

Factors associated with victims of suicide attempts treated in a hospital emergency service

Fatores associados às vítimas de tentativas de suicídio atendidas no âmbito da urgência e emergência

Factores asociados a víctimas de intentos de suicidio atendidas en el ámbito de urgencia y emergencia

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ABSTRACT

Objective: to examine associated factors and outcomes of suicide attempt victims treated at a hospital emergency service.

Method: this quantitative, longitudinal, retrospective, observational study considered data from 191 medical records of victims of suicide attempts treated between 2013 and 2022 in an emergency unit. The Acute Physiology and Chronic Health Evaluation II (APACHE II) was applied, and descriptive and inferential statistical analyses were performed. **Results:** most of the patients were men, adults, with mental comorbidities, and medication abuse was the most prevalent self-harm mechanism. The great majority had made no previous attempts, survived the event, and were referred to specialized services after hospital discharge. **Conclusion:** the factors associated with attempted suicide are being male, single, and aged between 18 and 59 years. As for the outcome, those with high APACHE II scores were more likely to die.

Descriptors: Nursing; Emergencies; Emergency Service, Hospital; Suicide, Attempted; Suicide.

RESUMO

Objetivo: analisar os fatores associados e o desfecho das vítimas de tentativa de suicídio atendidas em um serviço hospitalar de urgência e emergência. **Método:** estudo observacional, longitudinal, retrospectivo e quantitativo, com dados de 191 prontuários de vítimas de tentativa de suicídio atendidas entre 2013 e 2022 em uma unidade de urgência e emergência. Aplicouse o *Acute Physiology and Chronic Health Evaluation II* (APACHE II) e foram realizadas análises estatísticas descritiva e inferencial. **Resultados:** a maioria dos pacientes era de homens, adultos, com comorbidades de cunho mental, sendo o mecanismo de autoviolência mais prevalente o abuso de medicamentos. A grande maioria não possuía tentativas prévias, sobreviveram ao evento e foram encaminhadas após a alta hospitalar para serviços especializados. **Conclusão:** os fatores associados à tentativa de suicídio são representados pelo sexo masculino, sem companheiro(a) e idade entre 18 e 59 anos. Quanto ao desfecho, aqueles que apresentam elevado escore no APACHE II demonstraram maiores chances de evoluírem para óbito.

Descritores: Enfermagem; Emergências; Serviço Hospitalar de Emergência; Tentativa de Suicídio; Suicídio.

RESUMEN

Objetivo: analizar los factores asociados y la evolución de las víctimas de intento de suicidio atendidas en un servicio de urgencias hospitalario. **Método:** estudio observacional, longitudinal, retrospectivo y cuantitativo, con datos de 191 historias clínicas de víctimas de intento de suicidio atendidas entre 2013 y 2022 en una unidad de urgencia y emergencia. Se aplicó el *Acute Physiology and Chronic Health Evaluation II* (APACHE II) y se realizaron análisis estadísticos descriptivo e inferencial. **Resultados:** la mayoría de los pacientes eran hombres, adultos, con comorbilidad mental, siendo el abuso de medicamentos el mecanismo de autolesión más prevalente. La gran mayoría no tenía intentos previos, sobrevivió al evento y fue derivado tras el alta hospitalaria a servicios especializados. **Conclusión:** los factores asociados al intento de suicidio están representados por el sexo masculino, sin pareja y con edad entre 18 y 59 años. En cuanto al resultado, aquellos con una puntuación alta APACHE II tenían más probabilidades de morir.

Descritores: Enfermería; Urgencias Médicas; Servicio de Urgencia en Hospital; Intento de Suicidio; Suicidio.

INTRODUCTION

Suicide is considered a universal phenomenon because it is among the ten leading causes of death in the world. The World Health Organization (WHO) points out that one in every 100 deaths between the years 2020 and 2021 was due to this human act of inflicting the end of life on oneself¹. There has been an increase in suicide rates in Brazil in recent years, in which there were 35 suicides per day in 2020, and there was a considerable increase in 2021, mainly in September, coincidentally the month of suicide prevention².

Care for suicide victims follows a flow that usually starts in the urgency and emergency services, since these victims present clinical emergency situations and need comprehensive care, with assertive and resolute responses³.

