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ORIGINAL ARTICLE

# Prevalence and factors associated with suicidal behavior and suicide attempt identified in patient embracement in the mental health outpatient care services

*Prevalência e fatores associados ao comportamento suicida e à tentativa de suicídio identificados no acolhimento em ambulatórios de saúde mental*

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## ABSTRACT

**Objective:** Analyze the prevalence and factors associated with suicidal behavior and suicide attempt identified in patient embracement in the mental health outpatient care services. **Methods:** cross-sectional study with a document analysis using the information provided in the admission forms of adults treated in a patient embracement in the outpatient mental health care service in Cuiabá, Mato Grosso, Brazil, between February 2016 and June 2018. Simple frequencies and percentages were calculated for the description of variables, and crude and adjusted odds ratios for sex and age using logistic regression models. **Results:** The records of 1,780 embracement were analyzed. The prevalence of suicidal behavior was 7.8% and attempted suicide was 4.8%. Associated factors were identified for each phenomenon. **Conclusion:** female patients, with a mental disorder, and using psychoactive substances were associated with both suicidal behavior and suicide attempts. These characteristics can support the development of actions for patient embracement in these specialized services.

**Descriptors:** Self-Injurious Behavior; Suicide; Ambulatory Care; Mental Health.

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## RESUMO

**Objetivo**: analisar a prevalência e os fatores associados ao comportamento suicida e a tentativa de suicídio identificados em acolhimentos em ambulatórios de saúde mental. **Métodos**: estudo transversal, de análise documental, que teve como fonte as fichas de acolhimento de adultos atendidos em ambulatórios de saúde mental de Cuiabá, Mato Grosso, Brasil, entre fevereiro de 2016 a junho de 2018. Foram calculadas frequências simples e percentuais para descrição das variáveis e *odds ratio* bruto e ajustado para sexo e idade, por meio de modelo de regressão logística. **Resultados**: foram analisados os registros de 1.780 acolhimentos. A prevalência de comportamento suicida foi de 7,8% e de tentativa de suicídio 4,8%. Fatores associados para cada fenômeno foram identificados. **Conclusão**: sexo feminino, transtorno mental e uso de substância psicoativa foram associados tanto ao comportamento suicida como a tentativa de suicídio. Essas características podem direcionar ações de qualificação ao acolhimento nestes serviços especializados.


**Descritores:** Comportamento Autodestrutivo; Suicídio; Assistência Ambulatorial; Saúde Mental.

## INTRODUCTION

Suicidal behavior is characterized by several fatal or even non-fatal actions that interdepend on an executive sequence; it is a self-destructive action of the individual whose purpose and/or product would not necessarily be the completed suicide[1].

Suicide, in turn, is understood as a multi-factor problem, which may be related to socioeconomic, affective, genetic, education, social issues, among others[1]. Some of these factors can make it difficult to access comprehensive health care, confirming that self-blame and suicidal actions are alternatives for escape[2].

According to the World Health Organization (WHO), around 703,000 people around the world die each year as a result of suicide and, for each completed death, about 25 people had suicide attempts or suicidal thoughts[3]. This scenario, especially during and after the coronavirus (COVID-19) pandemic, led the WHO to issue new guidelines to help countries improve suicide prevention and care, including research on the subject[2-3].

According to estimates of the Pan American Health Organization (PAHO), 97,339 suicides were reported in the Americas in 2019, representing a mortality rate of 9.0 per 100,000 inhabitants, with a higher predominance in North America, where 14.1 suicides per 100,000 inhabitants were reported[4].

In Brazil, the suicide rate increased from 5.60 per 100,000 inhabitants in 2015 to 6.41 in 2019, with a higher number of deaths among male individuals, reaching 78.9%[4]. A study that estimated one suicide every 64 minutes in Brazil observed that deaths due to suicide are no longer concentrated in the South region of the country, with an increase among adults and black people in the Center-West region[5], indicating that further studies should be conducted in this region.

Cases of suicidal behavior can be treated in several health services, including those specialized in mental health. In Brazil, outpatient mental health care, which is again part of the Government's Psychosocial Care Network, according to Ministerial Ordinance nº 3588 issued in 2017, must provide embracement and healthcare through a multidisciplinary team to people with mental distress, which includes performing a mental examination and encouraging patients to talk about their suicidal feelings[6].

During the first contact with the person who shows suicidal behavior, the risk of suicide should be assessed, including the identification of risk factors and protective factors, based on every patient's context[1].

