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Association of childhood adversities with the first onset of mental disorders in Japan: Results from the World Mental Health Japan, 2002–2004

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ABSTRACT

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 predictors of the onset of DSM-IV mental disorders, especially during childhood, in Japan.

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1. Introduction

It is widely known that childhood adversities (CAs), such as parental death or child abuse, are significant risk factors for the onset of mental disorders during childhood or later life (Comijs et al., 2007; Fristad et al., 1993; Mullen et al., 1996). However, most of these studies were performed in Western countries, and it is uncertain whether a similar association between CAs and mental disorders can be found in Japan (Matsuura et al., 2009). Unlike in Western culture, Japanese culture is more likely to accept physical punishment of children as a form of discipline (Chang et al., 2006; Ellis and Petersen, 1992; Hayashida, 1986). In addition, since extended family or community ties are stronger in Japan (Fukuyama, 1995; Kitaoji, 1971), the impact of parental loss on the mental health of children might be relatively lesser. Therefore, the impact of CAs on the mental health of Japanese children might be different from those reported in children from Western countries. The effect of CAs on the onset of mental disorder among Japanese children needs to be analyzed.

Recent studies have shown that CAs are often comorbid (Dong et al., 2004; Ney et al., 1994), requiring simultaneous assessment of multiple CAs to avoid overestimation of the effect of particular CAs (Finkelhor et al., 2007; Kessler et al., 1997). Further, each CA often has a different effect on specific mental disorders (Kessler et al., 1997), suggesting that it is not plausible to use a cumulative score of the effects exerted by different CAs, such as the Adverse Childhood Experience Score (Dube et al., 2001; Edwards et al., 2003), which assumes that each CA has the same effect as the others and that the cumulative effects of multiple CAs are additive (Green et al., 2010). The purpose of this study is to elucidate the effects of CAs on the onset of mental disorders in the general population of Japan using a plausible statistical model that takes into account both additive and multiple CA effects.

2. Methods

2.1. Sample

The data from the World Mental Health Japan (WMH-J) was used. The WMH-J conducted an epidemiological survey of Japanese people aged 20 years and older as a part of the World Health

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Organization's World Mental Health Survey Initiative (Kessler and Ustun, 2004). Details of the WMH-J survey design, sampling, and field procedures have been described previously (Kawakami et al., 2008). Seven community populations in Japan (from 2 urban cities and 5 rural municipalities) were selected as study sites in 2002–2004. These sites were selected in consideration of the presence of geographic variation, availability of site investigators, and cooperation of the local government. An internal sampling strategy was used in all the surveys to reduce respondent burden by dividing the interview into 2 parts. Part I included a core diagnostic assessment (see below for details) and demographic variables of all respondents. Part II included questions about risk factors, including CAs. In order to reduce respondent burden and control study costs, Part II was administered only to 887 of the 2436 Part I respondents, including all Part I respondents with one or more lifetime disorders plus a probability subsample of approximately 25% of other respondents. The total weighted response rate was 58.4%. This sampling method was not significantly different from those used in the World Mental Health Surveys conducted in other countries (Demyttenaere et al., 2004).

The data reported here were weighted to adjust for differential probabilities of selection and non-response (weighted $n = 1722$). Details of sample weights have been reported previously (Kawakami et al., 2005). Written consent was obtained from each respondent from each site. The Human Subjects Committees of Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences; Japan National Center of Neurology and Psychiatry; Nagasaki University Graduate School of Biomedical Sciences; Yamagata University Graduate School of Medical Science; and Juntendo University Graduate School of Medicine approved the recruitment, consent, and field procedures.

2.2. Diagnostic assessment

WMH-J used the Japanese-translated computer-assisted personal interview (CAPI) version of the World Health Organization Composite International Diagnostic Interview version 3.0 (WHO-CIDI 3.0), a completely structured diagnostic interview, to assess mental disorders according to the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV) (Kessler and Ustun, 2004). Details of the translation process from English to Japanese have been reported previously (Kawakami et al., 2005). The lifetime diagnoses included 4 broad classes of disorders that encompass the 15 specific disorders included in this analysis: mood disorders [major depressive disorder, dysthymic disorder, bipolar I disorder (BP-I), BP-II], anxiety disorders (panic disorder, agoraphobia without a history of panic disorder, generalized anxiety disorder, specific phobia, social phobia, post-traumatic stress disorder), intermittent explosive disorder, and substance disorders (alcohol abuse, alcohol dependence with abuse, drug abuse, drug dependence with abuse). Diagnostic hierarchy rules and organic exclusion rules were used for making diagnoses.

