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<th>Title</th>
<th>Adverse childhood experiences and lifetime suicide ideation: a cross-sectional study in a non-psychiatric hospital setting</th>
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<tbody>
<tr>
<td>Authors</td>
<td>Corcoran, Paul; Gallagher, Jonathan; Keeley, Helen S.; Arensman, Ella; Perry, Ivan J.</td>
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Suicidal behaviour, including deliberate self-harm and suicide, is a major public health problem worldwide. Prevention of suicidal behaviour is difficult. In particular, prevention of suicide poses a major challenge given the relative rarity of the event. There is evidence that for a significant proportion of people who die by suicide, the event represents the culmination of a long process. This has been described as a series of phases whereby individuals experience a negative life event, often at an early age, which increases their vulnerability to external stressors, leading to thoughts of deliberate self-harm and/or wishing they were dead. Threats and/or plans of suicide may follow, which in some cases progress to acts of deliberate self-harm and suicide. While there are some empirical data supporting the hypothesis that adverse childhood experiences are major risk factors for suicide ideation and later mental health problems including suicidal behaviour, it is thought that a considerable proportion of people who die by suicide have not experienced a major adverse childhood experience. However, the magnitude of the effects and the relative importance of different forms of childhood adversity on suicidal ideation is not well defined, particularly in the Irish context.

The aim of this study was to investigate the association between childhood adversity and suicide ideation. Specifically, we have estimated the effect of eight major categories of adverse childhood experiences (using a standard self-report instrument) on the prevalence of lifetime suicide ideation. We have also examined the effect of reported childhood adversity on prevalence of severe suicide ideation and studied inter-relationships between childhood adversity, substance misuse and both depression and suicide ideation.

Methods

Participants

The study sample was recruited from accident and emergency (A&E) department review clinics at Cork University Hospital in the six-month period from mid-June to mid-December 2002. During this time, 249 individuals met the inclusion criteria: age 18-44 years and without severe or longstanding physical illness or disability, psychotic illness or other psychiatric disorder requiring inpatient or outpatient treatment within the preceding 12 months. A total of 182 patients (73% of those eligible) agreed to participate and were interviewed by a psychology graduate, supported by a consultant in child and adolescent psychiatry. Questionnaires were completed anonymously. Participants were given the opportunity to discuss any issues that the questionnaire may have raised for them and all were provided with information on local support services including a specialist counselling service for victims of abuse. Informed consent was obtained for all participants. We obtained ethical approval for the study from the Clinical Research Ethics Committee of the Cork Teaching Hospitals.

Study questionnaire

The participants were asked to complete a questionnaire that addressed demographic characteristics, use of tobacco, alcohol consumption (using the CAGE alcohol questionnaire) and illicit drugs. Problem drinking was defined where two or more of the four CAGE questions were answered in the affirmative. The questionnaire also included a section of the Adverse Childhood Experiences (ACE) instrument, addressing specific adverse childhood experiences, including emotional, physical, and sexual abuse and their exposure to the incarceration in prison of a household member, violence between parents, parental separation or divorce, household substance abuse or depression or mental illness in the household. The total number of positive responses to the categories of adversity forms the ACE score which ranges from a minimum of zero to a maximum of 10. We also assessed the participants' lifetime experience of a range of thoughts about death and suicide and history of intentional self-harm, using standard instruments. The following distinction was made between mild and severe suicide ideation: Mild suicide ideation included ever feeling life was not worth living and/or wishing to be dead and/or thinking of taking one's life but excludes severe suicide ideation. Severe suicide ideation includes ever planning suicide and/or deliberately self-harming whether hospital treated or not.

Statistical analysis

Differences in the prevalence of adverse childhood experiences, suicidal ideations and behaviours, depressed mood and tobacco, alcohol and illicit drug use were assessed with proportions and 95% confidence intervals using a mid-p approach to Fisher’s exact test. The chi-square test for trend was used to assess the evidence of a graded relationship between the number of adverse childhood experiences (none, one or at least two) and gender, depressed mood, suicide ideation and illicit drug use. Because of the rarity of the event, the chi-square test was used for the relevant potential confounders was used to assess the associations between childhood adversity, use of tobacco, alcohol and illicit drugs and risk of both suicide ideation and depressed mood.

