

Suicide is a complex problem which requires a range of prevention initiatives and methods of evaluation

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Summary

A range of factors can contribute to suicide, which means that a multifactorial approach to suicide prevention is necessary. While randomised controlled trials may be suitable for evaluation of some interventions, others require different approaches to assessment of impact. Also, suicide itself will not always be the most feasible outcome measure.

Declaration of interest

None

Authors' details

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The challenge of suicide prevention

It has been estimated that globally there are over 800,000 deaths by suicide each year (approximately one every 40 seconds) (WHO 2014), a figure which is likely to be a considerable under-estimate of the real size of the problem. Suicide is a highly complex issue, with a range of causes at both the individual and contextual levels. Examples of individual factors are genetic influences, mental disorders and psychological vulnerabilities. Contextual contributions include, for example, family influences, abuse, socio-economic downturn, exposure to suicidal behaviour by others, access to means for a suicidal act, and lack of availability of help at times of crisis. Careful exploration of the processes that lead to a specific deaths by suicide usually identify multiple likely contributory factors. Suicide is rarely due to a single cause.

Because suicide can be caused by a complexity of factors, if suicide prevention policies are to be effective they must include a range of initiatives (WHO, 2010). These include, first, what are termed '*universal*' interventions, aimed at reducing risk at the population level. Examples include reduction of access to means of suicide through initiatives such as increasing the safety of sites that are often used for suicide (e.g. certain bridges, cliffs, railways, multi-storey car parks) by installing barriers and other structures that reduce access; limiting amounts of dangerous medicines and withdrawal of more toxic drugs and

other substances (e.g. pesticides) that have frequently been used for fatal self-poisoning; public education and prevention programmes in schools; and promoting responsible media reporting and portrayal of suicide. Secondly, there are '*selective*' interventions focussed on subgroups of the population who may have heightened risk but are not necessarily having suicidal thoughts or engaging in self-harm, such as individuals with mental illness, substance misuse, financial problems, and chronic pain. Examples of such interventions include psychological therapy for people with depression, specific programmes for people who have experienced sexual and physical abuse, improvements to the safety of psychiatric inpatient units, and training opportunities for clinicians, police, prison staff and others likely to encounter people at risk in their daily work. Thirdly, there are '*indicated*' interventions for individuals who are showing more evident or immediate signs of suicide risk, such as those who have self-harmed, expressed suicidal thoughts, or recently been discharged from psychiatric hospital care. Possible interventions include psychological therapy, frequent appointments with clinical services, ensuring early follow-up of patients leaving psychiatric hospitals, and use of medication thought to have anti-suicidal effects (e.g. lithium, ketamine).

The challenge of evaluating suicide prevention initiatives

As a result of the range of types of potential suicide prevention initiatives, evaluation of their effectiveness requires different methodologies. In this issue of the journal Riblet and colleagues (Riblet et al, 2017) have focussed on one approach to evaluation, namely randomised controlled trials (RCTs). They have conducted a systematic review and meta-analysis of evaluations using this design, using suicide as the sole outcome measure. They have concluded that just one initiative, the World Health Organisation brief intervention and contact intervention for people who have self-harmed which was conducted in low and middle income countries, "is a promising suicide prevention strategy". This is based on meta-analysis of just three trials.

Policy makers and clinicians looking for evidence on which to base development of national or local suicide prevention programmes are likely to be disappointed with this conclusion as it does not provide guidance on which other approaches to suicide prevention might be effective. RCTs are undoubtedly valuable for evaluating certain types of approaches, especially some of those in the 'indicated' intervention category, but it is not always feasible or appropriate to use them to establish whether many of the other possible approaches are effective. This is a particular problem in the field of suicide prevention, especially for 'universal' interventions. For example, erection of a barrier to prevent suicide by jumping from a bridge known to be used frequently for this purpose is clearly going to be introduced for the whole community; it is not feasible to randomise half the community to have exposure to the barrier and half not. However, a quasi-experimental approach could be used, involving a before-and-after design, perhaps augmented with a parallel comparison with a similar bridge in another area which also has a relatively high incidence of suicide by

