SUICIDE PREVENTION

An evidence review 2015

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Published by:
Health Research Board, Dublin
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Foreword

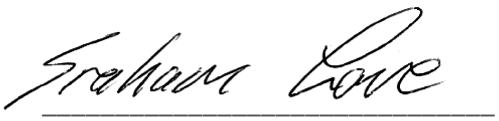
In Ireland almost 10 people died by suicide every week in 2012; a total of 507 people according to the National Suicide Research Foundation. Given these figures, the need to focus on measures to reduce suicide seems obvious. But suicide is a complex phenomenon and there is no simple cause–effect relationship that explains why people take their own life.

However, many suicides are preventable. The World Health Organization suggests that a systematic way of developing a national response to suicide is to create a national suicide prevention strategy, which indicates a government's clear commitment to dealing with the issue of suicide. Typically, national suicide prevention strategies combine a range of prevention strategies, and it is important that these are based on the best current evidence and that the evidence base is built upon over time.

But to have success and focus resources in areas that will have impact, it is essential to review what actually works. That is why the HSE National Office for Suicide Prevention asked the Health Research Board to review the evidence that is available in relation to suicide prevention interventions. It wants this evidence to underpin their new Strategic Framework for Suicide Prevention, 2015–18.

In this report, the HRB identifies suicide prevention interventions that have weak, moderate- or good-quality evidence that they actually reduce suicidal behaviours such as suicidal ideation, self-harm, suicide attempts or deaths by suicide. The HRB also presents suggestions for adding to and strengthening the evidence base on suicide prevention.

I hope that this report will strengthen the evidence base for suicide prevention and in conjunction with the strategic framework, help reduce the number of people dying by suicide in the future.



Graham Love
Chief Executive

Acknowledgements

The authors would like to thank Mr Gerry Raleigh at the National Office of Suicide Prevention in the Health Service Executive for commissioning the review. We greatly appreciate the valuable input provided by Professor Siobhan O'Neill, Ms Susan Kenny and Professor Ella Arensman. We are very grateful to our peer reviewers: Professor Siobhan O'Neill and Professor Stephen Platt for their valuable insights and comments. Finally, we would like to thank the Health Service Executive for funding this important review.

Acronyms and abbreviations

Acronym	Full text
CAMS	Collaborative Assessment and Management of Suicidality
CARE	Care, Assess, Respond, Empower
CAST	Coping and Support Training
CBT	Cognitive Behavioural Therapy
C-CARE	Counselors CARE
CDS	Community-based Depression Screening
CG	Control Group
DBT	Dialectic Behavioural Therapy
ED	Emergency Department
GBG	The Good Behaviour Game
GP	General Practitioner
HRB	Health Research Board
HSE	Health Service Executive
iCBT	Internet Cognitive Behavioural Therapy
IG	Intervention Group
IMPACT	Prevention of Suicide in Primary Care Elderly: Collaborative Trial
MACT	Manual assisted Cognitive Behavioural Therapy
NOSP	National Office for Suicide Prevention
NNT	Number Needed to Treat
PGC	Personal Growth Class
PROSPECT	Improving Mood – Promoting Access to Collaborative Treatment
PSI	Index of Potential Suicide
QAT	Quality Assessment Tool
QPR	Question, Persuade, Refer
RCT	Randomised Control Trial
RY	Reconnecting Youth
SNAP	Successful Negotiation Acting Positively
SOS	Signs of Suicide
STEPPS	Systems Training for Emotional Predictability and Problem Solving
TAU	Treatment as Usual
TBI	Traumatic Brain Injury
TG	Treatment Group
TMH	Telemental Health
UK	United Kingdom
USA	United States of America
WHO	World Health Organization
YST	Youth-nominated Support Team

