Suicide and mental health in rural, remote and metropolitan areas in Australia

Tanya M Caldwell, Anthony F Jorm and Keith B G Dear

In Australia, suicide rates have consistently been found to be higher in rural than in metropolitan areas. Adolescent and young adult males, especially those in rural or remote areas, have particularly high suicide rates. Mental health disorders have been described as the strongest risk factor for suicide across all ages and in young people. However, only a small body of literature has specifically focused on how mental health differs by age and sex across rural and metropolitan areas.

Judd et al conducted a literature review on rural psychiatric morbidity and found few differences in the prevalence of mental health disorders among urban and rural residents. The adult component of the 1997 Australian National Survey of Mental Health and Wellbeing (NSMHWB) revealed a slightly increased risk of anxiety disorders in rural centres, but a lower risk of “any mental health disorder” in “other rural” compared with urban areas. However, these differences were not significant after adjusting for a wide array of sociodemographic characteristics. Judd et al commented that variation in subgroups may be missed by such broad analyses and that further analysis of the NSMHWB data was needed.

Betts and Thornicroft noted that mental health services are generally recognised as being less available in rural and remote areas, where access to qualified specialist staff is often very limited. For instance, there are far fewer psychiatrists (by main place of work) for rural and remote populations (3.3 and 1.8 per 100,000, respectively) than for metropolitan populations (14.2 per 100,000). Service use is not independent of provision, ease, and means of access. However, there are few Australian community-based studies looking at service use and mental health that incorporate area of residence in their analyses. In the NSMHWB, residents of rural centres and “other rural” areas were found to be less likely than metropolitan residents to receive help from psychiatrists and psychologists for a mental health problem, findings which persisted after taking a wide range of characteristics into account, including the prevalence of disorders. However, there was no association between participants’ area of residence and whether or not they accessed help from any mental health professional or from a general practitioner for a mental health problem.

Higher suicide rates in rural compared with metropolitan areas, despite similar rates of reported mental disorders, suggest that factors other than mental health (including sociodemographic and service-related factors) may also influence suicide rates. For instance, compared with other age groups, young adults, particularly young men, visit GPs infrequently for general healthcare. Andrews et al found that men without tertiary education were the group least likely to consult a professional for a mental health problem and suggested they may not recognise they have a problem. These investigators argued that mental health literacy programs should specifically target these men.

The aim of our study was to determine, using existing datasets, whether age, sex and area differences in the prevalence of mental disorders and the use of professional help parallel differences in suicide rates.

METHODS

In Australia, deaths are recorded by the state registries of births, deaths and marriages. The Australian Bureau of Statistics (ABS) codes these mortality data according to ICD-10 “X” codes for suicide. Suicide refers to deaths resulting from intentional self-harm (X60–X84), including poisoning; hanging/suffocation; drowning; use of a firearm, explosive material, sharp or blunt objects; motor vehicle crashes; and other or unspecified means.

In our study, we used suicide data collated by the Australian Institute of Health and Welfare over a four-year period (1997–2000). We also analysed data from the NSMHWB to examine...
regional differences in prevalence of mental health disorders and use of professional help for these disorders.

The NSMHWB was designed to establish the prevalence of common mental health disorders and the utilisation and need for mental health services. The survey was carried out by the ABS using trained interviewers. Households were randomly selected using a stratified, multistage area sample. The ABS provided using trained interviewers. Households were randomly selected from dwellings such as prisons, hospitals or nursing homes. Comprehensive descriptions of the NSMHWB methods have been previously reported.\textsuperscript{18,19}

In the NSMHWB, a modified version of the Composite International Diagnostic Interview was used to assess past-year prevalence of mental health disorders and the utilisation and need for mental health services. The survey was carried out by the ABS in non-metropolitan areas: metropolitan (RRMA categories 1 and 2), rural centre (RRMA categories 3 and 4) and other rural/remote area (RRMA categories 5, 6 and 7).\textsuperscript{19} The suicide data (classified according to the RRMA designation of the usual residence of the deceased) were grouped according to the three NSMHWB area divisions to enable comparison across datasets.

Age-specific suicide rates per 100,000 population were calculated using the ABS estimate of the population age groups living in the different RRMA divisions between 1997 and 2000. All analysis of the NSMHWB data was conducted using STATA software\textsuperscript{23} and applying the weights provided by the ABS. The differences between metropolitan areas and each of the other RRMA divisions were evaluated using \( z \)-scores, calculated according to the formula

\[ z = \frac{D_{xy}}{\sqrt{S_x^2 + S_y^2}}, \]

where \( D_{xy} \) represents the difference between rates for two RRMA divisions \( x \) and \( y \) (assumed independent), and \( S_x^2 \) and \( S_y^2 \) are the variances of the suicide rate among people in RRMA divisions \( x \) and \( y \), respectively. A \( z \)-score greater than 1.96 or less than –1.96 indicates a significant difference \( (P<0.05) \).

