EUROPEAN JOURNAL OF PUBLIC HEALTH 2004; 14: 19–23

HEALTH DETERMINANTS

The incidence and repetition of attempted suicide in Ireland

PAUL CORCORAN, HELEN S. KEELEY, MARY O'SULLIVAN, IVAN J. PERRY *

Background: Suicidal behaviour has increasingly become recognized as a major public health problem. This study aimed to establish the extent of hospital-treated attempted suicide in South-west Ireland. Methods: Between 1995 and 1997, routine data collection, based on the standardized methodology of the WHO/Euro Multicentre Study on Suicidal Behaviour, took place in all general and psychiatric hospitals and prisons in the Southern and Mid-western Health Boards covering one-quarter (863,709) of the Irish population. Results: The annual person-based (aged over 15 years) male and female European age-standardized attempted suicide rates were 163 and 190 per 100,000, respectively. Female rates far exceeded male rates in under 20-year-olds. The peak rates for men and women were in the age range 20–24 (374 per 100,000) and 15–19 (433 per 100,000) years, respectively. One in six (16%) made a repeat attempt within the study period. Adjusting for age, repetition was marginally less common in women. Multivariate analysis investigating the risk of repetition associated with age, method and previous attempts found no age effect for women but an increased risk of repetition among men in their thirties (OR=1.7, 95% CI: 1.2–2.4). An attempt in the preceding 12 months greatly elevated the risk of repetition, particularly for women (female OR=13.7, 95% CI: 9.3–20.4; male OR=5.6, 95% CI: 4.1–7.8). Conclusion: Attempted suicide is a significant public health problem in Ireland. Rates are higher in women and highest among the young. An attempt in the past year greatly increases the risk of repetition, especially in women.

Keywords: attempted suicide, incidence, Ireland

Attempted suicide is one of the strongest risk factors for completed suicide[1,2] and is a major public health problem in its own right, causing significant burden to the individuals affected, their families and the health services. The World Health Organization estimates that between 10 and 20 million people worldwide attempt suicide each year.[3] A recent 30-year literature review on the epidemiology of parasuicide in the general population reported annual rates ranging from 2.6 to 1,100 per 100,000. Methodological differences, particularly in relation to case definition, were noted.[4] The WHO/Euro Multicentre Study on Suicidal Behaviour (formerly known as the WHO/Euro Multicentre Study on Parasuicide) employed a standardized methodology across its European centres and reported male and female attempted suicide rates ranging from 20–390 per 100,000 and 62–544 per 100,000, respectively.[5,6]

Traditionally, the Irish attitude towards suicidal behaviour was very negative, as exemplified by the fact that suicide was not decriminalized in Ireland until 1993. This negative attitude has been associated with underreporting of suicide in the past[7] and the same may have been true for non-fatal suicidal behaviour. The development of a more tolerant attitude towards suicidal behaviour has coincided with a rise in suicide, particularly among young men.[8] As the principal cause of death in Irish men aged 15–34 years,[9,10] suicide in Ireland is now a major public health problem. Up to one-third of Irish suicides have made previous attempts.[11] However, until now, the extent of the problem of attempted suicide was unknown. National rates of self-poisoning by medication have been published for Ireland,[12] but these were based on general hospital in-patient discharge data and therefore did not include episodes of deliberate self-injury, general hospital patients who were not admitted and cases treated solely in either psychiatric hospital or prisons.

As part of the WHO/Euro Study, this study aimed to quantify the extent of hospital-treated attempted suicide for a geographically defined catchment area made up of large urban and rural populations. The study was hospital based as the vast majority of suicide attempts encountered by GPs in Ireland are referred either to a general hospital accident and emergency department or to a psychiatric hospital.[13] Repetition of attempted suicide was also assessed given concerns relating to the disproportionate use of health services by a significant number of multiple repeaters.

METHODS

The Working Group of the WHO/Euro Study drafted the following definition of parasuicide:[14]

'An act with a non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realising changes which the subject desired via the actual or expected physical consequences.'