Results

Socio-demographic and behavioural characteristics of the study participants are summarised in Table 1. A total of 117 (64.3%) of the sample were male, two-thirds were single, over 40% were living with their parent(s), one-third had a primary or secondary education and over 40% were employed. Problem drinking in the sample was 22.0%, with substantially higher rates in men than in women (28.2% versus 10.8%). Similarly, illicit drug use was more prevalent in men (23.1% versus 4.6%).

Table 1: Socio-demographic characteristics of the study sample (N=182)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>117</td>
<td>64.3</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>35.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24 years</td>
<td>78</td>
<td>42.8</td>
</tr>
<tr>
<td>25-44 years</td>
<td>63</td>
<td>34.6</td>
</tr>
<tr>
<td>45-64 years</td>
<td>44</td>
<td>24.2</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>53</td>
<td>29.1</td>
</tr>
<tr>
<td>Single</td>
<td>127</td>
<td>69.8</td>
</tr>
<tr>
<td>Living</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>13</td>
<td>7.1</td>
</tr>
<tr>
<td>With parent(s)</td>
<td>76</td>
<td>41.8</td>
</tr>
<tr>
<td>Other relatives</td>
<td>38</td>
<td>20.8</td>
</tr>
<tr>
<td>Partner</td>
<td>59</td>
<td>32.4</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empl</td>
<td>127</td>
<td>69.8</td>
</tr>
<tr>
<td>Unemployed</td>
<td>14</td>
<td>7.7</td>
</tr>
<tr>
<td>Student</td>
<td>33</td>
<td>17.0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>67</td>
<td>36.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>65</td>
<td>35.7</td>
</tr>
<tr>
<td>Higher</td>
<td>44</td>
<td>24.2</td>
</tr>
<tr>
<td>Current/ex-smoker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>14</td>
<td>7.7</td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>105</td>
<td>57.8</td>
</tr>
<tr>
<td>Problem drinker</td>
<td>4</td>
<td>2.2</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>60</td>
<td>33.1</td>
</tr>
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</table>

Life-time prevalence of depression, suicide ideation and suicide

One in three (33.5%) experienced depressed mood during their lifetime and 42% reported suicide ideation, including 11% who reported ‘seriously considered suicide’ (Table 2). Over 30% of the sample reported at least one episode of deliberate self-harm, of which over half (15.5%) were hospital-referred cases. The reported prevalence of depressed mood and mild suicide ideation was similar in men and women, whereas there is a non-significant higher prevalence of severe suicide ideation in men than in women, Table 2.

Table 2: Prevalence, N (%), of lifetime experience of depressed mood, mild and severe suicide ideation, and adverse childhood experience

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Men (N=117)</th>
<th>Women (N=65)</th>
<th>Total (N=182)</th>
</tr>
</thead>
<tbody>
<tr>
<td>depressed mood</td>
<td>32 (27.8)</td>
<td>12 (32.8)</td>
<td>44 (23.9)</td>
</tr>
<tr>
<td>mild suicide ideation</td>
<td>50 (43.2)</td>
<td>20 (31.3)</td>
<td>70 (38.6)</td>
</tr>
<tr>
<td>severe suicide ideation</td>
<td>12 (10.3)</td>
<td>0 (0.0)</td>
<td>12 (6.6)</td>
</tr>
<tr>
<td>Emotional abuse</td>
<td>6 (5.1)</td>
<td>4 (6.2)</td>
<td>10 (5.5)</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>36 (30.8)</td>
<td>20 (31.3)</td>
<td>56 (30.8)</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>12 (10.3)</td>
<td>2 (3.1)</td>
<td>14 (7.7)</td>
</tr>
</tbody>
</table>

