Suicide risk among inpatients at a university general hospital
Risco de suicídio em pacientes internados em um hospital geral universitário

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Abstract
Objective: To estimate the proportion of inpatients at a university general hospital who are at risk of committing suicide. Method: A random sample of 253 patients (57% males) aged 18 years old or older, admitted to surgical and clinical wards, was assessed using the Mini International Neuropsychiatric Interview, which has a section that evaluates the risk for suicide. Univariate and multivariate analyses were performed. Results: There were 58 (23%) patients with a risk for suicide, 13 (5% of total) of whom presented a high risk. The prevalence of suicide risk was greater in young adult patients, those with no matrimonial relationship and those diagnosed with major depression (univariate analysis, Chi-squared test; p = 0.01, 0.03 and 0.0001, respectively). The multivariate analysis revealed that the risk for suicide in individuals younger than 30 years old was two fold higher than in those individuals between the ages of 30 and 59 years (OR = 0.45, 95% CI = 0.22-0.93; p = 0.03) and four fold greater than in those who were 60 years old or older (OR = 0.25, 95% CI = 0.1-0.64; p = 0.004). Conclusion: When young adults are admitted to general hospitals they should receive special attention due to their suicidal potential.

Descriptors: Suicide; Dangerous behavior; Cross-sectional studies; Hospital, general; Psychiatry

Resumo
Objetivo: Estimar a proporção de pacientes internados em um hospital geral universitário que têm risco de suicídio. Método: Uma amostra aleatória de 253 pacientes (57% do sexo masculino) com 18 anos ou mais, internados em enfermarias clínicas e cirúrgicas, foi avaliada pelo Mini International Neuropsychiatric Interview, que possui uma seção que avalia o risco de suicídio. Foram realizadas análises univariadas e multivariadas. Resultados: Cinquenta e oito (23%) pacientes tinham risco de suicídio, 13 dos quais (5% do total) risco elevado. A prevalência de risco de suicídio foi maior em adultos jovens, nos que não tinham vínculo matrimonial e nos que tiveram um diagnóstico de depressão maior (análise univariada, teste do Qui-quadrado; p = 0,01; 0,03 e 0,0001, respectivamente). A análise multivariada revelou que o risco para o grupo de indivíduos abaixo dos 30 anos de idade era duas vezes maior do que o de indivíduos entre 30 e 59 anos (RC = 0,45, IC 95% = 0,22-0,93; p = 0,03) e quatro vezes maior do que o de indivíduos de 60 anos ou mais (RC = 0,25, IC 95% = 0,1-0,64; p = 0,004). Conclusão: Pacientes adultos jovens internados devem receber especial atenção devido à maior frequência de risco suicida.

Descritores: Suicídio; Comportamento perigoso; Estudos transversais; Hospital geral; Psiquiatria

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Introduction

The risk for suicide among inpatients at general hospitals is estimated as three times higher than in the general population. Most of the individuals who commit suicide while inpatients at a general hospital have chronic or terminal illnesses that are painful, debilitating or both. Those admitted due to suicide attempt demand specific attention since there is a persistent risk of new attempts. The most common method of suicide in this setting is jumping from heights.

As in the general population, suicides are usually committed by individuals who have a comorbid, often unrecognized, psychiatric illness. A psychological autopsy study revealed that 88% subjects who completed suicide during the general hospital stay suffered from one or more psychiatric disorders. In fact, patients admitted to the clinical and surgical wards present high rates of psychiatric morbidity. However, the detection of mental disorders in this setting is deficient, partly because it is difficult to identify “psychiatric cases” when psychic suffering is combined with physical diseases and social problems. Besides, the caregiving team does not always have a positive reaction towards suicide behavior, making it hard to obtain a more precise assessment of suicide risk.

The objective of this study is to estimate the proportion of patients admitted to a university general hospital presenting a risk for suicide, as well as to verify if such a risk varies according to clinical and demographic variables.

Method

1. Patients and setting

This study was carried out at Hospital das Clínicas, Universidade Estadual de Campinas (Unicamp), Brazil. This is a tertiary university general hospital with 750 beds catering to 2.5 million inhabitants. Between June 2003 and January 2004, 304 individuals were selected from a population of 898 patients admitted to the hospital. In that time span, all admissions were consecutively numbered and patients were selected according to a list of random numbers. The inclusion criteria were: 
- older than 18 years old; admission having occurred 48-76 hours previous to the selection; able to understand the objective of the study and respond the questionnaire.
- After approaching the selected patients, 31 were excluded (15 patients were drowsy or confused, six patients had been admitted less than 48 hours earlier, five patients were younger than 18 years old, and five were unable to understand the questions).
- Out of the 273 individuals who fulfilled the entry criteria, 253 patients were selected according to a list of random numbers.

