

# Comparative Study of Psychiatric Morbidity among the Displaced and Non-Displaced Populations in the Andaman and Nicobar Islands following the Tsunami

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## Conflict of Interest

None.

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## Abbreviations:

NIMHANS = National Institute of Mental Health and Neuro Sciences  
 NOS = not otherwise specified  
 PTSD = post-traumatic stress disorder

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## Abstract

**Objective:** The objective of this study was to compare the psychiatric morbidity between the displaced and non-displaced populations of the Andaman and Nicobar Islands during the first three months following the 2004 earthquake and tsunami.

**Methods:** The study was conducted at the 74 relief camps in the Andaman and Nicobar Islands. Port Blair had 12 camps, which provided shelter to 4,684 displaced survivors. There were 62 camps on Car-Nicobar Island, which provided shelter to approximately 8,100 survivors who continued to stay in their habitat (non-displaced population). The study sample included all of the survivors who sought mental health assistance inside the camp. A psychiatrist diagnosed the patients using the ICD-10 criteria.

**Results:** Psychiatric morbidity was 5.2% in the displaced population and 2.8% in the non-displaced population. The overall psychiatric morbidity was 3.7%. The displaced survivors had significantly higher psychiatric morbidity than did the non-displaced population. The disorders included panic disorder, anxiety disorders not otherwise specified, and somatic complaints. The existence of an adjustment disorder was significantly higher in the non-displaced survivors. Depression and post-traumatic stress disorder (PTSD) were distributed equally in both groups.

**Conclusions:** Psychiatric morbidity was found to be highest in the displaced population. However, the incidence of depression and PTSD were distributed equally in both groups. Involvement of community leaders and survivors in shared decision-making processes and culturally acceptable interventions improved the community participation. Cohesive community, family systems, social support, altruistic behavior of the community leaders, and religious faith and spirituality were factors that helped survivors cope during the early phase of the disaster.

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## Introduction

Disasters potentially are traumatic events that impose “massive collective stress” consequent to “violent encounters with nature, technology, or humankind”.<sup>1–3</sup> A typical pattern of mental, emotional, and physical response is observed in the majority of people affected by a disaster.<sup>4,5</sup> The severity of the symptoms mainly depends on individual factors, socio-cultural factors, and the severity of the disaster.<sup>6,7</sup> Individual factors include (1) coping patterns; (2) pre-morbid personality; and (3) other individual resilience factors. Socio-cultural factors include social and family support, vulnerability of the special populations, and characteristics of the community.<sup>8–12</sup>

A meta-analysis of 160 studies of disaster victims found that post-traumatic stress disorder (PTSD), major depressive disorder, generalized anxiety disorders, and panic disorders were identified commonly by most of the studies.<sup>13</sup> The factors that most consistently increased the risk for adverse outcome were: (1) severity of the exposure to the disaster; (2) living in a highly disrupted or traumatized community; (3) lack of social support; (4) belonging to an ethnic minority group; (5) post-traumatic stress; and (6) being female.<sup>6,13,14</sup> Women are more likely than men to experience mental health problems as a result of a disaster.<sup>15-18</sup> This is because of their roles and responsibilities of caring for family members and bio-socio-cultural-religious factors. Women also are vulnerable to exploitation.<sup>5</sup> The increased rate of PTSD in women may not be universal, and may be influenced by biological, social, and cultural factors.<sup>19,20</sup>

Each disaster is unique; similarly, the experience of each disaster survivor is unique. Not all people in a particular community will respond in the same way.<sup>21,22</sup> Ethnic and racial minority groups may be at an increased risk of adverse outcomes, due to various reasons like language barriers, rejection of outside interference, lack of assistance (especially with regard to mental health), displacement, socio-economic status, religion, spiritual practices, and differing cultural values, all of which can present challenges for access to treatment and psychosocial rehabilitation.<sup>23-27</sup> Despite a few exceptions, most disaster studies that examined the effects of ethnicity on outcome have found that people belonging to minority ethnic groups fare worse than do people who are members of a majority group.<sup>13,28-31</sup> Various cultural groups differ considerably in regard to their views on disaster, loss, death, and grieving practices. These factors shape the meaning of the experience and play a significant role in the recovery process.<sup>32,33</sup>