List of statistical terms

Abbreviation	Full text
CG	Control Group
CI	Confidence Interval
d	Cohen's measure of effect size
df	Degrees of freedom
F	F-test or Fisher's F-ratio
HR	Hazard ratio
I2	I2 Index
IRR	Incident Risk Ratio
M	Mean
MD	Mean deviation
MIRR	Media Incident Rate Ratio
n	Sample size
OR	Odds Ratio
p	Probability of significance
RR	Risk Ratio or Relative Risk
SD	Standard deviation
SMD	Standardised mean difference
t	T-test
X^2	Chi-Squared

Executive summary

The National Office for Suicide Prevention (NOSP) of the Mental Health Division of the Health Service Executive (HSE) is developing a new strategic framework for suicide prevention (2015–18). This new strategic framework will where possible be based on best national and international evidence. We at the Evidence Centre of the Health Research Board (HRB) were commissioned by the NOSP to carry out a review of the evidence base for suicide prevention. In this report, we present our findings from a review of reviews, seeking to answer two research questions:

1. Which suicide prevention interventions have been evaluated in the published literature?
2. For which prevention interventions is there good-quality evidence that they reduce suicidal behaviours (measured by a decrease in completed suicides, suicide attempts, (deliberate) self-harm or suicidal ideation)?

Methods

Given the short timeframe available (June to September 2014) and the significant body of literature that exists in the field of suicide prevention, in consultation with the NOSP, we decided to focus resources on doing a review of existing peer-reviewed papers that used systematic review methods. Therefore this report is a review of reviews. The methodology reflects many of the steps associated with a systematic review: an explicit search strategy, inclusion and exclusion criteria, a quality assessment process, and a structured data extraction tool. However, our review was not a systematic review and there were a number of limitations including our strict inclusion/exclusion criteria, our single-researcher quality assessment process, and analysing summarised reviews rather than detailed primary papers.

Based on a systematic search using key terms and following full screening by two researchers, 47 reviews were found that met our inclusion criteria. The 47 papers were assessed for quality – 33 were assessed to be of 'strong' or 'moderate' quality and 14 to be of 'weak' quality. We extracted data from all the 'moderate' and 'strong' reviews (n=33). We also extracted data from one review assessed as 'weak quality' as it was the only review assessing the specific intervention. Therefore, 34 studies are included in our review of reviews, some of which covered more than one intervention. Five other international reviews are used in our conclusion chapter to compare and contrast our findings with those of other international reviews on the topic; these are referred to as 'comparison reviews' (du Roscoät and Beck, 2013; Mann et al., 2005; Scott and Guo, 2012; Teuton et al., 2014; WHO, 2014).

Interventions

Means restriction (four reviews)

Means restriction is a population-based approach to preventing suicide. The premise upon which it is based is that restricting access to various means, for example firearms, bridges, railways, cliffs, rural roads, drugs and pesticides, can prevent completed suicide. Six reviews on means restriction were assessed for quality – four were included in this review. We found that means restriction, in particular, barriers, reduces the incidence of suicide (Cox et al., 2013; Hahn et al., 2005; Krysinska and De Leo, 2008; Pirkis et al., 2013).

Other means restriction interventions may be effective but the evidence for these is limited and in some cases weak and would need more stringent investigation to determine their exact impact. Our findings are for the most part consistent with the conclusions of four of the comparison reviews (du Roscoät and Beck, 2013; Mann et al., 2005; Teuton et al., 2014; WHO, 2014). However, our finding that restricting access to firearms may be effective is in contrast to the conclusions put forward by Scott and Guo (2012) who argued that this evidence is inconclusive.

