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Trauma and PTSD in Japan

This issue of the *PTSD Research Quarterly* is the third in an occasional series on the epidemiology of trauma and PTSD around the world, following previous issues on Latin America (Fall 2009) and the Middle East (Fall 2010). Whereas published reviews of epidemiologic studies focus primarily on North America, this series aims to highlight other relevant bodies of work. In this issue, I consider research conducted in a specific country, Japan, rather than in a region of the world. There are three reasons for this choice. First, Japan is a highly developed country with a strong research infrastructure, and thus a significant body of work has emerged that spans the range of trauma survivors, including the general population (multi-event studies) and victims of violence, automobile accidents, fire, natural disasters, terrorist attacks, and war. The area that is least well represented in the Japanese literature is military trauma, which follows from Japan's post-World War II history of having only a defensive force for many years. This bibliography is limited to English-language articles, but interested readers will find many additional Japanese-language articles (with English abstracts) indexed in PILOTS. For an historical perspective on traumatic stress studies in Japan, the single best source is Goto and Wilson (2003).

The second rationale for focusing specifically on Japan is that it has been the setting of several catastrophic or novel mass traumatic events. The greatest of these were the 1945 atomic bomb explosions in Hiroshima and Nagasaki. As the trauma field develops, we sometimes lose sight of the significance of early phenomenological studies that presaged our current understandings and

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definitions of PTSD; Lifton's (1967) study of Hiroshima was profoundly important in this regard. The list of events in Japan also includes one of the greatest earthquakes that has been studied by behavioral scientists, the 1995 Hanshin-Awaji earthquake in Kobe, which killed over 6,500 people and left more than 300,000 homeless, as well as the most significant example of bioterrorism in the world literature, the 1995 sarin gas attacks in Tokyo. Earlier this year, Japan experienced a 9.0 earthquake that triggered massive tsunami waves and a nuclear accident. Approximately 15,000 people died in this disaster, and hundreds of thousands of people were evacuated or displaced. Given this event, it seemed timely to visit the past literature on disasters in Japan to review what was found about their psychological effects.

Third, Japan is of interest because of its cultural distinctiveness. The role of culture in shaping either the phenomenology or epidemiology of PTSD in Japan was not analyzed very thoroughly in most of the work reviewed, but there were exceptions that provide some insight.

This guide to the literature is organized around these three primary themes. First, I summarize the literature on individually experienced events, such as accidents, injuries, and domestic violence. General-population studies are included here. Second, I summarize the literature on mass trauma, including the atomic bomb attacks, natural disasters, and the sarin gas attacks. Third, I consider what the Japanese literature potentially tells us about the role of culture in shaping the expression of PTSD.

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Trauma in the General Population of Japan

The most important epidemiologic data on trauma and PTSD in Japan were collected as part of the World Health Organization's World Mental Health Survey Initiative (Kawakami et al., 2008). In 2002-2004, representative samples of adults aged 20 and older in two cities and five towns were interviewed. The 12-month prevalence of PTSD (9 of 887 or 0.4%) was far lower than that found (3.5%) in the parallel U.S. study (Kessler et al., 2005). Using data from the same survey, Fujiwara et al. (2011) reported population frequencies of various "childhood adversities," many of which would qualify as traumatic events, including parental death (11.5%), family violence (10.1%), physical abuse (7.5%), and sexual abuse (0.5%). Family violence and physical abuse both showed significant associations with mental illness, over and above the effects of other adversities such as parental mental illness, criminality, physical illness, and economic adversity. Thus, despite the low prevalence of PTSD, it does appear that trauma is a risk factor for mental illness in Japan, as it is elsewhere.

Similarly, Izutzu and colleagues (2008) studied lifetime trauma exposure in over 3,000 industrial workers. The 22% of the sample who reported one or more events exhibited higher depression and anxiety (measured by self-report) and a higher probability of sickness absence (confirmed in the company's human resources database) than did other workers. Events had their greatest impact in the first year, which is consistent with other literature in the trauma field.

