

REVIEW ARTICLE

Factors influencing suicide in older rural males: a review of Australian studies

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ABSTRACT

Introduction: Suicide remains an important public health issue in Australia, responsible for around 2500 deaths each year. Although suicide only accounts for around 1.7% of total mortality in Australia per year, 75% of suicide deaths are in males. This article reviews the factors contributing to suicide in older rural males in Australia and then categorises the papers into themes for ease of explanation. Living with experiences of drought, dramatic weather change, lower employment opportunities, out-migration, changing family dynamics, ageism in the community, economic change and competitive labour markets, all add to the diverse experience for an older person who is ageing in a rural setting.

Methods: A literature search was conducted in March 2015, using the terms 'elderly' and 'older males' and then combined with 'rural', 'suicide' and 'Australia', to investigate the amount of research that has been conducted on the factors relating to suicide in older rural Australian males.

Results: Reviewed articles consisted of research using either quantitative or qualitative approaches, which investigated suicide in older Australians published between 1950 and 2014. With strict adherence to the selection criteria, articles (21 in total) were removed because they were a literature review; a narrative review; they focused predominantly on youth or suicide risk, suicidal ideation or suicide attempts; or they discussed reasons for living. This article discusses the researcher's recommendations for further research into employment transitions for older Australian males, and the need to review policy change for further intervention in the future.

Conclusions: This article highlights factors that may cause older rural Australians to be placed at a higher risk of suicide than their urban-dwelling counterparts. With the impact of the changing economy, unpredictable climatic conditions and dynamic changes in rural Australian families, there is a need to highlight research that has been conducted in this area. Future research should focus on identification of misclassification of suicide deaths, investigation of the possible effect that retirement pathways may have on older



Australian males, suicide prevention strategies, mental wellbeing and the risk of suicidal behaviour. This will ascertain any compounding or protective factors that could influence this current trend.

Key words: ageing, Australia, men, mental health, suicide.

Introduction

In the Australian population, the highest rate of suicide (38.3 per 100 000) is found in men aged 85 years and older¹. Both suicide and intent to die by suicide are associated with depression and extreme stress in older people²⁻⁴. In men, suicide rates increase with age in Asian and English-speaking countries, particularly amongst the 'older old' (ie more than 80 years of age)⁴⁻⁶. Suicide in this group has been attributed to increased mental illness, family conflict and long-term or chronic illness⁴⁻⁶. Over the past 25 years, suicide in Australian rural communities has been widely researched; however, the focus has been predominantly on younger males^{7,8} and all aged farming populations⁹⁻¹³.

The rates of rural farmer suicide vary by age and state, with research in Queensland suggesting the highest rate of rural suicide is in male farmers aged 18–34 years¹², with the National Rural Health Alliance stating that farmers aged 55 years and older accounted for two-thirds of all farmer suicides¹⁴. The reasons for an increased rate of suicide in rural males compared to urban males is unclear, but suggests that factors other than mental health disorders may influence suicidal behaviour¹³. A number of initiatives designed to reduce the risk of suicide in all age groups have been developed and implemented around Australia¹⁵⁻¹⁹. Although services are targeted for specific locations, including rural communities, the extent to which these initiatives modify the factors leading to suicidal behaviour, or improve access to services that may reduce suicidal intent, seems unclear^{18,19}.

Reviews of research into rural male suicide by Alston²⁰ and Handley et al²¹ investigate the differences in urban and rural suicide. Alston highlights the multiple factors that contribute

to increased suicide rates in all aged rural men, including farming under stress, the reluctance of men to utilise health services, the stigma of mental illness, stoicism, threatened masculinity and changing rural practices²⁰. Handley's review concluded that there are (1) inconsistencies in terminology used in urban, rural and remote suicide research, (2) a reliance on cross-sectional studies, rather than studies that established causality and (3) a focus on urban suicide. Handley's review identified areas for future research, highlighting the importance of rural research that uses a longitudinal approach and includes community samples²¹.

Given the differences between suicide rates in rural males aged 75 years or more, compared to urban males the same age, it is reasonable to assume there are unique factors in rural communities that contribute to suicidal behaviour. To explore this further, this article reviews the Australian literature to investigate the factors unique to rural males that may be associated with increased suicidal behaviour or suicidal intent.

