Understanding Suicidality: Suicide risk, sex differences and views of suicide attempters

Skogman, Katarina

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ORIGINAL PAPER

Katarina Skogman · Margot Alsén · Agneta Öjehagen

Sex differences in risk factors for suicide after attempted suicide

A follow-up study of 1052 suicide attempters

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Abstract *Aim* This study aims to investigate suicide risk factors after attempted suicide and whether and how these risk factors differ between the sexes. *Method* A total of 1052 suicide attempters admitted to the Medical Emergency Inpatient Unit, Lund University Hospital, Sweden were followed up concerning suicide and death from other causes after a median period of 6 years and 5 months. In all, 50 persons committed suicide during follow-up. At the index suicide attempt, socio-demographic data and information about clinical characteristics were gathered in a standardised manner. Risk factors were identified among these data using survival analyses for the whole sample and for each sex separately. *Result* Men had a higher frequency of suicide and a greater overall mortality than women. Cox regressions showed that suicide attempt(s) prior to the index attempt and the use of a violent method for the index attempt were risk factors for men only, whereas older age and a high suicidal intent (Beck SIS score) were female ones. Major depression was a risk factor for both sexes. *Conclusion* More attention probably needs to be paid to the importance of gender in assessment of suicide risk and treatment of suicide attempters.

Key words suicide attempt – risk factors – sex differences – suicide

Introduction

Suicide attempters are at high risk for future death by suicide. In fact, a previous suicide attempt is one of the strongest factors predictive of future suicidal behaviour known today (Barraclough 1987; van Egmond and Diekstra 1989; Leon et al. 1990; Retterstøl and Mehlum 2001).

Among suicide attempters, a number of risk factors for suicide have been identified in prospective studies. Socio-demographic features that have been reported to be predictive of suicide are male sex (Holley et al. 1998; Soukas et al. 2001), increasing age (Holley et al. 1998; Nordentoft et al. 1993; Nordström et al. 1995a; Rygnestad 1997; Soukas and Lönnqvist 1991), living alone (Nordentoft et al. 1993) and living in a lower income area (Holley et al. 1998). The occurrence of suicide attempts prior to the index attempt, as well as a higher number of attempts, have been found to be suicide risk factors (Nordentoft et al. 1993; Soukas and Lönnqvist 1991; Soukas et al. 2001), as has also the nature of the index suicide attempt: in several studies "violent", "dangerous", "high lethality" and "non-impulsive" suicide attempts have namely been found to increase the suicide risk (Holley et al. 1998; Nielsen et al. 1995; Soukas and Lönnqvist 1991). Mental disorders in general (Soukas and Lönnqvist 1991) and depressions in particular (Nielsen et al. 1990) are, along with earlier psychiatric treatment (Soukas et al. 2001), risk factors that point out the importance of psychiatric problems in suicide attempters. Somatic illness also seems to play a part and has been found to be a suicide risk factor in some studies (Nielsen et al. 1990; Soukas et al. 2001). Further, abuse of psychopharmacological agents or alcohol has been found to increase the risk of suicide (Nielsen et al. 1990; Nielsen et al. 1995), and so has a genuine intention to die (or "a suicidal motive") at the index attempt (Ekeberg et al. 1994; Soukas et al. 2001; Soukas and Lönnqvist 1991).

One of the most consistent research findings in the literature on suicidal behaviour is that men have higher suicide rates than women, even though women make more suicide attempts than men (Cantor 2000; Kerkhof 2000). This inverse relationship has been referred to as the "gender paradox of suicidal behaviour" and several conceivable reasons for it have been discussed, such as men using more violent methods than women, culture

K. Skogman · M. Alsén · Assoc. Prof. A. Öjehagen (✉)
Dept. of Clinical Neuroscience
Division of Psychiatry
University Hospital
22185 Lund, Sweden
Tel.: +46-46/1738-85
Fax: +46-46/1738-44
E-Mail: Agneta.Ojehagen@psykiatr.lu.se

bound expectations about gender and suicidal behaviour, the possibility that depression in females more often is recognised and adequately treated than in males, and the higher prevalence of alcoholism and other substance abuse among men (Canetto and Sakinofsky 1998).

