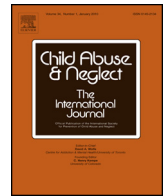




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Research article

Development of a prediction model for child maltreatment recurrence in Japan: A historical cohort study using data from a Child Guidance Center



Hiroyuki Horikawa^{a,c,*}, S. Pilar Sugimoto^{b,c}, Patou Masika Musumari^c,
Teeranee Techasrivichien^c, Masako Ono-Kihara^c, Masahiro Kihara^c

^a Shiga Prefectural Mental Health and Welfare Center, Mureyama-so House, Kasayama 8-Chome 5-130, Kusatsu City, Shiga, 525-0072, Japan

^b Center for Medical Education, Graduate School of Medicine, Kyoto University, Faculty of Medicine Building E Room 109, Yoshida Konoe-cho, Sakyo-ku, Kyoto, 606-8501, Japan

^c Department of Global Health and Socio-epidemiology, Kyoto University School of Public Health, Science Frontier Laboratory Room 204, Yoshida Konoe-cho, Sakyo-ku, Kyoto, 606-8501, Japan

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ABSTRACT

To develop a prediction model for the first recurrence of child maltreatment within the first year after the initial report, we carried out a historical cohort study using administrative data from 716 incident cases of child maltreatment (physical abuse, psychological abuse, or neglect) not receiving support services, reported between April 1, 1996 through March 31, 2011 to Shiga Central Child Guidance Center, Japan. In total, 23 items related to characteristics of the child, the maltreatment, the offender, household, and other related factors were selected as predictive variables and analyzed by multivariate logistic regression model for association with first recurrence of maltreatment. According to the stepwise selection procedure six factors were identified that include 9–13 year age of child (AOR=3.43/95%CI=1.52–7.72), <40 year age of the offender (AOR=1.65/95%CI=1.09–2.51), offender's history of maltreatment during childhood (AOR=2.56/95%CI=1.31–4.99), household financial instability or poverty (AOR=1.64/95%CI=1.10–2.45), absence of someone in the community who could watch over the child (AOR=1.68/95%CI=1.16–2.44), and the organization as the referral source (AOR=2.21/95%CI=1.24–3.93). Using these six predictors, we generated a linear prediction model with a sensitivity and specificity of 45.2% and 82.4%, respectively. The model may be useful to assess the risk of further maltreatment and help the child and family welfare administrations to develop preventive strategies for recurrence.

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Abbreviations: CGC, Child guidance center; AIC, Akaike's information criterion; ROC, receiver-operating characteristic; AUC, areas under the curve; SD, standard deviation; IQR, interquartile range; OR, odds ratio; 95%CI, 95% confidence interval; AOR, adjusted odds ratio.

* Corresponding author at: Shiga Prefectural Mental Health and Welfare Center, Mureyama-so House, Kasayama 8-Chome 5-130, Kusatsu City, Shiga, 525-0072, Japan.

E-mail addresses: hir.horikawa@gmail.com (H. Horikawa), sugimoto.pilar.2w@kyoto-u.ac.jp (S.P. Sugimoto), patomus@yahoo.fr (P.M. Musumari), techasrivichien.teeranee.2a@kyoto-u.ac.jp (T. Techasrivichien), kihara.masako.2u@kyoto-u.ac.jp (M. Ono-Kihara), kihara.masahiro.4n@kyoto-u.ac.jp (M. Kihara).

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1. Introduction

Children who experience maltreatment are at increased risk of long term physical, psychological, and behavioral consequences (Berlin, Appleyard, & Dodge, 2011; Norman et al., 2012; Tanaka, Georgiades, Boyle, & MacMillan, 2015; Tanaka, Wekerle, Schmuck, & Paglia-Boak, 2011; Widom, Czaja, Bentley, & Johnson, 2012). Reports of child maltreatment have been steadily increasing since the late 1990s in Japan (Equal Employment, Children and Families Bureau, 2013a, 2015). In response, Child Abuse Prevention Law in 2000 was enacted in 2000, introducing a series of measures to prevent maltreatment and protect children who have suffered maltreatment including health support for pregnant women (Equal Employment, Children and Families Bureau, 2009); home visiting services for all parents of new infants before 4 months of age (Equal Employment, Children and Families Bureau, 2007a); strengthening of the foster parent system (Equal Employment, Children and Families Bureau, 2012); confirmation of the child's safety within 48 h after receiving a notification (Equal Employment, Children and Families Bureau, 2007b); and the partial revision of the Civil Law to restrict parental authority (Equal Employment, Children and Families Bureau, 2011). Despite all these measures, the number of child abuse consultations handled at the Child Guidance Center (CGC), the main organization that deals with child maltreatment, nationwide has not subsided. The consultations increased by 8077%, from 1101 in 1990 to 88,931 in 2014 (Equal Employment, Children and Families Bureau, 2013a, 2015), indicating that child maltreatment has become a serious social concern in Japan.