While the definition leads to the inclusion of suicide attempts as well as cases of deliberate self-harm where the individual may have had little or no intent to die, the WHO/Euro Study has, since its recent name change, advocated the use of the term attempted suicide rather than parasuicide. The present paper adopts this convention.

The study catchment area, the Southern and Mid-western Health Boards, is situated in the South-west of Ireland. The area includes the cities of Cork and Limerick and contains almost one-quarter (863,709) of the Irish population, almost half of whom live in urban settings.[15] Monitoring began on 1 January

* P. Corcoran[1], H.S. Keeley[2], M. O'Sullivan[3], I.J. Perry[4]
1 National Suicide Research Foundation, Cork, Ireland
2 Child and Adolescent Psychiatric Services, Southern Health Board, Cork, Ireland
3 Regional Development Unit, Mid-Western Health Board, St Camillus' Hospital, Limerick, Ireland
4 Department of Epidemiology and Public Health, University College, Cork, Ireland
Correspondence: Professor Ivan J. Perry, Professor of Public Health, Department of Epidemiology and Public Health, Distillery House, University College, Cork, Ireland, tel. +353 21 4904235, fax +353 21 4904236, e-mail: i.perry@ucc.ie

1995 in the Southern Health Board and on 1 July 1995 in the Mid-western Health Board. The monitoring of attempted suicide was based on hospital-treated cases. Ten general hospitals with accident and emergency room facilities, five psychiatric hospitals and three prisons (one male only, one mixed and one male juvenile detention centre) were included. Episodes from the prisons (n=148), some of which were referred to general hospital, accounted for just 3% of all cases monitored. Prison suicide attempts were more likely to involve men, self-injury and repetition.

Data

The dataset included a wide range of variables including sex, age, previous history of attempted suicide (whether medically treated or not) and method of attempted suicide (based on the ICD-10 X-code classification).[16]

Three data collectors, using methodology based on the WHO/Euro Study, regularly visited the general hospitals, checked through all entries in the casualty book (which logs every attendance at the general hospital's accident and emergency department) and identified possible cases of attempted suicide. The relevant accident and emergency and medical records were located. If the case-definition criteria were met, they recorded as much of the required information as was available. In the small number of cases (<1%) where the individual denied that they deliberately made the attempt when the circumstances clearly indicated otherwise, consultation was made with the relevant hospital staff. The data collectors met regularly to ensure consistent coding of cases. The decision-making process was overseen by the research psychiatrist (HSK). The same procedure was followed in the psychiatric hospitals and prisons. In these settings, potential cases were sourced from the psychiatric hospitals' and the prison infirmaries' admissions books and daily incidents logs.

All monitoring forms were entered manually into prepared data files using the Statistical Package for Social Sciences.[17] Data collected between 1995 and 1997 have been checked and validated by the co-ordinating centre of the monitoring part of the WHO/Euro Study in Würzburg, Germany.

Statistical analysis

Data analysis was carried out using SPSS and Stata Statistical Software.[18] Population data was derived from the national census conducted in 1996.[15] For the total population and for those aged over 15 years, crude and European age-standardized[19] annual person-based rates were calculated with 95% confidence intervals. Non-residents were excluded from the calculation of rates. The population figures were adjusted to reflect the fact that the study began six months later in the Mid-western Health Board. Where relevant chi-square, chi-square for trend and Mann–Whitney U-tests were utilized. The chi-square test for trend, also known as the the Mantel–Haenszel chi-square test, tests whether there are linear increases in the risk of the outcome (i.e. repetition within 12 months) across the levels of the ordinal exposure variable (i.e. proximity of previous suicide attempt).

Episode-based logistic regression analysis was carried out to assess the contribution to the risk of a repeat suicide attempt within 12 months associated with a previous history of attempted suicide, controlling for method and age. As the effects of both previous history of attempted suicide, method and age were significantly moderated by sex, male and female episodes were analysed separately. Due to the relatively small numbers of episodes in the 10–14 year and over 55 year age groups, the analysis was confined to the 93% of episodes by 15–54-year-olds. While initially entered categorized into five-year age groups, age was collapsed, based on the similarity of repetition rates, into episodes by individuals aged 15–29, 30–39, 40–44, 45–49 and 50–54 years. Robust standard errors were utilized to allow for the clustering of the data due to the inclusion of multiple episodes by some individuals.