Method

Literature search strategy

A literature search (Fig1) was conducted using electronic databases (MEDLINE (1950 – March 2015), PubMed (January 1976 – March 2015), and CINAHL (up to March 2015)). Terms included in the initial search were 'aged', 'elderly' and 'older males'. Results were then combined with the terms 'rural', 'suicide*' and 'Australia'. Secondary searches were conducted of bibliographies of identified articles and previous systematic reviews.

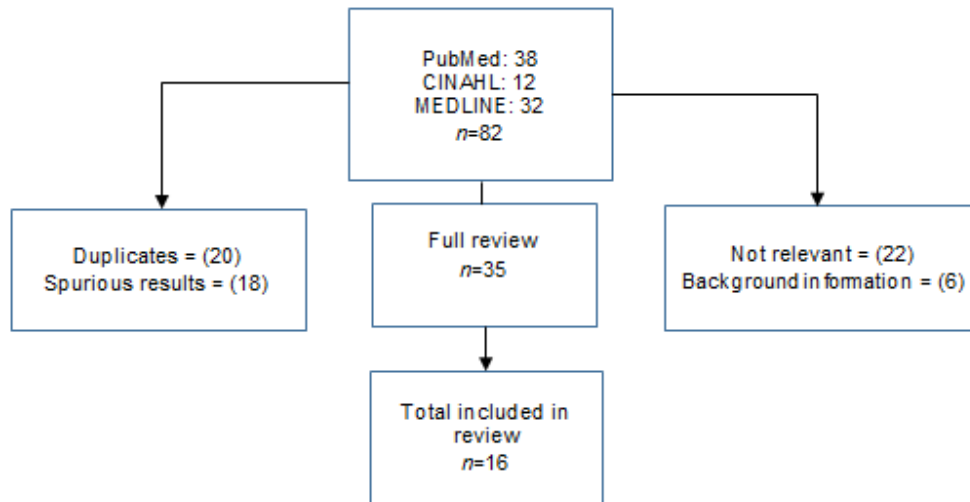


Figure 1: Literature search strategy.

Inclusion criteria

To be eligible for inclusion in the review, studies needed to be:

- published in English between 1950 and 2014
- peer-reviewed journal articles reporting factors that may contribute to suicide in rural men aged more than 65 years.

Results and analysis

A total of 82 articles were initially identified. After exclusion of duplicates ($n=22$) and articles that did not meet the inclusion criteria ($n=44$), 16 articles were selected for analysis and inclusion in the review (Table 1). Study findings were synthesised, using the Critical Appraisal Skills Program (CASP)²² appraisal tool. Key factors contributing to suicide in older males were identified from the articles and categorised by the authors (KCG and LW). Categories were organised conceptually, based on context, and included the role of age and gender, stigma of mental illness, availability of mental health services, socioeconomic status (financial adversity), isolation and changes to rural climate patterns. These

categories are presented individually and in context, with other categories where they overlap and intersect.

Literature review

Age and gender

Advancing age is a risk factor for suicide, because many older males cope less well with physical illness and loss of ability and social connections, as a result of the ageing process²³, particularly those who are unmarried or have lost a partner^{24,25}. Ageing migrant males are at higher risk of suicide, possibly as a result of limited education and employment opportunities, as they age in rural settings²⁰. Page and Fragar's national review of suicides over a 10-year period showed that 48.5% of completed suicides in rural areas were by farm managers aged 55 years and older²³. Guiney's study published in 2012, following the drought in the state of Victoria of 2001–2007, showed 20% of suicides were in men more than 60 years of age¹⁰. Guiney's study of males working in rural Australia highlights the gender imbalance in rates of suicide, the deteriorating health of older rural farmers, the high rate of male suicide generally, the changing dynamics in farming relationships, and the reduced sense of self-worth and feelings of 'entrapment' (p.



157)²⁰, as a result of growing levels of debt and increased poverty for those older male farmers²⁰. Highlighting similar stressors in rural Australia, Judd et al²⁶ discuss the high rates of suicide for males, with a particular focus on the longitudinal research conducted by Page and Fragar²³, who highlighted the issue of farm managers being placed in a high risk category for suicide. This is a result of a combination of geographical location; physical injury; psychological, emotional and financial stress; and the importance placed on feelings of place²⁶.

