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Prevention of suicide and suicidal behaviour in adolescents

**Article (Published version)
(Refereed)**

Original citation:

Stevens, Madeleine and Bond, Lyndal and Pryce, Cathy and Roberts, Helen and Platt, Stephen (2008) *Prevention of suicide and suicidal behaviour in adolescents. The Cochrane database of systematic reviews*, 3

DOI: [10.1002/14651858.CD007322](https://doi.org/10.1002/14651858.CD007322)

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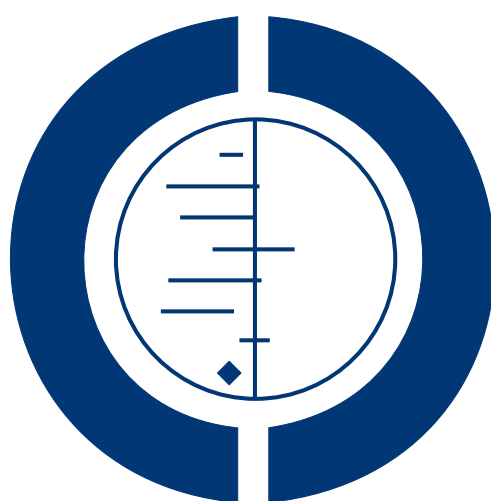
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Prevention of suicide and suicidal behaviour in adolescents (Protocol)

Stevens M, Bond L, Pryce C, Roberts HM, Platt S



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[Intervention Protocol]

Prevention of suicide and suicidal behaviour in adolescents

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Editorial group: Cochrane Depression, Anxiety and Neurosis Group.

Publication status and date: New, published in Issue 3, 2008.

Citation: Stevens M, Bond L, Pryce C, Roberts HM, Platt S. Prevention of suicide and suicidal behaviour in adolescents. *Cochrane Database of Systematic Reviews* 2008, Issue 3. Art. No.: CD007322. DOI: 10.1002/14651858.CD007322.

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ABSTRACT

This is the protocol for a review and there is no abstract. The objectives are as follows:

1. To determine whether school, community, primary health-care or other institution-based interventions for the prevention of suicide in adolescents are effective in reducing suicide attempts, reducing symptoms of known risk factors for suicide or increasing the likelihood of identifying at-risk individuals
2. To identify possible adverse effects associated with interventions
3. To determine, if possible, which features of interventions are most successful, for example, where programmes include more than one of the components listed in the description of the intervention section above. Other features of interventions which could be explored include frequency, intensity, mode of delivery, characteristics of providers and setting
4. To highlight areas where further research is most needed

BACKGROUND

Description of the condition

Suicide rates

Figures on suicide rates are much debated, with many authors suggesting significant underreporting of suicides, in some cases for cultural or religious reasons (La Vecchia 1994). It has been suggested that there may be even greater underreporting or misclassification in the case of young people (Wasserman 2005). Mean suicide rates for 15-19-year-olds for the 90 countries who provided data to the World Health Organisation are 10.5/100,000 for males and 4.1/100,000 for females, for the most recent year available (7.4 overall). Suicide accounted for 9.1% of deaths in this age group. Only accidents and assault come higher in causes of death in the 15-19 age group (Wasserman 2005). Globally there has been a rising trend in suicide rates for young males from 1950, this rise being particularly marked before 1980, and in countries outside Europe, while rates for females have remained fairly constant. Suicide rates in western Europe and North America have declined in recent years. It has been suggested that the decline is linked to the increased use of antidepressants being prescribed to adolescents during this period (Gould 2003). Rates for completed suicides rise markedly in the late teens and continue to rise until the early twenties after which they remain similar until the sixth decade (Gould 2003).

Suicide attempts are much more common than completed suicides, and rates of completed suicide and attempted suicide are positively related (Hawton 1998), making attempted suicide a risk factor for completed suicide (Kerkhof 2000). Accurate national statistics are unavailable (De Wilde 2002), however, a 1999 survey in the US found that 1 in 12 young people said they had attempted suicide (Grunbaum 2001). Evans et al (Evans 2004) report that epidemiological surveys of adolescents suggest suicidal phenomena (suicide attempts, deliberate self-harm, and suicidal plans, threats and thoughts) are underreported. Unlike completed suicides, suicide attempts are more common among young females than young males, and peak between 16 and 18 years of age, after which there is a marked decline, especially for females (Gould 2003).

