

REVIEW ARTICLE

A conceptual model of suicide in rural areas

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ABSTRACT

Context: Suicide is an important public health issue among rural communities although there is no single pattern of suicide in rural areas. Despite this, there are common themes in much of the research evidence on suicide in rural areas. From the published research in the area, a conceptual model of rural suicide has been developed which can be used by clinical and public health services when considering possible routes of intervention.

Issue: A conceptual model can be defined as 'a type of diagram which shows a set of relationships between factors that are believed to impact or lead to a target condition'. The model presented here uses the 'Cry of pain/ Entrapment' model of suicide risk to build a framework of factors which are associated with suicide in rural areas. Cross-setting factors associated with suicide rates include gender, poverty, mental illness, substance use, biological factors including apparent genetic risk, coping skills and media coverage of suicide. There are, however, other factors that appear to have particular importance in rural areas. These include rural stressors, such as isolation and political and social exclusion; factors affecting support, including social support, cultural norms on help-seeking, stigma associated with mental illness service availability; factors affecting the decision to self-harm, including modelling and cultural views on self-harm, and issues affecting the likelihood of self-harm resulting in death, including method availability, norms on methods of self-harm and treatment availability after harm occurs. Identifying which of these areas are the greatest local priorities helps to target activity.



Lessons learned: This model provides a way of considering suicide in rural areas. Local staff can use it to consider which issues are most relevant to their area. It allows classification of existing interventions, and deciding which other areas of work might be of local value. For researchers and service planners, it provides a way of classifying interventions and describing projects.

Key words: anthropology, attempted suicide, conceptual model, cultural and indigenous population models, rural health, rural health services, rural population, suicide, theoretical epidemiology.

Context

Suicide in rural areas is an important public health and clinical issue. Several recent reviews have examined the research and practice literature on rural suicide¹⁻⁴. There is no single pattern, but there is evidence of higher rates of suicide in rural areas in some countries, and increasing rates in some rural settings¹.

Interventions in suicide are often aimed at people in groups at higher than average risk of suicide. It is very difficult to measure the effectiveness of interventions because suicide is a relatively uncommon outcome, despite its large societal impact⁵. The effect of this is that it is very difficult to undertake intervention trials large enough to show an impact on suicide rates⁶. As a result, evidence of the effectiveness of an intervention is often lacking, and planners may take this paucity of evidence to mean that there is no coherent way of planning local intervention work.

Health and social care staff may consider suicide prevention mainly in terms of their ability to change an individual's suicidal behaviour⁷. The range of interventions that may affect suicide are, however, wider than work on individual behaviour⁸⁻¹⁰. Reviews of rural suicide make it clear that social and cultural factors are important in suicide risk as well as individual characteristics^{1,4}.

This review describes the known risk factors for suicide in rural areas, and draws them together into a conceptual model of rural suicide. By identifying the known factors, the authors sought to identify points at which healthcare workers

in local areas may be able to intervene in order to reduce suicide rates.

Issue

Conceptual model

A conceptual model can be defined as 'a type of diagram which shows a set of relationships between factors that are believed to impact or lead to a target condition'¹¹. Conceptual models have been proposed for aspects of suicide¹²⁻¹⁴, and for rural issues.

After reviewing existing suicide models, this model has been developed according to the established 'Cry of pain/ Entrapment' model, described below¹⁵. This model is a particularly good fit for rural suicide because it includes acknowledgment of the role of social and cultural factors in suicide, while not excluding the role of biological and service issues. It can be argued that factors such as social isolation increase the likelihood of defeat, entrapment and 'no rescue', which are core to the Cry of pain/ Entrapment model.

This model uses the Cry of pain/ Entrapment model of suicide risk¹⁵ to build a framework of factors in the literature which are associated with suicide in rural areas. Williams argues that stressful experiences resulting in feelings of defeat and loss can increase the risk of suicide. These appraisals are particularly harmful when the person cannot escape from the defeating situation.



In turn, it is this state of entrapment combined with no opportunities for rescue which Williams posits as associated with an elevated risk of suicide due to the activation of the 'learned helplessness script'. Learned helplessness is the realisation that there is no relationship between individual action and outcome. Williams and Pollock¹⁶ proposed that suicidal behaviour is reactive and the response ('the cry') to a situation that has three components: defeat, no escape, and no rescue. O'Connor et al, among others, have provided empirical evidence in support of this model¹⁷⁻¹⁹.

