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The prevalence of suicidal ideation in the general population: results from the Outcome of Depression International Network (ODIN) study.

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Abstract

Background: Suicidal ideation is believed to be part of a constellation of suicidal behaviours that culminates in suicide. There is little information on the cross-national prevalence of all suicidal ideation or of serious suicidal ideation in spite of its likely public health importance.

Methods: A two-stage screening approach of over 12,000 adults from the general population were evaluated by face to face interview to identify those meeting ICD-10 criteria for depressive disorders at 8 sites in 5 European countries. This study is a cross-sectional analysis of item 9 (suicidal ideation) of the Beck depression inventory from the total screened sample.

Results: The standardised period prevalence for all suicidal ideation varied from 1.1 to 19.8% while for serious suicidal ideation there was much less variation. Examining the inter-relationships between all suicide ideation, serious suicide ideation, depressive disorders and suicide failed to support a seamless transition from suicide ideation through depression and serious ideation to suicide.

Conclusions: Strategies to prevent suicide should be tailored to take account of site specific differences in its aetiology and understanding the path from suicidal ideation through depression to suicide is crucial to this.

Key words: Prevalence, suicidal ideation, general population

Background

The epidemiology of suicidal ideation in the general population is a neglected area in spite of its potential public health importance. At its most serious, suicidal ideation may be associated with suicidal plans and acts [1] since it is believed to represent the early stage of a continuum that begins with low mood and moves to passive death wishes, suicidal thoughts, plans and finally acts of self harm or suicide. Self-inflicted injuries were responsible for 1.3% of all Disability Adjusted Life Years (DALYs) according to Global Burden of Disease 2000 [2] while suicide is among the top three causes of death in the population aged 15-34 years and in this age range it ranks as the first or second cause of death for both the sexes. This represents a massive loss to society of young persons in their productive years of life. Data on suicide attempts are only available from a few countries; they indicate that the number of suicide attempts may be up to 20 times higher than the number of completed suicides [3].

Studies examining the one-year prevalence of suicidal ideation have found rates that vary from 8 to 15% [4,5,6]. Not surprisingly much lower figures and narrower ranges are reported for recent or 2-week period prevalence, ranging from 0.8% [7] through 5.3%-8.6% [8,9] while lifetime rates are higher and vary between 2.09 and 25.4% [10,11] depending on the study and on the countries investigated.

Inter country comparisons of prevalence are even more difficult to make, not just because of differences in the times frames but due to the variety of definitions of suicidal ideation in use and lack of standardisation between the study populations. In addition most of the studies, with one exception [11], have regarded suicidal ideation as a unitary phenomenon rather than on a continuum from fleeting ideas of self harm to a definite wish to die.

Only two cross-national study has been identified that would allow meaningful inter country comparisons and these showed a wide life-time variation, ranging from a prevalence of 2.09% in Beirut to over 18% in Christchurch, New Zealand [10] with the variation being only partly explained by variation in rates of psychiatric disorder. Another study [11] also identified a wide range in the life-time prevalence of suicidal thoughts between 2.6 and 25.4% and plans between 1.5 and 15.6%.

The precise explanation for variations in all aspects of suicide behaviour must always be considered in the local context. There is a pressing need for epidemiological surveillance and appropriate local research to contribute to a better understanding of this major public health problem and improve the possibilities of prevention. The present analysis was carried out so as to redress some of the deficiencies outlined above and facilitate inter-country comparisons, as well as expanding the scarce literature on serious suicidal ideation.

The aim of the present study was to quantify the prevalence of all suicidal ideation and of serious suicidal ideation in the general population of 8 sites in Europe. Furthermore

identification of risk factors for suicidal ideation was also part of the overall aim and this aspect of the analysis has been reported elsewhere [12].

We hypothesised that there would be variation between the participating sites in the prevalence of all suicidal ideation and of serious suicidal ideation. It was also postulated that the prevalence of suicidal ideation would mirror that of depressive disorders in the general population.

Methods

Sites: The present cross-sectional study forms part of a large investigation involving five countries in Europe: the Outcome of Depression International Network (ODIN). Details of the methods are provided elsewhere [13]. The broad aim of the ODIN study was to examine the prevalence of depressive disorders, to identify risk factors and to compare psychological interventions with treatment as usual by re-interviewing subjects at 6 and 12 months after the index evaluation.

