

Suicidality related to first-time admissions to psychiatric hospital

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Abstract

Background The epidemiology of suicidality shows considerable variation across sites. However, one of the strongest predictors of suicide is a suicidal attempt. Knowledge of the epidemiology of suicidal ideas and attempts in the general population as well as in the health care system is of importance for designing preventive strategies. In this study, we will explore the role of the psychiatric hospital in suicide prevention by investigating treated incidence of suicidal ideation and attempt, and further, discern whether sociodemographic, clinical and service utilization factors differ between these two groups at admission.

Methods The study was a prospective cohort study on treated incidence in a 1-year period and 12-month follow-up. The two psychiatric hospitals in northern Norway, serving a population of about 500,000 people, participated in the study. A total of 676 first-time admissions were retrospectively checked for suicidality at the time of admission. A study sample of 168 patients was found eligible for logistic regression analysis to elucidate the risk profiles of suicidal ideators versus suicidal attempters. GAF, HoNOS and SCL-90-R were used to assess symptomatology at baseline.

Results 52.2% of all patients admitted had suicidal ideas at admission and 19.7% had attempted suicide. In the study sample, there were no differences in risk profile between the two groups with regard to sociodemographic and clinical factors. Males who had made a suicide attempt were less likely to have been in contact with an out-patient clinic before the attempt. The rating scales not measuring suicidality directly showed no differences in symptomatology.

Conclusion The findings provide evidence for the importance of the psychiatric hospital in suicide prevention. About half of the admissions were related to suicidality and the similar risk profiles found in suicidal ideators and suicidal attempters indicate that it is the ideators who mostly need treatment that get admitted to the hospital, and should be evaluated and treated with equal concern as those who have attempted suicide.

Keywords Suicidal ideation · Suicidal attempt · Psychiatric hospital · Admission

Introduction

According to Global Burden of Disease 2000, self-inflicted injuries were responsible for 1.3% of all disability adjusted life years (DALYs) [32]. Mental disorder and suicidal attempt are among the strongest predictors of suicide [15, 16]. It is, therefore, of crucial importance to identify these groups and increase our knowledge of the epidemiology of suicidal ideas and attempts in the general population as well as in the health care system for designing preventive strategies. There is, however, great variability across sites concerning the epidemiology of suicidality. In one study, lifetime suicide attempts, plans and ideation varied by a factor of 10–14 across

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culturally diverse sites [5]. A European study reported an even greater difference in the prevalence of suicidal ideation, varying from 1.1 to 19.8% [6]. The investigation of whether suicidal ideation and suicidal attempt share a common risk profile or have different determinants should, therefore, be studied in the same population as risk profiles can also vary across sites.

Few studies have directly investigated possible differences in correlates between ideators and attempters. A multisite European study, the ESEMED study [4], found that factors associated with lifetime suicide attempts among those individuals with lifetime suicidal ideas, were female gender, suffering from a major depressive episode, panic disorder, alcohol abuse and being unemployed. Another cross-national study in 17 countries [21] found that female gender, low to medium education, early age of onset of ideation and zero years since onset of ideation were significantly associated with attempts among ideators. Concerning DSM-IV disorders, any anxiety disorder, mood disorder, impulse control disorder, substance abuse disorder and three or more disorders were associated with attempts in high-income countries. This was not the case for anxiety and mood disorders in low- and middle-income countries. In another population study from Australia [9], a physical medical condition and negative interactions with friends were associated with an increased likelihood of suicide attempts among suicide ideators. Age and gender interaction effects for suicide attempts were found involving physical medical condition, and mastery among men and not being employed for those aged 40–44 years. Other studies have found that only those not currently employed were significantly more likely to make a suicide attempt [24]. Female gender, lower age-groups and low/medium education were found to relate to suicide attempts by Joe et al. [17].

To the best of our knowledge, no studies have explored the difference in risk profile between ideators and attempters in the same clinical sample. One can hypothesize that along the pathway from suicidal ideas and behaviour to community and psychiatric health services, the two groups would react differently to such filters as acknowledging the need for help, consulting a GP, being referred to and admitted to psychiatric hospital [12]. By elucidating this pathway, the role of the different parts of the mental health systems can be delineated.

In this study, we will investigate treated incidence of suicidal ideation and attempt, and further we will determine whether sociodemographic, service utilization and clinical factors differ between these two groups, thus, exploring the role of the psychiatric hospital in suicide prevention.

