

# Mental Health Problems following the 2005 Earthquake in Kashmir: Findings of Community-Run Clinics

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#### Abbreviations:

PTSD = post-traumatic stress disorder

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#### Abstract

**Introduction:** Events such as earthquakes are followed by significant psychiatric morbidity due to the enormous damage caused to life, health, property, and other resources in the affected area. In October 2005, a devastating earthquake occurred in Kashmir in India. A team of mental health professionals visited the earthquake stricken area to provide mental health services five weeks after of the event.

**Methods:** The team conducted clinics at >30 sites in different villages in the area. This paper describes the mental health problems encountered in those communities.

**Results:** All patients seen in the clinics had their houses destroyed by the earthquake. Nearly one-fourth had suffered serious physical injuries and 12% had lost one of their family members. Common psychiatric diagnoses included adjustment disorders (39.6%), depressive episode (22.6%), and other stress disorders (21.8%). Only 10 (3.3%) patients were found to suffer from post-traumatic stress disorder (PTSD), though PTSD-like symptoms were reported by more than two-thirds of the patients.

**Conclusions:** Adjustment disorders, depression, other stress reactions, and PTSD-like symptoms were the common mental health problems five to six weeks following an earthquake.

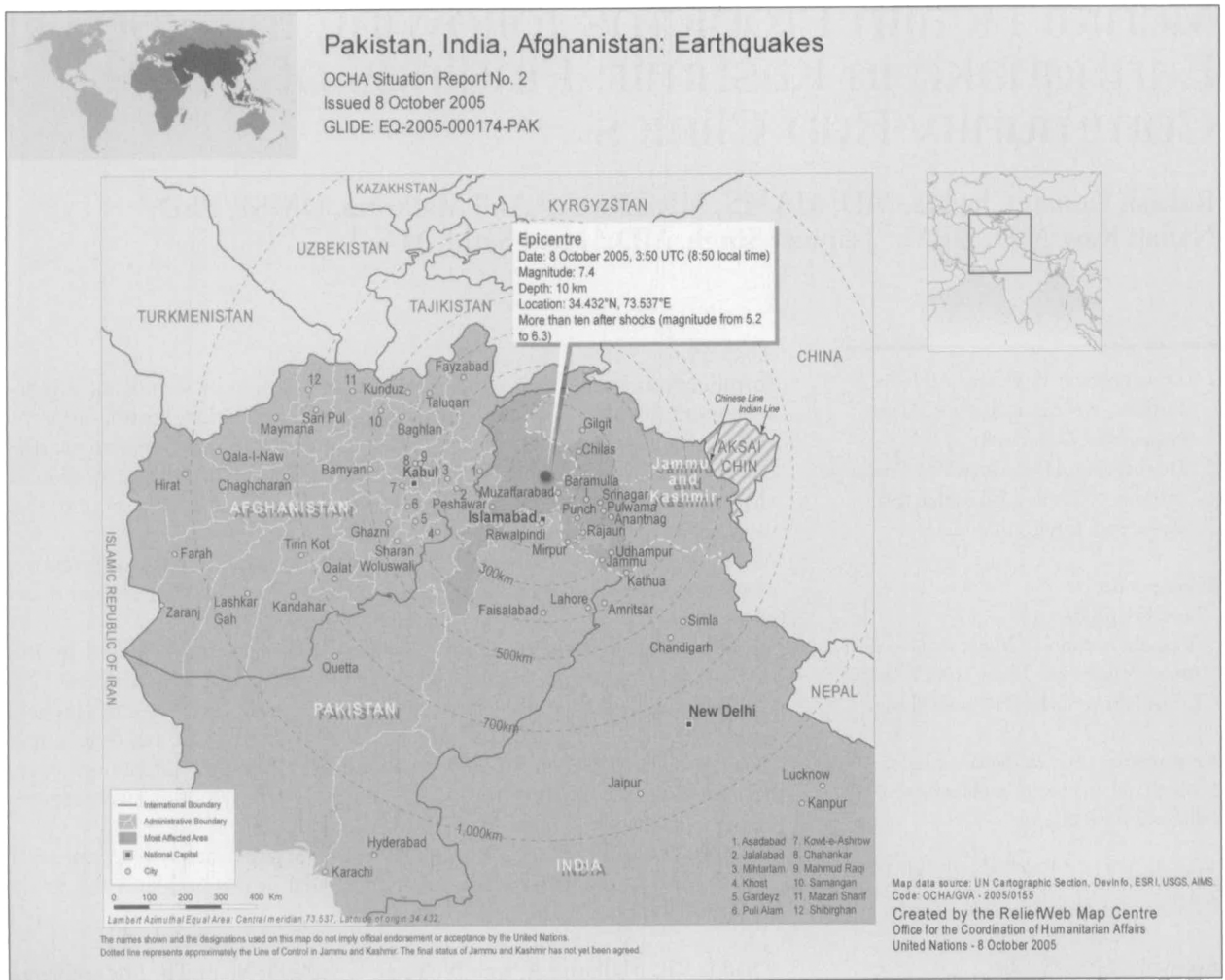
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#### Introduction