Table 1 Average annual person-based crude and European age-standardized attempted suicide rates per 100,000 by gender

	Male		Female	
	Rate	95% CI	Rate	95% CI
All ages				
Crude	136	129–142	161	154–169
EAS[a]	129	123–135	154	147–161
Over 15 years				
Crude	176	168–185	210	200–219
EAS[a]	163	155–171	190	181–199

a: EAS represents European age-standardized.

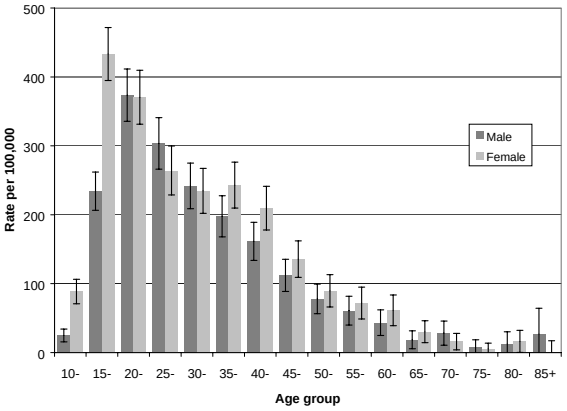

Figure 1 Annual person-based age-specific attempted suicide rate per 100,000 by gender

RESULTS

Incidence

A total of 4463 hospital-treated suicide attempts were registered over the study period. Three-quarters of these involved self-poisoning only (X60–X69, n=3309), 16% involved self-injury only (X70–X84, n=694) while the remaining 9% involved both self-poisoning and self-injury (n=416). All but 40 (0.9%) of these episodes were by residents of the catchment area. Just under half of the attempts were by men (2091, 47%) while 2372 (53%) were by women. The total number of individuals treated following a suicide attempt was 3325 (1511 (45%) men and 1814 (55%) women). Just 39 (1.2%) of these individuals were non-residents. *Table 1* details for male and female residents of the catchment area, the annual person-based crude and European age-standardized attempted suicide rates based on all ages and those aged over 15 years. Women had significantly higher rates, 19% higher when the entire population was considered and 17% higher for those over 15 years of age.

While the individuals treated following a suicide attempt ranged in age from 10 to 87 years, they were, in general, a young population: 19 years was the commonest age. The median age was 27 years, one-quarter were under 21 years of age and 95% were aged less than 54 years. The men (median age = 28 years) were significantly older than the women (median age = 26 years) (Mann–Whitney U = 2,248,730, p<0.001). The annual person-based age-specific suicide attempt rates exhibited a similar pattern for both genders (*figure 1*). The rate increased very sharply during teenage years, peaked at a young age (15–19 years

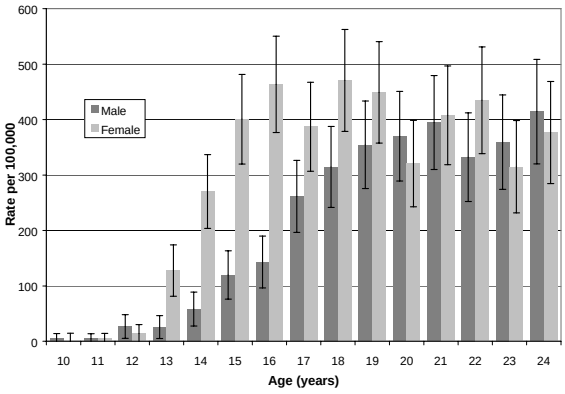

Figure 2 Annual person-based age-specific attempted suicide rate per 100,000 by gender for each age between 10 and 24 years