Displacement also has a significant impact on survivors.<sup>34,35</sup> Inherent to the state of displacement is the loss of social support due to the loss of community and reduced sense of control over one's life. This is likely to facilitate greater feelings of isolation and a state of anomie.<sup>36,37</sup> Displacement due to losing a home can cause a profound and long-lasting psychological impact on survivors.<sup>38</sup>

Post-disaster mental health delivery is based on the principles of preventive medicine. It includes community consultation and outreach programs with the goals of identifying high-risk groups, working collaboratively and proactively to reduce stigma and mistrust, engaging minorities in the delivery of care, promoting community recovery, and minimizing social disruption.<sup>23,39</sup> In a developing country like India, there are diverse socio-economic-cultural backgrounds and a wide variation in the allocation of sparse resources. Apart from these, the lack of trained mental health professionals and widespread stigma and discrimination add to the difficulty of mental healthcare delivery.<sup>40</sup> When available resources are limited, it becomes all the more important to identify those people who are at risk, and allocate resources for their care.<sup>27,41</sup>

### *Context of the Study*

An earthquake measuring 9.0 on the Richter scale triggered a massive tsunami in the early hours (06:00 hours, Indian standard time) of 26 December 2004, and devastated the population of the Andaman and Nicobar Islands of India in the Bay of Bengal. The population of the Andaman and Nicobar Islands is comprised of the tribal population native to the islands, and settlers from various states in India. While the destruction of homes and property led to the relocation of a large number of tribals and settlers to relief camps in Port Blair, a large section of the indigenous tribal population and a smaller number of settlers chose to stay on their home islands.

The National Institute of Mental Health and Neuro Sciences (NIMHANS), in Bangalore, India, was designated by the Government of India as the nodal agency for the assessment and coordination of psychosocial relief to the affected population in India following the tsunami. Hence, a multi-disciplinary team was deputed to the Andaman and Nicobar Islands. The main goals of the team were to identify and treat the persons in the camp needing immediate intervention, and to assess psychiatric morbidity immediately after the event. The data presented in this study is a part of this community assessment and intervention.

### *Objective*

The objective of this study was to compare the psychiatric morbidity between the displaced and non-displaced populations of the Andaman and Nicobar Islands during the first three months after the tsunami.

### **Methods**

#### *Subjects*

The study was conducted in the 74 relief camps in the Andaman and Nicobar Islands. Port Blair had 12 camps that provided shelter to approximately 4,684 displaced survivors (Displaced Survivors Group). There were 62 camps on Car-Nicobar Island that provided shelter to approximately 8,100 survivors who continued to stay in their habitat (Non-Displaced Survivors Group).

#### *Screening*

The team visited the 74 relief camps that sheltered 12,784 survivors, and screened and assessed for mental health problems. The affected population was large, and the survivor population in each camp was highly mobile and heterogeneous. Considering the logistics, the team approached each camp and contacted the medical officer in charge, the survivors' community leaders, and the local staff of the camp. They were educated about mental health consequences associated with a disaster, and the need and process for establishing mental health clinics for the survivors inside the camp was discussed. The consent and cooperation of the community leaders was obtained, as this was essential for community participation and entry point into the community. Following this, several announcements were made by the community leaders and the local staff of the camp about the availability of mental health professionals, along with descriptions of common signs of pathol-

Variables	Frequency (n = 475)	Percent (%)
Displacement		
Displaced	244	(51.4)
Non-displaced	231	(48.6)
Population		
Natives	249	(52.4)
Settlers	226	(47.6)
Psychiatric Morbidity		
Displaced survivors	244/4,684	(5.2)
Non-displaced survivors	321/8,100	(2.8)
Overall	475/12,784	(3.7)
Intervention		
SSRI, Benzodiazepine and counseling	200	(42.1)
SSRI and counseling	129	(27.2)
Only counseling	69	(14.5)
Benzodiazepine and counseling	47	(9.9)
TCA and counseling	23	(4.8)
Antipsychotic and counseling	7	(1.5)

