Risk factors for self-harm and suicidal ideation and behaviour in adolescents and young adults: a protocol for an umbrella review of systematic reviews [version 1; peer review: awaiting peer review]

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Abstract

Background: There are many primary studies on the risk and protective factors for self-harm and suicidal ideation and/or behaviour in the adolescent and young adult (AYA) age group. Moreover, there have been many systematic reviews on these primary studies. Some of these focus on a specific population, a geographic area, a specific risk factor or a socioeconomic group, whereas others are more general in their approach. An umbrella review of these systematic reviews is an appropriate design to synthesise the available research regarding the main risks and protective factors for self-harm and suicidal ideation and/or behaviour in AYAs and to establish the relative strength of the associations of these risk and protective factors.

Methods and analysis: The PRISMA-P checklist was used for this protocol. The databases to be used for this umbrella review will be Ovid Medline, Embase, APA PsycInfo, the Cochrane Database of Systematic Reviews, CINAHL, and Scopus. Systematic reviews included will date as far back as the year 2010 and up to the present so as to ensure that the evidence is contemporary and up-to-date. Two authors, including the first author, will independently screen the results for inclusion. The AMSTAR 2 checklist will be used for the quality assessment process and the overall strength of the body of evidence will be assessed using the GRADE tool.

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Keywords
Risk factors, protective factors, self-harm, suicidal, adolescents, teenagers, young adults, AYA
**Introduction**

**Background**

Self-harm and suicidal ideation and/or behaviour is a major public health problem globally. The World Health Organization (WHO) estimates that about 800,000 people die from suicide each year, which translates as about one suicide every 40 seconds. Moreover, it is estimated that for each death by suicide there are more than 20 suicide attempts. Self-harm is known to be a major risk factor for a later death by suicide, which is the second leading cause of death in the 15–24 year old age group. Thus, self-harm and suicide are highly correlated. According to Lin et al., the risk of dying by suicide is approximately 50 times that of the general population amongst people presenting to hospitals with self-harm. Given the burden of suicide deaths per year, coupled with self-harm being a major risk factor for a later death by suicide and the comparatively high rates of suicide in adolescents and young adults (AYAs), there is a necessity for public health researchers to study the risk and protective factors for self-harm and suicidal ideation and/or behaviour in these age groups. This work can inform specific interventions and preventative measures to target this age cohort and potentially decrease the rates of suicide.

The overall aim of this protocol is to set out how an umbrella review of systematic reviews will be conducted to describe the risk and protective factors for self-harm and suicidal ideation and/or behaviour in AYAs. The PRISMA-P checklist was used for this protocol. In keeping with the description of Grant et al., this umbrella review will focus on a “broad condition or problem”, namely that of self-harm and suicidal ideation and/or behaviour in AYAs, and synthesise the results of all the relevant systematic reviews over the last ten years.

**Definitions**

According to Ati et al., “suicidal behaviour is a conscious and deliberate act carried out by an individual to end his/her life both directly and indirectly.” Suicidal ideation can be defined as thoughts of the same. Aggarwal et al. define self-harm as “an act of intentionally causing harm to own self, irrespective of the type, motive or suicidal intent”. It can be difficult to disentangle non-suicidal and suicidal acts of self-harm. Aggarwal et al. contends that there is a substantial overlap of suicidal and non-suicidal self-injurious behaviours and that the dimensional quality of suicidal intent makes the classification arbitrary. Hence, it is the objective of this review to study self-harm and suicidal ideation and/or behaviour together.

**Rationale**

There are many systematic reviews on the risk and protective factors for self-harm and suicidal ideation and/or behaviour, and many examined these factors with respect to a very particular focus or characteristic. For example, the systematic review by Miranda-Mendizabal et al. identified the gender-specific risk and protective factors for self-harm and suicidal ideation and/or behaviour in AYAs. Aggarwal et al. reviewed risk/protective factors for youth self-harm in low- and middle-income countries. The systematic review by Wyatt et al. studied the risk factors for suicide and depression among Asian American, Native Hawaiian and Pacific Islander youth and the review by Bochicchio et al. did the same for transgender or gender-diverse identified youth. Altogether, many of the systematic reviews of risk factors for self-harm and suicidal ideation and/or behaviour for AYAs considered either a sociodemographic, gender-related or geographic characteristic. Others considered a specific risk factor in their systematic review: Epstein et al. reviewed studies that examined school absenteeism as a risk factor for self-harm and suicidal ideation and/or behaviour, whereas Gili et al. assessed how mental disorders can be a risk factor.

Further systematic reviews were more general in their approach, such as the review by Bozzi et al., which examined factors associated with risk-taking behaviours (including self-harm and suicidal ideation and/or behaviour) in adolescents. Ati et al. subdivided risk and protective factors into internal risk factors (e.g. poor individual coping), external risk factors (e.g. poor interactions in the family setting) and protective factors (e.g. positive activities).

