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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 lengthy suicidal process.[1] This has been described as a series of pathways whereby individuals experience negative life events, often at an early age, which increase their vulnerability to external stressors, leading to thoughts of suicide and/or wishing they were dead.[2,3] 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 suicidal process,[4,5,6] numerous studies have found evidence of an association between childhood adversity and later mental health problems including suicidal behaviour.[7,8,9,10] 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 depressed mood and studied inter-relations 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)[11] 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 eight categories of adversity in the first 18 years of life.[12,13] These are the participantsâ€™ personal experience of 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 and 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 eight. Whether the participants had ever experienced depressed mood was assessed by means of a standard, validated short instrument addressing whether they had ever felt sad or depressed and lost interest in most things like work or activities that usually gave them pleasure for a period of at least two weeks.[14] We also assessed the participantsâ€™ lifetime experience of a range of thoughts about death and suicide and history of intentional self-harm, using standard instruments.[15] 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 oneâ€™s life and/or seriously considered suicide 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 estimates of p values and 95% confidence intervals using a mid p approach to Fisherâ€™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, deliberate self harm and tobacco, alcohol and illicit drug use. Logistic regression with adjustment 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 obtained a third-level qualification and more than two-thirds of the sample were employed. Non-smokers (44.5%) outnumbered current smokers (37.9%) while one in six were ex-smokers (32, 17.6%). Smoking history was similar for men and women. The prevalence of 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)

Characteristic		***N***	***%***
Gender	Male	117	64.3%
	Female	65	35.7%
Age	18–24 years	75	41.2%
	25–34 years	63	34.6%
	35–44 years	44	24.2%
Marital status	Single	122	67.0%
	Married	53	29.1%
	Separated/divorced/widowed	7	3.8%
Living	Alone	11	6.0%
	With parent(s)	76	41.8%
	Other relatives/friends	36	19.8%
	Partner	59	32.4%
Employment	Employed	127	69.8%
	Unemployed	11	6.0%
	Student	31	17.0%
	Worked in the home	13	7.1%
Education	Primary/Secondary â€“ Lower cycle	41	22.5%
	Secondary â€“ Higher cycle	76	41.8%
	Third level	65	35.7%
Current/ex-smoker		101	55.5%
Problem drinker		40	22.0%
Illicit drug use		30	16.5%

Lifetime experience of depressed mood, suicide ideation and behaviour

One in three (33.5%) experienced depressed mood during their lifetime and 42% reported suicide ideation, including 11% who reported â€œsevere suicide ideationâ€ : i.e. planning suicide and/or a history of deliberate self harm, Table 2. Overall, 6.6% of the sample reported at least one episode of deliberate self harm, of which over half (3.8%) were hospital-referred cases. The reported prevalence of depressed mood and mild suicide ideation was similar in men and women, whereas there was 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

	Men	***Women***	***Total***	
	(N =117)	***(N=65)***	***(N=182)***	
Depressed mood	39 (33.3)	22 (33.8)	61 (33.5)	
Mild suicide ideation [1]	36 (30.8)	21(32.3)	57 (31.3)	
Severe suicide ideation [2]	14 (12.0)	6 (9.2)	20 (11.0)	
Emotional abuse [3]	19 (16.2)	8 (12.5)	27 (14.9)	

Physical abuse	15 (12.8)	8 (12.3)	23 (12.6)	
Sexual abuse	4 (3.4)	14 (21.5)	18 (9.9)	
Parental violence	12 (10.3)	6 (9.2)	18 (9.9)	
Parental separation/ divorce [3]	12 (10.3)	8 (12.5)	20 (11.0)	
Household substance abuse [3]	28 (23.9)	14 (21.9)	42 (23.2)	
Mental illness/ depression in household [3]	22(18.8)	12 (18.4)	34 (18.6)	
Incarcerated household member [3]		6 (5.1)	1 (1.6)	7 (3.9)
ACE score [3]	0	64 (54.7%)	31 (48.4%)	95 (52.5%)
	1	26 (22.2%)	16 (25.0%)	42 (23.2%)
	2+	27 (23.1%)	17 (26.6%)	44 (24.3%)

1. Mild suicide ideation includes ever feeling life was not worth living and/or wishing to be dead and/or thinking of taking oneâ€™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.
3. One female response missing.

Adverse childhood experiences

The prevalence of each 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. 3.4%, % difference = 18.1%, 95% CI = 8.8−29.9%, p < 0.001). A little more than half of the study sample (52.5%) 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 twelve (n = 15, 8.3%) had a household member who attempted suicide.

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 relative to those with none were also at significantly increased risk of depressed mood (OR = 6.8, 95% CI = 3.1−15.3) 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. Table 3, 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, employment and educational status, living arrangements, smoking, problem drinking 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= 1.5−8.3). By contrast, the associations observed in age and sex adjusted analyses between smoking, 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.

		Depressed mood		***Suicide ideation*** [1]	
		Odds Ratio [2]	***(95% CI)***	***Odds Ratio***	***(95% CI)***
Emotional abuse		2.81	(1.21−6.53)	2.48	(1.06−5.79)
Physical abuse		2.30	(0.94−5.63)	4.19	(1.60−10.98)
Sexual abuse		7.70	(2.41−24.59)	3.82	(1.28−11.37)
Parental violence		12.26	(3.34−44.97)	4.99	(1.64−15.17)
Parental separation/divorce		2.04	(0.79−5.24)	3.16	(1.18−8.49)
Household substance abuse		2.77	(1.36−5.65)	1.57	(0.78−3.16)
Mental illness /depression in household		4.17	(1.90−9.16)	2.92	(1.33−6.38)
Incarcerated household member		4.76	(0.87−26.03)	11.19	(1.28−97.95)
ACE score	1	0.49	(0.18−1.30)	0.88	(0.40−1.94)
	2+	6.83	(3.05−15.26)	4.65	(2.11−10.26)
Current/ex smoker		2.47	(1.27−4.82)	2.89	(1.52−5.51)
Problem drinker		3.22	(1.51−6.86)	1.95	(0.94−4.03)
Used illicit drug(s)		3.27	(1.4−7.63)	5.18	(2.09−12.81)

1. Mild or severe suicide ideation.
2. All relative to zero or non−exposed category

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 suicide ideation. The reported history of childhood adversity ranged from approximately 4% for incarceration of a household member to over 20% for household substance abuse. Approximately 50% of respondents reported at least one form of childhood adversity. The reported prevalence of sexual abuse in women (21.5%), but not in men (3.4%), 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 Experiences (ACE) Study, a retrospective cohort study involving a sample of 17,337 participants that found early childhood adversity (mental, physical and social and early negative life events) to be associated with significantly increased rates of attempted suicide in later life.[5] The findings from the current cross−sectional study are consistent with the data from the ACE Study. The findings suggest that in seeking to understand suicide ideation and associated mental health problems including depression and substance misuse, we need policy initiatives that move beyond immediate proximate causes or precipitants and address fundamental determinants of health and well being, using a life course perspective.

This study has significant methodological limitations that need to be considered in interpreting the findings. Because of the sensitive 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, therefore the prevalences of childhood adversity and suicide ideation reported here may overestimate those of the general population. However, given the studyâ€™s internal validity, the findings relating to the association between these phenomena − the primary focus of the paper − are likely to hold. 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 parental violence, parental separation/divorce and household substance abuse.

In summary, this study adds to the evidence linking childhood adversity with poor mental health in adult life including depression and suicide ideation. The findings emphasise the need to set the challenge of promoting mental health within the broad context of societiesâ€™ obligation to protect children from physical, emotional and sexual abuse.

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