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The health team, in particular nurses, must be prepared to provide effective care with individualized, effective, quality and safe care procedures in order to reestablish the victim's clinical status; therefore, elaborating protocols which guide care through scientific evidence is indispensable⁴.

In view of the high incidence of cases and the importance of the health team in caring for victims of suicide attempts, the WHO recommends prevention and intervention actions, monitoring at-risk populations, training, studies and research that reinforce policies aimed at suicide prevention⁵.

Despite this, there is a lack of scientific evidence which investigates the factors associated with suicide attempts in the adult population, mainly in the context of urgency and emergency, establishing factors related to adequate and continuous care to people with suicidal behavior³⁻⁵. Based on this premise, the present study aimed to analyze the associated factors and the outcome in relation to the death of suicide attempt victims treated at an urgency and emergency hospital service.

METHOD

This is an observational, longitudinal, retrospective study with a quantitative methodological approach conducted through data collection from medical records of suicide attempt victims, of both genders, treated at an urgency and emergency service of a hospital located in the interior of Minas Gerais, Brazil, between 2013 and 2020. Incomplete medical records were excluded, since they would compromise data analysis.

The average number of admissions due to suicide attempts in the urgency and emergency sector was used as a parameter to obtain the sample, defined by a professional specializing in statistics. As a result, a minimum sample of 191 participants was reached for the prevalence of deaths by suicide of 22.5%, a precision of 4% and a confidence interval of 95%, in a finite population of 350 notifications per year.

The information was recorded in a data collection instrument built and validated in content by the authors which contained the following information: code; collection date; general hospital record; gender; birth date; age; skin color; marital status; city of origin; medications in use at home; comorbidities and previous illnesses; date, time and day of service; type of transport of the victim; time between the event and the first medical care; clinical conditions at the time of admission (vital signs and level of consciousness); clinical conditions 24 hours after admission (vital signs and level of consciousness); diagnostic hypothesis; mechanism of self-violence; injured body areas; invasive procedures during hospitalization; previous hospitalization for attempted suicide; referral after hospital discharge; and whether or not the outcome was death.

After data collection, the Acute Physiology and Chronic Health Evaluation II (APACHE II) scale was applied with data from the first 24 hours of hospitalization, in which the score is calculated from the sum of 12 variables, having a score of 0 as a minimum value and a maximum of 71 points, in which the increase in the score is associated with an increased risk of death⁶.

Data were processed and analyzed using the Statistical Package for Social Sciences program (IBM SPSS®). Absolute and relative frequency was used to analyze categorical variables, while measures of centrality (mean and median) and variability (amplitude and standard deviation) were used for quantitative variables. Bivariate analysis was used considering association measures (chi-squared test, relative risk and odds ratio) and the simultaneous influence of clinical sociodemographic variables and type of self-harm on survival was included in the logistic regression analysis. A significance level of 5% was considered.

The research protocol was approved by the Human Research Ethics Committee of the institution involved. It should be noted that an Informed Consent Form (ICF) and Informed Assent Form (IAF) were granted because data stored in medical records were used.

RESULTS

The characterization of the 191 victims of suicide attempts analyzed in this study is shown in Table 1.

Most of the victims were male ($n=97$; 50.8%), under 19 years old and over 60 years old ($n=161$; 84.3%). Victims with white skin color ($n=101$; 52.9%) and who live without a partner ($n=140$; 73.3%) prevailed. Among the individuals attended, 164 (85.4%) had comorbidities, and mental disorders prevailed among these ($n=129$; 67.5%), followed by circulatory ($n=24$; 12.6%) and neurological disorders ($n=16$; 8.4%), and eight patients had more than one comorbidity.

TABLE 1: Presentation of sociodemographic and clinical variables of victims of suicide attempts treated at the urgency and emergency service between 2013 and 2020. Uberaba, MG, Brazil, 2020.