Stigma of mental illness and availability of mental health services

The unwillingness of people to discuss mental illness is evident in the reviewed articles, with one paper by Judd et al. discussing the preference to talk to professionals about practical things, such as seeking financial assistance, rather than discussing mental health¹¹. The stigma of mental illness was identified as a factor that prevented older rural males asking for assistance when they felt unable to cope with their daily life and responsibilities^{10,11,20,24-26}. Similarly, other studies reported the reluctance of older rural men to report feelings of stress and anxiety to their local doctor/general practitioner (GP)⁹⁻¹¹, with Rajkumar and Hoolahan's study on the experiences of isolation in rural Australia reporting the low use of mental health and GP services generally²⁷. Guiney's study of rural farmer's highlights discussions pertaining to family pride and personal and family values, being reasons why people are not connecting with their local health services¹⁰. These factors reduce the likelihood of diagnosis and treatment for mental health issues.

Although initiatives have been implemented to assist the mental health of older rural men¹⁵⁻¹⁹, there are still areas where services are limited or not available. Judd and colleagues^{11,26} suggest this may relate to a reduction in rural health services generally, with rural communities facing increased levels of out-migration and decreased population mass (a result of younger residents leaving rural areas to attend tertiary educational facilities and improve their chances of employment). The study conducted by Qi et al²⁸,

looking at socio-environmental factors and suicide, found that areas with high suicide rates also had higher populations of Aboriginal and Torres Strait Islander people, who are known to have high suicide rates, poorer access to mental health services and lower socioeconomic status²⁹.

Socioeconomic status, unemployment, and financial adversity

Research conducted into social integration and friendship by Handley et al. suggests that unemployment is also predictive of socioeconomic status³⁰. A study conducted in 2012 by Inder et al, reviewing reasons for suicidal behaviour, suggests that the presence of a psychiatric disorder, marital status, use of mental health services and a person's perception of financial viability can contribute to suicidal behaviours³¹. Renwick et al compared suicide in both rural and metropolitan areas, in order to highlight the inequity between rural and urban income levels, with rural residents earning far less than urban dwellers³². Inder et al³¹ suggest that prolonged or unforced unemployment in a rural or remote location may impact negatively on an individual's social capital and this may impact upon already compromised levels of psychological distress, leading to an increase in suicide risk^{33,34}. Other studies suggest that having to leave the family farm, either through forced or unforced means, results in an increased risk of suicide^{9-11,20}. Major factors associated with an increase in psychological stress and subsequent risks of suicide in older rural men were issues with farm ownership, and about who will inherit the family farm^{9-11,20}. Three studies found that when younger generations leave the farm, the burden of debt usually stays with the older generation, who are unable to leave the farm, and often unable to make a profit from it^{10,11,20}. Some studies identified economic (global agricultural export) and government regulatory factors (such as workplace injury laws) that place farmers under increased pressure, resulting in anxiety, and sometimes post-traumatic stress disorder, following workplace injury^{20,26,35}. Three studies^{11,20,33} highlight the stoic, hardworking persona of the Australian farmer, and the feelings of failure and disappointment when family farms fail or financial situations seem unresolvable.