2. Instruments

The Mini International Neuropsychiatric Interview (MINI-plus) version 5.0 was used to establish the psychiatric diagnoses. One of its sections evaluates the risk for suicide based on the answers given to the following questions: Over the last month: Have you wished you were dead? (Score: 1 point); Have you wanted to harm yourself? (2 points); Have you thought of committing suicide? (6 points); Have you planned how to commit suicide? (10 points); Have you attempted suicide? (10 points); Have you ever attempted suicide (life span)? (4 points). The risk for suicide range was “low” (score 1-5), “moderate” (score 6-9) and “high” (score ≥10). The sociodemographic data were recorded in a file. Patients whose score indicated moderate/high risk had their files reviewed and clinical diagnoses recorded.

Four fourth-year medical students were trained to administer the MINI. The training consisted of three 2-hour modules comprising: introduction, role-playing interviews, and two interviews with outpatients under supervision of senior psychiatrists. Interviews were conducted by the patient’s bedside.

3. Data analysis

Univariate analyses (chi-squared tests) were performed (risk of suicide versus sociodemographic groups and psychiatric diagnoses). The variable risk for suicide was dichotomized into “without risk” and “with risk”, the latter category including low, moderate and high risk groups. In the multivariate analysis (dependent variable: risk of suicide; independent variables: sociodemographic characteristics and psychiatric diagnoses) variables with p < 0.20 in the univariate analysis were included using a stepwise selection algorithm, combining the futures of forward selection and backward elimination. After the first variable is entered, the value of the criterion is reevaluated for all variables not in the model, and the variable with the largest acceptable criterion is entered next. At this point, the variable entered first is reevaluated to determine whether it meets the removal criterion. If it does, it is removed from the model. The odds ratios (OR) were obtained and the respective 95% confidence intervals were calculated (95% CI). The Epi-Info and SAS programs were used to perform statistical analysis.

This study was approved by an institutional Research Ethics Committee. The patients signed an informed consent. The researchers informed the assistant physician about cases of severe mental disorder or risk for suicide.

Results

Fifty-seven percent of the 253 patients were males (n = 144). Their mean age was 47.1 years (95% CI = 28.1-66.1). The mean schooling period (years successfully completed) was 6.2 years (95% CI = 0-13.2). The patients’ marital status was as follows: 59% (n = 149) with a matrimonial relationship (married or living together), 41% (n = 104) with no matrimonial relationship (single, divorced or widowed). Sixty-five percent (n = 164) of the study sample considered themselves to be Caucasian individuals.

There were 58 patients (23%) with a risk for suicide (42 of them presented low risk, 3 moderate risk, and 13 high risk). If only the latter risk group is considered, 5% of the inpatients presented a high risk for suicide. The main clinical problems recorded in 12 files of this subgroup were: one recent diagnosis made at admission (caseous granuloma that led to a diagnosis of tuberculosis), three cases of acute episodes of chronic diseases (transverse myelitis with HIV+; hypertensive crises in arterial systemic hypertension; crisis in chronic obstructive pulmonary disease) and eight cases of chronic suffering due to: lung cancer (three patients); bladder cancer; Chagascardiomyopathy; 17-year urethral trauma; Chagasacarcinoma and megaesophagus; congenital hip dislocation. The last three cases were admitted for corrective surgery.

The overall prevalence of mental disorders diagnosed using the MINI was 60% (n = 152) for at least one mental disorder and the most frequent diagnoses were: major depressive disorder (29.2%), agoraphobia (23.7%), general anxiety disorder (15%), bipolar disorder (7.9%), and alcohol abuse/
dependence (9.2%). The only diagnostic category associated with suicide risk was major depression. Among the 74 patients diagnosed with major depression, 58% had a risk for suicide against 0% of those who were not affected by depression (Chisquared test; p < 0.0001).

The prevalence of suicide risk did not vary regarding schooling or family income. Table 1 presents the distribution of patients with and without risk for suicide in relation to the sociodemographic variables (univariate analysis). Young adults and individuals with no matrimonial relationship presented higher suicidal risk.

In the multivariate analysis, major depression and marital status did not suit the regression model. The risk for suicide in individuals below the age of 30 was two fold higher than of individuals between the ages of 30 and 59 years (OR = 0.45, 95% CI = 0.22-0.93; p = 0.03) and four fold higher than of those who were 60 years old or older (OR = 0.25, 95% CI = 0.1-0.64; p = 0.004).