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**Table 1**—Demographic details of the survivors (SSRI = selective serotonin uptake inhibitors; TCA = tricyclic antidepressants)

\* Pre-existing mental disorders

ogy for which persons were encouraged to seek help. Subsequently, mental health clinics were established inside the relief camps. During the consultations with the survivors, attempts also were made to identify other cases using the snowball technique.<sup>42</sup> The snowball technique is a special non-probability method that relies on referrals from initial subjects to generate additional subjects.

As a part of assessment and intervention, the team adopted a multi-tiered approach encompassing disaster mental health awareness programs inside the camp, group discussions, poster displays, training primary healthcare physicians, nurses, and workers in basic diagnostic skills and counseling, and education of key community members such as captains, teachers, religious leaders, relief workers, social workers, and volunteers who were survivors.

#### Diagnoses

A qualified psychiatrist diagnosed the patients using the ICD-10 criteria.<sup>43</sup> If there was any doubt regarding the diagnosis, it was reviewed by a senior psychiatrist, and a consensus was sought. Data were collected using a semi-structured, clinical proforma that was developed and was in use at the screening and outpatient clinic at NIMHANS for decades. This proforma was used to capture the basic demographic details, history of presenting illness, family history, personal history, and mental status. Consultations usually were performed in the open air inside the camp. Informed oral consent was obtained from all the subjects. The study was conducted in accordance the guidelines provided by the NIMHANS Ethics Committee.

The statistics were processed using SPSS Version 11 (SPSS Inc., Chicago). The Chi-*t*-square/Fisher exact tests

were used to process the data. All results with  $p < 0.05$  were considered to be statistically significant.

#### Results

In the relief camps on the Adaman and Nicobar Islands, 475 survivors had at least one psychiatric diagnosis based on the ICD-10 criteria. Of these, 244 were displaced survivors residing in the Port Blair relief camps, and 231 were in the Non-Displaced Survivors Group from Car-Nicobar Island. Psychiatric morbidity in the Displaced Population Group was 5.2%, and 2.8% in the Non-Displaced Population Group. The overall psychiatric morbidity was 3.7%.

The demographic and clinical characteristics of the survivors are listed in Table 1. The most common psychiatric problems observed in the survivors' group were adjustment disorder in 178 (37.5%), depression in 102 (21.5%), panic disorder in 57 (12%), PTSD in 53 (11.2%), anxiety disorder not otherwise specified (NOS) in 26 (5.5%), and other disorders in 16 (3.4%). The "other" disorders were noted in children and adolescents by their parents, and included dizziness, vertigo, startle response, sleep-wake cycle disturbances, clinging behavior, excessive crying, withdrawal, and fear.

A comparison of psychiatric morbidity between the displaced and non-displaced survivors is in Table 2. Almost all of the 220 (90.2%) settlers who were displaced from their islands and placed in the camps of Port Blair, in contrast to only 24 (9.8%) of the native tribals (Nicobarese) who were displaced from their islands of origin. The displaced survivors had significantly higher rates of panic disorder ( $\chi^2 = 15.022, p < 0.001$ ), anxiety disorder NOS ( $\chi^2 = 12.171, p < 0.001$ ), somatic complaints ( $\chi^2 = 10.919, p = 0.001$ ), and others ( $\chi^2 = 15.676, p < 0.001$ ). However, adjustment disorder was significantly