jumping but where a barrier has not been erected. Similar problems are encountered in evaluation of other 'universal' approaches where, for example, availability of dangerous medication known to be used in fatal self-poisonings is restricted or terminated across the population. Here, just a before-and-after approach to evaluation may be feasible. An example from the UK was the withdrawal of co-proxamol (dextropropoxyphene and paracetamol combination analgesic) in the UK in the mid-2000s. This was shown to not only reduce the toll of suicidal and accidental deaths involving this drug but also to not lead to an increase in deaths involving ingestion of other (less toxic) analgesics, at least during the first three years following withdrawal of the drug (Hawton et al 2012).

Another important issue is that while suicide is a relatively common cause of death (indeed the most common cause of death in men aged under 50 years in England in 2015 (Department of Health 2017)), the population rate of suicide means that huge and unrealistic numbers of participants are required in RCTs to evaluate whether a specific intervention has an impact on suicides compared with a control intervention. Therefore, other related outcomes need to be assessed. The most obvious is non-fatal self-harm, which occurs very many times as frequently as suicide. Previous self-harm is recognised as a major risk factor for suicide, so it makes good sense that reducing self-harm would ultimately reduce suicide. In any case, self-harm is worthy of attention in its own right, as indicated by its acknowledgement in the recently refreshed National Suicide Prevention Strategy for England (Department of Health, 2017). A recent review and meta-analysis of 18 trials of CBT-based psychotherapy has shown a significantly greater impact on the proportion of trial participants repeating self-harm compared with treatment as usual, and on the basis of three trials, a reduction in frequency of self-harm associated with receiving dialectical behaviour therapy (Hawton et al, 2016). There were insufficient numbers of suicides in these trials to meaningfully assess the impact on this outcome.

What is the current evidence for effectiveness of measures to prevent suicidal behaviour?

So, what is the current position regarding which suicide prevention initiatives are effective? In the seminal review by Mann and colleagues of effectiveness of interventions the main conclusion was that restriction of access to means of suicide and education of primary care physicians are effective (Mann et al, 2005). A similar recent review has provided a more contemporary overview of what may work (Zalsman et al, 2016). Evidence regarding effectiveness of restricting access to methods of suicide appears to have strengthened, particularly measures to prevent suicide at sites popular for suicide (Pirkis 2015). In contrast, evidence for beneficial effects on suicidal behaviour of physician education regarding detection and management of depression appears weaker than it did a decade previously. School-based awareness programmes are beginning to show positive benefits with regard to prevention of self-harm (and suicidal ideation). It remains unclear whether antidepressants reduce suicide risk, except in older adults. Lithium is probably the drug with most evidence of anti-suicidal effects, although Riblet and colleagues in their review concluded that the evidence was less strong than it had been, but largely because of inclusion of a recent trial of poor quality (Riblet et al, 2017). Further work based on the National Confidential Inquiry

into Suicide and Homicide by People with Mental Illness which was not included in the review by Zalsman and colleagues (Zalsman, 2016) indicates that certain aspects of care by mental health services may reduce risk of suicide, namely removal of ligature points from hospital wards, specialised community teams such as outreach and crisis resolution/home treatment teams, services for patients with dual diagnoses, implementation of NICE guidance for depression and self-harm and multidisciplinary review after suicide, with family input (Confidential Inquiry, 2016).

Conclusions

The evidence for what may help reduce suicides, while far from extensive, is gradually growing. Those responsible for planning and implementing local and national suicide prevention policies now have at least some evidence on which to base their efforts. There is an onus on those of us who are working in the field of suicide prevention to continue to evaluate our activities, and to do so in the most rigorous manner possible. Often we will not be able to use RCTs as our design of choice, and often they will not be able to examine the outcome of suicide. However, we can draw on the broader discipline of program evaluation and use a range of methods and data sources to triangulate our findings to strengthen the evidence base. We are confident that this will mean that the gap between what is and is not known about the effectiveness of particular approaches to suicide prevention will decrease considerably in the coming years.

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