Method

Design and participants

The North-Norwegian study on first-time admitted patients to psychiatric hospital (FINN-study) was a prospective cohort study on treated incidence in a 1-year period and a 12-month follow-up period on utilization and outcome. The University Psychiatric Hospital in Northern Norway (UNN) in Tromsø, and Nordland Hospital (NLSH) in Bodø, participated in the study. All admissions to psychiatric hospital in the region with a population of about 500,000 people are administered by these two hospitals. There are 14 community mental health centres in the region. The psychiatric services in Northern Norway are fully described elsewhere [26].

Criteria for inclusion were: age 18–65 years, no previous admission to the admitting hospital and informed consent. Exclusion criteria were: discharged 3 days or less after admission; lack of language competency and cognitive impairment. The exclusion criterion, of short length of stay (0–3 days), was due to the regional ethics committee's requirement that a patient's decision to participate could not be given the first 24 h after admission. As a consequence, a considerable proportion (20.3%) of patients was lost from data collection. Of 676 first-time admitted patients, 477 were found eligible for participation. 251 patients (53%) gave their informed consent and were interviewed with Mini International Neuropsychiatric Interview (M.I.N.I. PLUS) [29] and of these a sub-sample with suicidal ideation as measured by M.I.N.I. PLUS was selected ($N = 182$).

The records of all patients ($N = 676$) were checked retrospectively for suicidality to evaluate the proportion of all first-time admitted patients reporting these symptoms at admission.

Data collection

The data collected in the FINN-study have been described elsewhere [22]. In this study, in addition to sociodemographic data like age, gender, marital status and employment status, service utilization data were collected, such as previous treatment in psychiatric health care and voluntary or involuntary admission. Clinical data were collected by interview or self-rating scale. Diagnoses and degree of suicidality were assessed according to interview using the M.I.N.I. PLUS, Norwegian version 5.0.0. [20]. M.I.N.I. was developed in Europe and USA as a short diagnostic instrument for generating DSM-IV criteria diagnoses convertible to ICD.10 diagnosis. The M.I.N.I. PLUS is an extended version of the M.I.N.I. that includes information on specific phobias and has an expanded psychosis module.

The M.I.N.I. PLUS is built up of 15 modules corresponding to diagnostic categories and collects information along 23 axis-I problem areas in relation to past and current symptoms. Suicidality was determined by the following items from M.I.N.I. PLUS: better to be dead, wished to hurt oneself, thought of suicide, planning suicide, and attempted suicide. An experienced psychologist (not employed at the participating hospitals) set the diagnoses on the basis of M.I.N.I. PLUS interviews done by trained interviewers. The primary diagnosis was chosen according to the reason for admission.

Symptoms and level of functioning at admission were measured with the Global Assessment of Functioning (symptom and functioning scale—GAF f and GAF s) [2]. Further, a Norwegian translation of the Health of the Nation Outcome Scale (HoNOS) [33] was used. The HoNOS consists of 12 items and is scored from 0 to 4 giving a maximum possible score of 48 points. A high score indicates greater disability. HoNOS has 4 sub-scales: behaviour (aggression/disruptive behaviour, self-harm, substance use), impairment (cognition, physical health), symptoms (hallucinations and delusions, depression and other symptoms) and social function (social relations, general functioning, housing situation and activities).

Symptom Check List-90-R (SCL-90-R) [8] was used to measure level of symptoms. The SCL-90-R consists of 90 items, each using a five-point scale from 0 (no problem) to 4 (severe/very severe), yielding a total score from 0 to 360, denoted as the Global Severity Index (GSI). The 90 items are intended to cover 10 areas of mental symptoms: somatization (12 items), obsessive–compulsive (10 items), interpersonal sensitivity (9 items), depression (13 items), anxiety (10 items), anger–hostility (6 items), phobic anxiety (7 items), paranoid ideation (6 items), psychoticism (10 items), additional scales (7 items). SCL-90-R is rated by the patient. Problems during the last 7 days are rated.

Life events during the last 12 months were recorded by interview using a modified version of the Interview for Recent Life Events [23], consisting of a list of 24 events: 4 events related to work, employment and income; 2 events related to marriage or cohabiting; 2 events related to threats against self or children; 14 items related to illness or injury of self or significant others; and 2 other items on destruction of home or witnessing serious injury or killing of another person.

Statistical analyses

Univariate odds-ratios (OR) were first calculated to investigate whether sociodemographic, clinical and service utilization factors differed between suicidal attempters and suicidal ideators. To obtain adjusted odds ratios (OR), multivariate logistic regression was performed for all the data presented in Table 2. In this way, independent

predictors could be distinguished. Suicidality (i.e. suicidal ideation versus suicidal attempt) was used as the dependent variable. To investigate whether any of the sociodemographic, clinical and service utilization factors differed between genders, separate analyses were performed for strata defined by gender.