Media guidelines (one review)

In some countries guidelines have been developed for media professionals to follow in the reporting of suicide. The premise upon which this prevention intervention is based is that media reporting of suicides can contribute to the phenomenon of imitative suicides. One review of media guidelines as a suicide prevention strategy was assessed for quality and was included in our review (Bohanna et al., 2012). These reviewers acknowledged that there was only limited evidence that the implementation of media guidelines impacts on suicide rates. This evidence came from experience in one country (Austria), where a cohesive intervention was put in place and there was a good level of compliance by media. While there was a suggested link between the introduction of media guidelines and changes in national suicide rates in primary studies in other countries, this was not backed by stringent research. Such changes are suggestive, but not necessarily a result, of the implementation of media guidelines only. The changes could be explained by any of a number of other factors, such as the introduction of other interventions to prevent suicide. Our findings concur with those of the comparison reviews, which also found the evidence for the impact of media guidelines on suicidal behaviour to be largely inconclusive (Mann et al., 2005; Scott and Guo, 2012; Teuton et al., 2014). Our and other comparison reviews also identified a gap in the evidence on how to deal with the issue of how suicide is addressed on the internet (Mann et al., 2005; Teuton et al., 2014; WHO, 2014).

Gatekeeper training (one review)

Gatekeeper training teaches people how to identify those at risk of suicide and how to refer them for treatment. One review of gatekeeper training as a suicide prevention strategy was assessed for quality and included in this review (Isaac et al., 2009). There is limited evidence to suggest that gatekeeper training on its own may impact on suicidal behaviour. However, where evidence exists, it is based on the gatekeepers' impact as part of a multi-faceted strategy to prevent suicide. Therefore, it is difficult to ascertain what role gatekeeper training specifically may play in reducing suicidal behaviour outcomes. Reductions may be as a result of other suicide prevention interventions, the particular combination of interventions, or a change in the circumstances that led to high rates of suicide. This finding is supported by the comparison reviews (Mann et al., 2005; Teuton et al., 2014; WHO, 2014). The training of primary care physicians in gatekeeping was identified as a promising intervention in both our and some of the comparison reviews (du Roscoät and Beck, 2013; Mann et al., 2005).

Screening (four reviews)

A screening programme involves the use of a psychometrically validated screening instrument that is able to identify those at risk of suicide, and referral to treatment (Pena et al, 2006). Where screening programmes are of a 'general' population, people previously unidentified as being at risk of suicide are the target of screening. Elsewhere, programmes are targeted at a population known to be at higher risk of suicide, for example older people or socially excluded young people. Four reviews evaluated the effect of screening on suicidal behaviour outcomes. Reports on the impact of screening on suicidal behaviours showed mixed results and were based on relatively weak methods. The evidence suggests that screening might have an impact on suicidal behaviour outcomes where screening of a high-risk population and good access to follow-up care occur in tandem. As with gatekeeper training, this raises the question of attribution. It is not possible to isolate the impact of the screening process from the follow-up intervention. Where the evidence is available, it suggests that screening does not bring about any harmful effects, but this needs more research with specific populations. The two comparison reviews that examined the evidence for screening (Mann et al., 2005; Teuton et al., 2014) came to similar conclusions.

Psychosocial interventions (13 reviews)

Psychosocial interventions cover a wide range of activities. Broadly speaking they fall into two categories:

- Psychotherapeutic interventions: These include, among many others, cognitive behavioural therapy (CBT), dialectic behavioural therapy (DBT), problem-solving therapy, interpersonal psychotherapy, family behaviour therapy, in-patient behaviour therapy and supportive counselling.
- Enhanced care/outreach/follow-up: These are interventions designed primarily to support those at risk of suicide in accessing and maintaining contact with services. Strategies include follow-up postcards, 24-hour emergency access to psychiatric services, and home visits.

Thirteen reviews were found that were assessed to be of strong or moderate quality. Overall, the evidence for psychosocial interventions is mixed. Within the two broad categories of interventions there is a wide variety of interventions. Even where reviews drew on roughly the same set of primary studies, they varied in how they categorised interventions and, in some cases, populations. Interventions that were categorised together often varied greatly in the content of the interventions, the length of intervention, the mode of delivery and the target population. It was beyond the scope of our review to address these definitional issues in detail and it presented challenges when interpreting this body of evidence as a whole. Therefore, at best we can only make statements about which interventions look promising.