There are some reports of sex differences in suicide risk factors among suicide attempters, and these all concern advancing age. In some studies, older age has been found to be a male risk factor (Rygnestad 1997; Soukas and Lönnqvist 1991), whereas others have found it to be a risk factor for women only (Holley et al. 1998; Nordström et al. 1995 a).

A need for more studies concerning the sex differences in suicidal behaviour has recently been addressed (Hawton 2000).

This study aims at identifying suicide risk factors present at an index suicide attempt and to investigate whether these risk factors differ between the sexes.

Subjects and methods

Study design and cohort collection

There are about 215 000 inhabitants in the catchment area of the Lund University Hospital. Every year (since 1987) approximately 190 suicide attempters are admitted to the Medical Emergency Inpatient Unit (MEIU) (Niméus 2000). Between the years 1987 and 1998, approximately half of all suicide attempters admitted to the MEIU were included in this study (1065 of ≈ 2100), the rest being suicide attempts occurring during weekends and holidays. The flow of the patients through the study is presented in Fig. 1.

During weekdays, a suicide research team evaluated patients in a standardised manner, using a special form and particular ratings (Öjehagen et al. 1992). The evaluations were carried out at the MEIU, generally within 24 h after the attempt. In case of repetition of attempted suicide during follow-up, only the first evaluation was included in the study. The attempt for which data were included will be referred to as the index suicide attempt.

During the period February 1995 to April 1997, all suicide attempters admitted to the MEIU were included in the study (unless they were already in the study), also during weekends and holidays. In order to investigate the representativeness of the sample, the consecutive cases (n = 253) were compared to the rest (n = 722). There were no significant differences in suicide frequencies between the sub-sample of consecutive first-time evaluations and the rest of the sample (5 % vs. 3 %, p = 0.092, NS), nor in the overall mortality (10 % vs. 15 %, p = 0.061, NS). Furthermore, a 1-year follow-up study of another, early sub-sample of the patients in the present study showed no differences in suicide rates between the included suicide attempters and the non-included ones (Öjehagen et al. 1991).

Follow-up concerning the occurrence of completed suicide and death of other causes was conducted in July 2000. Information was retrieved from the Lund Department of Forensic Medicine and from the Swedish National Central Bureau of Statistics. Thirteen patients were excluded from the study since it was impossible to gain information about whether they were alive or not (most often due to emigration), leaving 1052 cases for analysis. Among these, the follow-up period varied from 0 months (for those who died within 14 days) to 13 years and 7 months, with a median follow-up time of 6 years and 5 months. As in most other prospective studies of suicide risk after attempted suicide (Holley et al. 1998; Nordentoft et al. 1993; Rygnestad 1997; Soukas and Lönnqvist 1991; Soukas et al. 2001), we chose not to include cases of uncertain suicide among the suicides.

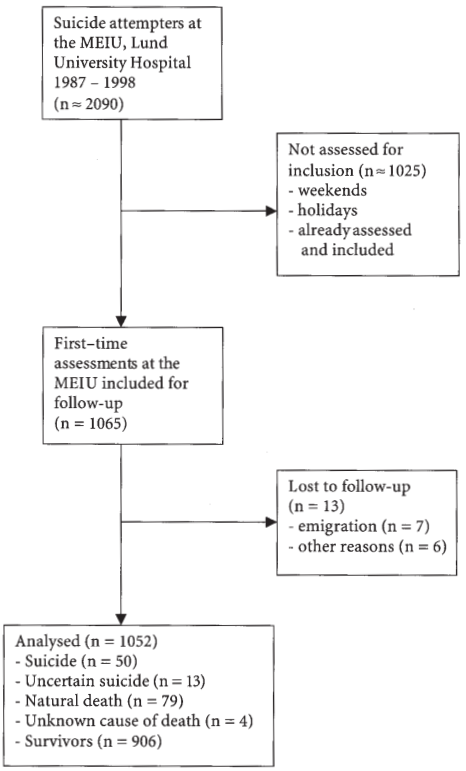

Fig. 1 Flow of subjects through the study

Definitions

A suicide attempt was defined as "a situation in which a person has performed an actually or seemingly life-threatening behaviour with the intent of jeopardizing his life, or to give the appearance of such an intent, but which has not resulted in death" (Beck et al. 1972).