Risk factors/ causes

The multiple causes of suicidal behaviour can be divided into proximal stressors or triggers on the one hand and predisposition, or factors associated with vulnerability to suicidal behaviour, on the other (Evans 2004; Mann 2005).

Evans 2004 conducted a systematic review of studies investigating factors associated with suicidal phenomena in adolescents. The evidence was drawn from population-based studies of young people who had answered self-report questionnaire or interview questions about suicidal phenomena, where the studies had reported a prevalence figure for suicidal phenomena. There was strong evidence of an association with suicidal phenomena for family sui-

cidal behaviour, a vulnerability factor, and for the stress factors of depression, alcohol abuse, use of hard drugs, mental health problems, suicidal behaviour by friends, family discord (especially for females) and poor peer relationships. There was also strong evidence of an association with living apart from parents, antisocial behaviour (especially in females), sexual abuse, physical abuse and unsupportive parents, which appeared as both vulnerability and stress factors. In addition, there was evidence suggestive of an association with poor communication within the family as a vulnerability factor and with hopelessness, eating disorders, smoking, drug use, sleep difficulties and media exposure to suicide as stressors. There were further possible associations with low self-esteem, poor physical health, physical disability and sexual activity.

Definitions

A large number of different terms are used in discussing suicide and suicidal behaviour. Here, following Fox and Hawton (Fox 2004), suicidal behaviour encompasses any form of intentional or deliberate self-injurious behaviour (suicide, attempted suicide, deliberate self-harm). This includes fatal outcomes but the term suicide will be used to refer only to self-injurious behaviour with a fatal outcome. Deliberate self-harm will refer to self-injurious behaviour with non-fatal outcome.

Description of the intervention

The various types of prevention programmes can be grouped into three main settings in which they operate: school, community and health-care systems (Gould 2003). The ultimate intended goal of the interventions is the prevention of adolescent suicide. The general goals of prevention programmes are usually either or both of 1) case finding with accompanying referral and treatment or 2) risk factor reduction (CDC 1994; Gould 2003; Gould 2001). Some programmes will have other goals, such as the promotion of good mental health and prevention of the onset of risk factors such as depression.

School-based interventions

Kalafat (Kalafat 2003) divides these into universal (given to everyone), selective (given to groups exposed to certain risk factors) and indicated interventions (given to specific individuals who have been identified through screening procedures as being at preclinical levels of a disorder).

The curriculum-based prevention programmes attempt to de-emphasise the link with mental illness in order to de-stigmatise suicidal feelings. One aim of these programmes is often to enable students to recognise peers at risk of suicidal behaviour and make students aware of where they can get help. However, there is a risk that the programmes normalise suicidal behaviour, reducing potentially protective taboos (Fox 2004). Harden et al (Harden 2001) found some evidence that discussing suicide may encourage some to consider it. In Guo and Harstell's review (Guo 2002), two

studies suggested some young people were more likely to commit suicide after school-based prevention programmes.

These programmes have been quite widespread in the US. The evidence of a possibility of negative effects prompted a turn towards skills-based programmes that aim to develop problem-solving, coping and cognitive skills, the rationale being that suicidal youths have deficits in these areas and that enhancing these protective factors will reduce the risk of suicide attempts. Targeted outcomes of these programmes include suicide risk factors such as depression, hopelessness, and drug abuse. There have been some promising findings from evaluations of these programmes (Gould 2003).

Screening, gatekeeper training (to help school personnel identify at-risk youths) and peer helper programmes aim to discreetly identify at-risk individuals who might need to be referred for treatment or further evaluation. Screening programmes use self-report and individual interviews and have been found to yield few false-negatives but many false-positives (Gould 2003:395). It is argued that a tolerance of false positives is essential to help avoid missing a suicidal individual (Thompson 1999). The use of peer helpers is based on the premise that suicidal youths are more likely to confide in a peer than an adult. Activities of peer helpers range from reporting of warning signs to counselling. There are also postvention/crisis interventions that are implemented after the suicide of a peer, a time of increased risk of suicide. The rationale for these programmes is that a timely targeted response will reduce subsequent morbidity and mortality.