Knowledge about risk factors for suicidal behavior in different regions of the country is valuable for the assertiveness of preventive actions and effective management and supports (re)planning and (re)organization of the work process of health professionals. Considering the above, this study aimed to analyze the prevalence and factors associated with suicidal behavior and suicide attempt identified in patient embracement in the mental outpatient care services.

## METHODS

### Study design and population

This is a cross-sectional study with a document analysis. It was conducted according to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE: https://www.strobe-statement.org/) initiative.

This study was conducted in four mental health outcare linked with the municipal management of Cuiabá, State of Mato Grosso, Brazil.

### Selection of documents

In Cuiabá, after referral by the service from Primary Health Care Network, the patient goes to the outpatient care service on the scheduled date, where the embracement process is begun by social workers and nurses and the completion of a form with sociodemographic and clinical data, and personal history. After that, the patient is seen by another professional

as defined by the outpatient service and/or referral. This initial care is recorded on the same reception form filled at the begun patient embracement.

The study analysis was based on these forms filled by professionals in the embracement process. Notes made by the social workers, nurses, physicians, or psychologists were taken into account, including the third consultation – the therapeutic consultation.

## Data collection procedures

Data were collected between January and March 2019. The medical records from all adult patients attended, which the first consultations performed from February 2016 to June 2018 were included. In total, 2,345 patient records were identified of which, 1,780 (76%) were included in data collection. The lost occurred due to filling failures of the embracement forms, did not have the variables of interest for this study, or had illegible notes. These factors consisted of the exclusion criteria of the study.

The pilot test was conducted with medical records from consultations prior to the study period, which allowed testing, evaluating, and reviewing logistics aspects and the data extraction instrument, which was based on the literature[1] and systematized in a printed form containing the variables of interest.

After the development of a data collection manual to help fill out the instrument and training developed by the study coordinator, six undergraduate nursing students performed data collection.

## Quality control and processing of data

Data quality control was performed in the coding of the collection instrument and in the review performed by the study coordinator when receiving the forms. Data were added to Microsoft Office Excel software and later converted to the Stata 16 statistical package (Stata Corp., College Station, United States of America), where analyses were performed. Data inconsistencies were analyzed and corrected as required.

## Outcomes and measurements

The primary outcome of the study was suicidal behavior, considered present when the forms had notes indicating thoughts and plans of death and prior attempts described in technical terms and/or information reported by the patient.

Suicide attempt was considered the secondary outcome, based on the notes of health professionals that indicate self-report by patients attended at the embracement service.

## Independent variables

The independent variables were information related to the sex of patients (female; male), age groups (18 to 29 years old; 30 to 39 years old; 40 to 49 years old; 50 to 59 years old; 60 years old or more), educational level (0 to 4 years of education; 5 to 8 years of education; 9 years of education or more), marital status (with a partner; without a partner), prior diagnosis of mental disorder (no; yes), use of psychotropic drugs (no; yes), and use of psychoactive substances (no; yes).

## Statistical analysis

Descriptive statistical analysis was used and the prevalence of outcomes was calculated for the study sample in general and for every stratum of studied variables. Crude odds ratios observed for every stratum and the respective confidence intervals (95% CI) were calculated using logistic regression model. The Wald test was used to identify differences between the groups. To assess the association between the independent variables and outcomes, a model was considered in which the variables were adjusted for sex and age, considering $p$ value <0.05 as statistical significance. Missing data were excluded from the analysis.

## Ethical aspects

The research that originated this study was approved under protocol nº 2.624228/2018 by the Research Ethics Committee of the Júlio Müller Teaching Hospital, Federal University of Mato Grosso, and is registered nationally under CAAE: 74639617.5.0000.5541.

# RESULTS

Of all 1,780 patients who had their medical records analyzed, 64.8% (n=1,154) were female which 61.4% (n=709) had no partner. Regarding age, 19.2% (n=341) were 18 to 29 years old, 23.0% (n=410) were 30 to 39 years old, 22.8% (n=406) were 40 to 49 years old, 19.2% (n=342) were 50 and 59 years old, and 15.8% (n=281) were 60 years old or older. Most individuals had 9 years of education or more (50.4%; n=480), followed by those with 0 to 4 years of education (30.0%; n=286) and 5 to 8 years of education (19.5; n=186), respectively (Table 1).