Repeaters were defined as patients who had made at least one suicide attempt prior to the index suicide attempt. A suicide attempt was labelled "violent" if the method used for the index suicide attempt was: (a) a method other than drug overdose or single wrist-cut, or (b) a combination of different methods (Träskman et al. 1981).

Investigation at the MEIU

A psychiatrist and a social worker from the Lund suicide research team conducted semi-structured interviews and ratings. The psychiatrist (not the same one for all patients) diagnosed psychiatric and somatic disorders according to the DSM-III-R, but no structured interviews were carried out for diagnostics. The interviews at the MEIU covered the following parameters: socio-demographic data, method used for the suicide attempt (violent vs. non-violent methods), occurrence of previous suicide attempts, current or previous contact with psychiatry and suicidal intent assessed by means of the Beck Suicidal Intent Scale (SIS) (Beck et al. 1974).

Suicide attempters who were assessed as high-risk patients were admitted to psychiatric in-patient treatment after their medical condition had been treated at the MEIU.

Ethical approval

This study received approval by the Research Ethics Committee of the Medical Faculty at the University of Lund. All patients gave informed consent to participate in the study.

Data analysis

The statistical calculations were performed in SPSS (Statistical Package for the Social Sciences), version 10.0 (Norusis 1995). Chi-square tests were used to analyse differences in the proportions of patients. Comparisons on ratings between subgroups were carried out with Mann-Whitney U-test, and Spearman's rho was used for calculations on correlations. Results were considered significant when $p < 0.05$.

In order to identify risk factors for completed suicide, survival analyses were employed. Kaplan-Meier (univariate) and subsequent Cox regression (multivariate) analyses were carried out for the sample as a whole and for each sex separately. Most of the variables reaching statistical significance as risk factors for completed suicide in Kaplan-Meier analyses were entered in a Cox regression analysis (Enter) in order to investigate the interdependence of the variables, i. e. whether or not they were independent risk factors. The selection of variables for inclusion in the Cox regression is described in "Results". The Kaplan-Meier and Cox regression analyses are suitable methods to determine risk factors in a study such as this one, where the follow-up time differs a great deal between the subjects, because the aspect of personal time at risk is taken into account in these calculations.

In order to enable survival analyses, the SIS variable was categorised into two groups: 0–18 points and 19–30. A SIS score of 19 points or more was recorded in 22 % of the patients. This cut-off level was used since it was found to have a sensitivity of 90 % and a specificity of 60 % in patients aged 55 years or older in predicting completed suicide, when Niméus and co-workers (Niméus et al. 2002) evaluated the Suicidal Intent Scale in a subgroup of this patient sample ($n = 555$).

In 73 cases (8 suicides and 65 others), there were missing values for one or two items on the SIS. In order for these subjects to obtain a total SIS score, that could be included in survival analysis, their missing values were replaced with the mode values of those particular SIS items. In another 67 cases (3 suicides and 64 others), there was no suicidal intent assessment at all. These were labelled as missing cases.

Age also had to be categorised for the purpose of survival analysis. It is known that suicide rates are higher in the elderly than in younger age groups in almost all industrialised countries (McIntosh 1992). We, therefore, compared the oldest quartile (aged 50 years and older) to the younger patients.

In the survival analyses (Kaplan-Meier and Cox regression), major depression compared to all other diagnoses was investigated as a risk factor for future suicide. The reason for investigating major depression as a possible risk factor was based on the high suicide frequency noted among these patients compared to those suffering from other psychiatric disorders.

Results

Completed suicides, uncertain suicides and deaths from other causes

At follow-up, 50 patients (4.8 %) had committed suicide, 13 cases (1.2 %) were labelled "uncertain suicide", and 79 (7.5 %) had died of natural causes. Four persons (0.4 %) had died of unknown reasons. The overall mortality after a median follow-up period of 6 years and 5 months was 14 %, and was higher among men than among women (20 % vs. 10 %; $p < 0.001$). More specifically, men had higher frequencies of suicide (6.5 % vs. 3.6 % of women; $p < 0.05$) as well as of natural death (10.9 % vs. 5.3 % of women; $p = 0.01$) and uncertain suicide (2.2 % vs. 0.6 % of women; $p < 0.05$).