Community-based prevention programmes

Crisis intervention centres and hotlines can provide immediate support at times of crisis. Suicidal behaviour is often associated with a crisis situation and research has indicated that such centres do attract high-risk populations (Dew 1987), but it remains unclear whether they reduce suicide rates in the communities in which they are located.

Some programmes, such as weapons control, aim to restrict the means of suicide. The rationale is based on the frequently impulsive nature of the suicide act and the transience of the risk period. However, there is little sign that these programmes have any effect on suicide rates (Fox 2004).

It has been suggested that there are risks associated with reporting of suicide in the media (Evans 2004), and that an increase in positive suicide models put forward by the media has led to increased suicidal behaviour in adolescents (Diekstra 1995). Therefore, media education programmes aim to encourage a responsible attitude towards media reporting of suicides. There are guidelines for newspaper reporting in many countries, for example, to keep suicide off the front pages and describe treatment resources in reports.

Health-care based prevention programmes

Interventions aimed at primary care health workers are designed to increase identification of at-risk youth. Many suicidal young people seek medical care in the month before their suicide (Pfaff 1999), although these rates (estimates range between 7 and 20% (Gould 2003)) are much lower than for adults (Mann 2005). There is some evidence that training medical practitioners may lead to increased identification of suicidal patients (Gould 2003). A systematic review (Mann 2005) concluded that physician education in depression recognition and treatment and restricting access to lethal methods reduces suicide rates.

Prevention programmes in other institutions

This review will also look at strategies for preventing suicide in other institutions such as those for young offenders. As well as interventions named above such strategies may include screening, close observation, removal of lethal means and structures which could be used for hanging, avoidance of solitary housing and the training of staff to recognise signs of risk (Nock 2000).

Existing reviews of suicide prevention programmes

There are a number of existing reviews of suicide prevention programmes which have reported evidence of both harm and benefit. In general, insufficient evidence was found to support particular approaches to suicide prevention.

A systematic review of suicide prevention strategies by Mann et al (Mann 2005) found two systematic reviews and four randomised controlled trials (RCTs) of curriculum-based programmes for adolescents. The review searched Medline, Cochrane and Psycinfo between 1966 and 2005.

A review of research on suicide prevention programmes for children and youth published between 1990 and 2002 was carried out by Guo and Harstall (Guo 2002) and included a broader range of research designs. All the included studies looked at school-based prevention programmes. The reviewers found increases in knowledge and improved attitudes to mental illness and suicide but insufficient evidence of effect on suicidal behaviour.

Ploeg et al (Ploeg 1999) reviewed studies on adolescent suicide prevention published between 1980-1995 and updated the review in 1999 with a focus on school-based programmes. They found evidence of improved knowledge but there were both beneficial and harmful effects in terms of help-seeking, attitudes, and peer support.

Gould et al (Gould 2003) conducted a review of the previous ten years of research on youth suicide risk and preventive interventions. A comprehensive, but not exhaustive, search was made of Medline, Psycinfo, ERIC and Education Full Text. The review concluded that there was insufficient evidence on the effectiveness of school-based suicide awareness programmes, peer support programmes or problem-solving and coping skills development courses. Limited evidence was found to support training of school

staff to recognise students at risk of suicide, and crisis intervention after a suicide to reduce risk of subsequent suicides in peers.

Why it is important to do this review

Suicide prevention programmes are being implemented in schools. In the US many states require or recommend that suicide prevention programmes are carried out. It is necessary to find out if any harm is caused by these interventions, and, given the limited resources available to schools, and the wide range of interventions available to them, to find out whether there are any positive effects of the interventions and what these might be. In addition, it may be possible to determine which features of interventions are most successful, leading to the possibility of recommendations for future programme development. It is very possible that some of the most at-risk young people will not be attending school and that community or health-care based programmes may be more likely to reach these young people. In order to make best use of resources, it is important to try to ascertain which components of suicide prevention programmes are effective for adolescents. The current review is intended to provide an exhaustive search and analysis of the available evidence bringing together findings from a variety of different, but interrelated, interventions.