Table 1: Literature review – included papers

Author/title	Year	Target population	Study type	Main factors associated with suicide	Limitations/findings
Renwick M, Olsen G, Tyrrell M. Suicide in rural New South Wales: comparison with metropolitan experience	1982	53/376 coronial inquests in New England, New South Wales, from 1976 to 1978	Retrospective cross-sectional analysis	Age Gender (male) Skilled worker with access to rifle Married with a history of psychological distress Alcohol consumption Season of spring Recently faced personal loss	Small numbers Although suicides were higher in males between 50 and 64 years, female suicides were higher in all other age groups Need for continuous data collection to ascertain a better picture of suicide
Page AN, Fragar LJ. Suicide in Australian farming, 1988–1997	2002	921 suicides in farm managers and agricultural workers	Descriptive and linear regression of mortality data between 1988 and 1997	Access to methods of suicide Decline in rural economy Social isolation Financial problems Legislative pressures Intergenerational conflict	Majority (48.5%) of farm manager suicides were in those aged ≥ 55 years Firearms most likely method Exhaust gas and hanging
De Leo D, Dwyer J, Firman D, Neulinger K. Trends in hanging and firearm suicide rates in Australia: substitution of method	2003	Suicides between 1975 and 1998 by International Classification of Diseases code	Retrospective audit of method of suicide	Access to methods of suicide	Older men less likely to use hanging as a method of suicide More likely to use firearms
Judd F, Jackson H, Fraser C, Murray G, Robins G, Komiti A. Understanding suicide in Australian farmers	2006	32 farmers in rural Victoria (16 male, 16 female) 351 farmers, 380 non-farmers	Qualitative interviews Quantitative survey	Financial difficulties Intergenerational conflict Workload Isolation Decision making and responsibility Conscientiousness high	Small number of older males Fast progression through suicide process in rural males
Caldwell TM, Jorm AF, Dear KB. Suicide and mental health in rural, remote and metropolitan areas in Australia	2004	All suicides 1997–2000 by Rural, Remote and Metropolitan Areas Classification 10 641 survey respondents	Retrospective cross-sectional analysis of national mortality data 1997–2000 and national wellbeing survey 1997	Poor access to professional help	Male suicide highest in rural areas Men aged ≥ 65 years at risk Small numbers of rural participants
Judd F, Cooper A-M, Fraser C, Davis J. Rural suicide – people or place effects?	2006	Not age specific, but focused on rural communities and suicide	Review article of rural suicide contributors	Social status Age (older is more likely to suicide) Sickness Unemployment/financial stress Access to mean of suicide	Not specific to older males but does mention some factors relevant to this group
Qi X, Tong S, Hu W. Preliminary spatiotemporal analysis of the association between socio-environmental factors and suicide	2009	2445 suicide deaths between 1999 and 2003 in Queensland, data from Australian Bureau of Statistics. 288 (12%) aged ≥ 65 years	Retrospective analysis	Lack of available services Rurality Low socioeconomic status	Males accounted for 80% of deaths Small retrospective sample
Gunn KM, Kettler LJ, Skaczkowski GLA, Turnbull DA. Farmers' stress and coping in a time of drought	2012	309 drought-affected farmers and spouses 12% of sample aged ≥ 65 years	Cross-sectional study	Very high levels of distress in those aged ≥ 65 years could contribute to suicide	Small sample size Older men less likely to use alcohol than younger men
Guiney R. Farming suicides during the Victorian drought: 2001–2007	2012	Farmer or primary producer deaths in Victoria between 2001 and 2007 (110 deaths)	Retrospective analysis	Multiple psychological factors Social factors Environmental and economic factors	20% of deaths were in those aged >60 years No increase in farmer suicides in the timeframe



Table 1: cont'd

Author/title	Year	Target population	Study type	Main factors associated with suicide	Limitations/findings
Handley T, Inder K, Kay-Lambkin F, Stain H, Fitzgerald M, Lewin T, Attia JR, Kelly BJ. Contributors to suicidality in rural communities: beyond the effects of depression	2012	618 participants in the Australian Rural Mental Health study 150 males aged ≥ 65 years	Cross-sectional study	Aged ≥ 65 years and married were less likely to attempt suicide	Small sample size Found depression and suicide were separate constructs
Handley TE, Inder KJ, Kelly BJ, Attia JR, Lewin TJ, Fitzgerald MN, et al. You've got to have friends: the predictive value of social integration and support in suicidal ideation among rural communities	2012	1356 participants in the Australian Rural Mental Health Study 39% male	Longitudinal study	Lower perceived social support Less community engagement Lower sense of belonging High distress about rural infrastructure	Small numbers aged > 65 years
Cheung YTD, Spittal MJ, Pirkis J, Yip PSF. Spatial analysis of suicide mortality in Australia: investigation of metropolitan-rural-remote differentials of suicide risk across states/territories	2012	10 616 suicide cases from National Coronial Database both urban and rural, male and female	Retrospective analysis	Socioeconomic deprivation Employment Reduced agricultural productivity due to climate events (drought, floods)	Rural areas have higher suicide risk, significantly higher in men.
Alston M. Rural male suicide in Australia	2012	30 articles ranging from 1987 to 2008, including research conducted by author between 2004 and 2009	Review article of rural suicide in farming families	High levels of social isolation Ease of access to firearms Lower socioeconomic status Climate change Changing gender relations Genre of masculinity leading to stoicism	Women needing to work off farm (80% of work is being done by women) Misunderstanding of older males and roles of women Issues of older males being unsuccessful farmers, relating to their understanding of being male Communities of < 4000 people
McPhedran S, De Leo D. Miseries suffered, unvoiced, unknown? communication of suicidal intent by men in 'rural' Queensland, Australia	2013	3203 coronial records of deceased men aged ≥ 18 years in rural (44%) or urban (54%) locations in Queensland	Retrospective audit of suicide deaths between 1990 and 2008	Rural location was associated with higher communication of intent to die by suicide, without any formal help from health professionals Financial stress Relationship breakdown	Small number aged ≥ 65 years
Inder KJ, Handley TE, Johnston A, Weaver N, Coleman C, Lewin TJ, et al. Determinants of suicidal ideation and suicide attempts: parallel cross-sectional analyses examining geographical location	2014	8463 Australian residents in 2007 National Study of Mental Health and Wellbeing and 634 Australian Rural Mental Health Study (rural and remote participants)	Cross-sectional study	Isolation Geographic remoteness Psychiatric distress Financial hardship Personality	Being married reduces suicide risk in older men
Handley TE, Attia JR, Inder KJ, Kay-Lambkin FJ, Barker D, Lewin TJ, Kelly BJ. Longitudinal course and predictors of suicidal ideation in a rural community sample	2013	2135 participants in the Australian Rural Mental Health Study self-reported their psychological and social wellbeing over a 3-year period (baseline, 12 months and 36 months)	Longitudinal analysis	Suicidal ideation was found to be associated with psychological distress, lack of social support and employment status Neuroticism Lack of belonging to community	Use of Patient Health Questionnaire 9 (only records suicidal ideation over a 2-week period) Measured thoughts of suicide, not suicidal behaviours