The frequency of suicide among women aged ≥ 50 years was 8 % (12/150), which was slightly higher than among men of that age group; 5.7 % (6/106) ($p = 0.62$, NS). Among women younger than 50 years at baseline, the suicide frequency was 2.3 %, which was significantly lower than among men under 50, 6.8 % ($p < 0.01$).

Cardiovascular disease was the most common natural cause of death ($n = 31$), followed by malignancy ($n = 11$). At least eight of the somatic deaths were associated with substance abuse (e. g. alcoholic liver cirrhosis).

The median follow-up time for suicide completers was 31 months, range 0–155. Almost four out of ten (38 %) suicides occurred during the first year after the index suicide attempt. The most common method for committing suicide was self-poisoning ($n = 23$), followed by hanging ($n = 10$) and jumping in front of a train ($n = 6$). Other methods were jumping from a height ($n = 4$), drowning ($n = 3$), carbon monoxide intoxication ($n = 2$), gunshot ($n = 1$) and cutting ($n = 1$). Twelve of the thirteen uncertain suicides were intoxications.

Patients who died through "uncertain suicide" were found to differ significantly from the ascertained suicides in that they: (a) more often had substance abuse disorder as their primary diagnosis (4/13 vs. 3/47, $p < 0.05$), as well as a history of substance or alcohol abuse at index (self-reported or diagnosed) (11/13 vs. 12/50, $p < 0.01$), (b) had lower suicidal intent scores at the index attempt (9.5 ± 3.9 vs. 16.3 ± 6.7, M ± SD; $p < 0.01$) and (c) were less often admitted to psychiatric in-patient treatment following the index suicide attempt (4/13 vs. 15/50, $p < 0.01$).

Patient characteristics

Socio-demographic and clinical characteristics, by sex, are presented in Table 1. Sixty-one percent ($n = 638$) of these patients were women. The mean age of the sample was 40 ± 17 years, ranging from 15 to 96 years, and did not differ between the sexes.

Substance abuse and anxiety disorders were more common among men than among women, whereas dysthymia was more frequent among women. Further, a higher proportion of women were assessed as not suffering from any psychiatric disorder (Table 1). Only 5 % of the patients used violent methods for their index suicide attempt. The proportion of violent attempts was higher among men than among women. Almost half of the patients were repeaters, and the proportion was higher among women than among men (Table 1).

The median suicidal intent score in this sample was 13, range 0–30. Suicidal intent was positively correlated

Table 1 Socio-demographic and clinical characteristics in 1052 suicide attempters, also by sex

	Total n = 1052 n (%)	Men n = 414 n (%)	Women n = 638 n (%)
Age (years; M ± SD)	40 ± 17	41 ± 17	39 ± 17
Marital status (n = 1008)			
Married/cohabiting/partner	422 (42)	158 (40)	264 (43)
Divorced/widowed	254 (25)	106 (27)	148 (24)
Single (never married)	332 (33)	131 (33)	201 (33)
Occupational status (n = 973)			
Employed	421 (43)	155 (40)	266 (45)
Studying	117 (12)	44 (12)	73 (12)
Unemployed/vocational rehabilitation	187 (19)	87 (23)	100 (17)
Disability pension	129 (13)	49 (13)	80 (14)
Old-age pension	111 (11)	49 (13)	62 (11)
Housewife	8 (1)	–	8 (1)
Diagnosis (n = 931)			
Major depression	172 (19)	72 (20)	100 (18)
Dysthymia	47 (5)	7 (2)***	40 (7)***
Depression NOS	92 (10)	35 (9)	57 (10)
Adjustment disorder	334 (36)	120 (33)	214 (38)
Anxiety disorder	23 (3)	14 (4)*	9 (2)*
Substance abuse disorder	94 (11)	56 (18)***	38 (7)***
Psychosis	70 (8)	29 (8)	41 (7)
Other axis I disorder	38 (4)	11 (3)	27 (5)
Axis II disorder only	6 (0.6)	3 (0.8)	3 (0.5)
No axis I or axis II disorder	36 (3)	8 (2)*	28 (4)*
Somatic illness (n = 970)	433 (45)	179 (47)	254 (43)
Current psychiatric contact (n = 1037)	451 (44)	170 (42)	281 (45)
Earlier psychiatric contact (n = 1037)	257 (25)	102 (25)	155 (25)
Psychiatric in-patient treatment following the index suicide attempt (n = 1013)	577 (57)	222 (56)	355 (58)
Violent index suicide attempt all patients were included (n = 1052)	55 (5)	38 (9)***	17 (3)***
Occurrence of suicide attempt(s) prior to index attempt (n = 1019)	461 (45)	163 (41)*	298 (48)*
High suicidal intent score (≥ 19) at index (n = 985)	231 (22)	98 (24)	133 (21)

