Relative risk of suicide following exposure to recent stressors, Victoria, Australia

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Abstract

Objective: This study aimed to identify stressors over-represented in the 12 months prior to death among 553 Victorian adults who died by suicide.

Methods: Age- and sex-specific suicide rates and relative risks of suicide were calculated using numerator data on suicides occurring in 2013 by people with a given exposure sourced from the Victorian Suicide Register and denominator data on the total Victorian population with that exposure sourced from the 2014 Australian Bureau of Statistics General Social Survey.

Results: Mental illness was associated with increased suicide risk among people of all age groups and both sexes. Alcohol and/or other drug problems were associated with increased risk for males and females of all ages, with the exceptions of the oldest males and females, and the youngest females. Trouble with the police was associated with increased risk among all but the oldest males, whereas among females it was associated with elevated risk in those aged 25-44 years and 65+ years.

Conclusions and Implications for public health: Males experiencing mental illness and alcohol and other drug problems should be a particular priority for suicide prevention initiatives but people exposed to other stressors such as contact with the police and divorce/relationship separation also warrant attention.

Key words: suicide, alcohol and other drugs, mental illness

Results

Mental illness was associated with increased suicide risk among people of all age groups and both sexes. Alcohol and/or other drug problems were associated with increased risk for males and females of all ages, with the exceptions of the oldest males and females, and the youngest females. Trouble with the police was associated with increased risk among all but the oldest males, whereas among females it was associated with elevated risk in those aged 25-44 years and 65+ years.

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Key words: suicide, alcohol and other drugs, mental illness

Method

Data sources

Two data sources were used: (a) the Victorian Suicide Register (VSR); and (b) the Australian Bureau of Statistics (ABS) General Social Survey (GSS). Exposure to stressors among those who died by suicide was sourced from the VSR and exposure to stressors among the general population from the GSS.

VSR

The VSR is a purpose-built database of all suicides and suspected suicides that occur in Victoria. The VSR is supported by a...
coding manual, data dictionary and quality framework. Data in the VSR is coded by individuals with experience in the conduct of medico-legal investigations and trained in mortality review for the purposes of surveillance. Detailed coded and free text data is systematically recorded according to strict coding rules. VSR data are coded based on review of all available information – typically the entire coronial file is available to coders, containing the coronial brief, forensic, medical and scientific reports and the coroners' finding. The coronial brief frequently includes statements from police and family members, copies of suicide notes, photographs taken at the scene of the suicide and medical records from general practitioners or psychiatrists/psychologists involved in treatment of the deceased.

Data items systematically recorded on the VSR include those related to the specific details of the suicide such as the method used, location of event and the cause of death. In addition, items related to specific known risk factors for suicide such as sociodemographic details; service contacts; information regarding physical illness, injury, pain or disability; other psycho-social stressors; and detailed information regarding any evidence of mental illness is also systematically recorded. The VSR comprises coded and free-text information. Data relevant to this study include sociodemographics (age and sex) and evidence of exposure to the following potential stressors: mental illness; relationship separation; bereavement; illness; accident/injury; disability; alcohol or other drug problems; violence/abuse; financial or work-related difficulties; bullying/harassment; and specific service contacts with police or child services. Data for all of these stressors are collected systematically in the VSR under the following variable names “diagnosed mental illness”; “relationship”; “death of a partner/family member”; “physical illness”; “physical injury”; “disability”; “substance abuse/use”; “experience of abuse”; “violence between deceased and partner/family member”; “financial stressors”; “work related stressors”; “bullying” and “specific service contacts”. The information is collected by first flagging a factor/stressor as relevant to that individual and then including notes to indicate why each factor/stressor was flagged (i.e. the coder enters the relevant information directly from the Coroners finding/police report/autopsy report/statement of a family member etc. into specific notes fields). More information about the VSR can be found elsewhere.