The prevalence of ***suicidal behavior*** was 7.8% (n=139). Table 1 shows the prevalence, crude and adjusted odds ratios for every stratum of analyzed variables. Variables with missing data were education, marital status, prior use of psychotropic drugs, and use of psychoactive substances. The frequencies of missing observations are identified by a, b, c, d, respectively.

Associations were identified between suicidal behavior and female participants (OR: 2.96; 95% CI: 1.88-4.65); prior diagnosis of mental disorders (OR: 2.00; 95% CI: 1.39-2.99); and use of psychoactive substances (OR: 1.73; 95% CI: 1.09-2.77), and age, with higher risk for younger age groups.

The prevalence of ***suicide attempts*** was 4.8%. Table 2 shows the prevalence, crude and adjusted odds ratios for every stratum of analyzed variables.

**Table 1.** Prevalence, crude and adjusted odds ratios of suicidal behavior in outpatient mental health care services in the Pantanal region (n=1,780), Cuiabá, MT, Brazil, 2019

| Variables | n | Suicidal behavior f | Crude *OR (95% **CI) | *p* value | Adjusted*** OR (95% **CI) | *p* value |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Male | 626 | 25 | 1 | | 1 | |
| Female | 1154 | 114 | 2.63 (1.68-4.10) | <0.001 | 2.96 (1.88-4.65) | <0.001 |
| **Age (years)** | | | | | | |
| 18 to 29 | 341 | 51 | 1 | | 1 | |
| 30 to 39 | 410 | 35 | 0.53 (0.33-0.83) | 0.007 | 0.48 (0.30-0.76) | 0.002 |
| 40 to 49 | 406 | 28 | 0.42 (0.25-0.68) | <0.001 | 0.37 (0.22-0.60) | <0.001 |
| 50 to 59 | 342 | 15 | 0.26 (0.14-0.47) | <0.001 | 0.23 (0.12-0.42) | <0.001 |
| 60 or older | 281 | 10 | 0.20 (0.10-0.42) | <0.001 | 0.18 (0.09-0.38) | <0.001 |
| **Education**[a] | | | | | | |
| 0 to 4 years | 286 | 24 | 1 | | 1 | |
| 5 to 8 years | 186 | 18 | 1.16 (0.61-2.22) | 0.632 | 0.93 (0.47-1.82) | 0.839 |
| 9 years or more | 480 | 51 | 1.29 (0.78-2.15) | 0.215 | 0.83 (0.47-1.45) | 0.515 |
| **Marital status**[b] | | | | | | |
| With a partner | 452 | 37 | 1 | | 1 | |
| No partner | 709 | 71 | 1.24 (0.82-1.89) | 0.296 | 1.16 (0.75-1.79) | 0.491 |
| **Prior diagnosis of mental disorder** | | | | | | |
| No | 1252 | 79 | 1 | | 1 | |
| Yes | 528 | 59 | 1.84 (1.29-2.62) | 0.001 | 2.00 (1.39-2.88) | <0.001 |
| **Prior use of psychotropic drugs**[c] | | | | | | |
| No | 196 | 20 | 1 | | 1 | |
| Yes | 794 | 60 | 0.71 (0.42-1.22) | 0.225 | 0.82 (0.47-1.44) | 0.510 |
| **Use of psychoactive substances**[d] | | | | | | |
| No | 486 | 40 | 1 | | 1 | |
| Yes | 408 | 47 | 1.45 (0.93-2.26) | 0.100 | 1.73 (1.09-2.77) | 0.020 |

**Note:** *OD - Odds Rations; **CI – Confidence Interval. ***OR: Adjusted for sex and age.

[a] Missing information about education: n=828 (46.51%).

[b] Missing information about marital status: n=619 (34.77%).

[c] Missing information about prior use of psychotropic drugs: n=790 (44.38%).

[d] Missing information about use of psychoactive substances: n=883 (49.60%).

