

REVIEW

Prevalence and Characteristics of Self-Harm in Adolescents: Meta-Analyses of Community-Based Studies 1990–2015

Donna Gillies, PhD, Maria A. Christou, MD, Andrew C. Dixon, MD, Oliver J. Featherston, MA, Iro Rapti, MD, Alicia Garcia-Anguita, PhD, Miguel Villasis-Keever, MD, Pratibha Reebye, MB, BS, Evangelos Christou, HSD, Nagat Al Kabir, MB, BCh, Panagiota A. Christou, MD

Objective: To provide meta-analytic estimates of self-harm from all community-based studies of adolescents from 1990 through 2015, estimates of suicidal risk, and characteristics including age profile, frequency, types, seeking help, and reasons.

Method: Databases, bibliographies, and the internet were searched for cross-sectional and cohort studies of 12- to 18-year-olds. Meta-analytic estimates of the prevalence and characteristics of self-harm, risk of suicidal behaviors, and rates comparing different methods were calculated.

Results: One hundred seventy-two datasets reporting self-harm in 597,548 participants from 41 countries were included. Overall lifetime prevalence was 16.9% (95% CI 15.1–18.9), with rates increasing to 2015. Girls were more likely to self-harm (risk ratio 1.72, 95% CI 1.57–1.88). The mean age of starting self-harm was 13 years, with 47% reporting only 1 or 2 episodes and cutting being the most common type (45%). The most frequent reason was relief from thoughts or feelings. Slightly more than half sought help, but for most this was from a friend. Suicidal ideation (risk ratio 4.97) and attempts (risk ratio 9.14) were significantly higher in adolescents who self-harmed, but this was higher with more frequent self-harm. Methodologic factors also were associated with higher rates of self-harm.

Conclusion: Interventions that can lower suicidal risk should be made available to adolescents who self-harm frequently as soon as possible. Preventative interventions that help adolescents deal with negative feelings should be instituted at the onset of puberty. Because friends are frequently asked for support, interventions also should be developed for peer groups.

Key words: self-harm, systematic review, meta-analysis

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A comprehensive body of research has identified self-harm as a major problem among young people around the world.^{1–4} However, rates of self-harm are highly variable. A meta-analysis of deliberate self-harm (DSH) and nonsuicidal self-injury (NSSI) found that lifetime estimates of DSH in 12- to 20-year-olds ranged from 5.5% to 30.7% across 20 studies and that rates of NSSI ranged from 2.4% to 42.0% across 19 studies.² Similarly, a meta-analysis of 29 studies found that NSSI rates varied from 3% to 52% in 10- to 17-year-olds.⁴

A major reason for the variation in estimates of prevalence could be the number of definitions used to describe self-harm, including self-injury, DSH, self-mutilation, parasuicide, and attempted suicide.^{5,8} Definitions are further complicated in that they might or might not include suicidal intent^{9–11} and might or might not involve obvious physical injury.^{2,10} Self-harm and DSH generally include

suicidal behaviors, whereas NSSI, as the term implies, specifically precludes suicidal behavior. In addition, self-injury or mutilation refers to tissue damage, whereas behaviors such as self-poisoning or overdose are not included. Self-harm is used more commonly in Europe and Australia, whereas NSSI tends to be used in Canada and the United States.^{2,5}

Rates of self-harm vary across geographic regions, but it is not clear to what extent this is due to real intercultural variation or because of methodologic differences.^{12,13} A bias toward Western countries has been identified as a limitation of studies of self-harm,^{13,14} but this has been addressed in part in recent years by an increasing number of studies from non-Western countries. Studies have reported that self-harm appears to be increasing among adolescents,^{15–17} although recent meta-analyses have not found evidence of increased rates.^{2,4} Evidence for higher rates of self-harm

among girls also exist,^{1,18} but these findings have been inconsistent.^{4,12,14}

Although there is some evidence that self-harm begins before puberty,^{13,14} others have found it begins later in adolescence,^{13,19} with puberty considered a key point in the initiation of self-harm behaviors.²⁰ The rates of self-harm also are believed to increase during adolescence, but currently there are no meta-analytic analyses of self-harm at different ages.