**GSS**

The GSS is a population survey designed to support the exploration of the links between different social and economic topics. The 2014 survey involved people aged 15 years or older who lived in 12,932 private dwellings. It had a response rate of 80.1% (20). GSS data can be extrapolated to the total population because of the way participants are sampled and the weights that are applied. Respondents were asked about exposure to stressors (occurring to the individual or a close family member) in the 12 months prior to the survey. The stressors for which equivalent data are captured in the VSR are: mental illness; divorce/relationship separation; death of a family member or close friend; physical illness; accident/injury; disability; alcohol or other drug problems; not able to get a job; involuntary loss of job; victim of abuse or violent crime; witness to violence; trouble with the police; gambling problem; bullying and/or harassment; and removal of children.

### Data extraction and inclusion criteria

Cases of suicide that occurred in 2013 were extracted from the VSR. For consistency with the GSS inclusion criteria, people aged younger than 15 years and those who were not usual residents of private dwellings (houses, flats, home units and any other structures used as private places of residence) were excluded. Cases coded as being exposed to a given stressor were examined by the first author through reading all the notes accompanying the flagging of that stressor to ensure the exposure occurred in the 12 months prior to death. For example, for the stressors injury and illness, the notes for each case with these variables flagged were read to confirm the injury or illness had been recorded as being an issue for the deceased in the 12 months prior to suicide. In addition, for people who had had contact with police prior to death, the record was only included if the deceased had what would be considered “trouble with the police” (i.e. they had been arrested, investigated, incarcerated, etc.) not if they simply had contact in the context of a suicide attempt. When substance use is mentioned in the coronial brief, VSR coders are instructed to code to the personal stressor category “substance use”. Further, when there is evidence of a substance use disorder diagnosed by a medical professional, VSR coders are also instructed to code to the mental illness category “Mental or behavioural disorders due to psychoactive substance use”. In the year of analysis, approximately one-quarter of cases with substance use recorded as a stressor had a diagnosed substance use disorder. Consequently, the categories “mental illness” and “alcohol and/or other drug problems” in this study both included people with a diagnosed substance use disorder. Throughout the text, the phrase “alcohol and/or other drugs problems” is used when referring to cases where substance use has been flagged as a stressor in the VSR.

### Analysis methods

Suicide rates per 100,000 adults experiencing the different stressors in the 12-month period prior to death were calculated by sourcing the numerator from the VSR and the denominator from the GSS. Upper (+) and lower (-) 95% confidence intervals for the rates were calculated using the Poisson variance approximation formula:

\[ \text{Relative Risk} = \frac{d / n}{d / n} \]

Where: \( d \) = number of suicides with stressor recorded in 12 months prior to death and \( n \) = population experiencing the stressor in the 12 months prior to survey. In addition, we performed analyses of co-occurring stressors. Relative Risk was calculated as the ratio of the rate of suicide in the exposed group to that in the non-exposed group.

### Ethics approval

Full approval for this research was granted by the Victorian Department of Justice and Regulation Human Research Ethics Committee (JHREC - reference number CF/15/16421).

### Results

The final VSR dataset contained the records of 553 suicides. The GSS data have been weighted to represent the population of 4.6 million adults aged 15 years and over in Victoria. Table 1 shows the frequency and proportion of cases recorded to have been exposed to various stressors in the 12 months prior to suicide (for VSR cases) or to the survey (GSS cases).
Comparison of suicide risk among Victorians exposed to 12-month stressors

Table 2 shows suicide rates and relative risk of suicide among adults exposed to a given stressor. Of the 14 stressors examined in the study, half were associated with significantly increased suicide risk. The three stressors with the highest relative risk (RR) for suicide were alcohol and/or other drugs problems (RR: 7.24, 95% confidence intervals (CI), 6.09 to 8.61), mental illness (RR: 5.39, 95% CI 4.57, 6.37), and trouble with the police (RR: 4.83, 95% CI, 3.82, 6.11). Mental illness was the only stressor associated with significantly increased suicide risk across all age groups.

Three stressors were associated with significantly decreased suicide risk: death of a family member or close friend (RR: 0.31, 95% CI, 0.23 to 0.43), being not able to get a job (RR: 0.27, 95% CI 0.19, 0.39), and bullying and/or harassment (RR: 0.30, 95% CI, 0.18, 0.53).