**Table 2.** Prevalence, crude and adjusted odds ratios of suicide attempts among patients treated in outpatient mental health care services in the Pantanal region (n=1,780), Cuiabá, MT, Brazil, 2019

| Variables | n | Suicide attempt f | Crude *OR (95% **CI) | *p* value | Adjusted*** OR (95% **CI) | *p* value |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Male | 626 | 12 | 1 | | 1 | |
| Female | 1154 | 74 | 3.50 (1.88-6.50) | <0.001 | 4.02 (2.15-7.52) | <0.001 |
| **Age** | | | | | | |
| 18 to 29 years | 341 | 35 | 1 | | 1 | |
| 30 to 39 years | 410 | 22 | 0.49 (0.28-0.86) | 0.013 | 0.44 (0.25-0.78) | 0.005 |
| 40 to 49 years | 406 | 13 | 0.28 (0.15-0.55) | <0.001 | 0.24 (0.12-0.48) | <0.001 |
| 50 to 59 years | 342 | 10 | 0.26 (0.12-0.54) | <0.001 | 0.22 (0.11-0.47) | <0.001 |
| 60 years or older | 281 | 6 | 0.19 (0.07-0.46) | <0.001 | 0.16 (0.06-0.41) | <0.001 |
| **Education**[a] | | | | | | |
| 0 to 4 years | 286 | 15 | 1 | | 1 | |
| 5 to 8 years | 186 | 14 | 1.47 (0.69-3.12) | 0.315 | 1.14 (0.52-2.53) | 0.730 |
| 9 years or more | 480 | 25 | 0.99 (0.51-1.91) | 0.983 | 0.58 (0.28-1.19) | 0.141 |
| **Marital status**[b] | | | | | | |
| With a partner | 452 | 25 | 1 | | 1 | |
| No partner | 709 | 41 | 1.04 (0.62-1.74) | 0.857 | 0.99 (0.53-1.68) | 0.975 |
| **Prior diagnosis of mental disorder** | | | | | | |
| No | 1252 | 50 | 1 | | 1 | |
| Yes | 528 | 36 | 1.75 (1.13-2.73) | 0.012 | 1.95 (1.24-3.07) | 0.004 |
| **Prior use of psychotropic drugs**[c] | | | | | | |
| No | 196 | 13 | 1 | | 1 | |
| Yes | 794 | 38 | 0.70 (0.36-1.35) | 0.297 | 0.84 (0.42-1.67) | 0.636 |
| **Use of psychoactive substances**[d] | | | | | | |
| No | 486 | 17 | 1 | | 1 | |
| Yes | 408 | 34 | 2.50 (1.37-4.56) | 0.003 | 3.27 (1.75-6.12) | <0.001 |

**Note:** *OD - Odds Rations; **CI – Confidence Interval; ***OR: Adjusted for sex and age.

[a] Missing information about education: n=828 (46.51%).

[b] Missing information about marital status: n=619 (34.77%).

[c] Missing information about prior use of psychotropic drugs: n=790 (44.38%).

[d] Missing information about use of psychoactive substances: n=883 (49.60%).

Associations were identified between suicide attempts and increased risk among female individuals (OR: 4.02; 95% CI: 2.15-7.52); prior diagnosis of mental disorders (OR: 1.95; 95% CI: 1.24-3.07), and use of psychoactive substances (OR: 3.27; 95% CI: 1.75-6.12). Association was found between this outcome and age, with higher risk for younger age groups.

## DISCUSSION

The literature has studies addressing suicide with more emphasis[4,7]; thus, studying suicide attempts and suicidal behavior represents an advance, contributing to further understanding of these phenomena as public health problems, allowing the creation of strategies to prevent fatal events.

The findings of our study show a prevalence of 7.8% for suicidal behavior among the embracement patients, and 4.8% for suicide attempts. The occurrence of suicidal behavior was lower than that observed in an international multicenter study, which was conducted in Ethiopia, Uganda, South Africa, India, and Nepal, and found a prevalence of 10.3%[8].

Suicide attempts, in turn, were lower than that identified in a study with 1,443 Primary Health Care (PHC) patients,

which reported a prevalence of 9%[9] for suicide attempts; however, when compared to the prevalence of 2.2% observed in the international study mentioned above[8], our study showed a higher rate.

Some factors can contribute to the denial of suicide attempts or suicidal behavior records, resulting in underreporting, including social and family stigma, religious aspects, lawsuits, among others[10].

The lack of local records compromises nationwide mapping, with a negative impact on possible public policies. The government plays a crucial role in issues related to the lack of reliable national records, including proper documentation of suicide attempts[1]. For this reason, information systems must be improved and campaigns must be implemented, using digital technology and artificial intelligence solutions.

In the studied scenario, a higher prevalence of suicide attempts and suicidal behavior among female individuals, aged 18 to 29 years, with a prior diagnosis of mental disorder, and use of psychoactive substances may indicate a specific profile related to the socioeconomic, cultural, and geographic context.