Chi2-test measuring sex differences: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

to advancing age for women ($r = 0.23$, $p < 0.01$), but not significantly so for men ($r = 0.10$, $p = 0.051$; NS).

Risk factors for completed suicide

After investigation of the socio-demographic data and clinical characteristics shown in Table 1, a number of significant risk factors for completed suicide were identified by means of Kaplan-Meier survival analyses, i. e. major depression (vs. all other diagnoses), a SIS score of 19 or more at index, a violent index attempt, being a repeater, an age of 50 years or more, a previous or current psychiatric contact and male sex (Table 2).

These risk factors were subjected to a Cox regression analysis, with the exception of the variable "previous or current psychiatric contact", which was considered a "system variable", i. e. descriptive of the health care system rather than the patient and, thus, less suitable for inclusion. All the six variables that were entered proved to be significant, namely, older age (50 years or more), being a repeater, major depression, male sex, a violent index attempt, and a high SIS score (19 points or more) (Table 3).

Sex-specific risk factors for completed suicide

By means of Kaplan-Meier survival analyses, it was found that advancing age, a high suicidal intent at index, being admitted to psychiatric in-patient treatment following the index attempt and previous or current psychiatric contact were risk factors for women only, whereas being a repeater and making a violent index attempt were risk factors unique to men. Major depression was a significant risk factor for both sexes (Table 2).

Cox regression of female risk factors

Age, major depression and SIS score were included in a Cox regression analysis for women separately, whereas system variables (i. e. "previous or current psychiatric contact" and "admission to psychiatric in-patient treatment following the index attempt") were excluded. All three variables that were entered in the analysis proved to be significant risk factors: being 50 years or older was the strongest one, entailing a 3.5-fold increase in the risk for completed suicide, followed by suffering from major depression (compared to any other psychiatric disor-

Table 2 Risk factors for suicide in univariate survival analyses (Kaplan-Meier), also by sex

Risk factor	Total sample		Men		Women	
	Log rank	P-level	Log rank	P-level	Log rank	P-level
Male sex	5.35	< 0.05	–	–	–	–
Age ≥ 50 years	8.36	< 0.01	0.32	0.057; NS	14.10	< 0.001
Repeater	9.92	< 0.01	8.16	< 0.05	3.43	0.18; NS
Violent index attempt	11.98	< 0.001	9.15	< 0.01	0.47	0.50; NS
Major depression vs. all other diagnoses	20.02	< 0.0001	7.00	< 0.05	14.24	< 0.001
Earlier/current psychiatric contact	8.73	< 0.05	3.52	0.17; NS	8.96	< 0.05
Psychiatric in-patient treatment after index attempt	5.78	0.056; NS	1.14	0.57; NS	9.61	< 0.01
SIS score ≥ 19 points	15.24	< 0.001	4.22	0.12; NS	11.84	< 0.01

der), which increased the suicide risk 3.0 times. Finally, a SIS score of 19 points or more at the time of the index attempt increased the risk for completed suicide 2.8 times (Table 3).

Cox regression of male risk factors

For men, a Cox regression was performed including the variables previous suicide attempts, violent index attempt and major depression, which all proved to be significant. The two strongest predictors were making a violent index attempt, which led to a 3.8-fold increase in the suicide risk, and being a repeater, which increased the risk by 3.6 times. Suffering from major depression entailed a 2.5-fold increase in suicide risk (Table 3).