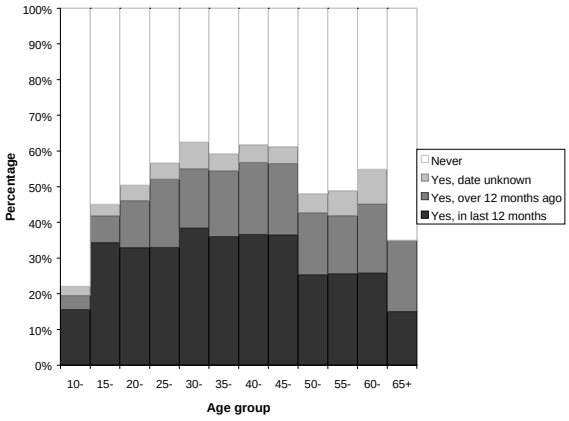

Figure 3 Previous suicide attempt (whether medically treated or not) by age

for women and 20–24 years for men) then gradually diminished before it levelled off at a very low rate for the over 65-year-olds. While the female rate was generally higher, there was very little difference between the genders in the majority of age groups. A striking difference was noted for the under 20 year-olds, where the rate of attempted suicide in women far exceeded that of the men, being twice and three times higher in those aged 15–19 and 10–14 years, respectively.

Within the 10–24 year age range, a gradual increase in the incidence of hospital-treated attempted suicide was seen, with each yearly increment in age for men up to the age of 21 years (*figure 2*). For women, this increase was far more striking and rapid. While there were virtually no suicide attempts by pre-teenage girls, the rate for 13-year-olds was 127 per 100,000. The rate was twice, three times and almost four times higher for 14, 15 and 16-year-old girls, respectively. At each age between 13 and 16 years, attempted suicide was at least three times more common in girls whereas in the early twenties, there was virtually no gender difference.

Repetition

On average, 1257 persons were treated for 1558 suicide attempts each year (annual person/event ratio = 1:1.24). During the study period, 538 (16%) individuals made a repeat attempt. Significantly more men repeated (19%M, 14%F; chi-square = 10.654, df=1, p=0.001). On average, male repeaters and non-repeaters were of a similar age at the time of their index attempt whereas for women, the repeaters were older (Median age = 29 vs 25 years; Mann–Whitney U = 182,410, p=0.017). The maximum number of attempts by any individual was 24. Only 6% (n=213) of the population of suicide attempters were treated for three or more episodes. However, this group made up 40% of the repeaters and accounted for 1026 (23%) of all registered suicide attempts.

Previous suicide attempts, whether medically treated or not, were significantly more prevalent in men (56%) than in women (50%) (chi-square = 10.809, df=1, p=0.001). Men were also more likely to have made a suicide attempt in the preceding 12 months (39%M vs 32%F; chi-square = 16.269, df=1, p<0.001). *Figure 3* illustrates the highly significant association between lifetime history of attempted suicide and age (chi-square = 119.190, df=33, p<0.001). The vast majority aged under 15 years had no previous history. With increasing age, the prevalence of previous attempts increased steadily to 60% for 30–49-year-olds. Slightly less than half the attempters in their fifties had made a previous attempt whereas this was the case for one-third of the over 65-year-olds. While a similar pattern was seen for men and women, the lower prevalence among attempters in their fifties was due mainly to men.

Approximately one in four of the male and female episodes (27%M, 24%F) recorded during 1995 and 1996 were followed by a repeat attempt within 12 months. Repetition within 12 months varied highly significantly with age (chi-square = 56.538, df=11, p<0.001). The repetition level increased from 11% following episodes by 10–14-year-olds to 36% following episodes by 45–49-year-olds after which it fell sharply. For episodes by both genders, there was a greater risk of repetition in cases where there had been a previous attempt. Furthermore, the more recent the previous attempt, the greater the risk of repetition (male chi-square for trend = 168.407, df=1, p<0.001; female chi-square for trend = 267.585, df=1, p<0.001). In cases with no previous history of the behaviour, respectively just 12% and 7% of male and female episodes were followed by a repeat attempt in the succeeding 12 months. This proportion increased to one-third and one-quarter of male and female acts, respectively (34%M, 27%F), where the most recent suicide attempt was made more than a year ago. Where there had been an attempt within the previous 12 months, approximately half of all cases were followed by a repeat attempt (50%M, 53%F).