Although few studies have focused specifically on interpersonal violence in Japan, Fujiwara et al. (2010) examined the influence of childhood abuse history and domestic violence on the mental health of 340 women housed in Mother-Child Homes. Citing other sources, the authors estimated that 14.3% of Japanese women experience domestic violence by age 30. Women in these homes were clearly at greater than average risk, with 84% having a history of domestic violence, 45% a history of child abuse, and 42% both. Child abuse was related to dissociative symptoms and depression, and both experiences were related to current traumatic stress. Domestic violence was related to dissociation only in women who had not experienced child abuse; the authors interpreted this effect to mean that abused women were already so distressed that domestic violence had little additional effect.

Motor vehicle accidents (MVAs) are an important source of trauma in Japan. In the Tachikawa Cohort Study (Matsuoka et al., 2008), 31 of 100 participants showed some form of new-onset psychiatric illness 4-6 weeks after the accident, including 8 full and 16 partial PTSD cases. The strongest predictors of PTSD were sense of life threat during the accident and heart rate and intrusive symptoms at the time of hospital intake. Eighteen months post-accident, Nishi, Matsuoka, and Kim (2010) found that posttraumatic growth in the Cohort was positively correlated with both sense of coherence (interpreted as a sign of coping success) and PTSD symptoms (interpreted as a sign of enduring distress). A similar study (Hamanaka et al., 2006) yielded similar results: 9% of the sample ($N = 100$) met full criteria for acute stress disorder (ASD) one month post-accident (plus 10% partial ASD), and 8.5% met full criteria for PTSD six months post-accident (plus 12.2% partial PTSD). The association between ASD and PTSD was quite strong when partial conditions were included. In another sample of MVA survivors

assessed 5 ($n = 93$) and 14 months ($n = 49$) post-accident, subjective measures of crash severity (life threat, persistent medical problems) were related to subsequent distress, whereas objective measures (e.g., change in velocity during impact) were not (Fujita & Nishida, 2008).

Mass Trauma in Japan

Some of these most significant contributions of the Japanese literature are related to critical events the country experienced in the 20th century. No single act of war before or since has been as catastrophic or deadly as the atomic bombings of Hiroshima and Nagasaki in 1945. Shigematsu (1998) provided a useful overview of 50 years of research supported by the foundation funded jointly by Japan and the United States. These studies addressed the long-term health consequences of radiation exposure based on biennial health examinations of 20,000 survivors and death certificate retrieval for a larger cohort of 120,000 survivors. This program of research was extremely important for documenting long-term risk for leukemia and other serious illnesses and for testing (and failing to find) evidence of heritable effects in offspring. Although, overall, the cohort's psychiatric status received little attention, Yamada and Izumi (2002) examined self-report data collected between 1962 and 1965 to estimate the prevalence of anxiety disorders. Peak prevalence (30-35%) occurred in men aged 25-40 and women aged 45-60. Likelihood of anxiety increased with more severe exposure (e.g., proximity to the epicenter) and presence of acute radiation symptoms. With great depth, Lifton (1967, 1970) documented Hiroshima's experience. He highlighted survivors' intense emotions surrounding their extreme confrontation with death, the subsequent numbing of these emotions, survivors' sense of shame, the clarity of particular seminal memories, survivors' ongoing bodily concerns wherein every minor illness triggered fear of dreaded disease, the cultural significance of their fears that offspring would be abnormal or die, and how survivors' self-image and social identity as *hibakusha* separated them from the rest of humankind.

A substantial body of work on postdisaster mental health includes studies of young children after a gas explosion (Ohmi et al., 2002), adolescents after an accident at sea (Maeda et al., 2009), and adults after volcano eruptions (Goto et al., 2002; Ohta et al., 2003) and earthquakes (Kuwabara et al., 2008). By far, the most extensively studied disaster was the 1995 Hanshin-Awaji earthquake in Kobe. The Kobe earthquake sparked significant advancement of PTSD research and treatment in Japan (Goto & Wilson, 2003; McCurry, 2004). Kato (1998) reported results from a large sample ($N = 6,217$) of residents of 100 temporary housing communities who were assessed with standardized measures of distress and PTSD. Percentages scoring above threshold on the PTSD measure ranged from 13% in the least exposed group to 25% in more highly exposed groups. Kwon, Maruyama, and Morimoto (2001) likewise demonstrated a strong relationship between severity of exposure and PTSD outcomes. Kato et al. (1996) studied age differences in a sample of 67 younger (< 60) and 75 older adults. Both groups showed distress at Week 3 but by Week 8, older adults had recovered more than younger adults. Fukuda et al. (1999) documented a strong association between health behavior (e.g., smoking, drinking, exercising) and PTSD symptoms in a sample of 108 men. The 26% of the sample whose "lifestyle" had worsened averaged 9 PTSD symptoms, compared to 5 symptoms in the remainder of the sample.