The original Cry of Pain/ Entrapment model was designed to examine individual psychological processes, and their relation to suicide. It is apparent from the recent reviews of rural suicide, however, that individual actions do not occur in isolation and are affected by the social, economic and cultural context. This model, therefore, places suicide in a social, economic and cultural context.

This rural conceptual model is shown in diagrammatic form (Fig1). There are factors which increase the risk of suicide in almost all settings, which the present authors have termed 'cross-setting factors'. There are also particular stressors more likely to affect rural populations. The ability to cope with the situation is affected by a range of factors including views on seeking help, social networks and service availability. The decision to self-harm in this situation is not inevitable, and is affected by social and cultural norms, and the individual's view of self-harm as an option. Finally, if self-harm is undertaken, the likelihood of death resulting from the self-harm is affected by the choice of method of self-harm, and the availability of rapid care if the person survives the initial attempt.

The components of the model are, therefore:

- the occurrence of stressors
- the judgement by the individual of their ability to cope with the problem, or to escape from it
- a potential assessment that they are unable to change the situation
- a decision to self-harm

- the likelihood of death resulting from that self-harm.

While there is no suggestion that all the stages apply in all instances of death by suicide, the model does provide a structure within which to consider rural suicide. Each of the component parts of the model (Fig1) will now be discussed.

Cross-setting factors: The factors shown under 'cross-setting factors' have some association with suicide in any setting. Subsequent components of the model identify issues of particular interest in rural areas, but some cross-setting factors are best summarised here.

Male sex is consistently associated with higher suicide rates, with the exceptions of India and China^{20,21}. People living in poverty have higher than average suicide rates in most studies, although the strength of the association varies²². Mental illness is associated with higher levels of suicide and suicidal ideation, with marked increases in rates, particularly among people with mood disorders²³⁻²⁵. Substance misuse is associated with higher suicide rates. In relation to alcohol, people are more likely to kill themselves when intoxicated, and people with a problematic alcohol consumption have higher rates of self-harm and suicide than those without such a problem. Similar findings have been reported for drug misuse²⁶.

There is increasing evidence that biological factors are associated with suicide risk, with higher rates found in some regions²⁷, and families hypothesised as being linked to genetic predisposition^{28,29}. It is apparent, however, that this risk is modified by environmental influences³⁰.

There are also a range of psychological factors associated with suicide risk. These include problem-solving deficits, avoidant coping¹⁷, reduced positive future thinking³¹ and impulsivity³².

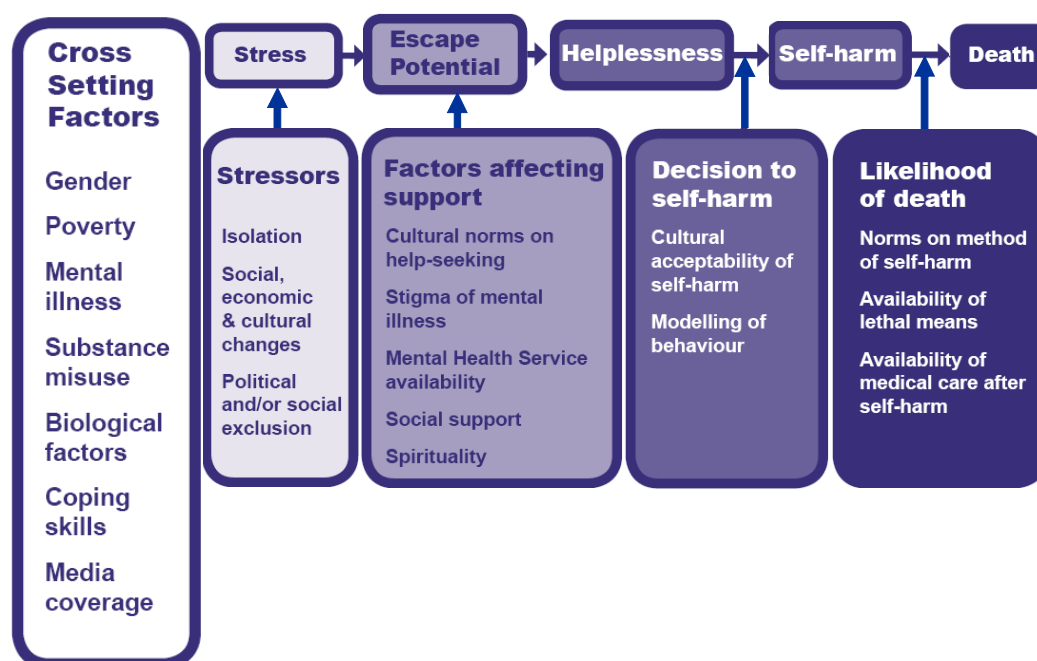


Figure 1: Conceptual model of rural suicide.

