

Risk factors for suicidal ideation among university students assisted by a student health care service*

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Objective: to identify the risk factors for suicidal ideation among university students assisted at the student health care service of a Federal University in the state of Minas Gerais. Method: a cross-sectional and retrospective study with a quantitative approach, based on administrative data generated by the Health Division of a Federal University in the state of Minas Gerais. The SPSS software, version 20.0, was used for all the analyses. A level of significance of 5% was adopted. Results: 545 forms of assistance were analyzed. Most of the assisted patients were female, the mean age was 22 years old, and there is higher prevalence in undergraduate students. The abuse of psychoactive substances was associated with suicidal ideation ($p=0.010$), as well as with alcohol abuse ($p=0.020$). Predictors for suicidal ideation are: use of psychotropic drugs ($p=0.022$); previous suicide attempt ($p=0.002$); non-suicidal self-harming behavior ($p=0.038$); alcohol abuse ($p=0.010$), and studying at the Uberlândia Campus ($p=0.001$). In contrast, the variables related to conflicts at the university ($p=0.004$) and to interpersonal relationships ($p=0.007$) were considered protective. Conclusion: interventions based on the risk factors identified in the research are considered necessary in order to be successful in the strategies for preventing suicidal behavior.

Descriptors: University Students; Mental Health; Suicidal Ideation; Reception Service.

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Fatores de risco para ideação suicida entre universitários atendidos por um serviço de assistência de saúde estudantil

Objetivo: identificar os fatores de risco para ideação suicida entre universitários atendidos no serviço de assistência de saúde estudantil de uma Universidade Federal no estado de Minas Gerais. Método: pesquisa transversal, retrospectiva, de abordagem quantitativa, a partir de banco de dados administrativos gerados pela Divisão de Saúde de uma Universidade Federal no estado de Minas Gerais. Para todas as análises, utilizou-se o software SPSS versão 20.0. Adotou-se significância de 5%. Resultados: foram analisados 545 formulários de atendimentos. A maioria dos atendidos era do sexo feminino, a média de idade foi de 22 anos e há maior prevalência em estudantes de graduação. O uso abusivo de substâncias psicoativas foi associado à ideação suicida ($p=0,010$), bem como o uso abusivo de álcool ($p=0,020$). Os preditores para ideação suicida são: uso de psicotrópico ($p=0,022$); tentativa de suicídio prévia ($p=0,002$); comportamento autolesivo não suicida ($p=0,038$); abuso de álcool ($p=0,010$) e estudar no Campus de Uberlândia ($p=0,001$). Em contrapartida, as variáveis relacionadas aos conflitos na universidade ($p=0,004$) e relacionamento interpessoal ($p=0,007$) foram consideradas protetivas. Conclusão: consideram-se necessárias intervenções com base nos fatores de risco identificados na pesquisa, a fim de se obter êxito nas estratégias de prevenção do comportamento suicida.

Descritores: Universitários; Saúde Mental; Ideação Suicida; Serviço de Acolhimento.

Factores de riesgo de ideación suicida entre estudiantes universitarios atendidos por un servicio de atención médica estudiantil

Objetivo: identificar los factores de riesgo de ideación suicida entre estudiantes universitarios atendidos en el servicio de atención de salud estudiantil de una Universidad Federal del estado de Minas Gerais. Método: estudio transversal, retrospectivo, con enfoque cuantitativo, basado en datos administrativos generados por la División de Salud de una Universidad Federal del estado de Minas Gerais. Para todos los análisis, se utilizó el software SPSS versión 20.0. Se adoptó una significancia del 5%. Resultados: se analizaron 545 formas de asistencia. La mayoría de los pacientes atendidos fueron mujeres, la edad promedio fue de 22 años con mayor prevalencia en estudiantes de pregrado. El abuso de sustancias psicoactivas se asoció con la ideación suicida ($p=0,010$), entre las que destaca el abuso de alcohol ($p=0,020$). Los predictores de ideación suicida son: uso de psicofármacos ($p=0,022$); intento de suicidio previo ($p=0,002$); comportamiento autolesivo no suicida ($p=0,038$); abuso de alcohol ($p=0,010$) y estudios en el campus de Uberlândia ($p=0,001$). Por el contrario, las variables relacionadas con los conflictos en la universidad ($p=0,004$) y las relaciones interpersonales ($p=0,007$) se consideraron protectoras. Conclusión: se consideran necesarias las intervenciones basadas en los factores de riesgo identificados en la investigación para tener éxito en las estrategias de prevención de la conducta suicida.