Perhaps the most unusual disaster occurred when members of a Japanese cult released sarin gas in the Tokyo subway system, killing 12 people and injuring over 5,000. One month post-attack, Ohbu et al. (1997) assessed 475 persons who had been admitted to St. Luke's International Hospital for acute sarin poisoning. The investigators did not measure PTSD but did assess relevant symptoms, including fear of the subway (32%), sleep disturbance (29%), flashbacks (16%), depressed mood (16%), and nightmares (10%). Sixty percent had at least one psychological symptom. Six months post-attack, Murata et al. (1997) evaluated the neurological functioning of 18 St. Luke patients and found no clinical abnormalities. Scores on the PTSD checklist ranged from 18-45 ($M = 26$) but were unrelated to variations in brain functioning (see Hoffman et al., 2007, for a more complete review of the neuropsychological research). Kawana, Ishimatsu, and Kanda (2001) followed St. Luke patients for many years. Rates of DSM-IV PTSD were 2.8%, 2.9%, and 2.1%, respectively, at 2, 3, and 5 years post-attacks, with an additional 7-8% partial PTSD at each time-point.

The Role of Japanese Culture

Most empirical studies summarized here did not explicitly consider the cross-cultural validity of the PTSD diagnosis, but Kawana and colleagues (2001) did show that prevalence rates based on revised Nakano criteria (12.4%, 9.7%, and 14.1%, respectively at 2, 3, and 5 years after the sarin gas attack) were higher than those obtained using DSM-IV criteria. Several studies (e.g., Fukunishi et al., 1996; Ohtani et al., 2004) included data on specific symptoms, and their relative frequencies were familiar, with certain symptoms (e.g., sleep disturbance, intrusive memories) being much more frequent than others (inability to recall aspects, restricted affect, estrangement), as is typically the case. In general, the Japanese literature showed relationships between variables (e.g., risk factors) that were consistent with other reports.

More broadly, this body of work did not give a great deal of attention to the role of culture, but there were exceptions. Throughout his narratives, Lifton (1967, 1970) considered how the social and psychological consequences of the atomic bombings were shaped by Japanese values surrounding patience, forbearance of hardship, and family. Goto and Wilson (2003) noted that Japanese culture discourages inappropriate public disclosure of emotion because of shame and norms regarding the ability to cope with stress. These values inhibit seeking help for psychological problems (Goto et al., 2002). As is true in many settings, physical symptoms are more readily recognized and acceptable than psychological symptoms. McCurry (2004) observed that Japan's traditions are changing towards a new openness about mental health problems. Indeed the field of traumatic stress studies has been growing in Japan and is likely to grow further still in response to the disaster of 2011.