Age-adjusted odds ratios from logistic regression analysis utilising robust standard errors indicated that suicide attempts by women were less likely to be followed by a repeat attempt in the succeeding 12 months (OR=0.803, 95% CI: 0.607–1.064), though this failed to reach statistical significance. Male and female episodes involving self-injury, either alone or in combination with self-poisoning, were more likely to be followed by a repeat attempt (*table 2*). The only significant age effect was an increased risk of repetition following suicide attempts by men in their thirties. Previous history had a striking effect on the risk of repetition, particularly if a recent attempt was made and particularly for women. A suicide attempt in the past year was associated with 5.6- and 13.7-fold increases in the odds of a repeat attempt within 12 months of male and female episodes, respectively.

DISCUSSION

The Irish rate of attempted suicide is higher than the rates reported for 1995 by eight of eleven centres in the WHO/Euro Study.[6] The level of repetition among Irish suicide attempters is similar to that found previously across Europe.[5] While the standardized methodology of the WHO/Euro Study has been employed, there are still limitations in the comparability of the resulting data across centres and in how generalizable the data are to the national situation. The catchment area for the present

study contains one-quarter of the Irish population and while it is more rural than the country as a whole it is similar in terms of its economic and cultural position.

This paper reports significantly higher rates of attempted suicide among Irish women. Traditionally in Europe, women had markedly higher rates.[20] All centres of the WHO/Euro Study, with the exception of Helsinki, found the female rate to be higher,[14] on average, by 47% for those over 15 years.[21] This is far higher than the 17% recorded here. A narrowing of the gender ratio over time has been noted[21] and more recently, several participating centres reported an excess of suicide attempts by men.[6] The striking rise in suicide that has occurred in Ireland has largely been confined to men and has caused the male/female ratio to increase from 2:1 to 5:1 between 1980 and 1998.[9,22] In this context, the smaller than expected excess of female suicide attempts may, paradoxically, be a reflection of the significance of the problem of suicidal behaviour in Irish men.

A disproportionately young population attempt suicide in Ireland. The highest rates were recorded for 15–19-year-old women and 20–24-year-old men, which has also been found to be the case in England.[23] Compared to boys, there were twice and three times as many girls aged 15–19 and 10–14 years, respectively, treated in hospital following a suicide attempt. There was a gradual increase in the rate with age for boys before 21 years. The onset of suicidal behaviour occured earlier in girls and their rate increased dramatically between the ages of 13 and 16 years, reaching almost 500 per 100,000. This indicates that each year in Ireland, one in every 200 16-year-old girls are treated in hospital following a suicide attempt. This profile of adolescent suicidal behaviour may be a reflection of the onset of puberty. Hankin and Abramson's review article indicates that the greater frequency of depression in girls appears after the age of 13 years or midpuberty.[24] At this pubertal stage there are two transient effects, a reduction in the prevalence of depression in boys and a relatively sharply demarcated period of increased risk of depression in girls.[25]

Previous suicide attempts were more common in Irish male suicide attempters both in terms of lifetime (56%M vs 50%F) and the year before a hospital-treated attempt (39%M vs 32%F). Such prevalences are high given that the WHO/Euro Study found that between 30% and 60% of suicide attempters have made previous attempts with between 15% and 25% having done so in the year preceding an episode.[21] The majority of Irish suicide attempters over 25 years of age had made a previous attempt with the exception of those aged 50–59 and over 65 years. In these age groups, a higher proportion than expected engaged in the behaviour for the first time. There is no evidence of an increased rate of attempted suicide in those aged 50–59 years, therefore we can only speculate as to why fewer repeaters than expected in this age group were treated in hospital following a suicide attempt. It may be that repeaters are more likely to die by suicide or by other causes around this age. This has been found to be the case for alcohol abusers with a history of attempted suicide.[26] Among the elderly (those aged over 65 years), the incidence of attempted suicide was very low and almost three-quarters of those involved were making their first suicide attempt. While this may be due to a cohort effect, there are many significant loss events associated with this age group which may be associated with an increased risk of attempted suicide in people with no history of the behaviour. We have previously reported that suicide attempts by the elderly are generally of higher lethality and are thus more likely to be 'failed' suicides.[27]

