Research article

The impact of child maltreatment on the risk of deliberate self-harm among adolescents: A population-wide cohort study using linked administrative records

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ABSTRACT

Adolescents exposed to maltreatment have an elevated risk of deliberate self-harm (DSH). The aim of this study was to investigate longitudinally the effects of the number, timing, and type of maltreatment allegations on adolescent risk of having a DSH-related hospital admission, using linked data in Western Australia. A total of 351,372 children born between 1986 and 2000 were followed from birth up to the year 2010. Cox regression models were utilized, while controlling for a range of psychosocial covariates. Compared to children without allegations of maltreatment, children with unsubstantiated allegations only (aHR = 1.04, 95%CI: 1.00–1.08, p < .01) and children with a substantiated allegation (aHR = 1.10, 95%CI: 1.06–1.15, p < .001) all had significantly increased risk of DSH in adolescence. Among children with a substantiated allegation of maltreatment, the greater the number of allegations, the longer the exposure to maltreatment, and the more types of maltreatment experienced by a child, the higher the child’s risk of DSH. However, this dose–response pattern was not found among children with unsubstantiated allegations only. This study calls for the early identification of children who are vulnerable to maltreatment, the better identification of the duration and severity of maltreatment experiences, and the provision of continued care and support, to reduce the child’s DSH risk in adolescence.

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1. Introduction

There is consistent evidence showing that child maltreatment is an important risk factor for adolescent deliberate self-harm (DSH) behaviors (Afifi, Boman, Fleisher, & Sareen, 2009; Brezo et al., 2008). DSH behaviors refer to behaviors performed directly and intentionally to cause physical destruction to oneself, regardless of suicidal intent (Nock, 2010). DSH is a major public health issue among young people, affecting 17% of those aged 15–24 years in Australia (Martin, Swannell, Hazell, Harrison, & Taylor, 2010), which is similar to the global prevalence of DSH, reported to be 16% (Muehlenkamp, Claes, *Corresponding author at: Telethon Kids Institute, the University of Western Australia, PO Box 855, West Perth, Western Australia 6872, Australia.

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Havertape, & Plener, 2012). Previous studies have shown that DSH is associated with a range of biological (e.g., low birth-weight, high birth order), psychological (e.g., hopelessness, impulsive-aggressive trait, and low self-esteem), and social (e.g., socioeconomic disadvantage, victimization, and substance abuse) risk factors (Hawton, Saunders, & O’Connor, 2012). DSH is considered to be a maladaptive coping strategy to regulate emotional pain that has resulted from adverse and traumatic experiences (Lang & Sharma-Patel, 2011; Yates, 2004).

Child maltreatment refers to behavior by parents or caregivers that results in children being abused, neglected or otherwise harmed, at risk of substantial harm, or where caregivers are unable to provide adequate care and protection (Australian Institute of Health and Welfare, 2016). Child maltreatment is generally classified into four different types: emotional abuse, physical abuse, sexual abuse, and neglect. Studies have shown that in both Australia and other high-income countries, the prevalence was 2% for neglect and 9% for each of the remaining types (Gilbert et al., 2009; Moore et al., 2015). Australian research has shown that 24% of DSH behaviors in males, and 33% in females may be attributed to child maltreatment (Moore et al., 2015). It has been shown that compared to other types of adverse psychosocial experiences, such as socioeconomic disadvantage, parental psychiatric disorders and substance abuse, and domestic violence, child maltreatment confers higher risk of DSH among adolescents (Bruffaerts et al., 2010; Dube et al., 2001; Thompson et al., 2012).