Psychotherapy

CBT and DBT are the psychotherapies for which there is the best, albeit limited, evidence for impacting on reducing suicidal behaviour. While the findings suggested that CBT (in its widest sense) might have a significant effect on reducing suicidal behaviour, it was unclear which forms of CBT were most

effective for which populations. The evidence for DBT was limited to people, mainly women, with borderline personality disorder. There was no evidence that this finding was generalisable beyond this population. Other suicide prevention interventions where the available evidence indicated they were potentially promising were problem-solving therapy and family therapy. Broadly speaking, our conclusions are the same as those of the comparison reviews (du Roscoät and Beck, 2013; Mann et al., 2005; Scott and Guo, 2012). However, Mann and colleagues and Teuton and colleagues (2014) stated that 'intensive care plus outreach' show promise as a suicide prevention intervention.

Enhanced care/outreach/ follow-up

The evidence across the different types of enhanced care interventions is inconclusive. We found mixed evidence for the impact of both 'emergency cards' giving people 24 hour access to care, and follow-up or enhanced care interventions that involved contact in person, either by telephone or by postcards. The comparison reviews found similarly mixed evidence (du Roscoät and Beck, 2013; Mann et al., 2005; Scott and Guo, 2012; Teuton et al., 2014). Overall, while the evidence is inconclusive, this may be due to poor quality research rather than the ineffectiveness of the intervention; further research is warranted.

Telemental health (two reviews)

Telemental health (TMH) has been used in numerous countries as a way of providing mental health care predominantly in psychiatric facilities. It is defined as the use of 'communications networks for delivery of healthcare services and medical education from one geographical location to another' (Soot et al., 2006). Two reviews of this type of intervention were assessed to be of strong/moderate quality – one focused on telemental health interventions specifically (Hailey et al., 2008), the other on telephone counselling as part of a broader review of interventions for older people (Lapierre et al., 2011). There was encouraging albeit limited evidence indicating that TMH is a prevention strategy that results in positive clinical mental health outcomes. However, only two primary studies examined suicidal outcomes, and only one demonstrated a reduction in suicide rates, among females. Although this outcome is promising, it would be difficult to draw strong conclusions regarding the impact of TMH on suicidal outcomes; further investigation is necessary to determine the exact nature of the impact. Other comparison reviews similarly found the evidence inconclusive (du Roscoät and Beck, 2013; Teuton et al., 2014).

Web-based interventions (one review)

The premise upon which this prevention intervention is based is that individuals who are vulnerable to suicide frequently access web-based resources as a source of support. One review was found that examined the impact of web-based interventions in preventing suicide (Lai et al., 2014). The reviewers found preliminary evidence suggesting that web-based interventions may be beneficial in helping to reduce suicidal behaviours. The interventions examined were Internet Cognitive Behavioural Therapy (iCBT) and internet-based, as opposed to face-to-face-based, 'suicide

survivor' groups. The primary studies were three randomised control trials (RCTs) and one pre- and post-treatment case series. Web-based strategies for suicide prevention have only emerged recently, and therefore many of the comparison reviews did not evaluate the method. The WHO (2014) review authors suggested that the internet and social media might be used more in suicide prevention; further high-quality RCTs are necessary to determine the exact impact of web-based suicide prevention strategies.

Emergency Department (one review)

Hospital emergency departments have been identified as important settings for evaluating and alleviating suicidal emergencies and instigating follow-up care to reduce suicidal symptoms (Larkin et al., 2008). The premise upon which this prevention intervention is based is that providing care and support in emergency departments via, for example, assessment by psychiatric clinician, review of treatments and expectations, and adherence to treatment, can influence whether completed suicide occurs. Only one review on suicide prevention in emergency departments was found; it focused on interventions for young people.