Disasters are worldwide phenomena associated with physical and psychological trauma to the affected community. The physical injuries often are the immediate effect of the event, but the effects of psychological trauma may persist long after the event and may not manifest immediately after the event. The subject has been studied in the Western world, but there are not many systematic studies from developing countries, including India. Research on disasters caused by natural hazards is rare relative to the frequency that such disasters occur in these countries. India, in particular, has been a witness to many major disasters in the last few decades, including the Bhopal gas tragedy in 1984, earthquakes in Uttar Kashi in 1991, Latur in 1993, Gujarat in 2001, the Tsunami in 2004, and the earthquake in Kashmir in 2005.<sup>1</sup> Devastating floods, droughts, and tornados also are common and occur almost every year in different parts of the country.

#### Background of the Disaster

The state of Jammu and Kashmir in India suffered a major earthquake on 08 October 2005. The earthquake measured 6.8 on the Richter scale. The epicenter of the earthquake was located 34.6 N latitude and 73.0 E longitude at a location 40 kms west of Muzaffarabad, Pakistan. The tremors of the earthquake were felt in the northern states of India, including Jammu and Kashmir, Himachal Pradesh, Delhi, Uttar Pradesh, Rajasthan, Haryana, Punjab, and Uttranchal. The earthquake caused extensive damage to life and



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**Figure 1**—Map of affected area  
 Source: ReliefWeb

property. Many villages in the area were destroyed completely. Some of the local hospitals also were completely destroyed and others suffered serious damage.<sup>2</sup> The area has inadequate mental health resources; there are a few psychiatrists, who are available only at a traveling distance of 3–8 hours in the city of Srinagar.

At the request of the local government, a team of mental health professionals consisting of three psychiatrists, two psychologists, and four social workers from two Indian Government medical institutions visited the area to provide mental health services to the affected people. The team reached the site two weeks after the earthquake. Because of the limited time available with the team, it was considered pertinent to provide services to the maximum number of the needy and also to sensitize the local doctors and paramedical professionals.

This paper reports on the mental health problems encountered by the team in the area during the aftermath of an earthquake.

### Methods

The team formed into three groups. One group stayed in Srinagar for coordination and the other two shifted to

Baramulla and Tangdar, the two base camps on the periphery. The two groups traveled to the different affected villages and conducted clinics for mental health problems at >30 sites. The community leaders in the affected villages were informed one day prior to the expected arrival of the team and were requested to inform the local population to contact the team for consultation. A public address system also was used in villages to inform people about the availability of the team. The group at Srinagar was dedicated to human resource development and conducted a sensitization program for doctors and paramedical workers of the state, in order that follow-up care could be provided by the local professionals. A total of 160 doctors and 216 paramedics attended the program in groups. The details have been discussed by Chadda and Malhotra.<sup>3</sup>