Descriptorios: Estudiantes Universitarios; Salud Mental; Ideación Suicida; Servicio de Recepción.

Introduction

Worldwide estimates indicate that nearly 800,000 people die due to suicide annually⁽¹⁾. Between 2010 and 2016, the global age-standardized suicide rate increased by 6% in the Americas. In Brazil, between the years 2011 and 2018, 339,730 cases of self-harm were reported, with 154,279 (45.4%) occurring among young people aged 15 to 29 years old⁽²⁾. According to the World Health Organization (WHO), suicide is the second leading cause of death among young people⁽³⁾.

Despite the evidence that many suicide deaths are preventable through prevention strategies, this topic is not usually a priority for governments and public health policy-makers. This disregard is reflected in the high number of cases of self-inflicted violence.

Self-provoked and self-inflicted violence are events that occur in all regions of the world and can be divided into suicide (suicidal thoughts and attempts) and self-abuse (self-harm). Suicidal behavior varies from suicidal ideation, thinking about ending one's own life, to the performance of the act. However, it is important to state that not all self-inflicted violence characterizes a suicide attempt, as this behavior can have the objective of emotional regulation, such as relieving feelings of emptiness or indifference and ceasing bad feelings or sensations, a request for help, without necessarily the objective of killing oneself. Thus, it is necessary to make a correlation between the intention and the result, since not every act of self-inflicted violence aims at death. The term suicidal ideation, the object of this study, is often used to refer to thoughts of killing oneself, but it also refers to a feeling of tiredness in life, that life is worthless⁽⁴⁻⁵⁾.

Suicidal ideation, the object of the present study and one of the forms of self-inflicted violence, is characterized by the thought that a self-inflicted action can result in death. Suicidal ideation among adolescents is observed worldwide, and can be related to the diagnosis of mental disorders and to environmental factors such as family history of suicide, exposure to violence, family conflicts, and also some personal characteristics such as alcohol and drug abuse⁽³⁾.

It is noteworthy that a significant portion of adolescents is in the universities⁽⁶⁾, being exposed to various risk factors for suicidal ideation. University students can suffer from various inadequacies related to the sudden changes arising from leaving high school and proceeding to higher education, such as: time management, independence, and separation from the family, among other pressures that can generate a state of anxiety and depression that is usually harmful to academic performance⁽⁷⁾, in addition to the need

to belong to a group and impulsiveness, which can culminate in alcohol and drug abuse motivated by the need for social acceptance and influence from friends⁽⁸⁾. Consequently, the inadequacy to these changes, the feeling of loneliness and the depressive state can be related to the high prevalence of suicidal ideation in this population⁽⁹⁾.

In this sense, a study that evaluated psychological distress among university students concluded that 47.7% of the sample had psychological distress, with a 52.8% prevalence of stress, 13.5% for anxiety symptoms, and 7.26% for depressive symptoms⁽⁸⁾. Another survey identified that 80.7% of the students had consumed alcoholic beverages at least once in their lives and that 68.8% had ingested alcohol in the last year, with a risky consumption pattern being evidenced in 21.1% of the students⁽⁹⁾. This prevalence of levels of depression, anxiety, stress, as well as alcohol consumption, which are defined as risk factors for suicide, have also been observed in other studies and generate an increasing concern with this audience, justifying the need of public mental health policies aimed at this population⁽¹⁰⁾.

Therefore, university students seeking student assistance programs can represent an even more worrying scenario for suicidal ideation, as they are a vulnerable population. Therefore, the objective of the present study was to identify risk factors for suicidal ideation among university students assisted by a student health service of a Brazilian public university. This knowledge is important for the planning of prevention actions, both by the managers of the higher education institutions and by the health teams that assist these students in and out of the campuses⁽¹¹⁾.