Variable	Displaced (n = 244) n (%)	Non-displaced (n = 231) n (%)	$\chi^2$	p-value
Age distribution (years)			36.566	<0.001
≤18	30 (12.3)	7 (3)		
19–59	196 (80.3)	167 (72.3)		
≥60	18 (7.4)	57 (24.7)		
Population			364.808	<0.001
Native tribal	24 (9.8)	225 (97.4)		
Settlers	220 (90.2)	6 (2.6)		
Adjustment disorder	58 (23.8)	120 (51.9)	40.209	<0.001
Acute stress reaction	2 (0.8)	1 (0.4)	0.283	1.000
PTSD	29 (11.9)	24 (10.4)	0.268	0.663
Depression	49 (20.1)	53 (22.9)	0.576	0.503
Panic disorder	43 (17.6)	14 (6.1)	15.022	<0.001
Alcohol Dependence Syndrome*	5 (2)	2 (0.9)	1.144	0.451
Somatic complaints	14 (5.7)	1 (0.4)	10.919	0.001
Phobic disorder NOS	3 (1.2)	1 (0.4)	0.902	0.624
Anxiety disorder NOS	22 (9)	4 (1.7)	12.171	<0.001
Schizophrenia*	3 (1.2)	3 (1.3)	0.005	1.000
Dissociative disorder	0	2 (0.9)	2.121	0.236
Recurrent Depressive Disorder *	0	2 (0.9)	2.121	0.236

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**Table 2**—Psychiatric morbidity in displaced and non-displaced population

\*Pre-existing mental disorders

 $p < 0.05$  was considered to be statistically significant.

higher statistically in the non-displaced survivors ( $\chi^2 = 40.209$ ,  $p < 0.001$ ). Diagnoses of depression and PTSD were distributed equally in both of the groups. An analysis of the role of gender did not reveal any effect on the pattern of the distribution of psychiatric disorders.

### Discussion

The results of this study must be interpreted against the caveat that this was information derived from records of clinical interventions performed during the early phase of the disaster, rather than a research project. Therefore, assessments using structured instruments and rigorous sampling methods could not be performed. However, the main strength of these results is that the community leaders and survivors were involved in the shared decision-making processes in regard to organizing and utilizing the services at the mental health clinics in the relief camps.

The most common psychiatric disorders observed in the survivors' group were adjustment disorder, depression, panic disorder, PTSD, anxiety disorder NOS, and others. This is similar to earlier findings in populations in the aftermath of disasters.<sup>13</sup>

Displacement was a significant factor in the manifestations of observed pathology. Displaced survivors had higher psychiatric morbidity in the form of panic disorder, anxiety disorder NOS, somatic complaints, and others. In contrast, adjustment disorder was more common in the non-displaced survivors. The fact that adjustment disorder (a lesser form of psychopathology) is more prevalent in the non-displaced group may be a reflection of the findings of overall lesser morbidity in the non-displaced group. However, depression and PTSD were distributed equally in both groups. These findings are similar to a study performed in Thailand.<sup>34</sup> Children in the displaced population were affect-

ed more than were those in the non-displaced population, which also was found in a similar study from Thailand.<sup>35</sup> Pre-existing psychiatric disorders in both of the groups had worsened or relapsed immediately after the tsunami.

Displacement is likely to facilitate greater feelings of isolation and a state of anomie. This classic sociological concept describes a state of normlessness and loosening of social norms, which is manifested in such social maladies as suicide and riots in what previously were socially and civilly cohesive and functioning environments.<sup>37</sup> Related to anomie is a reduced sense of control over one's own life. A sense of community—including residing within known social groups, familiar cultural activities, structured social relationships, and established roles—mitigates against a sense of normlessness.<sup>36</sup> These elements are even more important when a community is relocated physically.

Earlier observers highlighted the victims' search for familiarity and normalcy in an attempt to make sense out of the chaos of disasters. A sense of control is essential for victims, including access to the most accurate communication from recognized and trusted community officials regarding the aftermath of the disaster affairs. The stabilizing features of the community help to re-establish a sense of balance and norms.<sup>44</sup> Practically speaking, this includes allowing neighborhoods to retain their proximity and permitting known local leaders (traditional, municipal government, or non-governmental leaders) to maintain leadership roles. The autonomy of the community (including decisions by legitimate local leadership) should be respected and reinstated as much as possible.<sup>45</sup> Established localized social support structures and other organizations particular to each locality and culture are particularly important.