It also is unclear whether specific self-harm behaviors are associated with long-term risk,²¹ particularly because more severe forms are more likely to be associated with negative outcomes.^{22,23} Identifying the rates of specific types is difficult because many studies reporting rates of self-harm do not record specific behaviors, and of those that do, there is a lack of consistency in the types of self-harm that are reported.

Although higher-frequency self-harm is associated with poorer outcomes,^{10,22} it is unclear how many adolescents identified as having self-harmed continue to do so.²¹

Characteristics of self-harm, such as the reasons given for self-harm²⁴ and what help adolescents seek,²⁵ also can be used to inform preventative interventions or strategies. Currently, the major reasons given by adolescents for their self-harm are difficult to quantify because of the different survey tools that are used to collect different reasons for self-harm. For similar reasons, it has been difficult to quantify the types of help sought by adolescents who self-harm. However, qualitative reviews of seeking help concluded that although the majority did not seek help, those who did were most likely to seek help from peers.^{25,26}

Self-harm is strongly associated with suicidal thoughts and behaviors^{27,28} and up to 30% of young people who engage in NSSI have reported a suicide attempt.^{29,30} Because adolescents who deliberately harm themselves are at risk for later suicide and disabilities resulting from associated injuries,^{27,29,31} a major concern of families and workers is the likelihood that the self-harm episode will be ongoing⁹ and that young people who self-harm will attempt suicide.^{8,9} Meta-analytic estimates of risk of suicidal behaviors, specifically in those who self-harm compared with adolescents who have not self-harmed, do not yet appear to be available. However, a recent meta-analysis of 1,122,054 individuals confirmed the association between death by suicide and previous self-injurious thoughts or behavior (odds ratio 22.53, 95% CI 18.40–27.58).²⁸

Methodologic factors also can affect the reporting of prevalence. Differences in rates in previous studies could have been because they were too small or unrepresentative,³⁰ but much larger cross-national studies have become more common.^{10,32} Other sample characteristics that can result in increased reporting rates are larger female

proportions,^{1,33} biased sampling frames,³⁴ and advertising the study as one about self-injury.^{4,11}

Different assessment methods also make it difficult to establish accurate rates^{13,35} and there is a need to validate different methods of identifying self-harm.^{21,37–39} Surveys^{Q3} that use a checklist of specific self-harm behaviors can result in double the rates compared with single questions asking whether participants have harmed themselves.^{4,12} Rates also appear higher in studies using anonymous surveys compared with methods such as interviews.^{1,4} Who reports the self-harm also can affect reporting. Self-reported rates might be higher than self-harm confirmed according to other observers.²⁰ Conversely, rates of parent-reported self-harm have resulted in markedly lower rates.⁴⁰

In addition to including studies of self-harm across all countries and categories of self-harm, this review is the first meta-analysis of the comparative risk of suicidal behavior, age profile, frequency, types, seeking help, and reasons for self-harm.

OBJECTIVE

This review aimed to estimate the prevalence of all self-harm in adolescents in the community from 1990 through 2015, including rates by country and gender, and compare estimates of self-harm that included suicidal behavior (DSH) and self-harm that specifically excluded suicidal behavior (NSSI). We also aimed to provide meta-analytic estimates for the characteristics of self-harm including age of onset and self-harm at different ages, frequency and types, reasons, seeking help, rates using various criteria, and risk of suicidal behaviors. A secondary objective was to identify methodologic factors associated with variations in the prevalence of self-harm.

METHOD

For more detailed methods, please see Supplement 1, available online.

Inclusion and Exclusion Criteria

Cohort and cross-sectional studies reporting the prevalence of self-harm in community samples of adolescents 12 to 18 years of age were included. Studies that focused on children with specific disorders were not included.

Self-harm was defined as data from any study in which the investigator(s) stated that the outcome was self-harm, DSH, self-injury, self-mutilation, or parasuicide. Data from studies that referred to suicidality or suicidal behavior were used only if the definition could have included self-harm. Self-harm could include suicide attempts, but when separate data were available, these were not included. Data

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