Previous studies have suggested a number of possible mechanisms which underlie the association between child maltreatment and subsequent increased risk of DSH, and these mechanisms come from a number of different perspectives, including neurological, social, and psychological disciplines. Evidence from neuroscience supports the plausibility of the detrimental effect of child maltreatment on the child’s development at multiple levels of functioning (Cicchetti & Toth, 2005). Long-term exposure to an abusive or neglectful environment, particularly early in life, may affect the developing brain and disrupt sensory, affective, and cognitive processing capacities (National Scientific Council on the Developing Child, 2007; Streeck-Fischer & van der Kolk, 2000). These disruptions may increase the risk for internalizing and externalizing problems during adolescence, such as depression, anxiety, and over-response to toxic stress (Pechtel & Pizzagalli, 2011; Perry & Pollard, 1998), all of which may contribute to DSH behaviors. Maltreatment experience severely disrupts the child’s attachment to parents at an early age (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Cicchetti & Barnett, 1991). This may consequently increase the risk of stress, anxiety, and depression, and hence DSH behaviors during adolescence (Schoe, 2002; Streeck-Fischer & van der Kolk, 2000). Maltreatment has also been linked to low self-esteem (e.g., internalization of blame for maltreatment) and negative self-perception (e.g., self-hatred, shame, and unworthiness), both of which have been associated with increased risk of DSH behaviors (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Gratz, Conrad, & Roemer, 2002).

A number of different social factors have been shown to influence the effect of child maltreatment on DSH behaviors. Maltreated children tend to live in abusive and chaotic familial environments, where various forms of psychosocial adversities cluster. Compared to non-maltreated children, maltreated children are more likely to experience social disadvantage, such as single or teenage motherhood, and neighborhood socioeconomic disadvantage (Gilbert et al., 2009). Maltreated children are also more likely to have a parent who has alcohol and substance use problems (Dunn et al., 2002; Famularo, Kinscherff, & Fenton, 1992). Experience of these adversities makes the affected children more vulnerable to mental health problems and DSH behaviors (Hawton et al., 2012). Therefore, it is important to rigorously control for these psychosocial adversities in the examination of the association between child maltreatment and adolescent DSH.

Additionally, research on the impact of the timing of maltreatment on DSH behaviors has been inconclusive. Some studies have suggested that age at first maltreatment event influences DSH risk. For example, Wan et al. found that exposure to maltreatment after 10 years of age was more closely associated with adolescent DSH risk, compared with exposure to maltreatment at an earlier age (Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013; Wan, Chen, Sun, & Tao, 2015). In contrast, Dunn et al. reported that maltreatment during early childhood (0–5 years of age) was associated with higher risk of having suicidal ideation in young adults, compared with maltreatment during adolescence (Dunn et al., 2013). Thus, the issue of whether maltreatment during certain development periods results in differential levels of risk for DSH behaviors is not clearly understood.

In addition to the lack of consensus around the impact of the timing of maltreatment, it is also unclear whether different types of maltreatment confer different levels of risk for DSH. To date, most studies have focused on the relationship between DSH risk and sexual and physical abuse. Comparatively, emotional abuse and neglect have received far less research attention, and the results are far more conclusive. A review has suggested that sexual abuse may have a larger impact on DSH behavior than other types of maltreatment (Miller, Esposito-Smythers, Weismoore, & Renshaw, 2013). Previous research has also shown an increased risk of DSH associated with experiencing multiple types, versus a single type, of maltreatment (Anderson, Tiro, Price, Bender, & Kaslow, 2002; Brezo et al., 2008; Sansone, Gaither, & Songer, 2002).

Given the significant lack of clarity around the impact that different types of maltreatment, and the timing of maltreatment, has on DSH behaviors, this study aimed to investigate the effects of the number, timing, and type of maltreatment allegations on adolescent risk of having a DSH-related hospital admission. In order to achieve this, it was imperative to have a large sample size. Previous research in this field has been limited by small sample sizes. Furthermore, the majority of the existing studies adopted a cross-sectional design with self-reported child maltreatment experiences. This may lead to erroneous reporting of the timing of maltreatment. Large-scale longitudinal research that employs administrative records collected using standardized protocols to investigate child maltreatment, DSH-related hospital admissions, and important psychosocial adversities can address some of the main limitations in existing literature.

To date, there have been no longitudinal cohort studies to evaluate the association between child maltreatment and hospitalized DSH behavior during adolescence. Previous research has shown that one in eight adolescents with DSH behaviors
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