Gender-based differences in rates and risk of suicide per exposure to 12-month stressors

Suicide rates per 100,000 exposed males were significantly higher than rates per 100,000 exposed females for all stressors except abuse/violence, bullying/harassment and removal of children. For none of the stressors was the suicide rate among exposed females significantly higher than the rate among exposed males. (Tables 3 and 4)

Among males, suicide risk was highest among those experiencing alcohol and other drug problems, mental illness and trouble with the police. Males who had experienced divorce/relationship separation or involuntary job loss also had increased risk of suicide. Among females, suicide risk was increased for those experiencing mental illness, removal of children, alcohol and/or other drug problems, abuse/violence, trouble with the police and divorce/relationship separation.

Rates and risk of suicide by age groups and gender

Among males and females, mental illness was the only stressor associated with significantly increased suicide risk across all age groups. Increased suicide risk was associated with alcohol and/or other drug problems in males aged 15-64 years and females aged 25-44; trouble with the police in males aged 25-64 years and females aged 25-44 and 65 years and older; and divorce/relationship separation in males aged 25-44 years and females aged 15-44. Physical illness was associated with increased suicide risk among males and among females only in those aged 65 years and older. Experience of violence/abuse was associated with increased suicide risk among females aged 15-44 and 65 years and older.

Co-occurring stressors

The majority of those who died by suicide were recorded to have been exposed to two or more of the stressors (57.1%, n=316/553) in the 12 months prior to death. Mental illness, alcohol or other drug problems, physical illness, divorce/relationship separation and trouble with the police were the most commonly reported stressors overall (Table 1) and in combination. Table 5 shows sex-specific rates and relative risk of suicide for individuals experiencing the various possible combinations of these stressors. Males and females exposed to all combinations of the examined stressors had increased risk of suicide with the exception of females experiencing physical illness in combination with trouble with the police, and males and females experiencing physical illness in combination with divorce/relationship separation.

For males, the highest suicide risks were observed among those exposed to alcohol and/or other drug problems in combination with mental illness (RR: 6.85, 95% CI 5.34, 8.79), divorce/relationship separation (RR: 6.21, 95% CI 4.59, 8.42), or trouble with the police (RR: 5.55, 95% CI 3.96, 7.71). For females, the highest suicide risk was observed...
Suicide risk was highest in those experiencing alcohol and/or other drug problems, mental illness, and those who experienced trouble with the police in the 12 months prior to death. However, it is important to note that there were significant differences between males and females whereby male suicide rates were significantly higher than female suicide rates for those experiencing most of the studied stressors, and that age also impacted suicide rates and risk.

Mental illness was associated with increased suicide risk among individuals of all age groups and for both sexes. In contrast to a recent Queensland study, which found the prevalence of diagnosed psychiatric disorders was lower in older adults than middle-aged adults who died by suicide, the current study found significantly higher relative risk of suicide among the oldest Victorians when compared to their younger counterparts. Alcohol and/or other drug problems were associated with increased risk for males and females of all ages, with the exceptions of the oldest males and females, and the youngest females. Trouble with the police was associated with increased risk among all but the oldest males, whereas among females it was associated with elevated risk in those aged 25-44 years and those aged 65 years and older.