A semi-structured *pro forma* was used to record the findings of the assessment. Information included age, sex, losses due to the earthquake (injuries, death in family or friends, housing, financial), presenting symptoms, psychiatric diagnosis, and management. The team provided help to 450 persons during its stay. A brief clinical assessment was carried out by a psychiatrist and diagnoses were made according to the *International Classification of Diseases 10<sup>th</sup> Edition (ICD-10)* criteria.<sup>4</sup>

| Age (years)  | Male n (%)       | Female n (%)     | Total n (%)      |
|--------------|------------------|------------------|------------------|
| <15          | 4 (2.4)          | 0 (0)            | 4 (1.3)          |
| 15–24        | 26 (15.9)        | 20 (14.4)        | 46 (15.2)        |
| 25–34        | 36 (22.0)        | 42 (30.2)        | 78 (25.7)        |
| 35–44        | 32 (19.5)        | 32 (23.0)        | 64 (21.1)        |
| 45–54        | 23 (14.0)        | 23 (16.5)        | 46 (15.2)        |
| 55–64        | 22 (13.4)        | 11 (7.9)         | 33 (10.9)        |
| 65–74        | 7 (4.3)          | 7 (5.0)          | 14 (4.6)         |
| ≥75          | 14 (8.5)         | 4 (2.9)          | 18 (5.9)         |
| <b>Total</b> | <b>164 (100)</b> | <b>139 (100)</b> | <b>303 (100)</b> |

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**Table 1**—Distribution of the sample by age and sex (n = 303)

The team provided psychiatric assessment, medications, counseling, and psycho-education to the persons having psychiatric disorders and psychosocial problems. This included new onset cases as well as persons having mental health problems before the earthquake.

## Results

### *Sociodemographic Profile*

This paper reports data on 303 patients. The mean value of the ages of the sample was 40.2 ±18.1 years (range 11–106 yrs). The mean age of the females (38.4 ±15.6 yrs) was slightly lower than for the males (41.7 ±19.9 yrs). Fifty-four percent of the patients were males. The age and sex distribution of the sample are listed in Table 1. Interestingly, nearly 6% of patients belonged to the age group 75 years and above, an unusual finding from health services in India. There were no significant sex differences among the various age groups.

### *Loss and Injury*

All of the patients had suffered major damage to their houses and many had lost all of their belongings. All had suffered huge financial losses. Seventy-eight (25.7%) had suffered serious injuries such as fractures. Thirty-seven (12.2%) had lost one of their family members due to the earthquake.

### *Symptomatology*

Presenting symptoms reported by the sample with their frequency are listed in Table 2. Sleep disturbance, in the form of difficulty in initiation of sleep and frequent disruptions, was the most common symptom reported by nearly 80% of the patients. The second most common symptom cluster consisted of anxiety symptoms, such as feeling anxious or tense, palpitations, and restlessness, reported by >75% of the patients. Preoccupation with thoughts of the earthquake and related fears and apprehensions,

feelings of tremors, and recurrence of the event were reported by nearly two-thirds of the sample. Nearly half of the patients reported low mood as well as loss of appetite. Pain symptoms in different body areas were reported by 40% of the female and 30% of the male sample. About 30% of patients also reported depressive thoughts, inability to experience pleasure, and losing interest in day-to-day activities. Death wishes and suicidal ideation were reported by about 10% of the sample. There was no statistically significant difference in the prevalence of various symptoms amongst males and females except the decreased appetite, which was more common in females ( $\chi^2 = 18.09$ ,  $df = 1$ ,  $p \leq 0.001$ ).

### *Diagnoses*

Adjustment disorders, other stress disorders, and depressive episode were the three most common psychiatric illnesses seen in the sample, accounting for >80% of the sample (Table 3). About 5% of the patients were diagnosed as not having any psychiatric illness. Only 10 (3.3%) patients received a diagnosis of post-traumatic stress disorder (PTSD). There were trends for the other stress disorders to be more common in females, and the depressive episodes being more common in males, but the differences did not reach statistical significance. Fifty percent of patients with adjustment disorders belonged to the category of “prolonged depressive reaction”, one-third to the category with “disturbance of other emotions”; and the remaining to “mixed anxiety” and “depression group”. Four patients of psychotic disorders and three patients suffering from depressive episodes had been suffering from the illness before the earthquake.