The CIDI retrospectively assessed the age-of-onset of disorders. On the basis of the evidence that retrospective age-of-onset reports are often biased (Simon and VonKorff, 1995), a special question sequence was used to improve the accuracy of reporting, which has also been used in the National Comorbidity Survey Replication (NCS-R), details of which have been previously reported (Green et al., 2010). In brief, the age-of-onset reported by responders was confirmed by other sequential questions, such as "Was it before you went to school?" Onset was set at the upper end of the bound of uncertainty (e.g., age: 12 years for respondents who reported that the onset was before they reached teen age). Previous research has shown that this question sequence yields more plausible responses than the standard age-of-onset questions (Knauper et al., 1999).

2.3. Childhood adversities

Twelve dichotomously measured CAs occurring before the age of 18 were assessed in the WMH-J. The selection of this particular set of CAs was made on the basis of previous studies performed using the NCS-R (Green et al., 2010; McLaughlin et al., 2009). These 12 CAs include 3 types of interpersonal loss (parental death, parental divorce, and other loss of contact with parents), 4 types of parental maladjustment (mental illness, substance abuse, criminality, and violence), 3 types of child maltreatment (physical abuse, sexual abuse, and neglect), and 2 other CAs (serious physical illness in respondents and familial economic adversity). Parental deaths, divorces, and other parental separations (adoption, foster placement, living with relatives instead of parents), parental criminality, familial economic adversity, and sexual abuse were assessed with measures developed for the baseline NCS-R (Afifi et al., 2009). Parental mental illnesses (major depression, generalized anxiety disorder, panic disorder, antisocial personality disorder) and substance abuse were assessed using the Family History Research Diagnostic Criteria (FHRDC) Interview (Endicott et al., 1978) and its extensions (Kendler et al., 1991). Family violence and physical abuse of the respondent by parents were assessed with a modified version of the Conflict Tactics Scale (Straus, 1979). Neglect was assessed using a battery of questions commonly used in studies of child welfare (Courtney et al., 1998).

2.4. Analysis methods

First, a separate person-year file was created for each of the 15 disorders, and these 15 files were stacked. The models were estimated in a discrete-time survival framework with person-year as the unit of analysis using the stacked dataset, thereby forcing the slopes to be constant across the 15 disorders (Willett and Singer, 1993). Each model was controlled for person-year, age category, sex, 14 dummy variables for the outcome disorder category (i.e., for the 15 disorders in the stacked dataset), and controls for the prior onset of comorbid conditions that showed an onset before the age of 17 years. These controls for other early-onset disorders were included to adjust for the predictive effects of the CAs on temporally secondary disorders through direct effects on early-onset disorders that predicted the secondary disorders. The survival coefficients and their standard errors in the best-fitting model were exponentiated and are reported here in the form of odds-ratios (OR) and 95% confidence intervals (95% CI).

Bivariate and 3 multivariate models were estimated. The first multivariate model was additive: it included a separate variable for each of the 12 CAs without additional terms for interactions among these predictors. The second multivariate model included a series of dummy predictor variables for the number of CAs (e.g., one such variable for respondents who experienced exactly 1 CA, another for respondents who experienced exactly 2 CAs, etc.) without information about the types of CAs experienced. A third model included 12 predictors for the type of CAs and additional predictors for the number of CAs, with the latter starting at exactly 2 CAs rather than exactly 1 because the value of the variables for exactly 1 CA was perfectly predicted by the 12 dummy variables for individual CAs. Further, multivariate analyses were stratified by gender. Then, these models were tested for each mental disorder (i.e., mood disorders, anxiety disorders, substance disorders, and intermittent explosive disorder) and each life stage when the mental disorder appeared (i.e., childhood [age, 4–12 years], adolescence [age, 13–19

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