References

- Kessler, R.C., Chiu, W.T., Demler, O., & Walters, E.E. (2005). **Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication.** *Archives of General Psychiatry*, *62*, 617-709.
- McCurry, J. (2004). **Japan makes progress in facing up to post-traumatic stress.** *Lancet*, *363*, 1782.
- Fujiwara, T., Kawakami, N., & World Mental Health Japan Survey Group. (2011). **Association of childhood adversities with the first onset of mental disorders in Japan: Results from the World Mental Health Japan, 2002–2004.** *Journal of Psychiatric Research*, *45*, 481-487. doi: 10.1016/j.jpsychires.2010.08.002. It is well known that childhood adversities (CAs) are a significant risk factor for mental disorders in later life. However, it is uncertain whether a similar association between CAs and mental disorders can be found in Japan. Few studies have employed an appropriate statistical model that takes into account the high comorbidity of CAs. The purpose of this study is to elucidate the association between CAs and the onset of mental disorders in Japan. We used the data from the World Mental Health Japan, 2002–2004 ($n = 1722$). Respondents completed diagnostic interviews (the World Health Organization Composite International Diagnostic Interview) that assessed lifetime prevalence of 15 Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV) disorders. Associations of 12 retrospectively reported CAs with the lifetime prevalence of mental disorders were estimated using discrete-time survival analysis. Of the study sample, 32% reported as having experienced at least 1 CA during childhood. The studied CAs were highly comorbid. Parental mental illness showed significant sub-additive effects. The presence of 3 CAs showed a significant interactive effect on any mental health disorder. The number of CAs had a strong interactive effect on the onset of anxiety disorders. Predictive effects of CAs were found only among childhood onset mental disorders. It was confirmed that CAs are one of the predictors of the onset of DSM-IV mental disorders, especially during childhood, in Japan.
- Goto, T., & Wilson, J.P. (2003). **A review of the history of traumatic stress studies in Japan: From traumatic neurosis to PTSD.** *Trauma, Violence, & Abuse*, *4*, 195-209. doi: 10.1177/1524838003004003001. Based on available literature, this review article investigates traumatic stress studies in Japan from the late 19th century to the present for English-speaking audiences. First, traumatic neuroses of war victims, A-bomb survivors, and victims of work-related accidents are discussed. Second, traumatic stress studies of victims of other manmade disasters, such as the sarin gas attacks in Tokyo, domestic violence, and burn injuries, are discussed. Third, psychological outcomes of natural disaster studies are discussed in relation to social support and help-seeking tendencies of Japan disaster victims.
- Goto, T., Wilson, J.P., Kahana, B., & Slane, S. (2002). **PTSD, depression and help-seeking patterns following the Miyake Island volcanic eruption.** *International Journal of Emergency Mental Health*, *4*, 157-171. Assessing help-seeking patterns following disaster provides useful information about who needs professional help the most, who is willing to seek help, and who is reluctant to seek help. 231 Japanese evacuees from the Miyake Island volcanic eruption (2000) participated in this study (ages 20-93, average age 59.52). Ten months after the evacuation, participants were mailed questionnaires which elicited demographic data, disaster experiences, help-seeking patterns, and psychological symptoms (PTSD and depression). Help-seeking patterns were categorized as: professionals (physicians, nurses, psychotherapists/counselors, telephone consultation, social workers, priests and monks, and others); or informal (family, relatives, friends, neighbors, and others) and, (information, advice, tangible, and emotional). The findings indicate that younger and/or female victims frequently sought help from informal sources while male and/or older victims frequently sought help from professionals. Severity of PTSD and depression symptoms were positively correlated with help-seeking from physicians, but not psychologists or mental health professionals. Very high rates of utilizing medical assistance rather than mental health treatment were also identified among these disaster victims, and appeared related to cultural norms regarding shame and self-disclosure of emotional distress.
- Hamanaka, S., Asukai, N., Kamijo, Y., Hatta, K., Kishimoto, J., & Miyaoka, H. (2006). **Acute stress disorder and posttraumatic stress disorder symptoms among patients severely injured in motor vehicle accidents in Japan.** *General Hospital Psychiatry*, *28*, 234-241. doi: 10.1016/j.genhosppsych.2006.02.007. Objective: The prevalence of acute stress disorder (ASD) and posttraumatic stress disorder (PTSD) in seriously injured survivors of motor vehicle accidents (MVAs) in Japan was investigated. Furthermore, predictive factors in the early stage for development of PTSD were evaluated. Method: Subjects were consecutive samples ($N=100$) of