Nearly 50% of the patients were treated with anti-depressant drugs. Benzodiazepines were used in 24% of the patients to control anxiety symptoms and for insomnia. Twenty-three percent of patients were not prescribed any medication. Supportive techniques like reassurance, sympathetic listening, ventilation, and breathing exercises for relaxation were used in most of the cases.

## Discussion

This study documents the psychiatric symptomatology and diagnoses in a group of patients encountered by a mental health relief team in a disaster-affected population. The patients were evaluated 5–6 weeks after the event. They had recovered from the acute phase of stress and had started adjusting to the effects of the trauma. The relief work also had been going on, but most of the survivors had been staying in make-shift accommodations or public places like schools.

The state of Jammu and Kashmir in India is placed uniquely with respect to its socio-political situation. The local population has faced years of terrorism due to a political conflict leading to terrible loss of life and property and a constant sense of fear and apprehension, which has affected all aspects of their daily living. Hypothetically, conflict may have equipped these people with coping strategies that help them to deal with and survive under such conditions. It is possible that conflict may enable some populations to adapt in a better or a different manner

| Complaints  | Male<br>(n = 164)<br>n (%) | Female<br>(n = 139)<br>n (%) | Total<br>(n = 303)<br>n (%) |
|---|----------------------------|------------------------------|-----------------------------|
| Sleep disturbance   | 131 (79.9)                 | 110 (79.1)                   | 241 (79.5)                  |
| Anxiety/palpitations/tension/restlessness                         | 130 (79.3)                 | 100 (71.9)                   | 230 (75.9)                  |
| Fear/preoccupation/apprehensions of earthquake/feeling of tremors | 109 (66.5)                 | 92 (66.2)                    | 201 (66.3)                  |
| Decreased appetite  | 66 (40.2)                  | 90 (64.7)                    | 156 (51.5)*                 |
| Low mood/sadness  | 78 (47.6)                  | 63 (45.3)                    | 141(46.5)                   |
| Chest pain/stomach pain/body pain/headache                        | 50 (30.5)                  | 55 (39.6)                    | 105 (34.7)                  |
| Anhedonia/losing interest   | 59 (36.0)                  | 45 (32.4)                    | 104 (34.3)                  |
| Hopelessness/helplessness/loss of confidence                      | 52 (31.7)                  | 35 (25.2)                    | 87 (28.7)                   |
| Weakness/fatigability   | 25 (15.2)                  | 12 (8.6)                     | 37 (12.2)                   |
| Suicidal ideation/death wishes                                    | 21 (12.8)                  | 10 (7.2)                     | 30 (10.2)                   |

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Table 2—Presenting complaints and their frequency in the population ( $\chi^2 = 18.01$ ;  $df = 2$ ;  $p \geq 0.001$ )

| Psychiatric Diagnosis          | Male<br>(n = 164)<br>n (%) | Female<br>(n = 139)<br>n (%) | Total<br>(n = 303)<br>n (%) |
|--------------------------------|----------------------------|------------------------------|-----------------------------|
| Adjustment disorders           | 63 (38.4)                  | 57 (41.0)                    | 120 (39.6)                  |
| Stress disorder (others)       | 32 (19.5)                  | 35 (25.2)                    | 67 (22.1)                   |
| Depressive episode             | 42 (25.6)                  | 24 (17.3)                    | 66 (21.8)                   |
| Anxiety disorders              | 10 (6.1)                   | 4 (2.9)                      | 14 (4.6)                    |
| Post-traumatic stress disorder | 5 (3.0)                    | 5 (3.6)                      | 10 (3.3)                    |
| Somatoform disorders           | 2 (1.2)                    | 6 (4.3)                      | 8 (2.6)                     |
| Psychotic disorders            | 1 (.6)                     | 3 (2.2)                      | 4 (1.3)                     |
| No disorder                    | 9 (5.5)                    | 5 (3.6)                      | 14 (4.6)                    |

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Table 3—Diagnostic distribution of the sample

to disasters from natural or man-made hazards. This may modify the course and/or presentation of psychological morbidity evoked by such a disaster.

The study is unique from the perspective that the patients were seen very early, i.e., within six weeks of the event. This may have been useful in identifying early/acute responses to a disastrous event and offering intervention. The study also provides a baseline for comparison with data collected at a later stage.

