major depression, trauma-related loss of life, and impaired stress vulnerability were noted in the PTSD group. **Conclusions:** PTSD and partial PTSD are commonly observed following earthquake trauma and may persist for many months.

**Keywords:** Earthquake, PTSD, Psychiatric disorders

## 二、緣由與目的

In the aftermath of earthquake, with the loss of loved ones and livelihoods, survivors are at increased risk for experiencing psychological distress, including posttraumatic stress disorder (PTSD) (1-3).

Elevated rates of PTSD have been reported in victims of earthquake trauma, with prevalence rates of 13 to 95% (4, 5). As originally defined by DSM-III in 1980, PTSD is characterized by intrusive thoughts and recollections of the trauma, phobic avoidance, numbing, and hyperarousal. These symptoms are distressing, may interfere with interpersonal relationships and impair work and leisure activities (6, 7). In many cases, however, a person's symptoms fall short meeting full diagnostic criteria for the full disorder, and may be considered to be a partial or subthreshold form of PTSD (PTSS). It has been reported in a variety of traumatized civilian and military populations, as well as in the community, and affected persons demonstrate levels of impairment similar to those with full PTSD (8-12). It has been estimated to occur in 3% of the population (12).

On September 21, 1999, a major earthquake registering 7.3 on Richter scale struck the island of Taiwan. With its epicenter near the town of Chi Chi in Nantou County. Over 2000 deaths and 11,000 injuries were reported. The economic loss from this disaster has been estimated at \$11.5 billion (US) (13).

We conducted the present study to assess the posttrauma impact of the 1999 earthquake on two rural communities in Taiwan. Through the administration of a survey interview, the full range of psychiatric morbidity was assessed, comparing subjects with PTSD, PTSS, and controls without PTSD. These groups were also compared with respect to impact of earthquake exposure, occurrence of past trauma, and other morbidity-related factors, such as disability, stress vulnerability, social support, and wellbeing.

## 三、方法

Following the earthquake, 179 deaths (1% of this region's population) and extensive housing damage was reported in Chung-Liao Shiang, with total collapse of 2,369 houses and partial collapse of 1,136, representing significant damage to 83% of dwellings in the county.

From within this region, two villages, Song-Wen and Long-Yen, were selected. One hundred and fifty households were identified in each of the two villages using a random sampling technique. Eligible subjects were 18 years of age or older and had resided in the village during the earthquake. Individuals with significant hearing impairment, mental retardation, dementia, or mutism were ineligible for study participation.

The scales were translated from English into Chinese by study staff (TJL, CMC) and back translated into English by two independent reviewers. The back translations were then reviewed by study staff (JRTD, KMC) to ensure comparability with the original scales and final modifications were made. The survey instrument included the following assessments:

1. Demographics: age and so on
2. Taiwan Earthquake Experiences Questionnaires (TEEQ): This 21-item questionnaire was developed as a measure of exposure to the trauma,

assessing individual experiences following the earthquake.

3. Sheehan Disability, Stress Vulnerability, and Social Support Scales: The Sheehan Disability Scale (SDS) is a three item scale measuring disability in work, social/leisure activities, and family/home life function and provides a total disability score through summing the three subscales (14), while the Stress Vulnerability Scales (SVS) is a single item assessing perceived effects of stress (15).
4. Davidson Trauma Scale (DTS): The DTS is a validated, 17-item self-rated scale comprised of each of the DSM-IV PTSD symptoms (16, 17). A Chinese translation of this scale has been validated (18).
5. Chinese Health Questionnaire (CHQ-12). The CHQ-12 was developed in Taiwan for screening minor psychiatric morbidity in community and primary care settings (19-21). Modified from the 30-item General Health Questionnaire (22).
6. General Health Evaluation. This series of items included an assessment of wellness, using the WELLSCAN.
7. Suicidality. Current and lifetime suicide risk from the Mini International Neuropsychiatric Interview (MINI)(23).
8. Trauma Questionnaire (TQ). This instrument assesses a personal history of exposure to traumatic events and age at the trauma (24).
9. Mini Neuropsychiatric Interview (MINI). This structured diagnostic interview is comprised of a series of modules which assess all major Axis I diagnoses according to DSM-IV (23).

Using data from the PTSD module of the MINI, the sample was divided into three diagnostic groups: full PTSD, partial PTSD (PTSS), and non-PTSD (controls). Subjects who did not meet these criteria for PTSD but who endorsed at least one symptom in each of the three clusters (intrusion, avoidance/numbing, hyperarousal) and endorsed distress or impairment, were

considered to have PTSS.

Bivariate logistic regression, without adjusting for other covariates, was performed to determine whether a significant difference existed between any two diagnostic groups (PTSD, PTSS, non-PTSD, and (PTSD + PTSS)). Coefficient  $\beta$  (represents the log odds ratio comparing two outcome groups) and the standard errors of the  $\beta$ s were computed.

#### 四、結果與討論

Two hundred and fifty-seven subjects consented to participate in the survey and completed the first part of the survey. Five respondents, however, declined to participate in the second part of the interview (MINI). The results provided are based upon evaluable data from the 252 subjects who completed the both components of the survey.