Anxiety and Depression Scale, Clinician-Administered PTSD Scale, and Mini-International Neuropsychiatric Interview. Results: A total of 31 patients showed some form of new-onset psychiatric illness at the 4- to 6-wk follow-up. The majority of illnesses consisted of depression (major depression, $n = 16$; minor depression, $n = 7$) and PTSD (full PTSD, $n = 8$; partial PTSD, $n = 16$). Other illnesses included alcohol dependence ($n = 3$), obsessive-compulsive disorder ($n = 2$), agoraphobia ($n = 2$), and social phobia ($n = 1$). Both psychiatric morbidity and PTSD were predicted by a sense of life threat (odds ratio, 4.2 and 6.2, respectively), elevated heart rate (odds ratio, 1.6 and 1.7), and higher Impact of Event Scale-Revised intrusion subscale score (odds ratio, 1.1 and 1.1). **Conclusion:** This study showed that psychopathology and PTSD after a motor vehicle accident in Japan is common and that the incidence is within the range of that in Western countries. A combination of a sense of life threat, heart rate, and Impact of Event Scale-Revised intrusion subscale allowed for significant prediction of psychiatric morbidity and PTSD.

Ohbu, S., Yamashina, A., Takasu, N., Yamaguchi, T., Murai, T., Nakano, K., et al. (1997). **Sarin poisoning on Tokyo subway.** *Southern Medical Journal*, *90*, 587-593. On the day of the disaster, 641 victims were seen at St. Luke's International Hospital. Among those, five victims arrived with cardiopulmonary or respiratory arrest with marked miosis and extremely low serum cholinesterase values; two died and three recovered completely. In addition to these five critical patients, 106 patients, including four pregnant women, were hospitalized with symptoms of mild to moderate exposure. Other victims had only mild symptoms and were released after 6 hours of observation. Major signs and symptoms in victims were miosis, headache, dyspnea, nausea, ocular pain, blurred vision, vomiting, coughing, muscle weakness, and agitation. Almost all patients showed miosis and related symptoms such as headache, blurred vision, or visual darkness. Although these physical signs and symptoms disappeared within a few weeks, psychologic problems associated with posttraumatic stress disorder persisted longer. Also, secondary contamination of the house staff occurred, with some sort of physical abnormality in more than 20%.

Ohta, Y., Araki, K., Kawasaki, N., Nakane, Y., Honda, S., & Mine, M. (2003). **Psychological distress among evacuees of a volcanic eruption in Japan: A follow-up study.** *Psychiatry and Clinical Neurosciences*, *57*, 105-111. doi: 10.1046/j.1440-1819.2003.01086.x. Psychological distress in 248 evacuees from a volcanic eruption was evaluated using a 30-item General Health Questionnaire (GHQ-30) at four time points after evacuation: 6 months, 12 months, 24 months and 44 months. The proportion of evacuees with psychological distress (defined as a GHQ score ≥ 8) significantly decreased from 66.1% (6 months) to 45.6% (44 months). The GHQ mean score significantly improved from 12.6 to 8.9. Investigation of each factor on the GHQ showed progressive improvement over time in 'anxiety, tension and insomnia' and 'anergia and social dysfunction'. However, 'depression' began to improve only after 44 months and 'interpersonal dysfunction' started to worsen after 12 months. The dysfunction in interpersonal relationships continued at 44 months. Examination of the relation between GHQ mean scores and age group showed that recovery from psychological distress was more difficult in middle-aged and older evacuees than in younger evacuees.

Yamada, M., & Izumi, S. (2002). **Psychiatric sequelae in atomic bomb survivors in Hiroshima and Nagasaki two decades after the explosions.** *Social Psychiatry and Psychiatric Epidemiology*, *37*, 409-415. doi: 10.1007/s00127-002-0572-5. **Background:** Atomic bomb exposure was an extraordinarily stressful event. Although little epidemiological research has been performed on the psychiatric effects of the bombings, many medical descriptions of the survivors suggest that there was an increase of various symptoms that implied autonomic ataxia or neurosis-like disorders. The psychiatric effects of exposure to the atomic bomb explosions in Hiroshima and Nagasaki were assessed in this study. **Method:** From a self-administered medical questionnaire completed between 1962 and 1965 by 9421 informed and consenting Adult Health Study subjects, some questions congruent with the DSM-IV diagnostic criteria for generalized anxiety disorder and somatization disorder were selected and used as indicators of anxiety symptoms and somatization symptoms. The prevalence of psychiatric symptoms in relation to age, sex, city (Hiroshima vs. Nagasaki), acute radiation symptoms, exposure status (in city or not in city), ground distance from hypocenter, disease history, and death