OBJECTIVES

1. To determine whether school, community, primary health-care or other institution-based interventions for the prevention of suicide in adolescents are effective in reducing suicide attempts, reducing symptoms of known risk factors for suicide or increasing the likelihood of identifying at-risk individuals
2. To identify possible adverse effects associated with interventions
3. To determine, if possible, which features of interventions are most successful, for example, where programmes include more than one of the components listed in the description of the intervention section above. Other features of interventions which could be explored include frequency, intensity, mode of delivery, characteristics of providers and setting
4. To highlight areas where further research is most needed

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs), cluster randomised trials and quasi-randomised controlled trials (e.g. sequential allocation by class or school) will be included.

It is possible that very few, or only very poor quality, RCTs which meet the inclusion criteria will be found. In this case the best evidence available will be included (Petticrew 2006), firstly, controlled before and after studies and secondly, if there are very few or only very poor quality controlled studies, interrupted time series designs (Jackson 2005).

Published and unpublished studies in any language will be considered.

Types of participants

Studies involving adolescents of secondary school age (aged 11-18 years, grades 7-12), or those teaching or treating them, will be included in the review.

Studies conducted in school, community, health care or residential care settings, or in young offenders' institutions will be included.

Types of interventions

Interventions

Primary interventions (i.e. those aimed at preventing problems before they start) aimed at the prevention of suicide will be included. They include curriculum based suicide awareness programmes; skills-based programmes; screening with a view to further intervention for those considered at risk; gatekeeper training; peer helper programmes; postvention/crisis intervention; crisis centres and hotlines; restriction of the means of suicide; media education; primary care health worker intervention.

Interventions aimed specifically at youths who self-harm or have already made a suicide attempt will be excluded. Pharmaceutical interventions will be excluded. Interventions specifically aimed at young people with diagnoses of mental and behavioural disorders as defined by the World Health Organisation's International Classification of Diseases (ICD-10) will be excluded, except in the cases of conduct and emotional disorders (F90-F94) (WHO 1992).

Interventions will be categorised according to the list in paragraph one of this section.

Control conditions

Control conditions will include any other intervention, no intervention/usual care and waiting list.

Main comparisons

Prevention of suicide intervention versus any other intervention
Prevention of suicide intervention versus no intervention/usual care/waiting list

Types of outcome measures

There are difficulties in operationalising the distinction between suicide attempts, where there is an intention to die, and deliberate self-harm, where there is no intention to die. Terms are used in different ways and there are systematic cultural variations in their use. Therefore we will amalgamate suicide attempts and deliberate self-harm into a single category, "non-fatal suicidal behaviour",

while recognising the heterogeneity of the population this will include.

Primary outcomes

1. Rates of suicide
2. Non-fatal suicidal behaviour

Secondary outcomes

1. Suicidal ideation
2. Changes in protective behaviours including help-seeking behaviour
3. Rates of identification of at-risk individuals and false-positives
4. Changes in knowledge, attitudes and intentions towards suicide, suicidal peers and help-seeking
5. Changes in adults' knowledge, attitudes and intentions towards young people and suicide
6. Measures of suicide risk factors, e.g. depression, anxiety
7. Measures of other outcomes related to mental health (e.g. perceived stress, anger, self-esteem, coping and hopelessness)

Search methods for identification of studies

1. Electronic searches

We will search the following electronic databases:

CCDANCTR-Studies will be searched using the following terms
Diagnosis = Suicid*

CCDANCTR-References will be searched using the following terms

Free-text = Suicid*

Cochrane Central Register of Controlled Trials (CENTRAL)

Cochrane Developmental, Psychosocial and Learning Problems Group's Specialised Register

C2-SPECTR

Assia (1987 to present)

British Education Index (1975 to present)

CINAHL (1982 to present)

ERIC (1966 to present)

Index to theses (1986 to present)

Dissertation Abstracts International (1980 to present)