### *Resilience*

Ethnic and cultural differences between the two groups might have magnified the impact of displacement. For the most part, the non-displaced population comprised native tribals (Nicobarese) and members of the displaced group mostly were settlers.<sup>46</sup> The Nicobarese continued to live in extended joint families that may consist of 40–120 members. Leadership patterns and boundaries are well-delineated in the joint family, which are headed by sub-captains, and in the village headed by well-respected chieftains called "Captains". The interactions of the family members and the village hierarchies are marked by unusual levels of altruism. Communication is open. Women and children are given high priority with regard to social status, safety, and security. The community and kinship orientation of the Nicobarese also dictated their subsequent actions after the tsunami: they either refused to move from their islands, or, even when displaced to relief camps, persisted with their accustomed cohesiveness and kinship hierarchies. Consequently, after the tsunami, orphans were immediately "adopted", and were cared for, and families restarted their traditional rituals within a week after the event. The Nicobarese are a shy, reserved community, who do not display their emotional distress to outsiders. Any interaction with "outsiders" or even the acceptance of any type of intervention requires permission from the Captain. Without the Captain's approval, nobody in the community would cooperate. The

joint family system appears to buffer the early phase of stress. In contrast, settler families are mostly nuclear families comprising of 4–6 members, who have lost touch with their extended families on the mainland. They tend to be individualistic rather than community-oriented, express their distress easily, and vent their problems to others.

A cohesive community and family system and the altruistic behavior of the community leaders played a major role in providing support and mobilizing other survivors and youngsters in the community to help each other. Natives have a very simple lifestyle. Their dependency on the materialistic needs of the contemporary world is minimal, which added to their resilience. Though there is a vast diversity in regard to religion and cultural practices in the Adaman and Nicobar Island population, they proved to have "unity in diversity", even under adverse conditions. Religious institutions assumed different roles, from organizing camps to providing food for the survivors, and religious leaders gave their valuable time to the survivors by providing traditional and spiritual preaching. This religious grounding played a major role in helping the victims come to terms with the destruction. Within a few weeks after the disaster, they started their family and religious rituals by rebuilding their religious institutions, using their own resources. This finding is in accordance with previous observations that religious beliefs and social support can provide a basis for coping.<sup>47,48</sup>

### *Rehabilitation*

During the early phase of the relief work, tsunami survivors were supplied with clothes that were not accepted by many tribal communities, because they were not appropriate to their culture. When any kind of psychosocial intervention is planned without considering the local cultural and traditional practices, the planned intervention may be rejected.<sup>49</sup> Hence, rehabilitation efforts should be culturally appropriate and targeted toward empowering the affected community to enhance their camaraderie and competence to cope with future disasters.

### **Conclusions**

Psychiatric morbidity was higher in the displaced population than in the non-displaced population. However, depression and PTSD were distributed equally in both groups. Involvement of community leaders and survivors in shared decision-making processes and culturally acceptable interventions improved community participation. Psychosocial rehabilitation should be targeted at community empowerment and be initiated as early as possible after the precipitating event. The cohesive community, family systems, social support, altruistic behavior of the community leaders, and religious faith and spirituality helped the survivors cope with the early phase of the disaster.