To avoid the problem of small numbers of observations within cells, all independent variables, except diagnosis and life events, were dichotomized as follows: age (0 = <40 years, 1 = ≥40 years); gender (0 = male, 1 = female); marital status (0 = married, 1 = unmarried including divorced and widowed); employment status (0 = working, 1 = not working, including retired and others); anxiety [0 = no co-morbid anxiety (F40–F42), 1 = co-morbid anxiety]; psychoactive drugs [0 = no problematic use (F10–F19), 1 = problematic use]; previous treatment (0 = previous treatment in the psychiatric services, 1 = no previous treatment); voluntary admission (0 = yes, 1 = no); institution (0 = NLSH, 1 = UNN). The diagnoses were categorized in four groups: [0 = depression (F32–F38), 1 = bipolar disorder (F30–F31), 3 = psychosis (F20–F29), 4 = psychoactive drugs (F10–F19)]. Concerning life events, three categories were made: (0 = no events in last 12 months, 1 = 1–3 events, 2 = 4–10 events).

Only patients with a complete data set were included in these analyses, i.e. 168 out of 182 patients. Nine patients were excluded because of lack of data concerning employment status and three patients were excluded due to unclear diagnosis. Two were excluded because they did not fit into the diagnostic categories (1 patient with F40 and 1 patient with F06). One patient had a missing value on suicidal attempt. This selected group was bias-tested against the other first-time admitted patients. There was no bias as measured with Chi-square statistics (χ^2) concerning gender, age-group, living together, working situation or previous treatment in the psychiatric services. Concerning length of stay there was bias as expected ($\chi^2 = 25.8$, $P = 0.000$), due to the exclusion criterion.

With regard to clinical status at admission, symptomatology and functioning as measured with GAF, HoNOS and SCL-90-R, separate independent-samples *t* tests were performed to compare suicidal attempters with suicidal ideators. These variables were not entered into the regression model because of missing data (shown in Table 3). For instance, only 88 patients had a complete SCL-90-R data set.

Results

Suicidality in the total cohort and in the study sample

As seen in Table 1 displaying data from patient records, as many as 353 persons (52.2%) had thoughts of suicide at

Table 1 Suicidality in the total cohort and in the interviewed sample

| | Cohort (records) <i>N</i> = 676 | | | Sample (M.I.N.I. PLUS) <i>N</i> = 251 | | | By gender ^{ns} | | | |
|------------------------|---------------------------------|-----|------|---------------------------------------|-----|----|-------------------------|----|--------|----|
| | Yes | No | % | Yes | No | % | Male | | Female | |
| | | | | | | | Yes | % | Yes | % |
| Better to be dead | | | | 188 | 63 | 75 | 103 | 75 | 85 | 75 |
| Wished to hurt oneself | | | | 112 | 138 | 45 | 59 | 43 | 53 | 47 |
| Thought of suicide | 353 | 291 | 52.2 | 182 | 69 | 73 | 100 | 73 | 82 | 73 |
| Planning suicide | | | | 112 | 136 | 45 | 61 | 45 | 51 | 46 |
| Attempted suicide | 133 | 521 | 19.7 | 78 | 170 | 32 | 39 | 29 | 39 | 35 |

Number, percent and χ^2 -test
ns not significant

admission and 133 persons (19.7%) had attempted suicide. In the study sample these numbers are higher, 73 and 32%, respectively, and as many as 75% thought it would have been better to be dead. There were no significant differences between the genders or institutions (not shown).

Factors distinguishing suicidal ideators from suicidal attempters

In the multivariate analysis, only one factor showed a statistically significant difference between the two groups: Those not in contact with any psychiatric service prior to the admission were more prone to attempt suicide. Of the 107 patients with previous contact, only 7 patients had other contacts than with an out-patient clinic (i.e. hospitalized elsewhere).

Stratifying by gender and entering the same variables as shown in Table 2 into the analysis (no table shown), revealed that the significant difference concerning previous treatment pertains to men only (OR = 4.00, 95% CI 1.10–14.57, P = 0.04). The OR for women, however, is in the same direction (OR = 1.96, 95% CI 0.61–6.29, P = 0.26).

Clinical assessment of the two groups

As shown in Table 3 only GAF-symptoms and the HoNOS subscale on behaviour show statistically significant differences between the two groups such that those who had attempted suicide showed the highest level of symptoms and disability. No differences were found concerning SCL-90-R.