MEDLINE (1966 to present)

PsycINFO (1971 to present)

EMBASE (1980 to present)

Criminal Justice Abstracts (1968 to present)

Criminal Justice Periodical Index (1981 to present)

National Criminal Justice Reference Service (1970 to present)

LILACS (Latin American Health Sciences Literature) (1982 to present)

The search strategy will be broad, relying principally on the term "suicid*"

2. Other sources

a) Reference lists

Reference lists and citations of relevant studies and reviews will be checked for relevant material. Citation searches will be carried out using the Social Science Citation Index and Google scholar.

b) Correspondence

We will contact acknowledged experts and researchers in the field, as well as voluntary organisations with an interest in suicide, for information on published and unpublished trials

c) Grey literature

We will make further efforts to retrieve relevant studies via conference proceedings, dissertations, theses and government documents using the Networked Digital Library of Theses and Dissertations (NDLTD) and Google.

d) Hand searching

Journals specialising in research on suicide will be individually searched e.g. *Suicide & Life-Threatening Behavior* (2001 to present); *Archives of Suicide Research* (1995 to present); *Crisis: The Journal of Crisis Intervention and Suicide Prevention* (1995 to present).

Data collection and analysis

Selection of studies

Title and abstracts of studies identified by the searches will be read on screen and assessed for inclusion in the review by a member of the review team using the criteria listed above under 'Criteria for considering studies for this review'. Where the study appears potentially relevant the full text will be retrieved and assessed for inclusion independently by two reviewers. Any disagreements which cannot be resolved will be referred to a third member of the review team. Studies will be classified as either 1) RCT or quasi-RCT or 2) other study design.

Data extraction and management

Details of each study will be independently extracted by two assessors using a standardised data extraction form, with discrepancies which cannot be resolved referred to a third member of the team. Data will be recorded on the following (Jackson 2005):

Publication details

Study details (date, follow-up)

Study design

Population details (n, characteristics)

Intervention details

Theoretical framework

Provider

Setting

Target group

Consumer involvement

Process measures - adherence, exposure, training, etc

Context details

Outcomes and findings

Assessment of methodological quality of included studies

Risk of bias will be assessed for each included study using the Cochrane Collaboration 'risk of bias' (RoB) tool. The following six domains will be considered:

- 1) Sequence generation: Was the allocation sequence adequately generated?

- 2) Allocation concealment: Was allocation adequately concealed?
- 3) Blinding of participants, personnel and outcome assessors for each main outcome or class of outcomes: Was knowledge of the allocated intervention adequately prevented during the study?
- 4) Incomplete outcome data for each main outcome or class of outcomes: Were incomplete outcome data adequately addressed?
- 5) Selective outcome reporting: Are reports of the study free of suggestion of selective outcome reporting?
- 6) Other sources of bias: Was the study apparently free of other problems that could put it at a high risk of bias?

A description of what was reported to have happened in each study will be provided, and a judgement on the risk of bias will be made for each domain within and across studies, based on the following three categories:

- A. Yes (low risk of bias)
- B. Unclear
- C. No (high risk of bias).

Included studies will be critically appraised by two independent reviewers to assess the risk of bias. Any disagreements which cannot be resolved will be referred to a third reviewer. Where necessary, the authors of the studies will be contacted for further information. The application of assessment criteria will be piloted to ensure criteria can be applied consistently.

In addition to using the RoB tool, we are planning to use the Quality Assessment Tool for Quantitative Studies developed by the Effective Public Health Practice Project (<http://www.city.hamilton.on.ca/PHCS/EPHPP/>). The tool can be used for quantitative studies including randomised controlled trials, controlled before and after designs and interrupted time series designs. The tool assesses studies on:

- A Selection bias
- B Study design
- C Confounders
- D Blinding
- E Data Collection
- F Withdrawals and Dropouts
- G Analysis
- H Intervention Integrity

Measures of treatment effect

Continuous data will be analysed if means and standard deviations are available. For binary outcomes, a standard estimation of the odds ratio (OR) with the 95% confidence interval will be calculated. Post-intervention means and, where baseline data are available, pre-intervention means will be reported. Where possible, relative change from baseline in the intervention group will be calculated (intervention group change - control group change), along with standard deviations and 95% confidence intervals. Continuous variables that are measured on different scales in different studies will be analysed as standardised mean differences (SMD), and confidence intervals (95%) will be reported.