Mental illness and substance abuse are two of the most recognised risk factors for suicide and have been found to be associated with suicide among males and females. In fact, findings from the Global Burden of Disease study suggest mental and substance use disorders were found to be responsible for two-thirds of the suicides in 2010.
Table 3: Exposure to stressors in the 12 months prior to suicide, suicide rates and relative risk of suicide, by age group, Victorian adult males.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mental illness</th>
<th>Diverse / relationship separation</th>
<th>Death: family member/close friend</th>
<th>Physical illness</th>
<th>Accident/injury</th>
<th>Trouble with the police</th>
<th>Gambling problem</th>
<th>Bullying and/or harassment</th>
<th>Removal of children</th>
<th>Disability</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24 years</td>
<td>64.86 (35.79, 94.03)</td>
<td>24.13 (9.87, 38.40)</td>
<td>9.41 (1.88, 19.64)</td>
<td>7.35 (0.15, 14.55)</td>
<td>22.49 (7.86, 42.20)</td>
<td>35.41 (12.27, 58.54)</td>
<td>20.31 (19.50, 60.11)</td>
<td>8.37 (1.10, 17.84)</td>
<td>57.84 (-55.52, 171.20)</td>
<td>0.00 (0.00, 0.00)</td>
<td>12.85 (0.92, 16.42)</td>
</tr>
<tr>
<td>25-44 years</td>
<td>41.54 (33.19, 53.88)</td>
<td>41.22 (29.31, 53.13)</td>
<td>1.72 (-0.23, 3.66)</td>
<td>12.25 (7.01, 17.49)</td>
<td>14.65 (6.36, 22.94)</td>
<td>9.07 (14.57, 30.10)</td>
<td>6.07 (-1.78, 28.77)</td>
<td>6.50 (0.80, 12.94)</td>
<td>16.53 (-6.38, 39.45)</td>
<td>14.57 (2.91, 26.23)</td>
<td>16.99 (14.21, 19.78)</td>
</tr>
<tr>
<td>45-64 years</td>
<td>86.73 (65.81, 107.66)</td>
<td>25.98 (16.68, 35.28)</td>
<td>12.33 (6.09, 18.57)</td>
<td>17.42 (11.65, 23.19)</td>
<td>19.04 (6.06, 46.44)</td>
<td>14.03 (16.14, 28.42)</td>
<td>5.92 (-12.82, 24.13)</td>
<td>1.22 (-0.82, 2.18)</td>
<td>16.81 (-16.14, 40.76)</td>
<td>3.06 (-0.04, 8.50)</td>
<td>22.03 (18.55, 25.31)</td>
</tr>
<tr>
<td>65+ years</td>
<td>91.86 (55.85, 127.87)</td>
<td>4.33 (4.16, 12.81)</td>
<td>8.26 (1.02, 15.50)</td>
<td>46.07 (31.79, 60.35)</td>
<td>3.68 (-3.53, 10.89)</td>
<td>21.15 (14.35, 31.76)</td>
<td>7.43 (-2.87, 17.72)</td>
<td>0.00 (0.00, 0.00)</td>
<td>18.09 (0.00, 0.00)</td>
<td>0.34 (0.39, 3.13)</td>
<td>13.16 (9.91, 16.41)</td>
</tr>
<tr>
<td>ALL</td>
<td>61.64 (52.58, 70.69)</td>
<td>29.76 (23.54, 35.97)</td>
<td>6.89 (4.38, 9.40)</td>
<td>19.47 (15.65, 23.29)</td>
<td>18.23 (11.59, 24.86)</td>
<td>76.35 (37.79, 94.91)</td>
<td>6.44 (4.05, 8.82)</td>
<td>27.47 (19.78, 35.16)</td>
<td>23.66 (0.36, 35.62)</td>
<td>21.16 (12.32, 30.08)</td>
<td>17.81 (16.08, 19.53)</td>
</tr>
</tbody>
</table>

Suicide rate per 100,000

Mental illness               7.53 (4.25, 13.32) 
Diverse / relationship separation     2.13 (1.09, 4.12) 
Death: family member/close friend      0.70 (0.30, 1.63) 
Physical illness                0.53 (0.19, 1.48) 
Accident/injury                          1.83 (0.73, 4.62) 
Alcohol and/or other drug problem     10.86 (6.23, 18.98) 
Bullying and/or harassment          0.21 (0.08, 0.59) 
Involuntary loss of job            0.69 (0.21, 2.20) 
Violence/abuse                    1.32 (0.41, 4.25) 
Trouble with the police          3.14 (1.51, 6.46) 
Gambling problem                1.59 (0.22, 11.53) 
Bullying and/or harassment       0.63 (0.20, 2.02) 
Removal of children             4.57 (0.63, 33.09) 
Disability                       0.00 (0.00, 0.00) 
All                             1.16 (1.20, 2.18) 

