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Article

Trends in psychological distress and alcoholism after The Great East Japan Earthquake of 2011

A. Kanehara[a,1], S. Ando[b,*,1], T. Araki[c], S. Usami[d], H. Kuwabara[e], Y. Kano[f], K. Kasai[a]

[a] Department of Neuropsychiatry, The University of Tokyo, Tokyo, Japan
[b] Department of Psychiatry and Behavioural Sciences, Tokyo Metropolitan Institute of Medical Science, 2-1-6 Kamikitazawa, Setagaya-ku, Tokyo 156-8506, Japan
[c] Department of Youth Mental Health, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
[d] Department of Psychology, University of Tsukuba, Tsukuba, Japan
[e] Disability Services Office, The University of Tokyo, Tokyo, Japan
[f] Department of Child Neuropsychiatry, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

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ABSTRACT

Aims: Many studies have shown that natural disasters affect mental health; however, longitudinal data on post-disaster mental health problems are scarce. The aims of our study were to investigate the trend in psychological distress and alcoholism after The Great East Japan Earthquake and tsunami in north eastern Japan, in March 2011.

Methods: A longitudinal study was conducted using annual health check data for the general population, in the city of Higashi-Matsushima, which was affected by the high impact of tsunami. In 2012 and 2013, the Kessler Psychological Distress Scale and the CAGE questionnaire (for screening for alcoholism) were used to assess psychological distress and prevalence of alcoholism.

Results: Of 11,855 total eligible residents, 2192 received the annual check in 2012 and 2013. The prevalence of mental illness and the mean score of alcoholism tendency increased during the follow-up period. The majority of respondents (43.8%) with baseline serious mental illness (SMI) continued to have SMI at follow-up; only 16.7% reported recovering. Older age, female sex, and severity of home damage predicted higher psychological distress, while male sex was a risk factor for alcoholism at follow-up.

Conclusions: Psychological distress deteriorated 2 years after the huge natural disaster, compared with 1 year after the disaster. Long-term mental health care is needed for those affected by natural disasters, particularly those who have suffered loss.

Introduction

On March 11th, 2011, at 2:46 p.m., an earthquake with a magnitude of 9.0 on the Richter scale-now referred to as the Great East Japan Earthquake-affected the Pacific coast of north eastern Japan. The earthquake triggered a huge tsunami over 15 m in height that struck the Fukushima-Daiichi nuclear power plant. The number of people dead and missing as a result of the triple disaster (earthquake, tsunami, and nuclear accident) totalled more than 18,450 (Suzuki & Kim, 2012). Many people in northeast Japan suffered from long-term distress caused by the damage from the earthquake. The majority of support for the unaffected areas ended within a year after the disaster, and long-term mental health support for people in affected areas has been scarce (Fig. 1).

Previous studies have indicated there is a high prevalence of mental health problems, such as depression, after natural disasters (Tang, Liu, Liu, Xue & Zhang, 2014). The recent reports on survivors of the Great East Japan Earthquake have shown that loss of pleasure in life, change in working status, property loss, relocation, and loss of family members due to the disaster had adverse impact on mental health (Furukawa, Takeuchi, Yano & Muto, 2016; Ando et al., in press). A few multi-wave studies, with large samples, have shown different patterns of the prevalence of mental health problems after natural disasters, at different time points (i.e. increase, decrease, and no change) (Cerdá et al., 2013; Chou et al., 2007; Kessler et al., 2008; Osofsky et al., 2011; Pietrzak et al., 2012; Tsai et al., 2007). The long-term trend of psychological distress of affected residents affected by serious natural disasters has been unclear because of the small number of studies with

* Corresponding author.
E-mail address: ando-st@igakuken.or.jp (S. Ando).
[1] These authors are joint first authors on this work.

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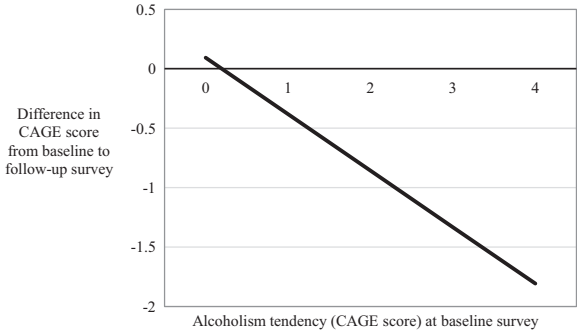

Fig. 1. Change of alcoholism tendency from baseline to follow-up survey (the line for those with mean score for each variable in Table 5).

large sample populations (Norris, 2006). Additionally, to the best of our knowledge, there have been no studies investigating the long-term trends of both psychological distress and alcohol use after natural disasters. It has been reported that substance abuse increases following natural disasters (Boscarino, Adams & Galea, 2006), and one study in affected communities after bushfires in Australia showed that the prevalence of heavy drinking was higher in highly affected areas compared with less affected areas (Bryant et al., 2014). Psychological disorders, including depression and anxiety, were generally associated with a high level of alcohol use which may be the norm prior to a natural disaster (Boschloo et al., 2013; Kessler et al., 1997). Therefore, long-term trends of psychological distress and alcohol use after disasters should be investigated concurrently.