One in four of the hospital-treated suicide attempts were followed by a repeat attempt within 12 months. Repetition was more likely to follow suicide attempts involving self-injury and suicide attempts by men, particularly men in their thirties. The most striking finding relates to the strength of the association between past and future suicide attempts. The presence of previous attempts has consistently been found to be associated with the occurrence of future attempts.[28] For attempted suicide in Ireland, the strength of this association is greatly increased when the previous attempt occurred within the past year and especially so for women. The finding that the more recent a previous attempt is, the greater the risk of repetition indicates that individuals who make a repeat suicide attempt in the short term may enter a cycle in which many further attempts are made.

The public health approach to the prevention of suicidal behaviour first requires the extent of the problem to be quantified,[29] which has not been done at national or European level. In monitoring non-fatal suicidal behaviour, we advocate including both deliberate self-poisoning and self-injury and focusing on general hospital accident and emergency room

Table 2 Risk of repetition within 12 months of an attempt for each gender

	Male episodes		Female episodes	
	OR	95% CI	OR	95% CI
Method				
Self-poisoning only	1.000		1.000	
Self injury[a]	2.218[b]	1.696–2.901	2.408[b]	1.717–3.376
Age				
15–29 years	1.000		1.000	
30–39 years	1.687[c]	1.197–2.377	0.994	0.694–1.425
40–44 years	0.814	0.482–1.372	1.256	0.734–2.151
45–49 years	2.197	0.869–5.555	1.359	0.775–2.385
50–54 years	0.976	0.385–2.472	1.188	0.479–2.949
Previous suicide attempt				
No	1.000		1.000	
Yes, in past year	5.640[b]	4.056–7.842	13.731[b]	9.257–20.366
Yes, >1 year ago	2.640[b]	1.728–4.033	4.938[b]	3.292–7.407
Yes, date unknown	1.623	0.921–2.881	2.357[c]	1.274–4.361

a: Self-injury alone or in combination with self-poisoning.
b: p<0.001 based on Wald statistic with one degree of freedom.
c: p<0.05 based on Wald statistic with one degree of freedom.
OR: odds ratio; 95% CI: 95% confidence interval

attenders rather than just in-patients. Currently, the monitoring of attempted suicide is being extended to cover the whole of Ireland. This will establish the extent of the problem of attempted suicide at national level for the first time thus providing baseline figures in support of the relevant initiatives set up to tackle the problem of suicidal behaviour.

Source of funding: This study was funded by the Irish Government's Department of Health and Children, the Southern and Mid-Western Health Boards and a Unit Grant from the Irish Health Research Board.
This paper is dedicated to the late Dr Michael J. Kelleher, Founding Director of the National Suicide Research Foundation.
We would like to thank all those who contributed to the study. We would like to acknowledge the many hospital, health board and prison personnel who facilitated and supported the study. We would further like to thank staff of the Irish Central Statistics Office.