Discussion

Representativeness of the sample

This sample is made up of non-consecutive suicide attempters from a medical emergency in-patient unit. It is possible that suicide attempters who are admitted during weekends and holidays differ from those admitted during weekdays (who were the only ones included in this sample, apart from the 2-year period of consecutive inclusion). When we compared the sub-sample of consecutive first-time evaluations to the rest of our sample, we found no significant differences in suicide frequencies or overall mortality. Furthermore, we do not know whether the results of this study can be generalised to all suicide attempters who are admitted to a general hospital following an attempt.

Methodological considerations

The fact that some data were missing was a problem faced in this study. In 7 % of the cases (n = 73, of which 8 were suicides), one or two items on the SIS were left without an answer. In order to obtain a total SIS score for these subjects, so that they could be included in survival analyses, their missing values were replaced with the mode values of those particular SIS items, which is one of the methods for handling missing data that statisticians suggest. It is difficult to estimate exactly to what extent the replacement of missing values affected the results, but the predictive power of a high SIS score was not exaggerated: 2 of the 8 suicides (25 %) in the group with mode values had a high SIS score (≥ 19 points) compared to 19 of the 39 suicides (49 %) with no missing values (p = 0.27, NS). Eighteen of the 65 non-suicides (28 %) in the "mode value group" had a high SIS score, as compared to 192 of 873 (22 %) non-suicides in the group with no missing values (p = 0.28, NS).

Further, equal proportions of women and men were given mode values (6.6 % vs. 7.5 %, respectively, p = 0.53, NS), so the sex differences concerning the SIS variable were not affected. Concerning the particular correlation of advancing age with SIS score found among women but not among men, there was no difference between the

Table 3 Risk factors for suicide in multivariate survival analyses (Enter Cox regression)

Risk factor	Total sample			Men			Women		
	Odds ratio	P-level	CI (95 %)	Odds ratio	P-level	CI (95 %)	Odds ratio	P-level	CI (95 %)
Male sex	1.92	< 0.05	1.08–3.39	–	–	–	–	–	–
Age ≥ 50 years	1.92	< 0.05	1.05–3.50	–	–	–	3.45	< 0.01	1.51–7.91
Repeater	2.58	< 0.01	1.41–4.72	3.58	< 0.01	1.55–8.28	–	–	–
Major depression	2.13	< 0.05	1.15–3.93	2.46	< 0.05	1.07–5.63	3.01	< 0.05	1.29–7.05
Violent index attempt	2.67	< 0.05	1.16–6.09	3.82	< 0.01	1.50–9.73	–	–	–
SIS score ≥ 19 points	1.90	< 0.05	1.02–3.52	–	–	–	2.82	< 0.05	1.21–6.58

results obtained when including only the 912 subjects with no missing SIS values and the results that are presented in this paper.

A common difficulty in studies of suicide prediction is that the presumed risk factors can change over time. Important life events may occur during follow-up; marital status and job situation may change, someone may develop a depression or make a new suicide attempt. As mentioned earlier, suicide attempts after entry into the study were not recorded. This may have affected the finding of an increased suicide risk among repeaters. However, the aim of the study was to examine what factors, present at one specific point in time (i. e. after a suicide attempt), could indicate a high risk of future suicide and, thus, possibly guide treatment.

In this study, we have chosen not to include cases of uncertain suicide among the suicides. It may be argued that uncertain suicides might be actual suicides, but some of the characteristics of these patients (substance abusers, lower suicidal intent at index, more often death through intoxication) suggest that these really are uncertain, and to assume that they were all suicides seems, in our opinion, rather hazardous. Nevertheless, the risk of dying through uncertain suicide must be recognised, especially among substance abusers. It is well known that substance abusers are also at increased risk for committing suicide (Murphy et al. 1990; Nielsen et al. 1995). Thus, suicide attempts among substance abusers should be regarded as a risk factor and are to be taken into consideration in treatment-planning.

Main findings

Almost 40% of the suicides occurred during the first year after the index suicide attempt. Many other studies have reported similar findings (Nordström et al. 1995a; Johnsson-Fridell et al. 1996; Rygnestad 1988; Tejedor et al. 1999; Hawton and Fagg 1988). This is an observation of clinical importance, since it indicates that follow-up and treatment during the first year(s) after a suicide attempt need special attention.