of family members were analyzed. **Results:** A higher prevalence of anxiety symptoms (odds ratio, 1.73) and somatization symptoms (odds ratio, 1.99) was observed in those with acute radiation symptoms than in those without them. The prevalence of anxiety symptoms and somatization symptoms among people who were in the city at the time of the explosion was significantly higher than among those who were not in the city. Among the former, prevalence was lower among proximally exposed people than among distally exposed people. Symptom prevalences were also affected by age, sex, and city. Although disease history such as neurotic disorder and ulcer were risk factors for anxiety symptoms and somatization symptoms, the increased prevalence of anxiety symptoms and somatization symptoms in association with atomic bomb exposure was independent of disease history and the death of family members. **Conclusion:** The prevalence of anxiety symptoms and somatization symptoms was elevated in atomic bomb survivors even 17-20 years after the bombings had occurred, indicating the long-term nature of the psychiatric effects of the experience. Psychiatric sequelae were independent of physical sequelae.

ADDITIONAL CITATIONS

Fujita, G., & Nishida, Y. (2008). **Association of objective measures of trauma exposure from motor vehicle accidents and posttraumatic stress symptoms.** *Journal of Traumatic Stress*, *21*, 425-429. doi: 10.1002/jts.20353. Associations of objective measures of trauma exposure with psychological sequelae following motor vehicle accidents (MVA) were examined in a Japanese population. Impact and injury severity of 93 MVA victims was assessed using on-the-scene in-depth investigations measured by the Injury Severity Score (ISS), barrier equivalent speed (BES), and change in velocity during the impact (Delta-v). Results showed that ISS, BES, and Delta-v were not related to posttraumatic stress symptoms (PTSS) or psychiatric symptoms at 5 and 14 months after the MVA. Subjective measures (e.g., perceived life risk, persistent medical problems) were significantly related to psychological sequelae. These findings suggest that the objective measures of trauma exposure are not associated directly with PTSS or psychiatric symptoms after an MVA.

Fujiwara, T., Okuyama, M., Izumi, M., & Osada, Y. (2010). **The impact of childhood abuse history and domestic violence on the mental health of women in Japan.** *Child Abuse & Neglect*, *34*, 267-274. doi: 10.1016/j.chiabu.2009.07.007. **Objective:** To understand the independent and interactive effects of childhood abuse history (CAH) and domestic violence (DV) on the mental health status of women in Japan. **Methods:** A self-administered questionnaire survey was conducted among a sample of 340 women staying in 83 Mother-Child Homes in Japan to assess the women's CAH and DV experiences, along with their current mental health problems, including dissociated, depressed, and traumatic symptoms. **Results:** Independent from DV, CAH, especially psychological abuse, had a significant impact on all of the women's mental health symptoms. DV was found to have an independent effect on traumatic symptoms. Weak interactive effects of CAH and DV were found on dissociated and traumatic symptoms. Among those women without CAH, DV was significantly associated with dissociated and traumatic symptoms; however, DV had no impact on dissociated and traumatic symptoms if CAH was present. **Conclusions:** The findings suggest the significant impact of CAH on women's mental health problems, independent from DV. CAH and DV weakly interact on women's mental health. **Practice implications:** In psychological therapy for battered women with mental health problems, if the cases were abused during childhood, it is recommended that therapy be focused on childhood abuse, especially if the client was psychologically abused. In addition, mental health care and welfare providers should be aware that the mental health problems of mothers without CAH might be exacerbated by DV; thus, appropriate resource allocation should be considered.

