# Childhood maltreatment and non-suicidal self-injury: a systematic review and meta-analysis

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## **Summary**

**Background** Non-suicidal self-injury is being increasingly recognised as a prominent public health concern. Identification of early and modifiable risk factors is necessary to advance the screening and intervention efforts, particularly early detection of at-risk individuals. We aimed to examine childhood maltreatment, including its specific subtypes, in relation to non-suicidal self-injury.

Methods We did a comprehensive meta-analysis of childhood maltreatment (overall, sexual abuse, physical abuse and neglect, and emotional abuse and neglect) in association with non-suicidal self-injury. We also provided a qualitative review of mediators and moderators of this association. We identified relevant articles published from inception to Sept 25, 2017, through a systematic search of Embase, MEDLINE, and PsycINFO. We extracted continuous and categorical data and assessed for potential moderators using ten study characteristics. We generated random-effects models for analysis and evaluated for publication bias.

**Findings** We identified 71 publications that met eligibility criteria. Overall childhood maltreatment was associated with non-suicidal self-injury (odds ratio 3.42, 95% CI 2.74-4.26), and effect sizes for maltreatment subtypes ranged from 1.84 (1.45-2.34) for childhood emotional neglect to 3.03 (2.56-3.54) for childhood emotional abuse. Publication bias was not evident, except in the case of childhood emotional neglect. Across multiple maltreatment subtypes, we found stronger associations with non-suicidal self-injury in non-clinical samples.

Interpretation With the exception of childhood emotional neglect, childhood maltreatment and its subtypes are associated with non-suicidal self-injury. Screening of childhood maltreatment history in non-suicidal self-injury risk assessments might hold particular value in community settings, and increased attention to childhood emotional abuse is warranted.

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#### Introduction

The clinical importance of non-suicidal self-injury, defined as direct and deliberate destruction of one's own bodily tissue in the absence of suicidal intent,<sup>1</sup> has been increasing acknowledged in the past decade. Based on estimates reported in 2014, the lifetime prevalence of this behaviour ranges from 5.5% in adults to 17.2% in adolescents.2 Although most individuals who engage in repeated non-suicidal self-injury cease this behaviour within a few years, it often follows a more chronic course, persisting for more than 5 years in around 20% of these individuals.3 Non-suicidal self-injury is a stronger predictor of suicide attempts than is a past history of suicidal behaviour.<sup>4-6</sup> Clarification of the potential factors that underlie the cause of this phenomenon is important because it might inform the development of future prevention and intervention strategies, a pressing need given the paucity of empirically supported treatments for this behaviour.7,8

Within this context, childhood maltreatment, particularly childhood sexual abuse, has received considerable empirical attention.<sup>9-11</sup> Moreover, childhood sexual abuse, and to a lesser degree childhood physical abuse and neglect, feature prominently in several theoretical conceptualisations of non-suicidal self-injury.<sup>9,12</sup>

Underlying the empirical and theoretical interest in these forms of childhood maltreatment is the assumption that they have a more central role, relative to other maltreatment subtypes, in the cause of non-suicidal self-injury. In the absence of empirical evaluation, however, such a possibility cannot be assumed. Furthermore, with the exception of a key early meta-analysis of sexual abuse and non-suicidal self-injury,<sup>12</sup> the association between childhood maltreatment and non-suicidal self-injury has yet to be systematically and quantitatively reviewed.

We intended the present review to address several goals. First, we aimed to provide a systematic metaanalysis of childhood maltreatment and its subtypes in relation to non-suicidal self-injury. Second, we evaluated the strength of associations between maltreatment subtypes and nonsuicidal self-injury after accounting for the presence of all available covariates. Third, we quantified the association between each form of childhood maltreatment and nonsuicidal self-injury severity among individuals who engage in this behaviour. Finally, we did a qualitative review of studies on mediators and moderators of this association. Through addressing these objectives, and through including a comprehensive evaluation of all forms of childhood maltreatment, this review builds



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See Comment page 5

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#### **Research in context**