We also found that male suicide attempters, compared to female ones, were more likely to complete suicide, as well as to die from any reason, which is consistent with findings of other studies (Nordström et al. 1995a; Soukas et al. 2001; Östamo and Lönnqvist 2001).

Risk factors for completed suicide were essentially different for men and women. Major depression was the only risk factor that was significant for both sexes; the other risk factors seen for the sample as a whole were in fact risk factors either for men only or for women only.

The importance of mood disorders for suicidal behaviour has been pointed out in several studies (Lönnqvist et al. 2000; Pokorny 1983; Nielsen et al. 1990) and depression has been stated to be the single psychiatric diagnosis most strongly linked with suicide (Wasserman 2001). Our finding that depression is a risk factor for suicide after attempted suicide is consistent with the findings of Nordström and co-workers (1995b). It has also been reported that depressed suicide attempters often do not receive adequate treatment for depression, even after the attempt (Suominen et al. 1998). Our findings underline the importance of identification and effective treatment of depression among suicide attempters.

The finding that advancing age is a risk factor for female suicide attempters, but not for the male, is compatible with some previous reports (Holley et al. 1998; Nordström et al. 1995a). It is possible that the index suicide attempts carried out by younger women were seldom aimed at resulting in death, meaning that these women were unlikely to kill themselves in the future as well. In older age groups, suicide attempts are much rarer than among the younger age groups (Schmidtke et al. 1992), and it has been proposed that suicide attempts of older persons can often be considered as "failed" suicides rather than a means of getting help, as would more often be the case among the young (De Leo and Meneghel 2001). This alleged difference in suicidal behaviour between the young and the old might be more pronounced among women, a suggestion supported by our finding that the total SIS score was positively correlated to advancing age for women, but not for men.

The fact that increasing age was not a risk factor for men is also important as it means that the young male suicide attempters were at equally high suicide risk as the older ones.

The finding that a high SIS score was a risk factor for women, but not for men, suggests that the SIS may be a better instrument for female suicide attempters than for male attempters in the assessment of suicide risk.

The occurrence of previous suicide attempts and making a violent index attempt were the two strongest risk factors for men, but did not entail an increased suicide risk for women. It is possible that repeated suicide attempts among women more often represent a behavioural pattern of deliberate self-harm rather than actual attempts to end life, which would explain why it was not a risk factor for women. The inclination of men to use violent methods may partially account for the high suicide risk entailed by repetitive suicidal behaviour. The finding that men more often used violent methods compared to women is consistent with earlier findings (Canetto and Sakinofsky 1998). A violent index suicide attempt and being a repeater have been identified as risk factors for suicide in other studies, although not specifically for men (Holley et al. 1998; Nielsen et al. 1995; Soukas et al. 1991; Soukas et al. 2001).

Except for the variables male sex (for the total sample) and age (for women and the total sample), the identified risk factors for suicide did not include any sociodemographic data. Instead, the risk factors identified were variables concerning psychiatric features of the patients (diagnosis, history of psychiatric treatment) and the nature of their suicidal behaviour (being a repeater, making a violent index attempt, high suicidal intent at index).

It has been stated that the clinical usefulness of suicide risk factors is limited, due to their low specificity (Nielsen et al. 1995; Nordentoft et al. 1993; Rygnestad 1997). Even if a suicide attempter fulfils all criteria to be considered a high-risk patient, it is still impossible to predict death by suicide in the individual case. However, the identification of risk factors for suicide among suicide attempters contributes to a better understanding of this group of patients, which in turn will hopefully aid the development of more adequate treatment.

Conclusion

In all, there seems to be a difference in the type of suicide risk factors between the sexes. Concerning men, the behaviour itself (i. e. making repeated suicide attempts and a violent index attempt) is an important warning signal, whereas for women this seems to be less informative. In the assessment of female suicide attempters, it may instead be more important to consider the severity of suicidal intent, and to recognise the suicide risk of older women.

It is possible that taking the role of gender into account in the assessment of suicide risk and treatment-planning could improve the prevention of future suicide.

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