Table 1 - Prevalence of suicide risk among inpatients at a university general hospital

<table>
<thead>
<tr>
<th>Sex</th>
<th>No suicide risk n (%)</th>
<th>With suicide risk n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>83 (76.1)</td>
<td>29 (23.9)</td>
</tr>
<tr>
<td>Male</td>
<td>112 (77.8)</td>
<td>32 (22.2)</td>
</tr>
<tr>
<td>Skin color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>126 (76.8)</td>
<td>38 (23.3)</td>
</tr>
<tr>
<td>Non-white</td>
<td>68 (77.2)</td>
<td>20 (22.7)</td>
</tr>
<tr>
<td>Age group (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>27 (61.4)</td>
<td>17 (38.6)</td>
</tr>
<tr>
<td>30-59</td>
<td>112 (77.8)</td>
<td>32 (22.2)</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>56 (66.2)</td>
<td>24 (33.8)</td>
</tr>
<tr>
<td>Marital status **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With matrimonial relationship</td>
<td>122 (81.9)</td>
<td>27 (18.1)</td>
</tr>
<tr>
<td>No matrimonial relationship</td>
<td>73 (70.2)</td>
<td>31 (29.8)</td>
</tr>
<tr>
<td>Area of residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>170 (76.2)</td>
<td>53 (23.8)</td>
</tr>
<tr>
<td>Rural</td>
<td>25 (63.3)</td>
<td>14 (36.7)</td>
</tr>
<tr>
<td>Has professional occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>90 (76.3)</td>
<td>28 (23.7)</td>
</tr>
<tr>
<td>No</td>
<td>79 (74.5)</td>
<td>27 (25.5)</td>
</tr>
<tr>
<td>Religion</td>
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<td></td>
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<tr>
<td>Catholic</td>
<td>127 (79.9)</td>
<td>32 (20.1)</td>
</tr>
<tr>
<td>Protestant</td>
<td>44 (75.9)</td>
<td>14 (24.1)</td>
</tr>
<tr>
<td>Other religions</td>
<td>10 (68.7)</td>
<td>14 (31.3)</td>
</tr>
<tr>
<td>No religion</td>
<td>13 (85)</td>
<td>7 (15)</td>
</tr>
</tbody>
</table>

Chi-Squared Test: * p = 0.01; ** p = 0.03

Discussion

This study estimated the prevalence of the risk for suicide as 23% in a random sample of inpatients at a university general hospital. The risk was considered high in 5% of the patients. The risk for suicide was significantly higher in young adults (30 years and younger) and could be over four times higher than that of patients over 60 years old.

Among some of the limitations of this study, one is related to the use of the MINI for assessment of suicide risk. Although it has operational advantages, especially its psychometric properties, it is not as good as an assessment performed by an experienced clinician. The MINI criteria focus on suicidal ideation and history of suicidal behavior, two important predictive factors for suicide, but not satisfactory for risk assessment. The patient's mental condition plays an important role. Depression, psychoactive substance dependence, delirium, feelings of despair and hopelessness are important risk factors. In relation to this aspect, it is important to highlight that 15 patients who were clearly drowsy or confused were excluded from this study. It is known that a significant number of suicides or suicidal attempts occurring at the general hospital was found in the group of patients suffering from delirium. In a larger sample, we would probably have found a relationship between risk for suicide and disorders resulting from alcohol abuse.

Another limitation was the use of the MINI by medical students and not mental health professionals. On the other hand, all the participant students were members of the academic psychiatric league and had a special training course on the MINI. In order to obtain greater statistical power, different degrees of risk were grouped into one category. Another restrictive factor was that we did not have records of all the clinical diagnoses and reasons for hospital admission of the patients in this study sample. Overall results were provided, however, it may be possible that psychiatric morbidity and suicide risk differ among different clinical and surgical settings. We also do not know the proportion of patients who were on psychiatric treatment at the time of hospital admission.

A Danish study that assessed 5,000 patients with multiple sclerosis demonstrated that the risk for suicide was higher among young adults, which is similar to our results. The risk for suicide presented by individuals diagnosed after the age of 40 was similar to that of the general population. Other studies demonstrated that the risk for suicide is higher in groups of younger patients with medullar lesions, Parkinson's disease and cerebral vascular accident.

Although high suicidal rates are often associated with the male sex in the general population and among individuals suffering from cancer, our findings do not demonstrate this relationship. There may have been problems with the sample (size, predominance of economically poorer classes). It is also possible that the impact of certain diseases and admission to a tertiary hospital are equally mobilizing, regardless of the sex.

Although the marital status and the depression variables did not remain in the logistic regression model, we believe that they are clinically relevant. Lack of a matrimonial relationship and depressive disorders are well documented risk factors for suicide. Probably with a larger sample they would remain in the regression model, as it is largely observed in the literature.

Based on our findings, we suggest that when young adult patients are admitted to general hospitals, they should receive special attention due to their suicide potential. Although not confirmed in the multivariate analysis, we also should pay attention to those with depression and no matrimonial relationship, as these are well known suicide risk factors. Besides providing the patient with special care, other measures are recommended to prevent suicide in general hospitals: restricted access to suicide opportunities (windows, dangerous balconies), protective screens, training the caregiving team to detect mental disorders and administer early treatment, caution while transporting confused and agitated patients as well as assessment of the risk for suicide before hospital discharge.

References