### RESULTS

#### Suicide

Across almost all age groups, suicide rates for men were higher in rural centres and other rural/remote areas than metropolitan areas \( (z>1.96), \) but men aged 20–29 years in non-metropolitan areas had particularly high suicide rates. For women, only those in the 30–44-years age group in rural areas had higher suicide rates than metropolitan women of the same age (Box 2).
Variation in mental health disorders across RRMA divisions

Findings from the analysis of the 1997 NSMHWB data are shown in Boxes 3–6.

Compared with men in metropolitan areas and rural centres, a smaller proportion of men in other rural/remote areas reported substance-use disorders or “any mental health disorder”. Apart from this, there were no significant differences in mental health disorders across RRMA divisions for either men or women (Box 3).

While small cell sizes prevented an examination of specific disorders by age, sex and RRMA division, it was possible to make comparisons based on the broader category of people with “any mental health disorder”. In rural areas, women aged 30–44 reported higher rates of “any mental health disorder” than their metropolitan counterparts, but otherwise there were no significant differences in the prevalence of mental health disorders between metropolitan areas, rural centres and other rural/remote areas within age groups (Box 4).

Professional help for mental health problems

The proportion of the population who had received professional help for any mental health disorder during the previous year is shown in Box 5. Small cell sizes meant that all rural centres and other rural/remote area categories (ie, RRMA categories 3–7) needed to be combined into one group (“non-metropolitan”) for purposes of analysis. A smaller proportion of non-metropolitan than metropolitan young adults (both men and women) had received professional help for a mental health problem.

The proportion of those who met the ICD 10 criteria for any mental health disorder who had received professional help for a mental health disorder during the previous year is shown in Box 6. In non-metropolitan areas, a smaller proportion of young men with any mental health disorder accessed professional help than in metropolitan areas. There was no difference between young women from metropolitan and non-metropolitan areas when only those with a mental health disorder were included in the analysis. Subsequent analyses also indicated that, in non-metropolitan areas, a smaller proportion of young men with any mental health disorder accessed professional help than young women (2, 3).

DISCUSSION

Our study confirmed that young men in non-metropolitan areas have higher suicide rates than their metropolitan counterparts. However, while mental health disorders are a leading risk factor for suicide, we did not find that young men in non-metropolitan areas reported higher levels of mental health disorders.

For women, both mental health disorders and suicide rates in the 30–44-years age group were slightly higher in large rural areas compared with metropolitan areas. However, these findings were of borderline statistical significance, and further conforma-
The small number of participants surveyed in non-metropolitan areas has several implications. First, rural and remote RRMA categories needed to be collapsed when reporting service-use patterns from the NSMHWB dataset, so we were unable to compare rural and remote areas. Second, a range of subgroups, specific services, patterns of use and characteristics could not be examined. Third, four years of suicide data (1997–2000) from the ABS needed to be combined to enable a breakdown by age and sex, whereas the NSMHWB was conducted over a single year (1997). Finally, the small sample sizes in rural and remote areas may have meant that some significant differences between groups were not found (eg, in the proportion of mental health disorders among young men in rural and remote areas compared with metropolitan areas).

We were unable to investigate the reasons why professional help is or is not used. Tudiver and Talbot argued that men do not seek general healthcare for a range of reasons, including a tendency to use indirect sources of help, the perception that seeking help will show their vulnerability; fear and denial; difficulty relinquishing control; and systematic barriers. Another study indicated that knowledge about depression and its treatments was greater among women and younger people. Mental health literacy may be a particular problem for young men in rural areas, who may be less likely to recognise or report symptoms of distress or know what can be done to help.

Some researchers have argued that a high proportion of suicides among patients with psychiatric disorders may be preventable through appropriate service-system responses. While improving suicide prevention strategies for people already in contact with professional help is vital, mental health policy and services also need to better incorporate people who currently have little contact with the healthcare system.