In some studies, media coverage of particular deaths by suicide was associated with higher rates in subsequent weeks, and there is reasonable evidence that this is likely to be a causal link^{33,34}.

Stressors: Isolation has been reported to be a stressor in some areas and occupations. In high income countries, farmers are now likely to work alone for long periods³⁵. In other cases, a spouse may be isolated on a farm or rural dwelling. If there is access to only one vehicle, and public transport is poor, then enforced isolation may result. In some countries, including Australia and Canada, there can be very large distances between settlements.

Rural areas have been subject to enormous change in some countries, a process sometimes termed 'rural restructuring'. Depopulation and ageing populations are common⁴. Farm incomes have declined in many areas, and pressures have

increased to also earn income from employment in non-farming jobs³⁶. Control over activities in some areas may be affected by environmental pressures.

Some groups in rural areas have experienced significant social or political exclusion. Indigenous groups report considerable cultural disruption³⁷⁻³⁹, as in the forced education of many Australian Aboriginal groups, and other groups such as the Inuit in Canada⁴⁰. Many groups feel excluded from national processes, and qualitative work reports feelings of dislocation and exclusion that are likely to be potent additional stressors⁴¹⁻⁴³.

People who are identified as 'different' may experience additional pressures. Homosexual people often report substantial stigma in rural areas, with resultant adversity⁴⁴⁻⁴⁷. Quinn discusses the evidence for an association between the experience of being homosexual in some rural areas, and



suicide risk, and concludes that there is insufficient information on the nature of the association⁴⁸. Nevertheless, there is good evidence for the occurrence of stigma and discrimination, and a strong argument for work on social attitudes. Some research is now exploring resiliency in homosexual people in rural areas⁴⁹. This type of work should offer insights in to protective factors for rural homosexual people.

Factors affecting support: Some groups are less likely to access care. In some countries, farm workers are a particularly stoic, self-reliant^{50,51} group. When asked to list sources of care, they often identify informal supports. In part, this may be due to stigma related to psychological distress and mental illness, and there are numerous reports of continuing stigma attached to mental illness in rural communities⁵².

Although there is little evidence that the prevalence of mental illness is any greater in rural than in urban areas, mental health services for those who do suffer from such illness tend to be less available in many rural areas⁵³. Where such services do exist, geographical constraints may make them less able to respond to a crisis⁵⁴⁻⁵⁶. The availability of services outside working hours may be further reduced because of the difficulty in sustaining on-call arrangements in large areas with widely distributed staff.

Some rural areas, and some people within rural populations, have well developed social networks. In other cases, perhaps because of geographical isolation or stigma, social support may be less available.

Religious groups and spiritual views can affect support availability. Some cultural and religious groups offer potent support to members, and religious beliefs can be an important strength for people. In some rural and Indigenous groups, these issues can be particularly important⁵⁷. Substantial social disruption to Indigenous groups is associated with less identification with traditional religious beliefs, and reduced connection with religious, cultural or spiritual tradition is associated with higher rates of suicide⁵⁸.

Traditions vary markedly according to the group, however, and associations therefore vary from setting to setting⁵⁹.

Decision to self-harm: Views about the acceptability of self-harm and of suicide vary widely. In traditional Inuit culture, taking a decision to remove a burden from a community has been viewed positively, and this may increase the acceptability of self-harm, and therefore the likelihood of considering it as an option⁶⁰.

Some rural communities have experienced high levels of self-harm and suicide. Where this has happened, suicide may appear more readily on an individual's list of possible responses to stress and perceived helplessness. Young people who have never been held in high regard by their community may see the intense community response to a death as validation of their life and value, with a subsequent increase in the likelihood of this being identified as an option⁶¹.