Method

This is a cross-sectional, retrospective and quantitative research study, based on data generated by the student's Health Division (*Divisão de Saúde*, DISAU) of the Federal University of Uberlândia (*Universidade Federal de Uberlândia*, UFU). The Health Division (DISAU) is a body that focuses on implementing programs, projects and actions that serve the UFU student community in their health needs, as well as their reflections on personal and academic life. With perspectives on guidance, health prevention and health promotion, all the work carried out by the DISAU is guided by the National Student Assistance Plan and by the National Student Assistance Program⁽¹²⁾. The service provides mental health care through psychological shifts and brief psychotherapy. The services are provided by spontaneous demand

and also by referral by the academic units. All UFU students (undergraduate and graduate) are served, preferably scholarship students from student assistance.

Mental health professionals who provide care in the DISAU complete a form prepared by the service, with data on the student. This information is collected routinely and has an administrative and service management character.

The data from all the DISAU consultations, from January 1st to December 31st, 2018 (which were organized in electronic spreadsheets), were accessed by the researchers, without information that would allow the student to be identified. According to these data, 545 students were assisted. Student profile information was used, such as gender, age, if undergraduate or graduate student, if they received a student assistance scholarship (any type of socioeconomic assistance student scholarship), in which campus they study (Uberlândia, Patos de Minas, Ituiutaba, and Monte Carmelo), and the presence of risk factors for suicidal ideation. The assessed risk factors were the following: presence of interpersonal conflicts, presence of conflicts at the University, the use of psychotropic drugs (use of continuous medications according to medical prescription), self-medication (use of psychotropic medications without medical prescription), use of psychoactive substances, previous suicide attempt, anxiety, panic attacks, depression, alcohol abuse, and non-suicidal harmful acts.

This study was approved by the Research Ethics Committee of the Federal University of Uberlândia, CAAE number: 23864819.7.00005152. The students were divided into two groups for analysis. The first group is made up by students without suicidal ideation (n=501 students) and the second by students with suicidal ideation (n=44 students).

The quantitative data were tested for normality using the Shapiro-Wilk test and, based on this, the Student's t or Mann-Whitney tests were applied. Independence between the groups and the qualitative variables was tested using the independence Chi-square test or Fisher's exact test. For predicting suicidal ideation from the predicting variables, the results were adjusted to multivariate logistic regression models, with the dependent response variable being success (presence of suicidal ideation). The adjusted Odds Ratio and its 95% confidence interval were calculated. It was decided to keep in the complete model only the predicting variables that have shown significant differences between the groups (success and failure); in the more parsimonious model,

those predicting variables with a Wald probability of less than or equal to 5% were maintained by the backward method (selection of variables, steps, and not shown intermediate analyses). The campus variable was dichotomized as belonging or not to the Uberlândia campus (only in the multivariate analysis). The adequacy of the model was tested by the Hosmer and Lemeshow test. The univariate logistic regression models were not tested, as we understand that suicidal ideation has a multi-factorial origin and cannot be predicted by only one aspect of the student's behavior or history. For all the analyses, the SPSS software version 20.0 was used and the significance was set at 5%.

Results

The information of 545 students treated assisted in the DISAU was analyzed, and the prevalence of suicidal ideation was verified in 44 (8.1%) students.

The analysis of the students' data showed that the mean age was 22.8 years old (median 22 years old) in the group without ideation and 22.9 (median 22.5) in the group with ideation, with no statistical differences between them (p=0.059).

Most of the university students are female (n=337), with no statistically significant difference between groups (p=0.819). In both groups, undergraduate students prevailed, without statistical differences (p=1.000), as shown in Table 1.

The Federal University of Uberlândia has four campuses, in different cities, namely: Uberlândia, Ituiutaba, Monte Carmelo, and Patos de Minas. The only campus where statistical significance was found was Uberlândia: 63.2% in the first group and 90.9% in the second (p<0.001).

In its turn, the percentage of university students receiving student aid shows a small difference between groups: 40.1% in the group without suicidal ideation and 40.9% in the group with 40.9% ideation (p=1.000).

It was verified that interpersonal conflicts and conflicts at the university were significantly higher in the group without suicidal ideation (p=0.012; p=0.006, respectively).