The participating countries and sites in this study were Britain (rural- Clwyd), Ireland (urban -Dublin and rural – County Laois), Spain (urban - Santander), Norway (urban - Oslo and rural - Rakkestad) and Finland (urban – Turku and rural - Koski-Marttila-Tarvasjoki).

Screening and risk factors: Adults aged between 18 and 64 were selected from the general population and screened for possible cases of depressive disorder (adjustment disorder, single and recurrent depressive episode, bipolar and persistent affective disorder) using the Beck Depression Inventory (BDI) [14].

The present study consists of an analysis of item 9 of the BDI in the screened sample. Variables that were associated with suicidal ideation include those items measured during the screening phase i.e. demographic data, life events and social supports were reported elsewhere [12].

Local area suicide rates were obtained from the central statistics offices of the countries participating in the ODIN study (see acknowledgements).

Table 1 about here

Statistical Analysis: Routine data management, including the description of results, was carried out using SPSS for Windows, version 8 [15]. Prevalence estimates for each centre were standardized for age and sex against the population of Santander (Spain) so as to allow meaningful inter-country comparisons.

Results

Response

Questionnaires were sent to 12,396 people, 7950 of whom responded. This yielded a response rate of 64.1%, with variations between sites from 55.3% for Ireland to 74.2% for Spain. The response rates for Finland, Norway and rural Britain (Wales) were 64.9%, 62% and 61.5% respectively. Among non-responders gender significant differences were apparent in Wales (men 35% vs women 26%), Ireland (52% vs 39%), and Norway (39% vs 30%) but not in Finland (39% vs 40%) or Spain (8% vs 9%). Only rural data was available for Wales and urban data for Spain.

Prevalence of suicidal ideation

Among responders suicidal ideation was reported by 7.4% in Norway, 2.3% in Spain, 7.4% in Britain, 9.8% in Finland and 14.6% in Ireland.

Figure 1 shows the standardized prevalence of suicidal ideation along with the 95% confidence intervals for the total sample of responders and for the individual countries by site and sex.

Figure 1 about here

There is wide variation between the countries with Ireland (urban, rural, male and female) having the highest and Spain (urban only male and female) the lowest rate of suicidal ideation. Indeed the Spanish male rate is significantly lower than rates at all other sites and their female rate is also significantly lower than all the other rates with the exception of the Norwegian, rural female rate. By contrast the rate in urban Irish women is significantly higher than in women at all other sites, with the exception of Irish and Finnish rural sites. It also significantly surpasses the male rates with the exception of the Norwegian and Finnish urban rates and the Irish rural rate.

More detailed breakdown of the ideation rates according to severity are shown in table 2, along with the prevalence of depressive disorder already identified in that population.

Table 2 about here

Severe suicidal ideation (SI 3 and 4) (“I would like to kill myself” and “I would kill myself if I had the chance”) is a feature in all sites, although at much lower frequency than the milder form (SI 1 “I have thoughts of killing myself but I would not carry it out)

and its most serious expression (SI 4) is present in the Scandinavian sites and Spanish sites, being absent in the British and Irish sites. Taken together the finding relating to the prevalence of all suicidal ideation support our stated hypothesis but not that relating to serious suicidal ideation which did not show the variation expected.

Relationship between suicidal ideation, depression and suicide

The interrelationship between the prevalence of all suicidal ideation, of serious suicidal ideation and of depressive disorder and also of suicide was examined by calculating the ratio of suicidal ideation to depression and completed suicide. The results are shown in table 3.

Table 3 about here

The ratio of depression to all suicidal thoughts (SI_{2,3,4}) varies more than 9-fold between the lowest (0.25) and highest (2.27) and in most sites the ratio is less than 1, due to the lower prevalence of depression compared to suicidal ideation. The ratio of depression and serious suicidal ideation varies even more with a greater than 14-fold difference between the highest (25.75) and lowest (1.74), excluding those with a zero ratio. None are less than 1 indicating that serious suicidal ideation is less common than depression in the population. There is a greater than 8-fold variation in the ratio between suicidal ideation of lesser and greater severity and the ratios are also always greater than 1, excluding those that are 0. Thus these findings did not support the hypothesis that the prevalence of suicidal ideation would mirror that of depressive disorders.