Discussion

Every second patient had suicidal ideas at admission and almost every fifth had made a suicidal attempt. These

figures are rather high and represent a challenge for the hospital staff with regard to diagnostic and clinical competence. To our knowledge, there are no directly comparable studies in the literature. Of related studies, two present data on admissions related to suicidality. From inner London it was reported that from 14 to 27% of admissions were due to prevention of suicide/self-harm [10]. From South Auckland, New Zealand it was reported that risk of suicide was the major contributory reason for admission in 17–28% of the cases [1]. Concerning hospital use in general, a report from the south west of England reported that parasuicide was the third most frequent cause of acute medical admission after acute myocardial infarction and heart failure [14]. On the other hand, among subjects reporting suicidal ideation, one study has shown significantly greater use of health services including hospital admissions [13]. An increased use of treatment was found in the United States [19]: among ideators who made an attempt, treatment increased from 40.3 to 79.0% from 1990–1992 to 2001–2003. From a population-based study performed in Australia, it is reported that individuals with suicidal ideation were more likely to make use of at least one type of service for mental health problems than non-suicidal individuals, and this was most marked for inpatient services [25]. It is further known that among those who die by suicide, contact with health services, and especially hospital admission, is common before death, indicating that clinicians have an important role in preventing suicide [3, 24].

As presented earlier, findings from community samples have revealed different risk profiles in suicidal ideators versus attempters with regard to several sociodemographic and clinical factors [4, 9, 17, 21, 25]. Compared with the general population, suicide attempters more often belong to the social categories associated with social destabilization and poverty [28]. In our study, the sociodemographic and clinical profile of the two groups were similar. This could be due to the filtering mechanisms along the pathway

Table 2 Proportion of sample with suicidal attempt according to sociodemographic, clinical and service utilization characteristics

| | Total sample (<i>N</i> = 168) <i>N</i> | Suicidal attempt (<i>N</i> = 70) % | Univar OR | 95% CI | Multivar OR | 95% CI |
|----------------------------|--|--|-----------|-----------|-------------|-----------|
| Age | | | | | | |
| <40 years | 100 | 45.0 | | | | |
| ≥40 years | 68 | 36.8 | 0.71 | 0.39–1.34 | 0.66 | 0.32–1.35 |
| Gender | | | | | | |
| Male | 91 | 38.5 | | | | |
| Female | 77 | 45.5 | 1.33 | 0.72–2.47 | 1.27 | 0.63–2.56 |
| Marital status | | | | | | |
| Married | 42 | 40.5 | | | | |
| Not married | 126 | 42.1 | 1.07 | 0.53–2.17 | 0.98 | 0.43–2.25 |
| Employment status | | | | | | |
| Working | 68 | 44.1 | | | | |
| Unemployed | 100 | 40.0 | 0.84 | 0.45–1.58 | 0.90 | 0.44–1.81 |
| Diagnosis | | | | | | |
| Depression | 107 | 42.1 | | | | |
| Bipolar | 40 | 45.0 | 0.55 | 0.10–2.97 | 0.49 | 0.08–3.04 |
| Psychosis | 14 | 35.7 | 0.49 | 0.09–2.83 | 0.46 | 0.07–3.14 |
| Psychoactive drugs | 7 | 28.6 | 0.72 | 0.10–5.17 | 1.04 | 0.13–8.52 |
| Anxiety | | | | | | |
| No | 74 | 36.5 | | | | |
| Yes | 94 | 45.7 | 1.47 | 0.79–2.74 | 1.61 | 0.79–3.29 |
| Psychoactive drugs | | | | | | |
| No | 64 | 35.9 | | | | |
| Yes | 104 | 45.2 | 1.47 | 0.78–2.79 | 1.73 | 0.80–3.76 |
| Life events | | | | | | |
| No | 23 | 30.4 | | | | |
| 1–3 | 80 | 46.3 | 1.52 | 0.55–4.22 | 1.57 | 0.50–4.98 |
| 4–10 | 65 | 40.0 | 0.78 | 0.40–1.50 | 0.71 | 0.34–1.48 |
| Previous treatment | | | | | | |
| Yes | 107 | 35.5 | | | | |
| No | 61 | 52.5 | 2.00* | 1.06–3.80 | 2.50* | 1.21–5.18 |
| Voluntary admission | | | | | | |
| Yes | 141 | 39.7 | | | | |
| No | 27 | 51.9 | 1.64 | 0.72–3.74 | 1.93 | 0.78–4.75 |
| Institution | | | | | | |
| NLSH | 99 | 44.4 | | | | |
| UNN | 69 | 37.7 | 0.76 | 0.40–1.42 | 0.88 | 0.44–1.73 |

Univariate odds ratios (OR) and multivariate odds ratios[†] (adjusted for all the variables in this table) and 95% confidence intervals (95% CI)

