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Preventing Suicide: Where are we?

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Suicide prevention is a global imperative, with over 800,000 suicide deaths recorded annually,[1] but national and regional prevention strategies vary greatly, as does the reliability of mortality records, making comparisons of data from different countries difficult to interpret.[2] Suicide prevention is further complicated by persisting taboos surrounding mental health and, particularly, by the relatively rare incidence rate of suicide deaths; thus the efficacy of prevention efforts is typically difficult to measure.[2]

Optimizing population-level suicide prevention strategies has been challenging due to the lack of clear evidence describing the efficacy of individual approaches. The article by Zalsman et al., *Suicide Prevention Strategies Revisited: Ten Year Systematic Review*, presents an excellent and timely update to Mann and collaborators' landmark publication on suicide prevention strategies,[3] reviewing suicide prevention studies that have been published over the last ten years, while considering their levels of evidence.

Suicide associates with many factors that can act throughout the lifespan to alter brain function, causing behavioural, cognitive and emotional changes that increase risk for suicidal behaviour, particularly in the context of psychopathology.[4] Prevention efforts aiming to identify individuals at risk can therefore target a wide range of biological, behavioural, and clinical factors. Other essential components of suicide prevention include social factors, ranging from regulating the availability of suicide means to improving access and organization of health and support services. A group of 18 European suicide experts systematically reviewed nearly 1800 articles published between 2005 and 2014 that assessed suicide prevention strategies, and reported on primary and/or secondary outcomes associated with suicidal behaviour. After stringent rounds of evaluation, they conserved 164 relevant articles and sorted them according to their approach to suicide prevention: means restriction, treatment interventions,

community and family-based interventions, follow-up and chain-of-care, education and awareness, media, telephone or internet-based interventions, screening, and combined prevention interventions.

The authors identified continued evidence supporting the benefits of means restriction, especially for analgesics, barbiturates, caffeine tablets, pesticides, and barriers at jumping sites. Surprisingly, despite the consistently strong association between firearm availability and suicide risk,[5] Zalsman and colleagues found mixed evidence supporting firearm control as an effective suicide prevention strategy. Gun control reduced suicide deaths in some settings (e.g. for high-risk individuals or in the context of other suicide prevention legislation), but not others, and in some cases decreased rates of firearm suicides were mitigated by suicides using other methods. Since firearms have a high lethality,[5] prevention strategies driving individuals toward less lethal methods may be helpful for decreasing overall suicide rates, especially when used in conjunction with other strategies.[6,7] Further assessment is required for the efficacy of restricting access to other suicide methods, for example through controlled access to charcoal, safer storage of pesticides, and measures to prevent hanging deaths in psychiatric hospitals, since increased awareness of in-patient suicide risk may reduce suicide deaths.[8] Strategies involving restricting access to common methods for suicide must consider method substitution, and emerging methods must be closely monitored.

Suicidal behaviours strongly associate with psychiatric illnesses,[2] which are commonly treated with pharmacotherapy and/or psychotherapy. Recent research has provided reasonable evidence for the use of cognitive behavioural therapy-based approaches, including dialectic behavioural therapy, in decreasing suicidal behaviour in both adolescents and adults. Antidepressants decrease the risk of suicide among depressed patients, and while some data has suggested that in youth antidepressants could lead to treatment-emergent suicidal ideation, Zalsman et al. show that the scientific evidence supports continued use of antidepressants in this age group. Other pharmacological interventions may decrease suicide ideation and attempts in specific patient groups, such as clozapine, particularly when used in psychotic patients, and lithium in patients with mood disorders. Another promising approach is the fast-acting treatment ketamine. While its efficacy for suicide prevention requires further validation, ketamine is particularly promising since it could be administered in the emergency department to rapidly and effectively treat patients in acute suicide crisis.

In addition to strategies that restrict access to lethal means, and pharmacological and psychotherapeutic interventions, Zalsman et al. point to school-based awareness programs as presenting effective evidence of suicide prevention. Other strategies that were previously hailed as effective, such as primary-care physician education, did not present sufficient evidence in this systematic review. Zalsman et al. critically evaluated two strategies that were not considered in the previous review by Mann et al., combination approaches and Internet or hotline-based approaches to suicide prevention. Combined approaches have been assessed through large-scale quasi-experimental studies that have shown promise. However, their design obscures the contributions of individual techniques, such as gatekeeper training and priority treatment for high-risk individuals. Studies examining these factors individually will determine whether they are effective strategies alone or as add-on approaches. Internet use has become ubiquitous and internet-based approaches to suicide prevention have gained traction, in part

because they are relatively inexpensive and easy to implement. However, before they are more largely adopted, reliable data should be generated to help assess their efficacy and effectiveness.

Zalsman and colleagues have made a massive effort, expertly and systematically summarizing the literature on suicide prevention strategies from the last ten years. Although some conclusions from this review are straightforward and have been recognized as effective prevention strategies over many years, others cannot be unquestionably made at this time. Some difficulties relate to disparate methodological approaches used by individual studies, rendering comparisons of outcomes and syntheses difficult to make, particularly when studies present significant variability in key aspects of the prevention strategy being tested, as well as in how outcomes are defined and/or measured. The systematic review methodology adopted the Oxford criteria for classification of levels of evidence. Although these are well-established and widely-accepted criteria to define evidence-based medicine, they are based on a hierarchal model to attribute strength of evidence that was primarily developed to inform decisions on clinical interventions, and may be too strict when considering complex public health strategies.[9,10] Nonetheless, this review fulfils an important role in highlighting areas of potential discrepancy between expert opinion (e.g. need for follow-up care), legislation (e.g. black-box warnings on antidepressant use in youth), or public policy (e.g. general public awareness campaigns), and available scientific data, critically identifying areas in which research must be focused to effect meaningful change on suicide.

Declaration of interests

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