Likelihood of death: Regardless of intent, once a person has decided to self-harm the likelihood of death is affected by the method they choose, and by the availability of treatment if the episode is life-threatening but not immediately fatal. Some methods, such as the use of firearms, drowning and hanging have high case fatality rates. Firearm ownership is common in rural areas in many countries^{62,63}, and a large number of country dwellers are familiar with their use. Hanging and drowning are difficult to prevent, and are common methods of self-harm in rural areas. Not all self-poisoning has a high case fatality rate, but some types of pesticide poisoning are very likely to result in death. Pesticides are often widely available and poorly controlled in rural areas, particularly in low- and middle-income countries^{64,65}. The choice of method is affected by local understandings of how self-harm is conducted, and while this is partly affected by media depictions, local knowledge of previous events is also likely to be important.

Where a person survives the attempt but is left in life-threatening condition, medical assistance may not be available in rural areas. In low- and middle-income countries



where there is limited transport infrastructure and low healthcare resources, treatment can be difficult to access.

Lessons learned

Use of the model

The literature on suicide in rural areas is large and expanding, making it difficult for busy planners and service providers to read and integrate. The conceptual model provides a structure for use in local areas to when considering preventative efforts and seeking to identify areas for intervention. While it is not possible to consider all the rural suicide-prevention literature here, some examples of possible areas of work will be outlined. The best response in individual areas will depend on the particular pattern of suicide and suicidal behaviour in the local area.

Cross-setting factors confirm that economic development work, while apparently distant from death by suicide, can help to reduce poverty, which is an important cause of increased risk of suicide³. Local work on increasing uptake of eligible state benefits and so increasing household income can be one method of poverty reduction in countries where this is a relevant policy option.

Substance misuse and mental illness are common risk factors. Local areas will be able to judge the extent to which substance misuse, in particular, is likely to be important. Reviewing the availability of and access to services for these problems, including mood disorders, will be important in overall efforts to reduce suicide⁶⁶. It can be difficult to increase investment in services, but increasing support to isolated professionals may be effective⁶⁷.

Other areas can also be addressed. Media reporting of suicide appears to be important in affecting public perception, and this can be influenced^{33,68}. This is also relevant to modelling suicidal behaviour, and the choice of method of self-harm. Many education systems have begun to deliver training on coping skills^{69,70}. Isolation and poor social

networks are associated with increased risk in some rural groups^{35,63}. Stigma can affect help-seeking and willingness to discuss problems, and programs such as those developed by Suicide Prevention Australia can be designed to reduce this⁷¹. The availability of lethal means of self-harm can be influenced. In areas where pesticide poisoning is the main method of suicide, there is encouraging evidence of the effectiveness of specific interventions^{72,73}. In other areas, access to firearms may be a more important issue⁷⁴⁻⁷⁶.

There are useful examples of localities where a range of interventions have been brought together in an integrated attempt to reduce suicide. The Akita Prefecture of Japan responded to high rates of suicide in older people by undertaking work aimed at improving the recognition and treatment of depression, improving staff knowledge, and increasing service access⁷⁷. There was a substantial fall in suicide rates in the intervention area compared with control areas. In another example of systematic local work, two programs in American Tribal areas^{78,79}, one of which spanned 15 years, used a systematic approach that drew on local information to identify problems, and sought to address them in a structured manner.

Conclusions

The many descriptive and analytic studies of rural suicide across the world have produced a rich body of information on rural suicide, and its risk factors. The volume of the available literature can make it difficult for services and individual workers to identify the relevant issues in a community in a manageable way.

Specifically, there are several possible uses of the model. For academic and research staff it can be used to categorise interventions, and to identify areas where research has already been conducted and those where there is less existing work. For service commissioners, it provides a framework within which to discuss interventions with service providers, and to identify areas of promising preventative work. For local services, the model can provide a structure within which to consider interventions. A review of local



epidemiology and known risk factors will help to identify areas in which intervention is likely to be appropriate, building on information on prevention.

Working to reduce suicide can seem difficult or even impossible. Taking a systematic approach to suicide in rural areas allows services to reduce the task into smaller elements, and to identify precisely areas for intervention. This article is intended to support healthcare services concerned with suicide intervention in local rural areas by providing a structure for identifying local contributing factors.

While some intervention efforts in rural areas have been criticised as being 'atheoretical' and lacking clarity in the mechanism of their effect⁸⁰, the model provided by this study offers a potentially useful evidence-based framework for the important task of identifying locally relevant risk factors and appropriate interventions for suicide risk in rural areas.

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