Variables	n	%
Gender		
Male	97	50.8
Female	94	49.2
Age		
From 18 to 59 years	30	15.7
<19 and >60 years	161	84.3
Skin color		
Branca	101	52.9
Parda	80	41.8
Preta	7	3.7
Amarela	3	1.6
Civil status		
No partner	140	73.3
With partner	51	26.7
Presence of comorbidities		
Yes	164	85.4
No	27	14.4
Comorbidities by system		
Brain	129	67.5
Circulatory	24	12.6
Nervous	16	8.4
Metabolic	14	7.3
Gastrointestinal	6	3.1
Respiratory	5	2.6
Autoimmune	3	1.6
Musculoskeletal	2	1.0

Table 2 presents data related to the use of medications and the mechanism of self-harm used in the studied suicide attempts.

It was observed that most of the victims used some type of medication (n=98; 51.3%), with the most frequent being antidepressants (n=67; 35.1%) and anxiolytics (n=32; 16.8%). It should be noted that 30 victims used more than one class of medication.

Medication intake prevailed (n=81; 42.4%) among the mechanisms of self-harm. Furthermore, it was found that 44 subjects used more than one self-harm mechanism.

Regarding the variables related to care for victims of suicide attempts, the time between the attempt and the first care was mostly up to one hour (n=59; 30.9%), followed by up to three hours (n=22; 11.5%). Most victims (n=84; 44.0%) arrived at the hospital service through the Mobile Emergency Care Service (*Serviço de Atendimento Móvel de Urgência - SAMU*), in an Advanced Support Unit (*Unidade de Suporte Avançado - USA*) ambulance, while 59 (30.9%) by ambulance, 26 (13.6%) by Basic Support Unit (*Unidade de Suporte Básico - USB*) ambulance, 14 (7.3%) with their own vehicle, 7 (3.7%) by Rescue/COBOM and 1 (0.5%) by helicopter.

It was found that 57 (29.8%) subjects had not previously attempted suicide and 52 (27.2%) had already attempted suicide. At the time of hospital discharge, 147 (77.0%) victims were referred to a specialized health service to continue the treatment. It was additionally noted that 29 (15.2%) progressed to death, thus committing suicide.

When analyzing the influence of sociodemographic and clinical data on death, it was noted that 15 (15.5%) of the 29 deaths by suicide were male, 18 (14.0%) had no partner, and 22 (13.7%) were aged between 18 and 59 years.

TABLE 2: Presentation of data regarding the use of medications and the mechanism of self-harm used in suicide attempts seen in the urgency and emergency service between 2013 and 2020. Uberaba, MG, Brazil, 2020.

Variables	n	%
Medications by pharmacological class		
Antidepressants	67	35.1
Anxiolytics	32	16.8
Benzodiazepines	30	15.7
Antiepileptics	16	8.4
Antipsychotics	24	12.6
Antihypertensives	15	7.9
Anticonvulsants	13	6.8
Antiglycemic agents	9	4.7
Antiretrovirals	6	3.1
Antacids	3	1.6
Anticoagulants	2	1.0
Vitamins	2	1.0
Corticosteroids	1	0.5
Hormonal	1	0.5
Self-harm mechanisms		
Medications	81	42.4
Carbamate/Rodenticide	36	18.8
Alcohol	25	13.1
Cold weapon	18	9.5
Pesticides	15	7.9
Abuse of illicit drugs	11	5.8
Fire arm	10	5.2
Corrosive	8	4.2
Hanging	6	3.1
Ingestion of non-specific chemicals	6	3.1
Falls	6	3.1
Foreign body ingestion	2	1.0
Artifact explosion	1	0.5
Fire/Burns	1	0.5

When relating death to the self-harm mechanism, it was observed that 9 (15.0%) victims had used medication; therefore, it proved to be the most lethal mechanism, followed by carbamate ingested by 7 (19.4%) and firearms (n=3; 30.0%), as shown below (Table 3).

TABLE 3: Logistic regression model for the predictive variables of death of victims of suicide attempts treated at the urgency and emergency service between 2013 and 2020. Uberaba, MG, Brazil, 2020.