Relative risk

Mental illness               3.59 (4.68, 4.85) 
Diverse / relationship separation     1.85 (0.82, 2.18) 
Death: family member/close friend      1.35 (0.30, 0.87) 
Physical illness                1.12 (0.24, 1.48) 
Accident/injury                          1.03 (0.32, 0.32) 
Alcohol and/or other drug problem     1.00 (0.04, 0.00) 
Bullying and/or harassment          0.31 (0.23, 0.50) 
Involuntary loss of job            1.62 (0.24, 2.25) 
Violence/abuse                    1.38 (0.23, 0.46) 
Trouble with the police          0.78 (0.86, 2.22) 
Gambling problem                1.28 (0.43, 1.28) 
Bullying and/or harassment       0.35 (0.20, 0.22) 
Removal of children             1.02 (0.03, 0.72) 
Disability                       1.20 (0.54, 1.84) 
All                             1.00 (1.01, 1.00) 

Note: ND = confidence intervals not defined given the relative risk was zero (i.e. zero cases of suicide were exposed to that stressor in the 12 months prior to death).
Relative risk of suicide following exposure to recent stressors

<table>
<thead>
<tr>
<th>Stressor</th>
<th>15-24 years</th>
<th>25-44 years</th>
<th>45-64 years</th>
<th>65+ years</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental illness</td>
<td>11.45</td>
<td>19.71</td>
<td>22.39</td>
<td>58.73</td>
<td>22.15</td>
</tr>
<tr>
<td>Divorce / relationship separation</td>
<td>45.76</td>
<td>14.68</td>
<td>9.26</td>
<td>6.36</td>
<td>13.47</td>
</tr>
<tr>
<td>Death: family member/close friend</td>
<td>1.21</td>
<td>1.94</td>
<td>2.87</td>
<td>6.63</td>
<td>2.62</td>
</tr>
<tr>
<td>Physical illness</td>
<td>-1.07, 6.59</td>
<td>0.61, 5.50</td>
<td>3.37, 10.26</td>
<td>9.49, 26.70</td>
<td>4.74, 4.99</td>
</tr>
<tr>
<td>Accident/injury</td>
<td>0.00</td>
<td>3.14</td>
<td>5.14</td>
<td>9.96</td>
<td>4.80</td>
</tr>
<tr>
<td>Alcohol and/or other drug problem</td>
<td>6.93</td>
<td>38.78</td>
<td>16.27</td>
<td>9.56</td>
<td>24.04</td>
</tr>
<tr>
<td>Not able to get a job</td>
<td>-2.67, 16.54</td>
<td>(25.13, 52.43)</td>
<td>(5.00, 27.55)</td>
<td>(-3.69, 22.81)</td>
<td>(16.85, 31.22)</td>
</tr>
<tr>
<td>Involuntary loss of job</td>
<td>0.00</td>
<td>3.00</td>
<td>3.65</td>
<td>0.00</td>
<td>1.11</td>
</tr>
<tr>
<td>Violence/abuse</td>
<td>-9.21, 28.39</td>
<td>(-1.00, 3.09)</td>
<td>(1.21, 18.37)</td>
<td>(0.00, 0.00)</td>
<td>(1.08, 7.24)</td>
</tr>
<tr>
<td>Removal of children</td>
<td>-47.58, 283.03</td>
<td>(15.39, 52.07)</td>
<td>(1.15, 17.54)</td>
<td>(-16.20, 100.14)</td>
<td>(13.00, 31.67)</td>
</tr>
<tr>
<td>Trouble with the police</td>
<td>0.00</td>
<td>30.27</td>
<td>11.58</td>
<td>153.14</td>
<td>21.86</td>
</tr>
<tr>
<td>Gambling problem</td>
<td>0.00</td>
<td>3.18</td>
<td>6.39</td>
<td>0.00</td>
<td>3.92</td>
</tr>
<tr>
<td>Bullying and/or harassment</td>
<td>-2.61, 6.05</td>
<td>(-0.85, 5.27)</td>
<td>(-0.89, 5.51)</td>
<td>(0.00, 0.00)</td>
<td>(0.28, 4.53)</td>
</tr>
<tr>
<td>Removal of children</td>
<td>0.00</td>
<td>3.84</td>
<td>8.64</td>
<td>0.00</td>
<td>2.26</td>
</tr>
<tr>
<td>Disability</td>
<td>0.00</td>
<td>0.00</td>
<td>4.86</td>
<td>0.00</td>
<td>2.15</td>
</tr>
<tr>
<td>All</td>
<td>(1.99, 6.05)</td>
<td>(4.13, 7.34)</td>
<td>(5.34, 9.27)</td>
<td>(3.04, 6.83)</td>
<td>(5.02, 6.99)</td>
</tr>
</tbody>
</table>