In 2008, the National Association of Child Guidance Center Directors conducted a nationwide survey on the situation of response, service provision and treatment for child maltreatment cases at the CGCs, but did not include questions about recurrence (Maruyama, 2009; National Association of Child Guidance Center Directors, 2009). Later in 2010, as part of the policy evaluation, the Ministry of Internal Affairs and Communications carried out the only survey to date, albeit not random, describing the proportion of child maltreatment recurrence as 9.5% (269/2823), 9.1% (272/2974), and 5.0% (166/3322) in 2007, 2008 and 2009, respectively (Administrative Evaluation Bureau, 2013). Unfortunately, systematic statistical data and studies with robust methodology are still lacking in Japan.

It is important to ensure that the child has a safe and an adequate environment enabling both mental and physical growth. In this regard, a thorough understanding of factors associated with maltreatment recurrence is of vital importance and very useful to guide effective preventive strategies. Studies on predictors of recurrence have been carried out in many countries, especially in the United States. However, results varied greatly probably due to differences in the study population, study design, definition and classification of maltreatment, as well as methods for data collection (Fluke & Hollinshead, 2003; Hindley, Ramchandani, & Jones, 2006; White, Hindley, & Jones, 2015). Numerous factors have been identified as predictors for maltreatment recurrence that include case characteristics of child, offender, caregiver, and family (Bae, Solomon, & Gelles, 2009; Casanueva et al., 2015; DePanfilis & Zuravin, 1999a; Dorsey, Mustillo, Farmer, & Elbogen, 2008; Drake, Jonson-Reid, & Sapokaite, 2006; English, Marshall, Brummel, & Orme, 1999; Fluke, Chabot, Fallon, MacLaurin, & Blackstock, 2010; Fluke, Shusterman, Hollinshead, & Yuan, 2008; Fluke, Yuan, & Edwards, 1999; Fryer & Miyoshi, 1994; Hélie & Bouchard, 2010; Helie, Laurier, Pineau-Villeneuve, & Royer, 2013; Putnam-Hornstein, Simon, Eastman, & Magruder, 2015; Sledjeski, Dierker, Brigham, & Breslin, 2008), agency factors and resources in community (Maguire-Jack & Font, 2014), sequence towards substantiation (Casanueva et al., 2015; Eastman, Mitchell, & Putnam-Hornstein, 2016; Putnam-Hornstein et al., 2015), and effects of service provisions after initial report (DePanfilis & Zuravin, 2002; Eastman et al., 2016; Jonson-Reid, Chung, Way, & Jolley, 2010; MacMillan et al., 2009).

Although there are common predictors identified in the literature such as young age (Bae et al., 2009; Drake et al., 2006; Fluke et al., 1999, 2008; Fryer & Miyoshi, 1994), prior reports (Bae et al., 2009; Fluke et al., 1999, 2008; Fryer & Miyoshi, 1994) and neglect (DePanfilis & Zuravin, 1999a; Drake et al., 2006; Fluke et al., 1999; Fryer & Miyoshi, 1994), because many other factors differ between studies, a universal standardized recurrence risk assessment tool does not exist (D'Andrade, Austin, & Benton, 2008; DePanfilis & Scannapieco, 1994; Gillingham, 2015; Johnson, 2011).

The Japanese government issued guidelines to assess the need for temporary protective custody (Equal Employment, Children and Families Bureau, 2013c) and there is a proposed assessment tool that is being widely used to manage support in the community (Fujiwara, Okuyama, & Ishii, 2006; Kato, 2009; Sato, 2008), but there is no standardized assessment tool that could help the CGC make an initial rapid judgment of the necessary measures to prevent the recurrence of maltreatment (Administrative Evaluation Bureau, 2013; Equal Employment, Children and Families Bureau, 2013c). Therefore, the aim of our study is to develop a multivariate model to identify children with significantly increased risk for first recurrence of child maltreatment within a year in a historical cohort study using the database of the CGC in one prefecture of Japan.

2. Methods

2.1. Data source

In Japan, the main authority responsible for child and family welfare is the CGC, who can work in cooperation with the Municipal Child Family Support Division (Equal Employment, Children and Families Bureau, 2010). The CGC manages the investigation, confirmation and initial response of reported cases of child maltreatment, and may provide services to the family or separate the child from the family. Upon notification of maltreatment, the CGC assesses the case. A multidisciplinary team, consisting of a medical doctor, child welfare officer, child psychologist, childcare instructor and childcare guidance staff work with the abused child, offender, family members and other concerned parties to take a course of action in the best

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