Fukuda, S., Morimoto, K., Mure, K., & Maruyama, S. (1999). **Posttraumatic stress and change in lifestyle among the Hanshin-Awaji earthquake victims.** *Preventive Medicine*, *29*, 147-151. **Background:** In 1995, Japan's Hanshin-Awaji area was severely damaged by a major earthquake. Lifestyle factors, sometimes associated with physical health and mortality, have also been known to be

associated with mental health status. This report examines the relationship between the subsequent change in lifestyle and the psychological stress induced by the earthquake. *Method:* An investigation was made of 108 male inhabitants of Awaji Island as to their individual lifestyle before and after the great earthquake, any posttraumatic stress disorder (PTSD) symptoms, and their demographic variables. *Results:* The mean PTSD score was higher in the worse lifestyle group than in the no/better lifestyle change group. Category B or D of PTSD scores were higher in the worse lifestyle group than in the no/better lifestyle change group. The percentage of subjects who lived in temporary public housing was higher in the worse lifestyle group than in the no/better lifestyle change group. *Conclusions:* Worse change in lifestyle might be associated with high PTSD score in victims of Hanshin-Awaji earthquake.

Fukunishi, I. (1998). **Posttraumatic stress symptoms and depression in mothers of children with severe burn injuries.** *Psychological Reports, 83*, 331-335. This study examined posttraumatic stress symptoms and depressive symptoms in mothers of children with burn injuries from accidentally falling into a bathtub filled with hot water. Subjects were 16 pairs, children with burn injuries and their mothers. Psychiatric interviews were administered to the mothers to check the presence or absence of mental disorders. The severity of mothers' depressive symptoms was rated on the Hamilton Depression Scale. Prevalence rates of DSM-IV posttraumatic stress disorder and major depression were 6.3% and 0% in children with burn injury and 12.5% and 18.8% in their mothers, respectively. For three symptoms of posttraumatic stress disorder (intense distress at similar event, restricted range of affect, and hypervigilance), prevalence rates were significantly higher for the mothers than for the children. Ratings of the three symptoms of posttraumatic stress disorder for the mothers were significantly and positively correlated with scores for guilt feelings. Compared with children with burn injury, mothers are prone to posttraumatic stress symptoms mixed with guilt feelings for children with burn injury.

Fukunishi, I., Sasaki, K., Chishima, Y., Anze, M., & Saijo, M. (1996). **Emotional disturbances in trauma patients during the rehabilitation phase: Studies of posttraumatic stress disorders and alexithymia.** *General Hospital Psychiatry, 18*, 121-127. doi: 10.1016/0163-8343(95)00121-2. Recent studies have shown a partial similarity between PTSD and alexithymia. In this study, the authors examined the relationship between PTSD and alexithymia in two samples of 26 patients with burn injury and 27 patients with digit amputation during rehabilitation. The prevalence rates of DSM-III-R PTSD and alexithymia assessed by the Toronto Alexithymia Scale (TAS) were significantly higher for injury patients than for healthy volunteers. The rate of PTSD symptoms of avoidance and emotional numbing was significantly and positively correlated with the TAS scores in injury patients. The PTSD symptoms of avoidance and emotional numbing had a significant relationship with function after digit replantation. Alexithymia also had a similar relationship with physical conditions. These results suggest that 1) in some cases, alexithymia may be evident when PTSD emotional symptoms appear in injury patients, and 2) emotional disturbances (i.e., PTSD symptoms of avoidance and emotional numbing and alexithymia) may be influenced by the level of functional recovery after digit replantation.

Izutzu, T., Shibuya, M., Tsutsumi, A., Konishi, T., & Kawamura, N. (2008). **The relationship between past traumatic experience and sickness absence.** *International Journal of Social Psychiatry, 54*, 83-89. doi:10.1177/0020764007083874. *Background:* Past traumatic experiences have been reported to lower stress tolerance, thereby increasing job strain. However, the relationship between past traumatic experiences and employee sickness absence is poorly understood. *Aims:* This study explores the relationship between sickness absence and past traumatic experience with regard to the amount of time lapsed after the experience, job strain and other mental health states such as depression and anxiety. *Methods:* A total of 3238 workers were assessed for levels of traumatic stress, depressive status, anxiety and job stress. *Results:* Odds ratios of the presence of traumatic experiences to sickness absence, adjusted for sex, age and depressive and anxiety states, were presented according to the length of time that had passed since the traumatic events. The odds ratio in the 0–1 Years Group was 1.75 ($p < 0.05$), and the odds ratio for the 19+ Years Group was 1.46 ($p < 0.1$). *Conclusions:* Past traumatic events are related to sickness absence. Sickness absence resulting from a past traumatic experience is important with respect to industrial health.