Isolation

Rajkumar and Hoolahan identified geographic isolation, loss of social capital and increased psychological distress were factors, working together or separately, in not accessing local medical services²⁷, and in higher recorded rates of suicide in rural areas³²⁻³⁶. Research conducted by Taylor et al highlighted isolation in some rural and remote communities as a reason why rural residents are not easily rescued or saved from a suicide attempt³⁴. Qi et al discussed that the greater the distance from a GP trained in recognising mental illness, the greater the risk of suicidal behaviours in older rural males²⁸.

Changes to the rural environment

In the years between 2001 and 2007, Victoria experienced one of its worst weather events, a drought lasting 6 years, which caused high levels of stress for the local drought-affected areas. Both Guiney and Alston discussed the relationship between changing climate patterns (particularly drought) and increased risk of suicide, in older rural men, with particular regard to recovery from extreme weather events^{10,20}. Five other articles highlighted that the changing rural environment was considered a major factor contributing to suicide risk, with changes to agricultural practices, reduced services, increased debt, reduced land values, decreased ability to find work and changing social support networks all playing a part in increased levels of psychological distress^{20,24,26,33,35}.

Discussion

The key finding of this review is that, for an older male in a rapidly changing rural environment, where financial adversity is increasing and social cohesion diminishing, likelihood of psychological distress and subsequent risk of suicide increases.

The literature reviewed clearly shows that older males are hesitant to access mental health programs, due to the stigma of mental illness, a lack of awareness of the benefits of mental health services, or an inability to access these services due to geographic isolation. Farmers in particular are less likely to access mental health services due to the stigma of mental illness, high workloads and lack of access, either perceived or real. In addition, farmers in live-work situations have an increased level of stress, with weekends viewed as another work day, and increased psychological pressure of ongoing work and family commitments. Increasing levels of environmental change are major contributors to an increased risk of suicide in this group. Factors outside the control of the rural male resident (such as global economics, climate events, societal change and financial adversity) may compound, leading to high levels of psychological distress and an increased risk of suicide³³.

Much of the literature review commented on the connection of the farmer to the land, and the sense of place and connection to the rural way of life^{11,20,26}. These findings reflect other rural Australian studies that highlight the strong connection of rural residents to their land and community^{20,37,38}. Hence, changes to the rural economy, a decrease in productive farms by 25% in the last 25 years and globalisation of agricultural product export have placed pressure on farmers to expand and carry large debts. When younger generations leave the farm, the burden of debt usually stays with the older generation, who feel trapped and unable to sell, but are also facing low profits and yields. Farmers who are forced to sell stock at extremely low prices or kill animals because they are unable to afford to feed them, as a result of climatic events, are at high risk of psychological illness and suicide.

It is clear that, in spite of programs targeting the mental health of rural men, there is still a stigma attached to being diagnosed with a mental illness, or displaying an inability to cope. Research suggests that rural males personalise their own experience (such as feeling a sense of responsibility for failed crops), limiting their ability to understand the broader



impact of changing weather patterns, and the way this affects others similarly. The perception that the persona of Australian rural men is hardworking, stoic and indestructible may lead this group to feel that the success of the farm is attached to their masculinity²⁰. In addition, the increasing requirement for women to work in other paid positions away from the farm has been identified as causing feelings of inadequacy, and therefore psychological distress, in older males. In addition, the increasing unpredictability of climate patterns leading to long periods of drought and/or unseasonal flooding have had an impact on the psychological state of rural communities^{10,11,39}.