Introduction

Suicidal behaviour, including deliberate self-harm and suicide, is a major public health problem worldwide. Prevention of suicidal behaviour is difficult. In particular, prevention of suicide poses a major challenge given the relative rarity of the event. There is evidence that for a significant proportion of people who die by suicide, the event represents the culmination of a long process. This has been described as a series of phases whereby individuals experience negative life events, often at an early age, which increase their vulnerability to external stressors, leading to thoughts of deliberate self-harm and/or wishing they were dead. Threats and/or plans of suicide may follow, which in some cases progress to acts of deliberate self-harm and suicide. While there are some empirical data supporting the hypothesis that adverse childhood experiences are major risk factors for suicide ideation and later mental health problems including suicidal behaviour, it is thought that a considerable proportion of people who die by suicide have not experienced a major adverse childhood experience. However, the magnitude of the effects and the relative importance of different forms of childhood adversity on suicidal ideation is not well defined, particularly in the Irish context.
Physical abuse
5 (12.8)
12 (12.3)
23 (12.6)
Sexual abuse
4 (3.4)
14 (21.5)
18 (9.9)
Emotional abuse
4 (6.7)
12 (18.3)
18 (9.9)
Parental violence
4 (10.3)
12 (12.3)
20 (11.9)
Parental separation/divorce
2 (10.1)
4 (5.7)
12 (21.3)
Household substance abuse
2 (3.9)
8 (12.3)
12 (21.3)
Incarcerated household member
1 (8.3)
5 (4.7)
3 (3.1)
Score
4 (5.7)
6 (5.7)
5 (5.7)
Sexual abuse
2 (2.1)
2 (2.1)
2 (2.1)
Parental violence
2 (2.1)
2 (2.1)
2 (2.1)
Physical abuse
2 (2.1)
2 (2.1)
2 (2.1)
Mental illness/depression in household
2 (2.1)
2 (2.1)
2 (2.1)
Household substance abuse
2 (2.1)
2 (2.1)
2 (2.1)
Parental separation/divorce
1 (9.1)
1 (9.1)
1 (9.1)
Mental illness/depression in household
1 (9.1)
1 (9.1)
1 (9.1)
Incarcerated household member
1 (8.3)
1 (8.3)
1 (8.3)
Score
1 (8.3)
1 (8.3)
1 (8.3)

1. Mild suicide ideation includes ever feeling life was not worth living and/or wishing to be dead and/or thinking of taking one’s life and/or seriously considering suicide but excludes severe suicide ideation.  
2. Severe suicide ideation includes ever planning suicide and/or deliberately self-harming whether hospital treated or not.

Adverse childhood experiences

The association between cumulative category of self-reported adverse childhood experience is detailed in Table 2. The only significant gender difference related to the reported prevalence of sexual abuse which was higher in women (21.5% vs. 3.9%). A little more than half of the study sample (52.9%) did not report any of the adverse childhood experiences while one in four (24.3%) reported at least two. The proportions reporting none, one or at least two adverse childhood experiences did not vary significantly by gender, Table 2. One in two (54.3%) of men and (58.4%) of women had at least one adverse childhood experience. The prevalence of childhood adversity was significantly higher in men compared to women (52.2% vs. 43.6%).

ACE category and score, depression and suicide ideation

Table 3 shows age and sex-adjusted risk of depressed mood and suicide ideation by adverse childhood experience category and score and by substance use. All of the identified categories of childhood adversity were associated with higher prevalence of both depression and suicide ideation. The associations with depressed mood were statistically significant for all categories except physical abuse, parental separation/divorce and incarcerated household member. Similarly all categories of childhood adversity were significantly associated with suicide ideation with the exception of household substance abuse. In these age and sex-adjusted analyses, participants with a history of two or more forms of childhood adversity were twice as likely to have both symptoms (OR = 4.2, 95% CI = 3.1–5.3) and suicide ideation (OR = 4.7, 95% CI = 2.1–10.3). Smoking, problem drinking and use of illicit drugs were also associated with increased prevalence of both depressed mood and suicide ideation, in analyses adjusted for age and sex only. In further multivariate analyses, we examined the independent associations between childhood adversity score and both depressed mood and suicide ideation following adjustment for age, sex, marital status, employment status, education, smoking and substance misuse. In these fully adjusted analyses, participants with a history of two or more forms of childhood adversity relative to those with none remained at significantly increased risk of depressed mood (OR = 5.5, 95% CI = 2.2–13.3) and suicide ideation (OR = 3.5, 95% CI = 2.1–6.7). This study found associations between self-reported adolescent problem drinking and use of illicit drugs with increased prevalence of both depressed mood and suicide ideation, were non-significant in these fully adjusted analyses.