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## References

1. Kinston W, Rosser R: Disaster: Effect on medical and physical state. *J Psychosom Res* 1974;18:437-456.
2. Norris F: Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *J Consult Clin Psychol* 1992;60:409-418.
3. Davidson JRT, McFarlane AC: The extent and impact of mental health problems after disaster. *J Clin Psychiatry* 2006;67(suppl 2):9-14.
4. Carol SN: Psychiatric Epidemiology of Disaster Responses. In: Ursano RJ and Norwood AE (eds.): *Trauma and Disaster, Responses and Management*, Review of Psychiatry Series, Vol 22(1), 2003. Arlington: American Psychiatric Publishing, Inc, pp 35-62.
5. World Health Organization: Psychosocial consequences of disaster—Prevention and management. WHO.MNH/PSF/91.3 Rev.1, 1992.WHO: Geneva.
6. Brewin CR, Andrews B, Valentine JD: Meta-analysis of risk factors for post-traumatic stress disorder in trauma exposed adults. *J Consult Clin Psychol* 2000;68:748-766.
7. Carlier I, Gerson B: Stress reactions in disaster victims following the Bijlmermeer plane crash. *J Traumatic Stress* 1997;10:329-335.
8. Johnes M: Aberfan and the management of trauma. *Disasters* 2000;24:1-17.
9. North CS, Smith EM, McCool RE, et al: Acute post-disaster coping and adjustment. *Journal of Traumatic Stress* 1989;2:353-360.
10. Morrow BH: Identifying and mapping community vulnerability. *Disaster* 1999;23:1-18.
11. Hutton D, Haque CE: Human vulnerability, dislocation and resettlement: Adaptation process of riverbank erosion-induced displaces in Bangladesh. *Disaster* 2004;28:41-62.
12. Regehr C, Hemsworth D, Hill J: Individual predictors of posttraumatic distress: A structural equation model. *Canadian Journal of Psychiatry* 2001;46:156-161.
13. Norris F, Friedman M, Watson P, et al: 60,000 disaster victims speak, Part I: An empirical review of the empirical literature, 1981-2001. *Psychiatry* 2002;65:207-239.
14. Palinkas LA, Downs MA, Petterson JS, Russell J: Social, cultural, and psychological impacts of the Exxon Valdez oil spill. *Hum Organ* 1993;52:1-13.
15. Kessler RC, Sonnega A, Bromet E, et al: Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995;52:1048-1060.
16. North CS, Nixon SJ, Shariat S, et al: Psychiatric disorders among survivors of the Oklahoma City bombing. *JAMA* 1999;282:755-762.
17. Basoglu M, Salcioglu E, Livanou M: Traumatic stress responses in earthquake survivors in Turkey. *J Trauma Stress* 2002;15:269-276.
18. Breslau N, Davis GC: Posttraumatic stress disorder in an urban population of young adults: Risk factors for chronicity. *Am J Psychiatry* 1992;149:671-675.
19. Foa EB, Stein DJ, Mc Farlane AC: Symptomatology and psychopathology of mental health problems after disaster. *J Clin Psychiatry* 2006;67(suppl 2):15-25.
20. Creamer M, Burgess PM, Mc Farlane AC: Posttraumatic stress disorder: Findings from Australian National Survey of Mental Health and Wellbeing. *Psychol Med* 2001;31:1237-1247.
21. Almedon AM, Summerfield D: Mental well-being in settings of 'complex emergency': An overview. *J Biosoc Sci* 2004;36:381-388.
22. Summerfield D: A critique of seven assumptions behind psychological trauma programmes in war-affected areas. *Soc Sci Med* 1999;48:1449-1462.
23. Norris FH, Algeria M: Mental health care for ethnic minority individuals and communities in the aftermath of disasters and mass violence. *CNS Spectr* 2005;10(2):132-140.
24. Snowden LR: Bias in mental health assessment and intervention: Theory and evidence. *Am J Public Health* 2003;93(2): 239-243.
25. Jaycox LH, Marshall GN, Schell T: Use of mental health services by men injured through community violence. *Psychiatr Serv* 2004;55:415-420.