Kuwabara, H., Shioiri, T., Toyabe, S., Kawamura, T., Koizumi, M., Ito-Sawamura, M., et al. (2008). **Factors impacting on psychological distress and recovery after the 2004 Niigata-Chuetsu earthquake, Japan: Community-based study.** *Psychiatry and Clinical Neurosciences, 62*, 503-507. doi: 10.1111/j.1440-1819.2008.01842.x. *Aim:* This study was undertaken 5 months after the 2004 Niigata-Chuetsu earthquake in Japan to assess factors that impacted on psychological distress and its recovery. *Methods:* Three thousand and twenty-six adult victims who lived in temporary shelter and in seriously damaged areas were evaluated by questionnaire. The questionnaire queried subject profile, degree of house damage, health status, and psychological distress using a 5-point scale before, immediately, and 5 months after the earthquake. *Results:* Immediately after the earthquake, 59.3% of the subjects had psychological distress. At 5 months after the earthquake, however, this percentage decreased to 21.8%. The psychological distress immediately after the earthquake was significantly serious in victims who: (i) were female; (ii) felt stronger fear of the earthquake and the aftershocks; (iii) lived at home or office after the earthquake; and (iv) were injured due to the earthquake or suffered from sickness after the earthquake. In contrast, the factors impairing psychological recovery 5 months after the earthquake were as follows: (i) being with unfamiliar member(s) during the night after the earthquake; (ii) serious house damage; (iii) living in temporary shelter or at a relative's home after the earthquake; and (iv) physical illness after the earthquake. *Conclusion:* Despite differences between disasters, these results were consistent with those in some previous studies and may be useful for long-term mental care support.

Kwon, Y., Maruyama, S., & Morimoto, K. (2001). **Life events and posttraumatic stress in Hanshin-Awaji earthquake victims.** *Environmental Health and Preventive Medicine, 6*, 97-103. doi: 10.1007/BF02897953. Stress induced by disaster is experienced to varying degrees by all respondents, and is known to evoke psychophysiological reactions. In this study, we investigated the relationships between earthquake-related life events and posttraumatic stress symptoms. A total of 380 adults were surveyed one year after the 1995 Hanshin-Awaji earthquake in Japan. The questionnaire included items concerning earthquake-related life events, emotional support and PTSD symptoms. As a result, after controlling for demographic variables, earthquake-related life events were significantly related to the grade of posttraumatic stress and its three components: re-experience, avoidance, and arousal, in both male and female subjects. Male subjects who currently had lower emotional support showed higher scores of posttraumatic stress and arousal. In conclusion, a higher experience of earthquake-related life events appears to be an important risk factor for development of poor mental health status following an earthquake disaster.

Maeda, M., Kato, H., & Maruoka, T. (2009). **Adolescent vulnerability to PTSD and effects of community-based intervention: Longitudinal study among adolescent survivors of the Ehime Maru sea accident.** *Psychiatry and Clinical Neurosciences, 63*, 747-753. doi: 10.1111/j.1440-1819.2009.02031.x. *Aims:* The aim of the present study was to examine the psychological impact on adolescent survivors of a maritime disaster that resulted in the deaths of nine people, including four high school students, and the effects of psychiatric intervention for the survivors. *Methods:* Long-term multidimensional intervention consisting of psychoeducation, hospital treatment, family support, and day care was provided for nine adolescent survivors. To evaluate these effects, the survivors were also assessed using self-rating scales (Impact of Event Scale, General Health Questionnaire, and Self-rating Depression Scale) and psychiatric structured interviews (Clinician-Administered PTSD Scale) at 2, 8, 14, 26, and 38 months after the accident. *Results:* Prevalence of PTSD among adolescent survivors was much higher than in adult survivors at the 2-month examination (78% vs 12%, respectively). Although the observed prevalence remained high until the 14-month examination, remarkable improvement occurred thereafter and none was diagnosed with PTSD at the 38-month examination. *Conclusion:* Adolescents may have a specific vulnerability to PTSD and community-based intervention is effective for adolescents with serious symptoms of PTSD.