We found that research on the effectiveness of emergency department suicide prevention programmes is promising. Newton et al. (2010) suggested that care that is initiated in the emergency department or continued post emergency department discharge results in reduced suicidal behaviours and improved adherence by young people to treatment. They emphasised the importance of including assessment, disposition planning, adherence, and problem-solving outcomes. We would agree with Newton and colleagues' suggestion that further investigation is necessary across multiple settings to determine the exact impact of emergency department-based suicide intervention programmes.

School-based/youth strategies (eight reviews)

The school environment is considered an obvious and appropriate setting for the delivery of suicide prevention programmes (Hawton et al., 2002; Robinson et al., 2011). The premise upon which this prevention intervention is based is that providing programmes in schools, for example knowledge and awareness, gatekeeper training, curriculum-based programmes, screening, skills training and/or peer leadership, can influence whether completed suicide occurs. Some programmes took a multi-faceted approach, delivering a number of interventions within the one programme. Eight reviews examined school-based programmes, none of which carried out a meta-analysis.

All eight reviews concluded that there is a lack of evidence for the effectiveness or ineffectiveness of school/curricula-based suicide prevention and post-vention programmes in impacting on suicidal behaviour. The review authors highlighted the necessity for further research to determine the exact impact of school-based intervention and post-vention programmes and we support this suggestion. Our findings are consistent with the findings of the comparison reviews (du Roscoät and Beck, 2013; Mann et al., 2005; Scott and Guo, 2012; Teuton et al., 2014). Generally, it is considered difficult to draw conclusions in

this setting as programmes are not evidenced-based nor do they evaluate effectiveness of the programmes in reducing rates of suicide or other suicidal behaviours (Mann et al., 2005). Despite this, there is some evidence suggesting that a multi-component approach in schools may be beneficial in developing protective factors and reducing suicidal attempts and tendencies (Wasserman et al., 2014, in press, cited in Scott and Guo, 2012 and WHO, 2014). Importantly, many of the reviews that assessed the effectiveness of suicide prevention programmes in young people had been carried out in different countries and hence, their suitability in an Irish context remains to be seen.

Military personnel and veterans (one review)

Prevention programmes have been specifically designed for and delivered to veterans and military personnel. One review was found that addressed interventions delivered to this 'at-risk' population (Bagley et al., 2010). We found the evidence for interventions with military personnel and veterans to be inconclusive. There were numerous methodological limitations to the primary studies in the review. Despite this, the limited evidence suggests that a multi-faceted programme involving a range of different interventions may be required for this population. The only comparison review to discuss this intervention was based on the same study and came to the same conclusion, although they appeared less concerned about the quality of the primary studies (Scott and Guo, 2012).

Conclusions

Overall our umbrella review found the body of evidence on suicide prevention interventions limited. However, a small evidence base does not mean that interventions in this field are necessarily ineffective, rather that there is little review-level evidence that they work.

A number of challenges in carrying out research on the impact of suicide prevention interventions on suicidal behaviour were identified in the reviews considered in this umbrella review:

- the attribution of reductions in suicide behaviours to one particular intervention, in a context where there may be other factors at play;
- death by suicide is a relatively rare event and studies to determine if an intervention significantly reduces the numbers of completed suicides requires very large sample sizes;
- the ability to generalise the findings of an intervention implemented in a particular context and with a specific population to other populations in different contexts appears limited;
- a lack of consistency across studies as to what constitutes 'treatment as usual'; and
- inconsistency in definitions of interventions and outcomes.

There is a need for high-quality, rigorous research to be carried out using adequately powered RCTs if we are to identify the true impact of suicide prevention interventions on suicidal behaviour. Where meta-analysis is to be carried out, it needs to be methodologically sound and based on comparable interventions.

The lack of review-level evidence in the Irish context highlights the need for national research, and careful consideration on the generalisability of the existing evidence to the Irish context.

Introduction

1 Introduction

This report presents the findings of a review of reviews on suicide prevention interventions, carried out by a team at the Evidence Centre of the Health Research Board (HRB).