Unit of analysis issues

Any cluster randomised trials will be identified in the review. The

methods used to analyse these, and whether the risk of unit of analysis error was dealt with appropriately, will be reported. Where the analysis was carried out appropriately, studies will be considered for meta-analysis. Where the analysis was inappropriate, approximately correct analyses may be performed if the necessary information can be extracted (Higgins 2005).

Dealing with missing data

Study authors will be contacted to request data missing from information on methods or results. Information on missing data and dropouts will be assessed for each study. The review will report the number of participants included in each study's final analysis as a proportion of all participants in the study. The possible effects of the missing data will be discussed.

Data will be included only for those participants whose results are known. The possible impact of missing data will be discussed.

Assessment of reporting biases

Funnel plots will be drawn to investigate the relationship between study power and effect size. An asymmetric plot may indicate biases such as publication bias or location biases, poorer methodological quality of smaller studies, or a true difference related to smaller studies due, for instance, to differences in the delivery of the intervention to smaller samples. Possible reasons for any asymmetry will be explored (Egger 1997a).

Data synthesis and assessment of heterogeneity

In the first instance a common sense approach will be adopted to assessing whether meta-analyses combining data from different studies are appropriate in terms of whether participants, interventions and outcomes are sufficiently similar (Krisjansson 2003). If meta-analyses appear a possibility, statistical tests of heterogeneity (chi-square and I-square) will be carried out (Higgins 2003). A random-effects model will be used to allow for expected heterogeneity. Effect estimates will be weighted by the inverse of their variance, giving greater weight to larger trials. It is possible that even if the types of intervention are diverse, a meta-analysis could usefully be carried out on studies of similar interventions, with similar research questions and similar outcomes, to provide an indication of the direction, but not the size, of any effect.

Meta-analyses will only be carried out on any RCTs or quasi-RCTs included. Other studies, if included, will be summarised in tables additional to the meta-analyses, summarised in a narrative synthesis and included in the discussion.

Subgroup analysis and investigation of heterogeneity

Separate analyses will be carried out for subgroups of studies with similar research questions based on:

1. Type of intervention: curriculum based suicide awareness programmes; skills-based programmes; screening with a view to further intervention for those considered at risk; gatekeeper training; peer helper programmes; postvention/crisis intervention; crisis centres and hotlines; restriction of the means of suicide; media education; primary care health worker intervention.
2. Type of outcomes measured:
 - Rates of suicide

- Non-fatal suicidal behaviour
- Suicidal ideation
- Changes in protective behaviours including help-seeking behaviour
 - Rates of identification of at-risk individuals and false-positives
 - Changes in knowledge, attitudes and intentions towards suicide, suicidal peers and help-seeking
 - Changes in adults' knowledge, attitudes and intentions towards young people and suicide
 - Measures of suicide risk factors, e.g. depression, anxiety
 - Measures of other outcomes related to mental health

3. Type of setting of the intervention (school-based, community-based, health-care based or those based in other institutions). An attempt will be made to determine where interventions share similar features that are found to be successful or unsuccessful.

Sensitivity analysis

A sensitivity analysis will be carried out to explore the effects of the addition or removal of lower quality studies from the results.

ACKNOWLEDGEMENTS

We would like to thank Mark Petticrew, Amanda Perry and Esther Coren for advising on the protocol.

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* Indicates the major publication for the study

HISTORY

Protocol first published: Issue 3, 2008

Date	Event	Description
10 January 2007	New citation required and major changes	Substantive amendment

CONTRIBUTIONS OF AUTHORS

The protocol has been written by Madeleine Stevens with considerable advice, additions and amendments from Lyndal Bond, Cathy Pryce, Helen Roberts and Stephen Platt.

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- Research Development Fund Pump Priming, UK.

External sources

- Cochrane health promotion and public health field, Australia.