* *P* (adjusted) = 0.013

mentioned earlier [12] resulting in admission of only those patients who have serious suicidal ideas and are most in need of treatment or security, making this group more similar to the suicidal attempters. That there was no difference in symptomatology between the two groups with regard to SCL-90-R, HoNOS-symptoms or co-morbidity of alcohol/drug abuse or anxiety, emphasizes this interpretation, as there are reported differences in population-based studies with regard to mental disorders [4, 21]. Further, one

study from Canada reports that individuals with suicidality without depression, were less likely to report treatment contacts than individuals with suicidality and depression [27]. The differences found with regard to HoNOS-behaviour and GAF-symptoms were as expected as these instruments measure the level of suicidality directly. This interpretation, however, is not supported by Ghazinour et al. [11] who explored a possible continuum from suicidal ideations to suicide attempts. They found that a continuum

Table 3 GAF, HoNoS and SCL-90-R ratings at admission in persons with suicide attempt and suicidal ideation only

| | Total sample, <i>N</i> | Suicidal attempt (%) | Suicidal attempt | | Suicidal ideation | |
|--------------------|------------------------|----------------------|------------------|------|-------------------|------|
| | | | Mean | SD | Mean | SD |
| GAF-symptoms*** | 152 | 42.1 | 33.9 | 12.4 | 41.8 | 10.7 |
| GAF-function | 152 | 42.1 | 46.6 | 12.7 | 46.2 | 12.0 |
| HoNOS-total | 101 | 42.6 | 14.7 | 4.7 | 14.3 | 5.2 |
| HoNOS-symptoms | 140 | 40.1 | 5.3 | 1.9 | 5.8 | 1.9 |
| HoNOS-behaviour*** | 146 | 41.8 | 5.3 | 2.4 | 3.3 | 2.2 |
| SCL-90-GSI | 89 | 40.4 | 155.9 | 69.8 | 154.3 | 61.0 |
| SCL-90-depression | 118 | 40.0 | 29.3 | 13.4 | 30.6 | 11.7 |
| SCL-90-anxiety | 120 | 40.0 | 18.6 | 10.0 | 19.7 | 9.17 |

Mean scores and independent-samples *t* test

*** $P < 0.001$

of suicidal behaviour was supported, but this did not include self-reported suicide attempt. This study was performed in the general population of Iranian Kurds, however, this group's particular societal norms and values could explain the low rate of suicidal attempts that was found.

The only difference we found between the two groups was regarding help-seeking behaviour before admission: Men with suicidal attempts were less likely to have been in contact with an out-patient clinic than men with suicidal ideation only. This finding is difficult to interpret, but is supported by a Finnish study showing that young males were less likely to have any treatment contact during the month before their attempt [31]. One interpretation could be that suicide attempts in men are more driven by impulsivity than in females, thus, making them less prone to have contacted an out-patient clinic before their attempt. Such an interpretation is not supported by the literature, however [30, 34]. Nonetheless, the finding indicates the importance of the psychiatric hospital, especially with regards to males who bypass out-patient clinics to a greater extent.

Our study was performed on first-time admitted patients and thus confounding factors related to previous experience with the psychiatric hospital were avoided. In this way, the results could be regarded as more valid concerning how the psychiatric hospital serves the community. There is a possible bias connected to the fact that those with a shorter length of stay than 3 days or less were excluded from the study. In theory, persons admitted only a short time could represent a group of more unnecessary admissions. This is, however, unlikely since there were as many suicide attempters in the excluded group as in the rest of the sample. Leaving hospital without staff agreement is a potential risk factor for suicide. One could assume that this could explain some of the short stays in the hospital and thus have biased the results. This is not likely,

however, if a suicidal patient wants to leave the hospital, the hospitals' policies are to institute involuntary commitment if necessary. Another Norwegian study reports that the length of hospital stay for suicide attempters has significantly decreased over the last 10 years, but this does not appear to affect suicide attempt repetitions [18].

There is a reason to believe that mental health services can reduce the risk of suicide and suicidal behaviour. In an ecological analysis it was found that residence in a county that offered a minimum safety-net of mental health services significantly reduced the risk of suicidal behaviour for at least 1 year after the index attempt [7]. The findings presented here give good evidence for the importance of the psychiatric hospital in suicide prevention even if we do not know what would have happened had there been no admissions. About half of the admissions are related to suicidality and it appears that those most in need of treatment or security get admitted. The findings indicate that once having passed all the filters and gain admission to psychiatric hospital, the suicidal ideators should be evaluated and treated with equal concern as attempters.

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