The lack of longitudinal studies may be partly attributed to ethical issues and the feasibility of conducting research after natural disasters. One article highlighted that participants in post-disaster research with mental illness in need of treatment should be referred to clinical care (Ferreira, Buttell & Ferreira, 2005). From the acute phase, immediately post-earthquake, until the present day, we have continuously supported the mental health services of the city of Higashi-Matsushima in northeast Japan, which the earthquake and tsunami severely affected (Araki, Kuwabara, Ando & Kasai, 2014; Kuwabara et al., 2015). We collaborated with the city of Higashi-Matsushima government and the public health centre, and have continued follow-up support for annual health checks to identify people at risk and in need of care. The aims of this study were to investigate the trends in psychological distress and alcoholism in the general population in the affected area, after the earthquake in 2011, and to examine factors predicting mental health problems, using data from two annual mental health check surveys.

Methods

Study design

A longitudinal cohort study using data from two annual health checks was conducted in Higashi-Matsushima. The baseline health check was conducted in 2012, and the follow-up health check was conducted in 2013.

Participants

Data were collected during annual health checks for residents aged 19 years or older, who enrolled in the national health insurance scheme in Higashi-Matsushima in north-east Japan. The city is located on the coast, and 65% of the area was flooded by the tsunami in 2011. More than 1000 of 40 000 residents in the city lost their lives to the disaster. The annual mental health check was initiated for the residents from 2012 as part of a collaborative effort with Higashi-Matsushima city to identify residents at risk and in need of mental health care. This study was approved by the Ethical Committee, Faculty of Medicine, The University of Tokyo [Approval no. 3583-(2)] and Tokyo Metropolitan Institute of Medical Science [Approval no. 14–21]. Requirement for informed consent was waived by the Ethics Committee of the Faculty of Medicine, The University of Tokyo. Instead, we publicized the use of the survey data for the purpose of this study on our research team web page (Department of Youth Mental Health). The use of anonymous data for research was clearly stated on the cover of the health check questionnaire in 2013, providing people with the opportunity to be excluded from the study.

Data collection

Data were collected using self-reported questionnaires. An invitation letter and questionnaire was delivered to residents of Higashi-Matsushima who were eligible for the health check. Those who received the health check filled in the questionnaire and returned it to the health check venue.

Measures

Psychological distress was assessed using the Kessler Psychological Distress Scale (K6) score of nonspecific psychological distress, to screen for the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM IV) anxiety-mood disorders during the last 30 days (Kessler et al., 2002). A score of 8–12 was classified as mild to moderate mental illness (MMI) and 13–24 as serious mental illness (SMI). It should be noted that, in our study, SMI is defined by scores on K6 measuring anxiety and depression and does not mean the diagnosis of schizophrenia or bipolar disorder.

People who scored higher than 20 at the baseline survey were followed-up at least once by telephone and/or a visit by community health nurses in the public health centre. Probable alcoholism was defined as those who scored two or more in the CAGE questionnaire (a mnemonic for attempts to Cut back on drinking, being Annoyed at criticisms about drinking, feeling Guilty about drinking, and using alcohol as an Eye opener) (Ewing, 1984). Dichotomous questions were used to address four types of current sleep disturbance problems, including difficulty in getting to sleep, nocturnal awakening, early morning awakening, and insufficient sleep (changed to daytime sleepiness on the 2013 survey).

Covariates

Data were also collected to control for potential confounding factors: age; sex; living status (alone, with family) and home damage (total collapse, major collapse, half collapse, partial damage and no damage). Additionally, intention to seek help was assessed by a dichotomous question: ‘Do you want a consultation about your mental health?’ People who intended to seek help were followed-up at least once by telephone and/or a visit by community health nurses in the public health centre.

Statistical analysis

Since the objective of this study was to examine the mental health of residents between 2012 and 2013, the analysis focused mental health-related data for individuals who had health checks in both 2012 and 2013. Prevalence of mental illness, alcoholism, and sleep disturbance between the baseline and follow-up surveys were compared using within-respondent paired comparison tests (McNemar's test and Wilcoxon signed-rank test). We examined patterns of onset, recovery, and persistence of SMI and alcoholism using cross tabulations (chi-square test). Multivariate linear regression analysis was conducted to examine factors predicting mental distress and alcoholism. Since the number of independent variables (in addition to covariates) is rela-