#### Evidence before this study

We searched Embase, MEDLINE, and PsycINFO for articles in English and published from inception to Sept 25, 2017, that assessed the association between childhood maltreatment and non-suicidal self-injury, with the search terms (self-injur\* OR parasuicid\* OR "self-harm" OR "self-mutilation") AND ("emotional abuse" OR "emotionally abused" OR "emotional victimization" OR "emotionally victimized" OR "verbal abuse" OR "verbally abused" OR "psychological abuse" OR "psychologically abused" OR "physical abuse" OR "physically abused" OR "sexual abuse" OR "sexually abused" OR "sex abuse" OR maltreat\* OR "childhood neglect" OR "child neglect" OR "childhood abuse" OR "child abuse"). We supplemented this search by assessing the references of a previous meta-analysis of childhood sexual abuse and non-suicidal self-injury. After excluding duplicates and ineligible publications, we identified 71 relevant studies that evaluated the association between childhood maltreatment and non-suicidal self-injury.

#### Added value of this study

To our knowledge, we have done the most comprehensive review to date of the association between childhood maltreatment and non-suicidal self-injury; the first such review to expand beyond childhood sexual abuse. With 43 new studies of childhood sexual abuse in the present meta-analysis, it provides a substantial update to a previous meta-analysis of childhood sexual abuse. Additionally, we quantitatively evaluated childhood maltreatment in relation to non-suicidal self-injury after accounting for covariates, and supplemented our analyses with a systematic qualitative review of studies

upon the earlier meta-analysis of childhood sexual abuse and non-suicidal self-injury.<sup>12</sup>

#### Method

#### Search strategy and selection criteria

We did a systematic search of the literature in Embase, MEDLINE, and PsycINFO to identify relevant studies published until Sept 25, 2017. We limited the search to English language publications and peer-reviewed journals, supplemented by a search of the references of the previous meta-analysis of childhood sexual abuse and non-suicidal self-injury.<sup>12</sup> This search strategy yielded a total of 1492 articles, of which 938 were unique reports. In cases in which the eligibility could not be ruled out on the basis of the title and abstract, we examined the full text. All authors reviewed the search results independently, with at least two assigned to each search result; discrepancies were resolved by RTL.

We included studies that (1) assessed any form of childhood maltreatment, distinct from other constructs (eg, other adverse childhood experiences); (2) assessed childhood maltreatment observed distinctly from abuse in adulthood (ie, before age 18 years *vs* starting at 18 years); (3) assessed non-suicidal self-injury separately from other

examining mediators and moderators of this association. With the exception of childhood emotional neglect, childhood maltreatment and its subtypes were consistently associated with non-suicidal self-injury, and these findings were not artifacts of publication bias or shared correlates. Across multiple maltreatment subtypes, stronger associations with non-suicidal self-injury were found in community samples than in clinical samples.

#### Implications of all the available evidence

Our findings suggest that screening for childhood maltreatment history might be important in assessing risk for non-suicidal self-injury, and such screening might be particularly valuable in community settings. Also, a history of childhood maltreatment should be accorded comparable weight in risk stratification for both sexes rather than a greater emphasis be given to females. Furthermore, countering the prevailing view in research and practice that childhood emotional abuse is less associated with non-suicidal self-injury than are childhood sexual and physical abuse, it might be comparably, if not more, relevant to this outcome, warranting greater attention to this maltreatment subtype, especially with it being the most prevalent form of childhood abuse. The present review also highlights the need for longitudinal research more precisely delineating the temporal nature of the relation between childhood maltreatment, non-suicidal self-injury, and potential mediating mechanisms underlying this association, for the potential of work in this specialty to yield promising candidates for targeted intervention.

constructs (ie, suicidality and other risky behaviours); (4) assessed childhood maltreatment and non-suicidal self-injury systematically; (5) presented quantitative data for the association between childhood maltreatment and non-suicidal self-injury; and (6) only assessed childhood maltreatment subtypes in relation to non-suicidal self-injury distinguished between maltreatment subtypes.

### Data extraction

Several studies presented data for non-suicidal self-injury and childhood maltreatment as both continuous and categorical variables. In these cases, we selected the continuous data for use in our analyses. This decision was guided by statistical concerns regarding dichotomous variables relative to continuous variables.<sup>13-16</sup> In cases where both continuous and categorical data were available in a given study, the effects produced by categorical data tended to be larger, indicating that our preference for continuous data produced more conservative estimates of the association between childhood maltreatment and non-suicidal self-injury.

To assess potential moderators in meta-analyses, we extracted data from ten study characteristics. We included four sample characteristics: sample age group

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