Hence, there is a copious amount of research carried out on the various risk/protective factors for self-harm and suicidal ideation and/or behaviour and there are many systematic reviews that collated evidence on this subject. Therefore, there is a need for an umbrella review of the various systematic reviews, to give an overarching account of the evidence for various risk and protective factors for self-harm and suicidal ideation and/or behaviour in the AYA age group.

**Objectives**

This umbrella review aims to systematically synthesise all the relevant systematic reviews, so as to give a comprehensive overview of the risk and protective factors for self-harm and suicidal ideation and/or behaviour in AYAs. Furthermore, these risk and protective factors will be compared and contrasted with respect to different gender identities, sub-age cohorts of AYA, different cultures, sociodemographics, and geographic locations amongst other variables. It will also compare risk factors for suicidal and non-suicidal acts of self-harm, if the distinction is made in the reviews. Explicitly, this umbrella review will address the following questions:

1. What are the risk and protective factors for self-harm and/or suicidal ideation or behaviour in AYAs?
2. How do these risk/protective factors change for AYAs with respect to characteristics such as gender, sub-age groups of AYAs, sociodemographics and other characteristics?
3. What is the relative strength of association of each of the risk and protective factors for self-harm and suicidal ideation and/or behaviour?

**Methods**

**Search strategy**

The search strategy for this umbrella review will follow the PECO (population, exposure, comparison, and outcome) format.
The population will be persons defined as adolescents and/or young adults. The age ranges may differ substantially for these age cohorts but the AYA age cohort should roughly encompass persons aged 15–30. The exposures are the various risk (and protective) factors, and the comparisons are the absences of the same risk (and protective) factors. The outcome will be any report of self-harm or suicidal ideation and/or behaviour from persons of this age group.

The databases to be used for this umbrella review will be Ovid Medline, Embase, APA PsycInfo, the Cochrane Database of Systematic Reviews, CINAHL, and Scopus. A search strategy was devised for this review with the assistance of a librarian in the Royal College of Surgeons Ireland (RCSI). The search strategy will use the key words presented in Table 1 along with syntax specific to the different databases used for this search. Using this search strategy, we found that a substantially high proportion of systematic reviews ever published were within the period 2010–2021. Moreover, it is likely that these systematic reviews could themselves be considered to have summarised and included significant findings and studies prior to 2010. Hence, the search strategy will use the six mentioned databases and include articles published from 2010 up until 12th October 2021, to ensure that the evidence is contemporary and up to date.

### Inclusion/exclusion criteria

Systematic reviews will be included as far back as the year 2010 and up to present day so as to ensure that the evidence is contemporary and up to date. Furthermore, only peer-reviewed published papers will be included. Systematic reviews dealing with risk/protective factors for self-harm and suicidal ideation and/or behaviour in AYAs will be included from a myriad of geographical and sociodemographic locations. Systematic reviews that study self-harm and suicidal ideation and/or behaviour in all ages may be included if the AYA group can be identified as a sub-population in that study. Meta-analyses for various metrics (such as odds ratios) for risk/protective factors will also be included.

Other types of reviews, such as scoping reviews or narrative reviews, will not be included. Primary studies, case reports, and case series will also be excluded. Studies related exclusively to other diseases (such as HIV or diabetes) will also be excluded. Other exclusions will be systematic reviews involving prevention of self-harm or suicide; reviews about interventions for self-harm or suicide; studies exclusively relating to prevalence of self-harm and/or suicidal ideation and/or behaviour; and economic evaluation studies. Systematic reviews specific to an age cohort, like geriatrics, that does not include the AYA age cohort, will also be excluded. Qualitative studies (or reviews of such) that synthesise peoples’ experiences of self-harm and/or suicidal ideation and/or behaviour will also be excluded.

### Screening and selection procedure

The results from the screening process will be compiled into the Rayyan software by the first author. Two authors, including the first author, will independently screen the results for inclusion. Selection and exclusion of articles will be determined using the inclusion/exclusion criteria. Any conflicts regarding whether a systematic review ought to be included or not, will be forwarded to a third reviewer who will make a final judgment about the article’s inclusion or exclusion in the study.

### Data extraction and method of synthesis

The data that will be extracted from the systematic reviews will include the author and year of publication; location of the study; the systematic review targets; types of studies included in the review; the population targeted in the review (including age profiles and gender); risk profile categories; results and results of any meta-analyses. Regarding age, there will most likely be variations for each review in terms of how they define AYA (if defined at all). Moreover, there will likely be different definitions of this age cohort in the primary studies within these reviews. Therefore, the data for age definitions used by the reviews and the age ranges found in these studies will be explicitly extracted – with particular attention to the bounds of the reviews.