5 Proportion of the population (weighted estimates and 95% CIs) who had received professional help for any mental health disorder during the previous year, by sex, age and RRMA group

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Metropolitan area</th>
<th>Non-metropolitan area</th>
<th>(z)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(3151 men; 3986 women)</td>
<td>(1554 men; 1950 women)</td>
<td></td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–29</td>
<td>8.1% (5.9%–10.4%)</td>
<td>3.8% (1.0%–6.5%)</td>
<td>-2.4</td>
</tr>
<tr>
<td>30–44</td>
<td>10.9% (8.9%–12.9%)</td>
<td>8.0% (5.7%–10.3%)</td>
<td>-1.9</td>
</tr>
<tr>
<td>45–59</td>
<td>8.8% (6.6%–10.9%)</td>
<td>9.9% (6.7%–13.1%)</td>
<td>0.6</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>4.5% (2.8%–6.3%)</td>
<td>3.8% (1.7%–5.9%)</td>
<td>-0.5</td>
</tr>
<tr>
<td>Overall</td>
<td>8.5% (7.5%–9.6%)</td>
<td>6.7% (5.4%–8.0%)</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–29</td>
<td>15.8% (13.2%–18.4%)</td>
<td>9.5% (6.3%–12.7%)</td>
<td>3.0</td>
</tr>
<tr>
<td>30–44</td>
<td>16.1% (14.0%–18.2%)</td>
<td>18.1% (15.0%–21.3%)</td>
<td>1.1</td>
</tr>
<tr>
<td>45–59</td>
<td>15.6% (13.0%–18.3%)</td>
<td>14.3% (11.0%–17.6%)</td>
<td>-0.6</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>7.6% (5.6%–9.7%)</td>
<td>5.2% (3.1%–7.4%)</td>
<td>-1.6</td>
</tr>
<tr>
<td>Overall</td>
<td>14.1% (12.9%–15.3%)</td>
<td>12.4% (10.8%–13.9%)</td>
<td>-1.8</td>
</tr>
</tbody>
</table>

*Bold figures indicate proportions significantly different from those in metropolitan areas \((P < 0.05)\).
† Metropolitan area = RRMA categories 1 and 2.
‡ Non-metropolitan area = RRMA categories 3, 4, 5, 6 and 7.
§ \(z\)-score of the difference between RRMA groups and metropolitan areas.

6 Proportion (weighted estimates and 95% CIs) of those meeting the ICD-10 criteria for any mental health disorder who received professional help during the previous year, by sex, age and RRMA group

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Metropolitan area</th>
<th>Non-metropolitan area</th>
<th>(z)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(602 men; 823 women)</td>
<td>(264 men; 386 women)</td>
<td></td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–29</td>
<td>25.2% (18.1%–32.3%)</td>
<td>11.4% (11.1%–21.7%)</td>
<td>-2.2</td>
</tr>
<tr>
<td>30–44</td>
<td>34.0% (27.3%–40.7%)</td>
<td>27.3% (19.1%–35.6%)</td>
<td>-1.2</td>
</tr>
<tr>
<td>45–59</td>
<td>35.8% (25.9%–45.8%)</td>
<td>41.3% (27.9%–54.7%)</td>
<td>0.6</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>26.9% (14.1%–39.7%)</td>
<td>24.4% (8.4%–40.4%)</td>
<td>-0.2</td>
</tr>
<tr>
<td>Overall</td>
<td>30.6% (26.4%–34.7%)</td>
<td>26.2% (20.5%–31.9%)</td>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–29</td>
<td>37.3% (30.6%–44.0%)</td>
<td>27.9% (17.8%–38.0%)</td>
<td>-1.5</td>
</tr>
<tr>
<td>30–44</td>
<td>49.7% (43.5%–55.9%)</td>
<td>50.1% (41.7%–58.5%)</td>
<td>0.1</td>
</tr>
<tr>
<td>45–59</td>
<td>53.5% (45.1%–61.9%)</td>
<td>53.7% (43.1%–64.3%)</td>
<td>0.0</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>39.5% (27.8%–51.2%)</td>
<td>41.0% (24.2%–57.8%)</td>
<td>0.1</td>
</tr>
<tr>
<td>Overall</td>
<td>45.4% (41.6%–49.3%)</td>
<td>44.3% (38.9%–49.7%)</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

*Bold figures indicate proportions significantly different from those in metropolitan areas \((P < 0.05)\).
† Metropolitan area = RRMA categories 1 and 2.
‡ Non-metropolitan area = RRMA categories 3, 4, 5, 6 and 7.
§ \(z\)-score of the difference between RRMA groups and metropolitan areas.
Overall, a wide range of factors, including those relating to being male, together with a fundamental lack of services, may help to explain why young men, particularly those in rural areas, do not access professional help.

Given that mental health problems are a major risk factor for suicide, a better understanding of the reasons behind young rural men’s use and non-use of services is of considerable importance. Increasing service use by and for these men, even to a small degree, might reduce their suicide rates.

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COMPETING INTERESTS
None identified.

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