Not many patients displayed PTSD, though hyperarousal was present in the form of persistent anxiety symptoms and sleep disturbance. Fear and preoccupation with the thought of an earthquake and its recurrence were seen in most of the people who sought help. It may have been too early for the signs of PTSD to appear. More so, as a mental disorder occurring as part of a disaster, PTSD may not be as

common as other psychiatric disorders such as depression and anxiety disorders.<sup>5,6</sup> In earlier disaster mental health surveys from India completed two months following the Tsunami, the prevalence of PTSD has been reported as varying from 12.7% to 23%.<sup>7,8</sup> Another study conducted in the Tsunami-affected population after eight weeks found PTSD symptoms in 7–12% of the affected population.<sup>9</sup> Although this study was not a prevalence study, a large number of patients displayed PTSD-like symptoms. However, few presented with a full PTSD syndrome.

Prevalence of depressive disorders was high compared to PTSD which was seen in only 10 (3.3%) patients. A major depressive episode related to the disaster was reported in 21.8% of those seen in the community-run clinics. The higher prevalence of depression in males could be related to the burden of arranging for necessities, relief

material, and planning rehabilitation, which traditionally is within male's responsibility in a patriarchal society. Sharan *et al* also reported 21% prevalence of depression in earthquake victims from India two months after the event.<sup>8</sup>

The team was able to provide immediate services in the form of mental health assessment, medications, and limited psychosocial support to a large proportion of the affected population in the remote hilly area of Kashmir, India. There were some inherent logistical problems, as many areas were cut off from the main cities because of massive damage to the existing roads. Furthermore, the harsh weather made the work of the team difficult. When the team started its work, affected people had been coming out of the stage of acute trauma and the acute stress reactions had begun to settle down. At the time of this study, the core psychiatric symptoms had started to surface.

#### Limitations

The study had three limitations. First, it would have been preferable to make a preliminary assessment of the needs by drawing a representative sample of the affected population. This was not possible due to the vastness of the affected area, poor connectivity to the affected villages due to difficult hilly terrain, and the limited time available with the team. Second, the sample could have been affected further by a treatment-seeking bias as only those with a high-

er severity of problems may have sought treatment. Third, no structured instruments could be used for making diagnoses due to shortage of time and other logistic problems.

#### Conclusions

Common mental health problems in the immediate aftermath of a disaster include adjustment disorders, depression, and acute stress reactions. Post-traumatic stress disorder symptoms are seen commonly, though the full development of the syndrome is infrequent in the early post-disaster phase. It is possible to deliver basic mental health services to the disaster-affected population using a community-based model after basic needs of food and shelter have been secured by the rescue teams. Local health workers also can be sensitized to the mental health needs of the disaster-affected population to help ensure continued care of the affected population.

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# Editorial Comments—Mental Health Problems following Earthquake in Kashmir: Findings of Community Run Clinics

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The article by Chadda *et al* is particularly deserving in that it describes a universal, social imperative to address the mental health and well-being of affected populations following a horrendous disaster caused by natural hazards. The inclusion of mental health workers, psychologists, and psychiatrists in post-disaster recovery and response efforts is not always feasible, but in recent years the importance of recognizing these professionals as “front line responders” has been gaining currency. By addressing the extent and typology of mental health needs of survivor populations (e.g., adjustment disorders, depression, and stress reactions, such as post-traumatic stress disorder (PTSD) symptoms), the business of recovery and reconstruction can begin. This paper sufficiently captures the extent of psychiatric morbidity in the affected Kashmiri populations following the October 2005 earthquake in India. The authors visited >30 rural and remote sites and met with >300 survivors who had lost their homes, loved ones, and who also had suffered physical injury and mental health trauma. It is a remarkable testament to human resiliency that the vast majority of the earthquake survivors described in this paper, including those who live in an ongoing state of civil unrest due to political conflict, did not present full PTSD mental health disorders. *Prehospital and Disaster Medicine* deserves praise for supporting the work of our colleagues in the south. Thanks to the WADEM for the inclusion of this empirically based study, as it contributes to our understanding of human resiliency following disasters caused by natural hazards in a meaningful way.