### Table 4: Exposure to stressors in the 12-months prior to suicide, suicide rates and relative risk of suicide, by age group, Victorian adult females.

#### Suicide rate per 100,000

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Mental Illness</th>
<th>Divorce / Relationship Separation</th>
<th>Death: Family Member/Close Friend</th>
<th>Physical Illness</th>
<th>Accident/Injury</th>
<th>Alcohol and/or Other Drug Problem</th>
<th>Not Able to Get a Job</th>
<th>Involuntary Loss of Job</th>
<th>Violence/Abuse</th>
<th>Removal of Children</th>
<th>Disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>11.45</td>
<td>45.76</td>
<td>1.21</td>
<td>2.76</td>
<td>0.00</td>
<td>6.93</td>
<td>0.00</td>
<td>-9.21</td>
<td>-47.58</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>25-44</td>
<td>19.71</td>
<td>14.68</td>
<td>1.94</td>
<td>0.61</td>
<td>3.14</td>
<td>38.78</td>
<td>3.00</td>
<td>1.05</td>
<td>-1.00</td>
<td>3.84</td>
<td>0.00</td>
</tr>
<tr>
<td>45-64</td>
<td>22.39</td>
<td>9.26</td>
<td>2.87</td>
<td>5.14</td>
<td>5.14</td>
<td>16.27</td>
<td>3.65</td>
<td>9.79</td>
<td>1.21</td>
<td>6.39</td>
<td>8.64</td>
</tr>
<tr>
<td>65+</td>
<td>58.73</td>
<td>6.36</td>
<td>6.63</td>
<td>9.96</td>
<td>9.96</td>
<td>9.56</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3.92</td>
<td>0.00</td>
</tr>
<tr>
<td>All</td>
<td>22.15</td>
<td>13.47</td>
<td>2.62</td>
<td>4.80</td>
<td>24.04</td>
<td>3.92</td>
<td>1.11</td>
<td>4.16</td>
<td>3.92</td>
<td>5.96</td>
<td>2.15</td>
</tr>
</tbody>
</table>

#### Relative risk

<table>
<thead>
<tr>
<th>Stressor</th>
<th>15-24 years</th>
<th>25-44 years</th>
<th>45-64 years</th>
<th>65+ years</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental illness</td>
<td>4.96</td>
<td>8.47</td>
<td>6.22</td>
<td>36.43</td>
<td>8.39</td>
</tr>
<tr>
<td>Divorce / relationship separation</td>
<td>20.47</td>
<td>3.44</td>
<td>1.32</td>
<td>1.31</td>
<td>2.66</td>
</tr>
<tr>
<td>Death: family member/close friend</td>
<td>0.25</td>
<td>0.26</td>
<td>0.32</td>
<td>1.41</td>
<td>0.37</td>
</tr>
<tr>
<td>Physical illness</td>
<td>0.64</td>
<td>0.91</td>
<td>0.91</td>
<td>0.91</td>
<td>1.20</td>
</tr>
<tr>
<td>Accident/injury</td>
<td>0.05</td>
<td>0.69</td>
<td>2.06</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>Alcohol and/or other drug problem</td>
<td>1.84</td>
<td>16.69</td>
<td>2.45</td>
<td>2.02</td>
<td>5.29</td>
</tr>
<tr>
<td>Not able to get a job</td>
<td>0.00</td>
<td>0.45</td>
<td>0.45</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Involuntary loss of job</td>
<td>2.48</td>
<td>0.17</td>
<td>1.38</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Violence/abuse</td>
<td>33.89</td>
<td>7.65</td>
<td>1.31</td>
<td>9.13</td>
<td>4.21</td>
</tr>
<tr>
<td>Trouble with the police</td>
<td>0.64</td>
<td>6.82</td>
<td>3.32</td>
<td>12.24</td>
<td>1.00</td>
</tr>
<tr>
<td>Gambling problem</td>
<td>0.00</td>
<td>0.87</td>
<td>0.00</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>Bullying and/or harassment</td>
<td>0.65</td>
<td>0.36</td>
<td>0.29</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>Removal of children</td>
<td>16.39</td>
<td>0.00</td>
<td>0.00</td>
<td>5.77</td>
<td>5.77</td>
</tr>
<tr>
<td>Disability</td>
<td>0.00</td>
<td>0.65</td>
<td>0.00</td>
<td>0.34</td>
<td>0.34</td>
</tr>
</tbody>
</table>