Specially-designed summary tables will be used to present the key characteristics of each of the included studies. These may be subdivided for the variations in the reviews with respect to age, gender, geographic locations, socioeconomic status

### Table 1. Search terms.

| Risk/protective factors | Self-harm and suicidal | Age-group | Systematic review |
|-------------------------|------------------------|-----------|------------------|
| Risk                    | Self-harm              | Adolescent| Systematic review|
| Protective              | Self-mutilation        | Adolescence| Meta-analysis    |
| Indicator               | Self-injury            | Teenagers |                  |
| Aetiology               | Self-injurious         | Youth     |                  |
| Cause                   | Risk-taking            | Teen      |                  |
|                         | “risk behaviours”      | Juvenile  |                  |
|                         | “risk behaviors”       | AYA       |                  |
|                         | Suicidal               | Young adult|                 |
and other variations. The data extracted from the systematic reviews will determine this. These tables will be used to synthesise the key information regarding the predominant risk/protective factors for self-harm and/or suicidal ideation and/or behaviour.

For the meta-analyses included, the pooled meta-analytic estimate (and the 95% confidence interval) will be extracted. Heterogeneity will be assessed using the I² statistic. It is our objective that a meta-analysis of the meta-analyses will be carried out. If this is not possible, a descriptive synthesis of the results will be carried out instead. Any strength of association metrics (like odds ratios, relative risk ratios or hazard ratios) will also be extracted. Subgroup analyses may also be used for the different age ranges reported in the included studies and will be determined by the bounds of the different systematic reviews included in this study.

The risk and protective factors may be subclassified according to the different variations. For example, there may be shared or different risk and protective factors for high-income countries versus middle- and low-income countries. The PRISMA statement for the reporting of systematic reviews will be used for the reporting of this umbrella review14.

Quality assessment
A quality assessment will be conducted for each of the systematic reviews included in this umbrella review. The AMSTAR 2 checklist, a critical appraisal tool for systematic reviews, will be used for this quality assessment process15. The overall strength of the body of evidence will be assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool16.

Ethics and dissemination
Ethical approval is not needed for this review protocol. The results will be disseminated to academic audiences in a peer-reviewed journal and at academic conferences. The presentation of this study at academic conferences may take the form of poster presentations or oral presentations.

Study status
The results have been compiled and screening is currently taking place using inclusion/exclusion criteria.

Discussion
Strengths and limitations
To the best of our knowledge, this is the first time that such an umbrella review is undertaken on this topic, and given the plethora of research already compiled in this area, it is a strength of this study that it will constitute such a synthesis of the literature. Moreover, this research is urgent given the high rate of suicide in the AYA age group. Understanding the aetiology of self-harm and suicidal ideation and/or behaviour in AYAs could enable public health workers in the mental health area to put in place prevention programmes or facilities. For example, a thorough knowledge of the risk and protective factors in AYAs could lead to the development of an algorithm for identifying high risk AYA individuals in a screening programme for suicide or suicide attempts.

An anticipated limitation of this study is the ambiguity that sometimes exists between a self-harm act with non-suicidal intent and a suicide attempt. This can often be difficult to discern. This is another reason why self-harm and suicide are being considered together as part of self-harm and suicidal ideation and/or behaviour for the purposes of this study. Furthermore, there may be very recent primary research papers not accounted for, as part of this study, since they may not be included in a systematic review. However, there has been a sufficient number of papers published, and systematic reviews of those papers, in this area over the last 10 years to substantiate a thorough synthesis of the risk/protective factors for self-harm and suicidal ideation and/or behaviour in AYAs. However, it is a possibility that important primary research papers may be overlooked by this umbrella review if they had never been included in any published systematic review. Finally, while the objective of this umbrella review is to study the risk/protective factors for self-harm and suicidal ideation and/or behaviour, a limitation of this study will be that it will not account for the prevalence of both. Prevalence of self-harm and suicidal behaviour is an important outcome when discussing risk factors, but it would require an entire review or study in itself.

Conclusions
Conducting this umbrella review of systematic reviews will allow us to obtain a wide picture of the topic at hand; to highlight whether the evidence base around the topic is consistent or contradictory; and, to explore the reasons for the findings17. This high-level attempt to consolidate over 10 years of research will further allow researchers to build on the mechanisms behind the various risk factors and study the relationship between the risk and protective factors and their associations with self-harm and suicidal ideation and/or behaviour in AYAs.

Data availability
Underlying data
No data are associated with this article.

Reporting guidelines
Figshare: PRISMA-P checklist for “Risk and protective factors for self-harm and suicidal ideation and/or behaviour in adolescents and young adults: a protocol for an umbrella review of systematic reviews”, https://doi.org/10.6084/m9.figshare.17924657.v114

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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