1.1 Background

The National Office for Suicide Prevention (NOSP) of the Mental Health Division of the Health Service Executive (HSE) is developing a new strategic framework for suicide prevention (2015–18), leading on from *Reach Out*, the current National Strategy for Action on Suicide Prevention 2005–2014. The objective is to identify a set of priority actions which will contribute to reducing suicidal behaviour in Ireland. Key to the new strategic framework is that it be based on the best national and international evidence on suicide prevention interventions. The Evidence Centre of the HRB was commissioned by the NOSP to carry out a review of this evidence. This report presents the findings of the review.

1.2 Research questions

The aim of this review is to provide the NOSP with the best available evidence on the effectiveness of suicide prevention interventions. To meet this aim there are two main research questions:

Question 1: Which suicide prevention interventions have been evaluated in the published literature?

The review focuses on prevention interventions explored in systematic reviews of meta-analysis papers. It does not consider primary studies or evidence from pharmaceutical clinical trials or other papers on pharmacological interventions. However, we provide references to NICE guidelines on the treatment and management of psychiatric conditions, including guidelines on pharmaceutical interventions – see Appendix 1.

Question 2: For which prevention interventions is there good-quality evidence that they reduce suicidal behaviour?

Central to answering this question is assessing the quality of the available evidence. While research on suicide prevention focuses on a range of outcomes, the review focuses on those outcomes related to the NOSP's definition of suicidal behaviour as 'the spectrum of activities related to suicide including suicidal thinking, self-harming behaviours not aimed at causing death, and suicide attempts' (NOSP, 2012). The outcomes of interest for the review were:

- completed suicide,
- suicide attempts,
- (deliberate) self-harm, and
- suicidal ideation.

The following chapters report on the approach taken to carrying out the review, the findings, and some concluding comments comparing our findings with those of some other key reviews on the same topic and discussing some methodological limitations to research in the area.

Methods

2 Methods

In order to answer the research questions comprehensively, the preferred approach for this work would have been a systematic review of other reviews and primary studies. However, given the timeframe available (June to September 2014) and the significant body of literature that exists in the field of suicide prevention, in consultation with the NOSP it was decided to concentrate resources on carrying out a review of existing systematic reviews and meta-analyses. While not a systematic review, the methodology reflects many of the steps associated with doing such a review, for example an explicit search strategy, inclusion and exclusion criteria, quality assessment, and a formal data extraction form. This chapter outlines the approach taken to carrying out this 'review of reviews'.

In this chapter and throughout the report we refer to different categories of authors of studies and/or reviews as follows:

- the 'reviewers' or 'review authors' refers to those who wrote the reviews included in our report;
- the 'researchers' or 'research authors' refers to those who wrote the primary research studies reviewed by the review authors;
- 'comparison reviews' refers to the five international reviews of suicide prevention strategies which we used to help validate our findings; and
- 'we' refers to the HRB research team who prepared this report, and 'umbrella review' to this HRB 'review of reviews'.

2.1 Search strategy

Given the tight deadline (four months) for undertaking the review, the literature search focused on finding high-quality meta-analyses, systematic reviews and reviews covering all aspects of suicide prevention. An English-language restriction was applied to the searches, but no date restriction. We searched the following electronic databases:

- Cinahl
- Cochrane Library
- Embase
- Medline
- PsycINFO

We used controlled vocabulary terms including 'suicide' and/or 'suicide prevention' and /or keywords including 'suicide prevention' or 'suicide' and 'prevention'. Search terms were modified to meet the requirements of individual databases in terms of differences in fields and syntax. The aim of the search strategy was high precision and recall (see Figure 1). In addition we examined the reference lists of recent systematic reviews and hand-searched reference lists of selected reviews located by the electronic searches. The results were checked against the WHO *Preventing suicide: A global imperative* report (WHO, 2014) and the reference lists on the WHO website *Self harm and suicide* to ensure relevant reviews were not overlooked. Key informants were also invited to submit articles they considered relevant. A more detailed explanation of the search strategy and terms is outlined in Appendix 2.