#### Note

- ND = confidence intervals not defined given the relative risk was zero (i.e., zero cases of suicide were exposed to that stressor in the 12-months prior to death).
- All = GSS data not available.

The study has important implications for public health and suicide prevention. In addition to focusing on people experiencing mental illness, suicide prevention programs and initiatives should focus on individuals experiencing other significant life stressors and should be targeted based on stressors found to be associated with increased suicide risk in certain populations. While results were largely consistent across the age groups that are over-represented among the suicide cases are likely to be underestimated. Another limitation in using population-level exposure data is that it does not relate to individual-level exposures. Finally, the risk estimates for each factor could not be adjusted for the influence of other factors and as such all estimates are unadjusted.

### Implications for public health

This study has important implications for public health and suicide prevention. It demonstrates the need for targeted interventions and initiatives to reduce the risk of suicide, particularly in certain populations experiencing other significant life stressors. The findings highlight the importance of focusing on individuals experiencing these stressors in the context of their overall life experiences. The study also underscores the need for further research to understand the complex interplay of stressors and their impact on suicide risk.

The implications of these findings are significant for public health policies and programs. Public health officials and mental health professionals can use this information to develop targeted interventions that address the specific stressors associated with increased suicide risk. This includes creating support systems and implementing policies that address the needs of individuals facing significant life stressors.

Moreover, the study emphasizes the importance of integrating multiple factors in suicide prevention efforts. Suicide risk is influenced not only by mental illness but also by other significant life stressors such as divorce, relationship separation, and financial difficulties. Therefore, a multidisciplinary approach that considers the broader context of an individual's life is crucial.

In conclusion, the study provides valuable insights into the factors associated with suicide risk in the Victorian population. It highlights the importance of considering the interplay of stressors and the need for targeted interventions to address these factors. The findings have important implications for public health policies and programs aimed at reducing suicide risk.
Males experiencing mental illness and/or alcohol and other drug problems should be a particular priority but those exposed to other stressors such as contact with the police and divorce/relationship separation also warrant attention. In addition, certain combinations of co-occurring stressors were associated with elevated rates among men and women and there were some significant differences between these which should be considered in any suicide prevention initiatives.

The Victorian Suicide Prevention Framework25 outlines two major initiatives that are currently being implemented in Victoria; place-based suicide prevention trials and hospital outreach programs. Place-based trials in six communities involve a local suicide prevention group developing a plan to reduce suicides in the area through the implementation of nine proven suicide prevention interventions such as awareness programs, general practitioner support, gatekeeper training and reducing access to means. Hospital outreach programs being implemented at 12 health services aim to provide practical, psychosocial support in addition to direct mental health or other medical treatment to people who have made a suicide attempt. These objectives and programs are consistent with findings from this current study given people exposed to the stressors found to increase suicide risk such as mental illness, alcohol and/or other drug problems and other psychosocial stressors, may be supported by some of these interventions. If shown to be effective in reducing suicide these programs could be extended across Victoria to ensure all Victorians who are at risk for suicide have access to the support they may need.

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References

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