There is also a higher prevalence of psychoactive substance use in the ideation group compared to the group without suicidal ideation. Similarly, the number of students who abuse psychoactive substances is higher in the second group (27.3%) than in the first group (12.1%) (p=0.010). Alcohol abuse was also significantly higher in the second group (20.4%) than in the first group (8.8%) (p=0.020).

Table 1 - Profile of university students assisted by the Health Division (DISAU) of the Federal University of Uberlândia, according to the presence or absence of suicidal ideation. Uberlândia, MG, Brazil, period between January and December 2018

Variable	Without Ideation	With Ideation	Statistics
	% (n)	% (n)	
<i>Gender</i>			
Female	62.1 (311)	59.1 (26)	
Male	37.9 (190)	40.9 (18)	0.05*; 0.819†
<i>Course Level</i>			
Graduation	59.9 (300)	59.1 (26)	
Postgraduate course	40.1 (201)	40.9 (18)	<0.01*; 1.000†
<i>Study campus location</i>			
Ituiutaba	20.9 (105)	2.3 (1)	
Monte Carmelo	14.4 (72)	6.8 (3)	
Patos de Minas	1.6 (8)	0 (0)	
Uberlândia	63.2 (316)	90.9 (40)	12.53*; <0.001†
<i>Other variables</i>			
Receiving student aid	40.1 (201)	40.9 (18)	<0.01*; 1.000†
Interpersonal Conflicts	30.6 (150)	11.4 (5)	6.36*; 0.012†
Conflicts at the University	35.5 (174)	13.6 (6)	7.69*; 0.006†
Use of Psychotropic	0.2 (1)	4.5 (2)	6.96*; 0.008†
Previous Suicide Attempt	0.4 (2)	20.4 (9)	70.79*; <0.001†
Anxiety	31.8 (156)	29.5 (13)	0.02*; 0.886†
Panic Attacks	2.2 (11)	4.5 (2)	0.19*; 0.661†
Stress	4.7 (23)	2.3 (1)	0.13*; 0.713†
Depressive Condition	20.8 (102)	50 (22)	17.79*; <0.001†
Use of psychoactive substances	12.1 (59)	27.3 (12)	6.71*; 0.010†
Self-medication	1.4 (7)	6.8 (3)	0.042‡
Alcohol abuse	8.8 (43)	20.4 (9)	0.020‡
Non-suicidal self-harmful acts	1.6 (8)	13.6 (6)	<0.001†

*Chi-square test statistic with continuity correction; †Probability associated with the Chi-square test; ‡Probability associated with Fisher's exact test

Using psychotropic drugs as well as previous suicide attempts were identified as predictors for suicidal ideation ($p=0.008$; $p<0.001$, respectively). Both were higher in the group with suicidal ideation: (4.5%) and (20.4%).

Other variables also suggest significant differences between the first and second groups. They are: i) depressive condition, ii) self-medication, and iii) non-suicidal self-harming acts. Depressive conditions are reported by 50% of the students in the group with suicidal ideation and by 20.8% of the students in the group without ideation ($p<0.001$). In turn, self-medication is greater in the second group (6.8%) compared to the first (1.4%) ($p=0.042$). Finally,

non-suicidal self-harming acts also showed statistical significance, being lower in the first group (1.6%) when compared to the second group (13.6%) ($p<0.001$).

Table 2 shows the prediction model for suicidal ideation and has the following predictive variables: use of psychotropic drugs ($p\leq 0.022$); previous suicide attempt ($p\leq 0.002$); self-harming behavior ($p\leq 0.038$); alcohol abuse ($p\leq 0.010$), and studying in the Uberlândia Campus ($p\leq 0.001$). In contrast, the variables i) conflicts with the university ($p\leq 0.004$) and ii) interpersonal conflicts ($p\leq 0.007$) were considered protective factors for suicidal ideation. The model showed adequate adjustment by the Hosmer and Lemeshow test (Chi-square=1.74; $p=0.97$).