Finally, the ratio between serious suicidal ideation and the local suicide rates varies by a factor of more than 24 between the lowest ratio (among urban Irish females) and the highest (rural Irish females).

Discussion

With the exception of two studies [10,11] this is one of the few studies to explore the prevalence of suicidal thoughts cross-nationally in the general population using a large sample. Moreover, it is the only study to provide detailed data on their prevalence in both sexes, in urban and rural settings. Along with the above study [11] it is also the only one to provide information on the prevalence of serious suicidal ideation. The availability of contemporaneous data on depressive disorders in this data set [16] allows for consideration of the relationship between both.

However it is important to acknowledge the limitations in this study of which the most important is the absence of data from more sites in each country thus limiting the generalisability of the findings to each individual country as a whole. The small sample size in some sites such as Dublin also curtails generalising the findings. A further

limitation is the variable response rate to the screening questionnaire, ranging from 54% to 68%, with response rates being highest in women, in older age groups and in the rural sites. The possibility of response bias must therefore be considered and the pattern of non-response i.e. among men and younger age groups, suggest that the prevalence figures for suicidal ideation obtained in this study may be an under-estimate especially for sites in Ireland and Wales where non-response was highest. Also, the data relating to serious suicidal ideation/suicide ratios must be interpreted with some caution since the rates were not age standardised in two of the centres. Finally, this is a study conducted at population level rather than at individual level so these findings do not extend to those who had depressive disorder and a further analysis of this group is currently being carried out so that the risk factors for suicidal ideation among individuals rather than on populations can be examined and treatment implications identified.

This paper shows that the two-week period prevalence for suicidal ideation varies greatly between countries with a 17 fold difference between the lowest (urban Spanish men) and highest (urban Irish women) rates although the confidence intervals for the Irish rates are wide pointing to a cautious interpretation of the result. This variability replicates the findings of one study [10] which identified between 2.09 and 18% reporting suicidal ideation and another [11] which found that the prevalence of suicidal thoughts varied by a factor of 10 (2.6-25.4%) across sites, although both of these examined lifetime prevalence rather than period prevalence as in this study.

Turning to serious suicidal ideation, our study found much less variability in its prevalence (SI 3 and 4 – 0.4-1.8%) but there was a 10-fold variation in the most serious manifestation of suicidal ideas (SI 4) expressed as “I would kill myself if I had the chance) (SI4) but this must be set against the low base rate (0.1-1.2%). These figures are much lower than their nearest equivalent, suicidal plans, (1.1-15.6) reported in one study⁹. It is also noteworthy that suicidal plans were identified at all sites in that study whilst active suicide intent (SI 4), its nearest equivalent in our study, is only present in the Scandinavian and Spanish sites. However, these studies may not be directly comparable due to the differing time frames.

The fact of such variation in the prevalence of reported suicidal ideation has been the subject of a recent analysis of possible differential risk and protective factors across the sites studied [12].

Examining those studies that used a similar time frame, the rates obtained in our study are somewhat higher and show a broader range than those obtained in others [7,8]. The Spanish rate obtained by us was the one exception as it was somewhat lower than the 6.5% rate found in the study on the Spanish island of Formentera [9] while our rates for Finland are broadly in line with those of another study [6] in that country.

The most intriguing aspects of this study lie in results obtained from the inter-relationship between the prevalence of all suicidal ideation, serious suicidal ideation and depression. The greater than 9-fold variation in the ratios between depression and all suicidal ideation (0.25- 2.27) suggests that there is no predictable pattern of association across sites.

Indeed in most sites suicidal ideation is more common than depressive disorder as indicated by ratios of less than 1. The ratios between all suicidal ideation and serious suicidal ideation show similar variability while that between depression and serious suicidal ideation varies even more. Finally, the ratios between serious suicidal ideation and the local suicide rates varies considerably also with a greater than 24 fold difference between the lowest and highest. Thus the model of a constant and predictable transition beginning with depression and moving through suicidal ideation to serious suicidal ideation and ending in suicide is not sustained by these findings, nor by the greater prevalence of suicidal ideation over depressive disorders at some sites. The disparities in ratios point to the possibility of different protective and risk factors operating across centres although none were found in a separate analysis of these variables [12]. However, it is possible that there are factors which operate differentially which were not included in the present study such as substance misuse and social/ religious sanctions against suicide.

