



## Research article

# Association between maternal intimate partner violence victimization during pregnancy and maternal abusive behavior towards infants at 4 months of age in Japan



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## ARTICLE INFO

## Article history:

Received 9 October 2015

Received in revised form 12 February 2016

Accepted 30 March 2016

## Keywords:

Domestic violence

Abusive head trauma

Child abuse

Shaken baby syndrome

Japan

## ABSTRACT

The purpose of this study was to investigate whether maternal intimate partner violence (IPV) victimization during pregnancy is associated with abusive behavior by the mother towards infants at 4 months of age. A population-based sample of 6590 mothers with 4-month-old infants participated in this study in Japan. Abusive behavior was assessed via questionnaire and defined as frequency of shaking and smothering during the preceding month. Both verbal and physical IPV during pregnancy were assessed retrospectively. Multiple logistic regression analysis was used, adjusting for types of IPV and potential covariates, specifically postpartum depression. Maternal exposure to verbal and physical IPV during pregnancy was reported by 10.9% and 1.2% of women, respectively. In the adjusted model, women exposed to verbal IPV alone were significantly more likely to abuse offspring (odds ratio: 1.59, 95% confidence interval: 1.17–2.16) while exposure to physical IPV did not have an additive effect for abusive behavior. Maternal victimization by verbal, but not physical IPV was associated with maternal abusive behavior towards their 4-month-old infant. Screening for verbal abuse during pregnancy might be an efficient approach to identify high-risk mothers of infant abuse.

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## 1. Introduction

Child abuse is a major public health issue worldwide. In high-income countries, annual prevalence of physical child abuse is estimated to range from approximately 4% to 16% (Gilbert et al., 2009). Abusive head trauma (AHT), often described as shaken baby syndrome (SBS), is a type of child abuse that can cause severe brain injury including subdural hematomas, axonal injury and cerebral edema, as well as retinal hemorrhages (Herman, Makoroff, & Corneli, 2011), or death (Christian & Block, 2009). Inflicted traumatic brain injury occurs at an estimated annual rate of 17.0 cases per 100,000 children aged 2 years or younger in North Carolina, US (Keenan et al., 2003), and kills at least one in every four affected infants in the US (Center for Disease Control and Prevention, 2012).

Infant crying is a well-known trigger of AHT/SBS (Barr, 2014; Barr, Trent, & Cross, 2006). Recent studies have proposed prevention strategies focusing on this issue, and educational material (Barr et al., 2009; Simonnet et al., 2014) on infant crying has been found to be effective in increasing knowledge of crying and shaking among caregivers (Barr et al., 2006;

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Dias et al., 2005; Lee, Barr, Catherine, & Wicks, 2007; Talvik, Alexander, & Talvik, 2008). Prevention strategies that focus on other risk factors which induce maternal distress, such as economic factors or family relationships, antenatal psychiatric morbidity, economic deprivation, low education, and marital disharmony (Cesare, Sabates, & Lewin, 2013; Propper, Rigg, & Burgess, 2007), might also be efficient in the prevention of shaking. As it is feasible to conduct antenatal screening of expectant mothers at risk of abusive behavior, it is possible to initiate interventions, such as the provision of educational materials, before birth.