Table 2 - Multiple logistic regression analysis and of the Odds Ratio (adjusted) for the prediction of suicidal ideation in university students assisted by the Health Division (DISAU) of the Federal University of Uberlândia, Uberlândia, MG, Brazil, period between January and December 2018

Predictive Variable	<i>Bi</i> [*]	<i>EP</i> [†]	<i>Wald</i> [‡]	<i>p</i> [§]	<i>OR</i>	<i>LL</i> [¶]	<i>UL</i> ^{**}
Interpersonal Conflicts	-1.43	0.53	7.31	0.007	0.24	0.09	0.68
Conflicts with the University	-1.44	0.50	8.42	0.004	0.24	0.09	0.63
Use of Psychotropic	3.02	1.32	5.22	0.022	20.49	1.54	273.18
Previous Suicide Attempt	2.81	0.90	9.85	0.002	16.64	2.88	96.33
Non-suicidal self-harming behavior	1.48	0.71	4.32	0.038	4.41	1.09	17.86
Studying at the Uberlândia Campus	2.07	0.63	10.81	0.001	7.89	2.30	27.05
Alcohol Abuse	1.59	0.61	6.71	0.010	4.91	1.47	16.36
Constant	-3.85	0.61	39.70	0.000	0.02		

*i-th model parameter estimation; [†]Standard error of *Bi*; [‡]chi-square statistics of Wald's test; [§]Probability based on Wald's test; ^{||}Adjusted Odds Ratio; [¶]Lower Limit of the Odds Ratio at 95%; ^{**}Upper Limit of the Odds Ratio at 95%

Discussion

In this study, the prevalence of suicidal ideation among students was 8.1%, the following being identified as risk factors: i) use of psychotropic drugs, ii) previous suicide attempt, iii) self-harming behavior, iv) alcohol abuse, and v) studying on the Uberlândia campus. This prevalence was similar to that of other studies. However, the risk factors were partially divergent.

A study with the objective of evaluating the presence of suicidal ideation in adolescents in the general population found that 10.7% had suicidal ideation and, as a risk factor, depression symptoms were observed⁽¹³⁾. Another survey shows that 9.9% of the students had suicidal ideas in the last 30 days, and the variables i) sexual orientation, ii) suicide attempts in the family, and iii) presence of depressive symptoms were identified as risk factors⁽¹¹⁾. In the same vein, data from the V National Survey of Socioeconomic and Cultural Profile of Undergraduates from Federal Educational Institutions in Brazil showed that 83.5% of the students have some emotional difficulty, with anxiety affecting 6 out every 10 students, the idea of death affects 10.8% of the target population and suicidal thinking, 8.5%⁽¹⁴⁾.

Most of the studies understand that there is prevalence of ideation, suicide attempts, and depression in females because it is associated with hormonal, physiological, and environmental issues⁽¹⁵⁾. There are many possible reasons for different suicide rates between men and women, such as: gender equality issues, differences in socially acceptable methods of dealing with stress and conflict between men and women, availability and preference for different means of suicide, availability and patterns of alcohol consumption, and differences in the rates of seeking care for mental disorders. The reasons vary widely from country to country and also among regions⁽¹⁾. However, in the present study, the gender variable did not find similar results. Another study carried out with university students also did not

identify a significant difference between the prevalence of emotional states (Depression, Anxiety, and Stress) evaluated according to the gender⁽¹⁰⁾.

Thus, when gender and suicidal ideation are correlated, it appears that there is no consensus in the literature, requiring further investigation on the issue. Given such setting, the most important thing is to know the epidemiological characteristics of each region in order to formulate prevention strategies.

A study on factors associated with suicidal behaviors and depression among university students showed that socioeconomic issues can influence an increase depressive symptoms⁽⁷⁾. However, the present study failed to demonstrate that the socioeconomic situation impacts on suicidal ideation. Thus, further investigations with this theme are necessary for better elucidation.

Excessive consumption and/or dependence on alcohol and other drugs are closely linked to suicides and/or suicide attempts⁽¹⁶⁾. Psychoactive substance abuse showed a significant difference between the groups, being more prevalent in the group with suicidal ideation. Several studies point in the same direction, corroborating the idea that the prevalence of suicidal ideation is mainly associated with the use of alcohol and other drugs. In this research study, it was not tested whether gender interferes with alcohol abuse⁽¹⁷⁾.