These findings have important public health implications for reducing suicide. Firstly, they demonstrate that a “one size fits all” approach is unlikely to be effective and that initiatives must be tailored to take account of site-specific differences as recommended by others [11]¹¹. For example, when the ratio between depression and all suicidal ideation is close to 1 or more, the public health focus should be on treating depressive disorders, whereas when ratios are less than 1 focussing exclusively on depression will miss those who have suicidal ideation without depression. On the other hand where there is a large ratio between depressive disorders and serious suicidal ideation, as in rural Irish males, interventions need to be directed towards identifying the factors that mediate between depression and serious ideation rather than on depression per se since such strategies are likely to be unsuccessful.

Clearly, further cross-national studies using comparable time frames are needed to identify the location specific mediators between suicidal ideation, depressive disorders and suicide so that preventive programmes can be tailored to local needs.

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Table 1 Item 9 of Beck Depression Inventory

I don't have thoughts of killing myself	SI ¹ 1
I have thoughts of killing myself but I would not carry this out	SI 2
I would like to kill myself	SI 3
I would kill myself if I had the chance	SI 4

1 SI = Suicidal ideation

Figure 1 95% confidence intervals for prevalence of suicidal ideation by country, site and sex

Standardized Prevalence of Suicidal ideation (%) By Country, Site and Sex

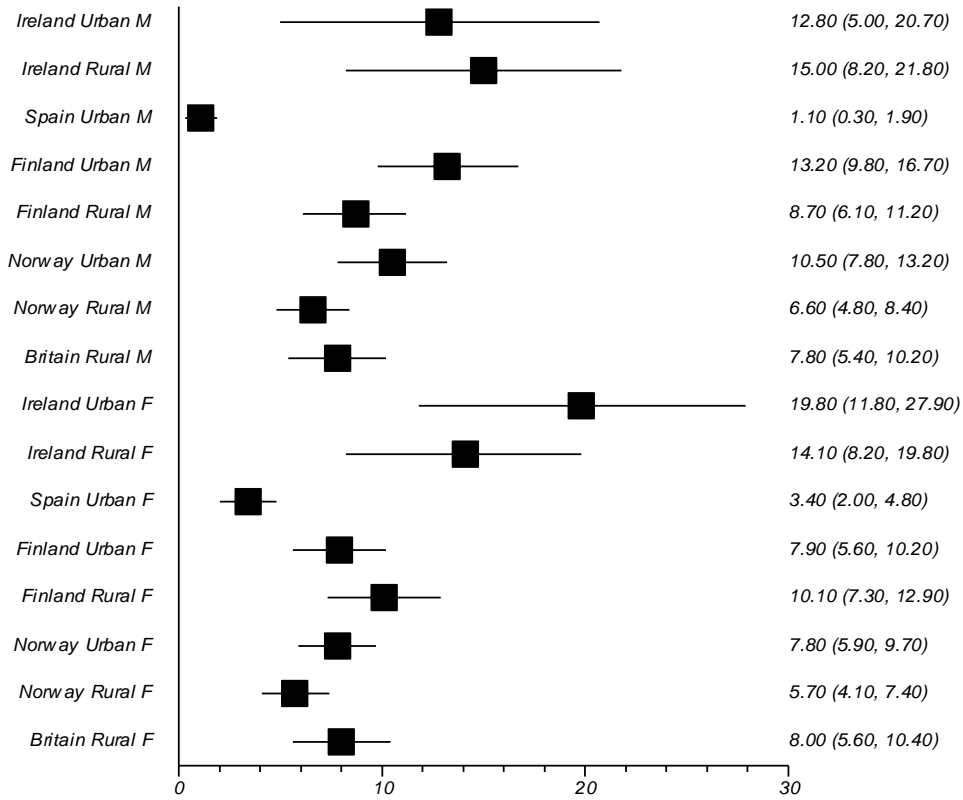


Table 2 Standardised prevalence of suicidal ideation (SI) % by severity and of depressive disorder (%), by country, site and sex