26. Perilla J, Norris F, Lavizzo E: Ethnicity, culture, and disaster response identifying and explaining ethnic differences in PTSD six months after Hurricane Andrew. *J Soc Clin Psychol* 2002;21:28-45.
27. The Sphere Project: *Humanitarian Charter and Minimum Standards in Disaster Response*. Oxford: Oxfam Publishing, 2000.
28. Thiel de Bocanegra H, Brickman E: Mental health impact of the World Trade Center attacks on displaced Chinese workers. *J Trauma Stress* 2004;17:55-62.
29. Galea S, Ahern J, Resnick H, et al: Psychological sequelae of the September 11 terrorist attacks in New York City. *N Engl J Med* 2002;346:982-987.
30. Schuster MA, Stein BD, Jaycox L, et al: A national survey of stress reactions after the September 11, 2001, terrorist attacks. *N Engl J Med* 2001;345:1507-1512.
31. Norris FH, Alegria M: Promoting Disaster Recovery in Ethnic-Minority Individuals and Communities. In: Ritchie EC, Watson PJ, Friedman MJ (eds): *Interventions following Mass Violence and Disasters: Strategies for Mental Health Practices*. New York: Guilford Press; 2006, pp 319-343.
32. Watson PJ, Friedman MJ, Gibson LE, et al: Early Intervention for Trauma-Related Problems. In RJ Ursano, AE Norwood (eds): *Trauma and Disaster, Responses and Management*, Review of Psychiatry Series. Arlington: American Psychiatric Publishing, Inc., 2003, Vol 22(1), pp 97-124.
33. Young BH, Ford JD, Ruzek JI, et al: *Disaster Mental Health Services: A Guide for Clinicians and Administrators*. Palo Alto, California: National Center for Post-Traumatic Stress Disorder, 1998.
34. Van Griensven F, Chakkraband MLS, Thienkrua W, et al: Mental health problems among adults in tsunami-affected areas in southern Thailand. *JAMA* 2006;296(5):537-548.
35. Thienkrua W, Cardozo BL, Chakkraband MLS, et al: Symptoms of post-traumatic stress disorder and depression among children in tsunami-affected areas in southern Thailand. *JAMA* 2006;296(5):549-559.
36. Putnam RD: *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster, 2000.
37. Giddens A: *Emile Durkheim: Selected Writings*. London: Cambridge University Press, 1972.
38. Fullilove MT: Psychiatric implications of displacement: Contributions from the psychology of place. *Am J Psychiatry* 1996;153:1516-1523.
39. Ursano RJ, Fullerton CS, Norwood AE: Psychiatric dimensions of disaster: Patient care, community consultation, and preventive medicine. *Harv Rev Psychiatry* 1995;3(4):196-209.
40. Chandrashekar CR, Math SB: Psychosomatic disorders in developing countries: Current issues and future challenges. *Curr Opin Psychiatry* 2006;19:201-206.
41. Somasundaram DJ, Van De Put WACM: Management of trauma in special population after a disaster. *J Clin Psychiatry* 2006;67(suppl 2):64-73.
42. Vogt WP: *Dictionary of Statistics and Methodology: A Nontechnical Guide for the Social Sciences*. London: Sage, 1999.
43. World Health Organization: *ICD-10 Classification of Mental and Behavioural Disorders*. Geneva: World Health Organization, 1992.
44. Erikson K: *Everything in its Path*. New York: Simon & Schuster, 1976.
45. Bolin R: Natural Disasters. In: L R Gist, B Lubin (eds.): *Psychological Aspects of Disaster*. New York: Wiley, 1989, pp 61-85.
46. Math SB, Girimaji SC, Benegal V, et al: Tsunami: Psychosocial aspects of Andaman and Nicobar islands. Assessments and intervention in the early phase. *International Review of Psychiatry* 2006;18(3):233-239.
47. Falloot RD, Heckman JP: Religious/spiritual coping among women trauma survivors with mental health and substance use disorders. *J Behav Health Serv Res* 2005;32:215-226.
48. Ano GG, Vasconcelles EB: Religious coping and psychological adjustment to stress: A meta-analysis. *J Clin Psychol* 2005;61:461-480.
49. Carballo M, Heal B, Hernandez M: Psychosocial aspects of the Tsunami. *J R Soc Med* 2005;98:396-399.