In its turn, previous suicide attempt appears as an important risk factor for suicidal ideation, being identified both in this research and in several other studies. Significantly, a previous suicide attempt is the most important risk factor for suicide in the general population⁽¹⁾. In this sense, attempts must be treated with the seriousness that the case deserves, and must be interpreted as indicative of seriousness and complexity. These patients must receive specialized multidisciplinary treatment and access to suicide means must be restricted.

Policies on restricting resources (such as limiting access to pesticides and firearms or placing barriers on

bridges) require an understanding of the preferences of the methods of different groups in society and depend on cooperation and collaboration among several sectors^(1,16). It is noteworthy that such measures must be adopted as suicide prevention policies as they prove to be effective.

There is lack of evidence in the literature on the efficacy of the use of antidepressants and neuroleptics in preventing suicide, considering that studies of this type come up against methodological issues and ethical concerns⁽¹⁸⁾. In this study, the association between suicidal ideation and the use of psychotropic drugs was noticed, which coincides with other studies, such as, for example, a recent study that showed that antipsychotic drugs and polypharmacy can be considered as predictors for suicide⁽¹⁹⁾.

The literature has shown that the anxiety rate among university students is higher than that of depression⁽²⁰⁾. However, the present study identified in 50% of the sample a strong association between depressive symptoms and suicidal ideation, which corroborates with a recent study on correlations of suicidal ideation in students, which shows that students with symptoms that are suggestive of depression are more prone to suicide⁽²¹⁾.

Depression is one of the main causes of suicidal behavior in adolescence and can be aggravated by impulsivity, which is one of the components present in most of the psychological suicide models. This trait has an important influence on the risk for suicide and self-harming in adolescents⁽²²⁾.

However, suicide intention can be difficult to assess, as it may be wrapped by ambivalence or even concealment. In addition, cases of death as a result of self-harm without suicide intent or suicide attempts with initial suicide intent in which a person no longer wishes to die (but has become terminal) can be included in the data on suicide deaths. The distinction between the two is difficult, so it is not possible to determine which proportions of cases are attributable to self-harm, with or without suicidal intent⁽¹⁾.

In this research, self-harming behavior proved to be significant for the risk of suicidal ideation. Thus, it is necessary to develop programs for preventing not only suicide, but also self-harming behaviors.

Regarding the university campuses, this study showed that the association between suicidal ideation and the Uberlândia campus was significant. This can best be explained by the fact that the campus is in the largest and most urbanized city (larger and more urbanized cities are related to a higher incidence of mental disorders). In the same vein, a study that discussed the influence of urbanization on the development of problems related to mental health identified a 9.6% prevalence of anxiety

and depression (combined) in urban areas *versus* 6.9% in rural areas ($p < 0.001$)⁽²³⁾.

On the other hand, at the same time that interpersonal and university-related conflicts are protective factors for suicidal ideation, this hypothesis assumes that the main complaint for seeking health services by this group of students was not related to signs and symptoms of mental disorders but, rather, to the difficulty in dealing with life events. It is important to think that these difficulties must be treated, avoiding the evolution of cases towards suicidal ideation or other complications in the mental health of these students.

No single factor is sufficient to explain why a person died due to suicide: suicidal behavior is a complex phenomenon that is influenced by several factors of personal, social, psychological, cultural, biological and environmental interaction.

The analysis of the data of the students assisted by the health service allowed better understanding their profile and characterizing the service. Based on these findings, interventions based on the risk and/or protective factors identified in the research are considered necessary in order to be successful in strategies for preventing suicidal behavior. This allows for better organization and planning of the care service.

The study had as a limitation its data collection based on a spreadsheet used by the service, not being possible to carry out some analyses, as the data are not collected routinely by the division.

Conclusion

This study identified five risk factors for suicidal ideation among university students assisted by the Health Division, namely: use of psychotropic drugs, previous suicide attempt, self-harming non-suicidal behavior, alcohol abuse, and living in Uberlândia (a large urban center when compared to other campuses). Such findings can contribute to the development of suicide prevention strategies, as well as in the elaboration of public health policies focused on this theme. It should be emphasized that these results do not end the debate on the theme, and that it is important to carry out other more specific studies that correlate the abuse of psychoactive substances among university students and suicidal ideation, as well as identifying whether large urban centers can be harmful to mental health.

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