Several risk factors for AHT/SBS can be detected during pregnancy, including childhood abuse history, younger maternal age, single parenthood, poverty, mental health, or housing type (Berger et al., 2011; Fujiwara, Yamaoka, & Morisaki, 2016; Keenan et al., 2003). Previous studies have suggested that intimate partner violence (IPV) could be associated with child abuse (Edleson, 1999; McGuigan & Pratt, 2001; Zolotor, Theodore, Coyne-Beasley, & Runyan, 2007). Experiencing a physical or verbal attack from someone whom one is close to can cause feelings of instability and poor self-esteem (Ludermir, Valongueiro, & Araujo, 2014), which may contribute to a woman's feelings of anger and frustration when her infant cries, which could then lead to infant shaking. One possibility is that IPV increases the risk of postpartum depression (PPD) (Boeckel, Blasco-Ros, Grassi-Oliveira, & Martinez, 2014; Budhathoki, Bhusal, Ojha, & Basnet, 2013; Dennis & Vigod, 2013; Trabold, Waldrop, Nochajski, & Cerulli, 2013; Wu, Chen, & Xu, 2012), which in turn contributes to child abuse (Cadzow, Armstrong, & Fraser, 1999; Dennis & Vigod, 2013; Egeland, 1993; Ludermir et al., 2014) and acts as an important mediator for abusive behavior. Alternatively, it is possible that women who experienced IPV were less likely to engage in positive parenting or receive social support from friends (Buchbinder & Eisikovits, 2004; Levendosky & Graham-Bermann, 2001), which results in an insecure attachment pattern (Hague, Mullender, Kelly, Imam, & Malos, 2002; Levendosky, Huth-Bocks, & Semel, 2002).

An analysis of internationally comparable data collected from 19 countries, among which Japan was not included, reported the prevalence of IPV during pregnancy to be in the range of 2.0–13.5% (Devries et al., 2010). Although the lifetime prevalence of IPV in Japan (15%) is lower than that in other countries (24–71%) (García-Moreno, Jansen, Ellsberg, Heise, & Watts, 2005), a report from the Japanese government stated that the number of people seeking assistance from the Domestic Violence Counseling and Support Center has been steadily increasing (Gender Equality Bureau Cabinet Office, 2015). Having a supportive partner can be a protective factor for AHT/SBS (Keenan et al., 2003), therefore it is possible that the existence of IPV during pregnancy is a risk factor for AHT/SBS. Further, victimized woman may feel helpless (Ludermir et al., 2014), which could increase the risk of attacking others, including her infant (Egeland, 1993). However, to the best of our knowledge, no study has so far investigated the association between IPV and AHT/SBS.

Similar to SBS, smothering is also a life-threatening form of child abuse, with a reported prevalence in Japan of 2.4% (Yamada & Fujiwara, 2014). This rate is similar to reported prevalence in Western countries, for example, 3.4% in the Netherlands and 2.6% in the United States (Reijneveld, van der Wal, Brugman, Sing, & Verloove-Vanhorick, 2004; Theodore et al., 2005). As smothering shares the same risk factors for shaking (Fujiwara et al., 2016), such as infant crying, we hypothesized that IPV during pregnancy is associated with both shaking and smothering in early infancy.

In the present study, the primary goal was to evaluate the association between maternal IPV victimization and maternal abusive behavior (shaking and smothering) towards infants at 4 months of age.

## 2. Methods and materials

### 2.1. Sample

Participants were recruited from Aichi prefecture, Japan. Of all 54 municipalities in Aichi, 45 municipalities agreed to join this study, resulting in 80% coverage of Aichi prefecture's total population. We included all women ( $N=9707$ ) who were registered in a 3- or 4-month health check-up program between October and November 2012. The total participation rate for the 3- or 4-month health check-up in Aichi prefecture was 97.9%. In total, 6590 women responded (response rate; 68%). Questionnaires were collected using the following methods: for 34 municipalities, the anonymous questionnaire was posted to each participant before the health check-up, and the completed forms were collected at the check-up sites; for the remaining 11 municipalities, the questionnaire was distributed at the check-up sites and the participants mailed completed questionnaires to the health center. Our study was approved by the ethics committee of the National Center for Child Health and Development, Tokyo, Japan.

### 2.2. Assessment of verbal and physical intimate partner violence

The questionnaire assessed whether participants experienced IPV during pregnancy. The following question assessed frequency of verbal IPV: "Have you been verbally humiliated or yelled at by your partner during pregnancy?" with possible responses of (1) "never," (2) "a few times," (3) "sometimes," and (4) "often." The following question assessed frequency of physical IPV: "Have you been physically abused by your partner, such as being slapped or beaten up which induced injury during pregnancy, when having an argument?" and included the same response items as verbal IPV.

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