The sample was almost evenly divided by gender (53% male; 47% female), with a mean (sd) age of 55.5(17.3) years (median, 59).

Using logistic regression, pairwise contrasts of the PTSD groupings (e.g., PTSD vs. PTSS, PTSD vs non-PTSD, PTSS vs non-PTSD, and (PTSD and PTSS) vs non-PTSD) were performed for each variable. Female gender was associated with a greater risk of developing PTSD or PTSS. Lower educational level was associated with a greater risk of developing PTSS, and PTSS/PTSD combined.

Bivariate analysis of the TEEQ variables by PTSD category reveal that, compared to non-PTSD controls, subjects with PTSD and PTSS were impacted to a much greater extent by exposure to consequences of the earthquake, as measured by total TEEQ score. Those with PTSD experienced greater exposure to death compared to either those with PTSS or non-PTSD controls, and to dislocation compared to controls.

In the bivariate analysis, those with PTSD were more likely to have had previous

traumatic experiences compared to non-PTSD controls (unadjusted OR 1.23, 95% CI: 1.06, 1.43;  $p < 0.01$ ), but not more so than those with PTSS (unadjusted OR 1.20, 95% CI: 0.97, 1.48; NS).

Posttraumatic stress disorder was observed to have a prevalence rate of 10.3% ( $n=26$ ), while 19.0% of the sample ( $n=48$ ) had PTSS.

The prevalence of other comorbid Axis I disorders in the full sample, as assessed by the MINI, were as follows: major depression, 17.5% ( $n=44$ ); dysthymia, 5.2% ( $n=13$ ); GAD, 9.1% ( $n=23$ ); panic disorder, 1.6% ( $n=4$ ); and alcohol abuse/dependence, 7.1% ( $n=18$ ). Increased suicidal risk, as measured by at least one positive response on the MINI suicide module, was observed in 9.1% ( $n=23$ ) of respondents.

Bivariate analyses of diagnosis by PTSD category show that PTSD is associated with a significantly greater likelihood of comorbid major depression compared to either PTSS or non-PTSD controls, and that PTSS carries a greater risk of comorbid depression than no PTSD. PTSD and PTSS are each further distinguished by greater risk of comorbid GAD and suicidality compared to controls.

While no difference was observed between the PTSD and PTSS groups, controls were much less likely to have any axis I disorder compared to either those with PTSD or PTSS, and these differences were highly significant.

Results of the bivariate comparison reveal that, compared to non-PTSD controls, subjects with either PTSD and PTSS were more likely to exhibit general psychopathology.

In bivariate analyses, compared to controls, subjects with either PTSD or PTSS demonstrated significantly greater SDS scores, reflecting greater disability overall, as well as in domains of work, social, and family/leisure activity. The PTSD and PTSS groups were distinguished from each other only in terms of stress vulnerability, with the PTSD group exhibiting greater

vulnerability.

This PTSD prevalence is lower than rates reported in other studies of earthquake survivors (1, 3, 29). The variability in earthquake intensity, the time elapsed between the occurrence of the disaster and data collection, types of exposure of the subjects, and the methodological differences across these studies make it difficult to derive an estimate of the expected frequency and severity of mental health consequences following earthquake disasters (3, 29).

Most of the subjects with PTSS met DSM-IV criteria for intrusion (95%) and hyperarousal (95%) symptoms, but few reached the criteria for avoidance and numbing. A similar finding was made in the 1988 earthquake in Armenia where subjects scored higher on reexperiencing and arousal than numbing/avoidance (29).

Several studies have suggested that the elderly are at greater risk for developing posttraumatic sequelae than are younger adults (33, 34). Our study, however, did not show this tendency, perhaps because the social support structure of our respondents was relatively preserved and because experience of stress around World War II lead them to cope better.

In our study, total trauma exposure, particularly death and dislocation, was significantly higher in subjects with PTSD. While level of exposure to a disaster is generally considered an important factor in the development of psychological morbidity (35,36). Our result of high score of death in subjects with PTSD, who witnessed grotesque forms of death and lost loved ones, is similar to the findings by Green (37).

Compared to controls and those with PTSS, respondents with PTSD had higher rates of major depression, dysthymia, and suicidality, a finding similar to that reported previously (38-43). The prevalence of neurasthenia was 31%, as rate similar to the finding of "shenjing shuairuo" in Hong Kong (25). However, this rate is high when compared to the findings in western studies, 2.5% to 12% (44-47), and these differences

may be due to cultural factors, variation in diagnostic criteria, and sampling methods.

### 五、計畫成果自評

本研究為本校與 Duke 大學之共同合作計劃，藉著兩位美國教授在 PTSD 之知識，可加強我們的研究經驗並達到國際性之研究成果。另外由於研究者與兩村之村長熟識及全心的投入，使本研究獲得相當的成果，並將本研究之成果投稿於國際知名之期刊，如此可提升國內之學術價值及國家之知名度。

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