Some subgroups within the older male rural cohort have particularly high levels of suicide. These are older migrants and Indigenous and Torres Strait Islander populations. High levels of suicide in rural migrants could be due to a lack of access to education and poor English, coupled with the hardworking, stoic nature of many migrant families, who are determined and accustomed to living with adversity⁴⁰. Indigenous and Torres Strait Islander communities have a 20% lower life expectancy than non-Indigenous communities, with higher unemployment rates and lower socioeconomic status. These disparities are exacerbated in rural and particularly remote areas and can impact on later suicide risk⁴¹.

The unique vulnerability relating to factors for older age cohorts in rural areas, relating to socioeconomic factors such as isolation, physical comorbidity, health service access and lack of resources, can be interpreted in the context of the Vulnerable Persons Conceptual Framework, developed by Flaskerud and Winslow⁴². This framework was used to try to interpret the themes that emerged from the literature. The Vulnerable Persons Framework has three dimensions relating to relative risk, health status and resource availability. Commonly, in epidemiological research, relative risk relates to the risk of association between strength of exposure to a disease and the outcome of disease. In this instance, relative risk applies to a population in regards to the relationship between increased risks of illness, due to lack of resources and decreased health status. Ideally speaking, the greater the

access to resources, the better the health status will be, leading to a general decrease in risk of comorbidities in vulnerable people⁴³. Health status indicators, using a vulnerable persons framework, can be defined as levels of morbidity and mortality⁴⁴, while resource availability relates to the amount of community resources available to the community, in order to improve their overall health.

The research included in the present article makes recommendations for increasing current strategies, with a view to the development of future strategies in order to assist rural people who may be experiencing suicidal behaviours. These include increased identification of people at risk through screening³⁰, increased clinical and telepsychiatry services to assist rural GPs caring for rural people at risk²⁷ and further research into suicide risk factors, comparisons with other male-dominated occupations. Along with further examination of the incidence of farming suicides, these may provide a more complete picture of the complexities of older male suicide in rural Australia^{10,41}. Kennedy et al¹³ suggest there needs to be more discussion and research into the impact of suicide on communities, and an understanding of the specific needs of farming communities, both in the local and regional sense. In view of the high suicide rate in older rural males, compared to urban males, Shah and Bhat suggest there is a need for further research into the risks and protective factors for older men⁴⁰. There is a suggestion that the experience of adversity can protect some people from suicidal behaviours⁴⁰. This is supported by other research in rural communities that highlights the role of protective factors in preventing high levels of stress, building resilience and successful adaptations¹⁰. Coping mechanisms such as the collective resource of social capital, the camaraderie found in rural communities and the shared experience, may be an area of research to investigate further. Such research can then drive changes to existing policies and suicide prevention programs.

There were two obvious gaps discovered in the existing research on suicide in older rural men. The first is the reluctance of researchers to explore the possible misclassification of suicide deaths (ie deaths classified as



accidents, which may, in fact, be suicide), with only one article, by De Leo, discussing the importance of recording appropriate suicide mortality data⁴⁵. With this at the forefront, it is likely that stigma around suicide, and issues relating to insurance claims, following the death of an older male, may be associated with underreporting of suicide deaths¹³. The second finding is that of the paucity of research, giving particular regard to the impact of retirement, overall mental wellbeing and suicidal behaviour on older rural males.

Conclusions

This article reviewed the literature outlining the potential contributing factors to suicide in elderly Australian rural dwelling males. The literature highlights the impact of the changing rural economy and the differing dynamics of contemporary rural families. In this setting, ageing rural men are exposed to a number of issues that compound the risk of suicide, compared to older men living in urban Australia. Those who are farmers are burdened with the rising financial cost of maintaining increasingly large farms to ensure financial return, whilst dealing with unpredictable climatic conditions. The burden of financial adversity and the stress of losing farms that have been in families for generations are key factors impacting on the mental health of farmers. Similarly, rural men who have a long history working in service industries (such as farm fencing, shearing, and agricultural supplies) are also affected by the downturn in the rural economy. Future research should focus on improved suicide prevention strategies, improved understanding of suicidal behaviours, identification of possible misclassification of suicide death, further investigation into retirement pathways, and the effect that retirement may have on mental wellbeing and suicidal behaviours in older rural dwelling males.

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