REFERENCES

1 Gunnell D, Frankel S. Prevention of suicide: aspirations and evidence. BMJ 1994;308:1227-33.
2 Neeleman J. A continuum of premature death: meta-analysis of competing mortality in the psychosocially vulnerable. Int J Epidemiol 2001;30(1):154-62.
3 World Health Organisation. Fact sheet 217: the newly defined burden of mental problems. Geneva: World Health Organisation, 1999.
4 Welch SS. A review of the literature on the epidemiology of parasuicide in the general population. Psychiatr Serv 2001;52(3):368-75.
5 Kerkhof A, Schmidtke A, Bille-Brahe U, De Leo D, Lönnqvist J, editors. Attempted suicide in Europe: findings from the Multicentre Study on Parasuicide by the WHO Regional Office for Europe. Leiden: DSWO Press, 1994.
6 World Health Organisation. WHO/EURO Multicentre Study on Parasuicide: facts and figures. Copenhagen: World Health Organisation, 1999.
7 Cantor CH, Leenaars AA, Lester D. Under-reporting of suicide in Ireland, 1960-1989. Arch Suicide Res 1997;3(1):5-12.
8 Kelleher MJ. Youth suicide trends in the Republic of Ireland. Br J Psychiatry 1998;173:196-7.
9 Central Statistics Office. Report on Vital Statistics, 1998. Cork: Central Statistics Office, 2001.
10 Central Statistics Office. Report on Vital Statistics, 1999. Cork: Central Statistics Office, 2002.
11 Kelleher MJ, Keohane B, Corcoran P, Keeley HS, Neilson S. An investigation of one hundred suicides. Ir J Psychol Med 2000;17(3):86-90.
12 Walsh D, Mosbech J, Adelstein A, Spooner J, Dean G. Suicide and self-poisoning in three countries: a study from Ireland, England and Wales, and Denmark. Int J Epidemiol 1984;13(4):472-4.
13 Fitzsimons MM, Kelleher MJ, Keeley HS, et al. Parasuicide and general practice: a pilot study. Ir Med J 1997;90(5):190,192.
14 Platt S, Bille-Brahe U, Kerkhof A, et al. Parasuicide in Europe: the WHO/EURO multicentre study on parasuicide. I. Introduction and preliminary analysis for 1989. Acta Psychiatr Scand 1992;85(2):97-104.
15 Central Statistics Office. Census 1996: Volumes I and II. Cork: Central Statistics Office, 1997.
16 World Health Organisation. The ICD-10 classification of mental and behavioural disorders. Geneva: World Health Organisation, 1992.
17 Statistical Package for the Social Sciences, Version 8.0. Chicago: SPSS Inc, 1998.
18 Stata Statistical Software: Release 6.0. College Station: Stata Corporation, 1999.
19 Waterhouse J, Muir C, Correa P, Powell J, editors. Cancer incidence in five continents. Lyon: IARC, 1976.
20 Diekstra RFW. Epidemiology of attempted suicide in the EEC. In: Wilmotte J, Mendlewicz J, editors. New trends in suicide prevention. Basel: Karger, 1982:1-16.
21 Kerkhof A, Arensman E. Pathways to suicide: the epidemiology of the suicidal process. In: van Heeringen K, editor. Understanding suicidal behaviour. Chichester: Wiley, 2001:15-39.
22 Central Statistics Office. Report on vital statistics, 1980. Cork: Central Statistics Office, 1984.
23 Gunnell D, Brooks J, Peters TJ. Epidemiology and patterns of hospital use after parasuicide in the south west of England. J Epidemiol Community Health 1996;50:24-9.
24 Hankin BL, Abramson LY. Development of gender differences in depression: description and possible explanations. Ann Med 1999;31(6):372-9.
25 Angold A, Costello EJ, Worthman CM. Puberty and depression: the roles of age, pubertal status and pubertal timing. Psychol Med 1998;28(1):51-61.
26 Wasserman D. Attempted suicide and alcoholism: epidemiological and psychodynamic aspects. In: Crepet P, Ferrari G, Platt S, Bellini M, editors. Suicidal behaviour in Europe: recent research findings. Rome: Libbey, 1992:287-95.
27 Kelleher MJ, Keohane B, Corcoran P, Keeley HS. Elderly suicides in Ireland. Ir Med J 1997;90(2):72-4.
28 Sakinofsky I. Repetition of suicidal behaviour. In: Hawton K, van Heeringen K, editors. The international handbook of suicide and attempted suicide. Chichester: Wiley, 2000:385-404.
29 Silverman MM, Maris RW. The prevention of suicidal behaviors: an overview. Suicide Life Threat Behav 1995;25(1):10-21.

Received 22 May 2002, accepted 3 September 2002