	Site/gender	SI 1 ¹	SI 2 ²	SI 3 ³	SI 4 ⁴	S 2,3,4	CI ⁵	Depressive disorder ⁶
Ireland	Urban M	87.1	11	1.8	0	12.8	5-20.7	6.9 2.4-20.1
	F	80.1	18.9	0.9	0	19.8	11.8-27.9	20 5.3-53.9
	Rural M	84.9	14.3	0.7	0	15	8.2-21.8	9.8 2.7-29.7
	F	85.9	12.3	1.8	0	14.1	8.2-19.8	6.9 2.6-16.9
Spain	Urban M	98.8	1.1	0	0	1.1	0.9-1.9	2.5 1.0-6.23.3
	F	96.5	2.4	0.5	0.5	3.4	1.9-4.8	2.6 1.7-4.0
Finland	Urban M	86.7	11.4	0.7	1.2	13.3	9.8-11.7	3.3 1.5-7.0
	F	92	7	0.7	0.2	7.9	5.6-10.2	8.4 5.1-13.5
	Rural M	91.2	8.7	0	0	8.7	6.2-11.2	5.6 1.7-16.5
	F	89.8	9.4	0.7	0	10.1	7.3-12.9	7.4 4.5-12.0
Norway	Urban M	89.4	9.3	0.8	0.4	10.5	7.9-13.2	5.6 3.0-10.5
	F	92.1	6.3	0.7	0.8	7.8	5.9-9.7	12 7.5-18.9
	Rural M	93.3	5.7	0.8	0.1	6.6	4.8-8.4	7.6 4.2-13.5
	F	94.2	5.3	0.4	0	5.7	4.1-7.4	10.3 4.0-23.0
Britain	Rural M	92	6.9	0.9	0	7.8	5.4-10.2	6.5 3.3-12.
	F	92	8	0	0	8	5.6-10.4	5.9 3.5-9.7
Total		90.4	8.6	0.7	0.2	9.5		

1 I don't have thoughts of killing myself

2 I have thoughts of killing myself

3 I would like to kill myself

4 I would kill myself if I had the chance

⁵ CI=confidence intervals

⁶ Weighted prevalence %

Table 3 Ratio of prevalence of depression, all suicidal ideation and serious suicidal ideation to each other by site and sex

Country	Site	Depression: S2,3,4 Ratio	Depression:S3,4 Ratio	S2:S3,4 Ratio	S3,4:National suicide rates/(100,000) ^{1,2} Ratio
Ireland	Urban M	6.9/12.8=0.54	6.9/1.8=3.83	11/1.8=6.1	1800/22.3=80.6
	Urban F	20/19.8=1.01	20/0.9=22.2	18.9/0.9=21	900/4.6=19.6
	Rural M	9.8/15=0.65	9.8/0.7=14	14.3/0.7=20.43	700/28.37=24.7
	Rural F	6.9/14.1=0.49	6.9/1.8=3.8	12.3/1.8=6.83	1800/3.73=482.6
Spain	Urban M	2.5/1.1=2.27	2.5/0= ~	1.1/0= ~	0/9.4= 0
	Urban F	2.6/3.4=0.76	2.6/1=2.6	2.4/1=2.4	1000/3.3=300
Finland	Urban M	3.3/13.3=0.25	3.3/1.9=1.74	11.4/1.9=6	1900/363=52.3
	Urban F	8.4/7.9=1.06	8.4/0.9=9.33	7/0.9=7.7	900/12=75
	Rural M	5.6/8.7=0.64	5.6/0/0= ~	8.7/0= ~	0/91= 0
	Rural F	7.4/10.1=0.76	7.4/0.7=10.57	9.4/0.7=13.4	700/0= ~
Norway	Urban M	5.6/10.5=0.53	5.6/1.2=4.66	9.3/1.2=7.75	1200/20.1=59.7
	Urban F	12/7.8=1.54	12/1.5=8	6.3/1.5=4.2	1500/9.8=153.06
	Rural M	7.6/6.6=1.15	7.6/0.9=8.44	5.7/0.9=6.3	900/17.1=52.63
	Rural F	10.3/5.7=1.81	10.3/0.4=25.75	5.3/0.4=13.25	400/8.2=48.78
Britain	Rural M	6.5/7.8=0.83	6.5/0= ~	6.9/0= ~	0/29.2= 0
	Rural F	5.9/8=0.74	5.9/0.9=6.55	8/0.9=8.88	200/8.8=22.7
	TOTAL	8.6/9.5= 0.91	8.6/0.9=9.56	8.6/0.9=9.56	

¹ Rates available from author, for all groups by sex and site

² Rates for Ireland and Finland were not age standardised