Variables	Death				Univariate analysis		
	YES		NO		OR	95%CI	p-value
n	%	n	%				
Gender							0.73
Male (97)	15	15.5	82	84.5			
Female (94)	14	14.9	80	85.1	1.44	0.17-12.23	
Age range							0.55
<19 and >60 years (161)	7	23.3	23	76.7	1.75	0.03-6.30	
≥ 18 to ≤59 years (30)	22	13.7	139	86.3			
Time between attempt and treatment							0.40
> 1 hour (59)	10	27.7	27	73.3			
< 1 hour (96)	7	11.9	52	88.1	2.77	0.26-28.89	
Self-harm mechanism							0.95
Medications (81)	9	11.1	72	88.9	1.10	0.29-41.70	
APACHE II score in the first 24h					3.59	1.40-9.18	0.00

Logistic regression analysis enabled verifying that those patients with high APACHE II scores, meaning above 20 points in the first 24 hours after the event, are more likely to progress to death.

DISCUSSION

When investigating the sociodemographic profile of the participants, most were adults, male and without a partner. An incidence-based analysis evaluating data from 2000 to 2018 in South Korea found that the proportion of suicide attempts by gender was approximately twice as high among men than among women, constituting data which are close those of this study which states that men have 1.5 times the chance of death compared to women. The most lethal and aggressive self-harm mechanisms were among males and the mean age by gender was 18.06 for men and 19.93 for women⁷. Higher suicide attempt rates are also found in people with a partner and children compared to those who do not have them⁸.

The most prevalent comorbidities in this study were mental and circulatory. The national and international literature points out that victims of suicide attempt generally have two or more psychiatric comorbidities, with the main ones being mood disorders and bipolar disorder⁹⁻¹¹.

The self-harm mechanisms most used by the victims were the abusive use of medication, carbamate and pesticides. Results of a cross-sectional study carried out in the emergency department of a tertiary hospital in India pointed out that the most common mechanism used to attempt suicide was the consumption of unknown substances, followed by drug overdose and hanging¹².

For the time between the suicide attempt and the first care provided, most received initial care within an hour of the event, since suicide attempts are among potentially life-threatening situations where the victim needs immediate treatment. Thus, the time between the suicide attempt and the first consultation is crucial for a good prognosis for the patient².

When analyzing the influence of sociodemographic and clinical data on death, it was found that the victims who died were male, aged between 18 and 59 years, using drugs and carbamate as the self-harm mechanism. A study carried out in Ecuador is similar to the present study in demonstrating that the majority of people who died by suicide were men with complete primary education, married or in a relationship¹³.

Antidepressant medications and the use of polysubstances are identified as the most common among individuals who die by suicide¹⁴ in most cases. On the other hand, a survey carried out in the United States points out that the use of firearms in suicide attempts has the highest death rates¹⁵.

In that study, the increase in the APACHE II score evaluated in the first 24 hours after the event was shown to be directly related to the chances of death of the victims. Instruments such as the APACHE II are essential in urgency and emergency services, contributing to forecast the patient's needs, and consequently better care and prognosis, in addition to guiding the team on which are those which require more care due to their greater degree of complexity¹⁶.

It should be noted that people who attempted suicide should be considered those at high risk for suicidal ideation and new attempts, as they put their own lives at risk; therefore, these people should be prioritized in preventive interventions, receive help and be monitored¹⁷.

From the results presented, it was possible to systematize the information on the factors associated with attempted suicide victims treated at an urgency and emergency service and to monitor the outcome in relation to death in these cases, presenting criteria which are little addressed in the literature, and gathering relevant information for teaching, research and care in health and nursing.

Study limitations

A limitation of the present study is the fact that it was carried out in a single urgency and emergency service, which makes generalizations impossible. Therefore, further research on this topic is needed for better understanding of care for suicide attempt victims in other urgency and emergency services.

CONCLUSION

There was a predominance of adult men with white skin color, without a partner, students, with mental comorbidities, using some medication at home, with the most prevalent self-harm mechanism among attempted suicide victims being drug abuse. Regarding the event, the victims arrived at the hospital service referred by *SAMU/USA*, the vast majority did not have previous attempts, survived the event and were referred to specialized services after hospital

discharge. Also, death was related to the high final score of the APACHE II instrument in the first 24 hours of hospitalization.

The present study contributes to teaching, research and care in health and nursing by presenting an overview of the associated factors and the outcome of suicide attempt victims treated at an urgency and emergency hospital service, since it subsidizes planning actions and intervention strategies.

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