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A comparison of suicides in psychiatric in-patients, after discharge and in not recently hospitalized individuals

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Abstract

Objective: Time of in-patient treatment and the first weeks after hospital discharge have repeatedly been described as periods of increased suicide risk. This study compared demographic, clinical and suicide related factors between in-patient, post-discharge and not recently hospitalized suicides.

Methods: Suicide data from the Tyrol Suicide Register were linked with registers of three psychiatric hospitals in the state of Tyrol, Austria. Suicide cases then were categorized as in-patient suicides, post-discharge suicides (suicide within 12 weeks after discharge) or never/not within 12 weeks before death hospitalized suicides. Data were collected between 2004 and 2011.

Results: Of **the total of** 711 cases, 30 were in-patient, 89 post-discharge and 592 not recently hospitalized suicides. The three groups differed with regard to male-to-female ratio (lower in both hospitalized groups), marital status, suicide method used (jumping in in-patients, hanging in not **recently** hospitalized suicides), history of attempted suicide and suicide threats (highest in in-patients) and whether suicides had been in psychiatric or general practitioner treatment shortly before death. In most variables with significant differences there was a gradual **increase**/decrease with post-discharge suicides taking the middle place between the two other groups.

Conclusions: The three suicide populations differed in a number of variables. Varying factors appear to influence suicide risk and choice of method differently in in-patient, post-discharge and not hospitalized suicides.

1. Introduction

The diagnosis of a psychiatric disorder is a major risk factor for attempted and completed suicide [15,38]. Psychological autopsy studies have revealed that at least 90% of suicide cases had had a psychiatric disorder [6,23]. A history of a psychiatric hospitalization increases the risk for suicide 30-fold compared to the general population [13]. Suicides of patients during psychiatric hospitalization (in-patient suicides) and after a hospital stay (post-discharge suicides) have therefore attained the particular interest of suicide researchers [4,28,29].

Patients who are currently hospitalized in a psychiatric unit on the one hand constitute probably the population of highest risk for suicidal behavior since they go through a particularly severe phase of their illness. On the other side, the hospital setting with its high degree of medical and nursing competence should provide the relatively best and safest professional environment to prevent suicidal acts. The incidence of completed in-patient suicide ranges from six to 566 per 100,000 admissions [4] but this rate mostly lies between 100 and 200 [1,9,31]. Another way of calculating yields a rate of 147 suicides per 100,000 in-patient years [50]. Most in-patient suicides actually occur outside the hospital [47] and of these the majority had been on a granted leave [21]. However, in a considerable number of individuals who end their life this happens after they had left the ward

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without staff consent [9,22]. Being away without permission at any time during the hospital stay constitutes a risk factor for subsequent suicide [11]. Suicide risk appears to be particularly high during the first week after admission [17,19,44]. Suicide methods most frequently used include hanging, jumping from heights and railway suicides [35,45].

The period after discharge from psychiatric hospitalization constitutes a phase of particular risk for completed as well as attempted suicide [10,34]. The definition of the period considered to be of elevated risk for further suicidal acts mostly ranges from one [2,44] to four weeks [14,16] after discharge. However, suicide risk may be increased for up to one year [49]. Risk is associated with factors on the individual level such as a history of self-harm, patient-initiated discharge, depressive symptoms and a higher amount of psychiatric after-care [20,29] (although the latter may constitute an epiphenomenon and reflect the need for more intensive care in the more suicidal patients rather than displaying an actual causal risk factor) but also with institution-associated variables [30,32]. In a recent study Kapur et al. [26] found indications for a transfer of suicide risk from the in-patient to the post-discharge period in England while a decline in post-discharge suicides was registered for the same period in Denmark [37].

In-patient and post-discharge suicides show overlapping but not identical characteristics and both may be different from suicides without a previous hospital admission. In this retrospective study we compared demographic, clinical and suicide-related variables of patients who died by suicide during a psychiatric hospital stay with patients who died by suicide within 12 weeks after discharge and suicide cases who were never or not within 12 weeks before death hospitalized.

2. Methods

The Tyrol Suicide Register (TSR) is a data bank consisting of information on all suicides occurring in the State of Tyrol, Austria. Beginning in 1995, data are collected by the respective police officers investigating each event of death in which any doubts on a natural cause cannot be ruled out. For this register, a number of individual- and suicide-related data on every suicide in Tyrol are assessed. Due to uncertainty concerning data protection issues regarding the transfer of full identity data of suicide cases from the police to our research team data provision was transiently interrupted between 2002 and 2004. Therefore, the study period was set from 1 February 2004 to 31 January 2011, thus comprising seven years. During this period, a total of 775 suicides took place in Tyrol. Suicides with a place of residence outside Tyrol were excluded for this study.

Suicide data then were linked with the registers of three psychiatric in-patient departments in Innsbruck, Hall and Kufstein. Another psychiatric unit was opened within the general hospital of Lienz in December 2009. Thus, also suicides occurring in the respective county after this date were excluded.

Finally, 711 suicides remained for study analysis. According to whether the suicide patients had been admitted to one of the three psychiatric departments and when they were discharged, they were categorized as “in-patient suicides” (suicide during a psychiatric hospital stay; group 1), “post-discharge suicides” (suicide within 12 weeks after discharge; group 2) and “not recently hospitalized” (never or not within 12 weeks before death hospitalized suicides; group 3). The three groups were compared with regard to variables available from the TSR.

The entire “Hospital Suicides in Tyrol” project had been reviewed and approved by the Ethics Committee of the Medical University of Innsbruck.

2.1. Statistics

Comparison of the three groups (in-patient, post-discharge and not recently hospitalized suicides) with respect to metric variables was performed by one-way analysis of variance or Kruskal–Wallis test, depending on the distribution of the variable (normal or not normal, respectively). Deviations from normality were tested by means of the Shapiro–Wilk test.

The Chi-square test was applied for comparison of the three groups with regard to categorical variables. Fisher’s exact test was used for post-hoc pairwise group comparisons.

Some of the assessed suicide related variables showed a considerable proportion of missing values (between 3.4% for suicide note and 19% for prior suicide attempt). Missing cases were dropped from the analysis variable-wise, giving rise to unbiased results provided that observations are missing completely at random (MCAR). As we did not detect significant associations between the proportion of missing values of the most important suicide related variables and basic socio-demographics (age, gender) or group, obviously the MCAR condition was at least approximately fulfilled.

All statistical tests were performed at a 0.05 level of significance. Analyses were carried out using the SPSS software package, version 22.

3. Results

Thirty suicides (4.3%) were categorized as in-patient suicides (group 1), 89 (12.5%) as post-discharge suicides (group 2) and 592 (83.3%) as not recently hospitalized suicides (group 3). Comparisons of demographic, clinical and suicide-related variables between groups are displayed in Tables 1 and 2. The in-patient and post-discharge suicide rates were 45.69 and 135.56 per 100.000 admissions, respectively. The mean annual general suicide rate of Tyrol came to 15.93 per 100.000 inhabitants.

Groups differed in a number of features. The male-to-female ratio of suicides in both clinical populations was significantly lower than that of the not recently hospitalized group which in turn was comparable to the gender ratio for suicide in the general population of Austria (3:1). With regard to marital status, the only significant difference found was a higher percentage of