Discussion

In this cross-sectional study involving a consecutive series of attenders at an A&E review clinic, we found that approximately one-third of patients gave a lifetime history of depressed mood and over 40% a lifetime history of substance misuse. Participants with a history of two or more forms of childhood adversity ranged from 21.3% for incarcerated household member to over 25% for household substance abuse. Approximately 50% of respondents reported at least one form of self-reported childhood adversity. The reported prevalence of sexual abuse in women (21.5%), but not in men (3.9%), is consistent with estimates from the nationally representative SAVI Study.16

The study findings are consistent with a strong and significant association between childhood adversity and both depressed mood and suicide ideation. There was also evidence of associations between substance misuse (smoking, problem drinking and use of illicit drugs) and both depressed mood and suicide ideation. In multivariate analysis the associations between childhood adversity and both depression and suicidal ideation were independent of substance misuse. By contrast the associations between substance misuse, depression and suicide ideation were not independent of childhood adversity.

The notion that negative childhood experiences exert critical effects on adult mental health is well established.7,8,9,10 However, few studies have systematically defined and addressed the scale of childhood adversity and the magnitude of its effects on mental health outcomes. In this study we have used instruments developed for the US Adverse Childhood Experience (ACE) Study involving a sample of 17,173 participants from two or more categories of childhood adversity relative to those with none remained at significantly increased risk of depressed mood (OR = 5.5, 95% CI = 2.2–13.3) and suicide ideation (OR = 3.5, 95% CI = 2.1–6.7). This study found associations between self-reported adolescent problem drinking and use of illicit drugs with increased prevalence of both depressed mood and suicide ideation, were non-significant in these fully adjusted analyses.

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This study has significant methodological limitations that need to be considered in interpreting the findings. Because of the sensitivity of the topics covered, we preferred to administer the questionnaire through face-to-face interviews rather than by telephone or post. As an accessible proxy to the general population, the sample was drawn from A&E department review clinic attenders. This population would be expected to have higher levels of mental health and psychosocial difficulties compared to the general population. Furthermore, rates of childhood adversity and suicide ideation reported here may overestimate those found in the general population. The cross-sectional design does represent a fundamental limitation of the study in this regard. Clearly, participants with current or previous depressed mood or suicide ideation may be more likely to recall and report childhood adversity than participants without mental health problems. For this reason, the magnitude of the effects in our study may have been overestimated. However, it should also be noted that the ACE Study instrument addresses severe and relatively objective sources of childhood adversity such as physical abuse, sexual abuse and parental separation/divorce and household substance abuse. Table 3 shows age and sex-adjusted analyses between smoking, problem drinking, substance misuse and use of illicit drugs with increased prevalence of both depressed mood and suicide ideation, were non-significant in these fully adjusted analyses.

1. Mild suicide ideation includes ever feeling life was not worth living and/or wishing to be dead and/or thinking of taking one’s life and/or seriously considered suicide but excludes severe suicide ideation.  
2. Severe suicide ideation includes ever planning suicide and/or deliberately self-harming whether hospital treated or not.

References


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Acknowledgement: The National Suicide Research Foundation carried out this study with the support of a Unit Grant from the Cork University Hospital, and in particular Mr Stephen Cusack, Consultant in Accident and Emergency Medi