A higher risk of suicidal behavior in women at a younger age was also found in a multicenter study with PHC services in five countries[8], while a higher risk of attempted suicide in this group was also identified in a study conducted in the United States of America[11] and in Brazil, also in the context of PHC[9].

A temporal analysis conducted in a Brazilian state (n=169) identified that, besides the finding that women attempt suicide more often than men, female individuals use less aggressive methods than male individuals[12].

Most suicides in the Americas between 2000 and 2007, of both male and female individuals, were caused by poisoning, hanging injury, and gunshot wounds; however, poisoning is more prevalent among women, while gunshot wounds are the most common cause of suicide among men[7].

Studies conducted in Brazil have indicated a trend toward an increase in suicide mortality rates among individuals of both sexes[7,13], with an increase in the North, Northeast, and Southeast regions[13]. However, if the prevalence of suicidal behavior remains high among female individuals, a greater increase in suicide mortality may occur in this group in the coming years.

The literature[2-13] shows an increase in suicide mortality rates among younger people, particularly individuals aged 25 to 59 years (22.7%) and 10 to 24 years (21.8%)[14], which reinforces the importance of the finding that suicide attempts are associated with younger age groups.

Young people and adolescents constitute a risk group, as they experience a period of development with major biological, psychological, and social changes[1]. Other influences and risk factors are associated with mental disorders, school rejection, and family relationship problems, as well as history of friends who committed suicide[15].

Health promotion actions are required for children and adolescents in order to develop socio-emotional skills for life with a strong focus on government protection and the creation of screening programs at school and PHC services for prevention, monitoring, and support to these young people.

Although no relationship was observed between the phenomena of interest and marital status, several studies performed in Brazil and abroad have reported that the absence of a partner is associated with higher rates of suicidal behavior and suicide attempts[9,11-16].

A partner can act as support and help to restructure bonds and manage distress[17], while the absence of a partner can be associated with difficulty in maintaining relationships due to the presence of a mental disorder[17]. Such a disorder has a negative impact on social and marital life, based on an archaic and stigmatized conception of madness, legitimizing the subject's exclusion[18].

Likewise, although no relationship was observed between education and the phenomena of interest in our study, a lower educational level was identified as a risk factor for suicidal behavior[8] and suicide attempts[11] in other studies.

This phenomenon may be linked with the susceptibility of groups of lower educational levels to social and economic disadvantages, leading this population to find a job and acquire a financial status[17-19], but this phenomenon is also present in the academic environment. Suicidal behavior among graduate students may be due to stressors such as pressure related to deadlines, assignments, and other requirements, contributing to the development of mental distress, and becoming a predictive factor for suicide[20].

Another important variable is the presence of mental disorders, since the person received at the outpatient care service already had a medical diagnosis, possibly from other treatments. Having a diagnosis presented a higher prevalence for both outcomes (11.2%-6.9%) and was associated with them. Although the connection between suicide and mental disorder is well established in the literature[9,11-21], it is not prudent to make a simplistic relationship between the two phenomena. A study conducted in the United States compared suicide of people with a diagnosed mental disorder to suicide of people without any mental disorder, and reported that, of 174,000 deaths, 8.7% had some serious disorder, 33% had other mental disorders, and 58.2% had no psychic diagnosis known so far[22].

It is noteworthy that, both the care provided by health professionals and studies on this subject should address more than a psychiatric diagnosis as a causal and linear form of suicidal behavior or suicide attempt, considering other risk factors as well, such as life history and abuse[23].

Suicidal behavior can be linked with contextual and existential factors such as dealing with problems without hope for a solution, demoralization associated with the diagnosis full of stigma and prejudice, and the side effects of the treatment, which can prevent or affect the progress of evolutionary tasks, values, or life plan[23].

The use of psychoactive substances was associated with suicidal behavior and suicide attempts by patients admitted to the outpatient care services studied. This finding agrees with current knowledge on this subject. A study[24] that analyzed the risk of suicide in psychoactive substance users (n=45) showed intermediate risk in 25 users and high risk in 9 users. However, an interactive review reported that one of the risk factors commonly associated with suicide attempts is abusive use and dependence on psychoactive substances[25].

Other variables have been identified as factors associated with suicidal behavior, such as depressive symptoms and alcohol[8]; however, they were not the focus of our investigation.

The set of factors associated with suicidal behavior and suicide attempts can contribute to improve the understanding of vulnerable groups and individual characteristics and, consequently, support the development of targeted therapeutic projects. It can also contribute to the development of technologies for the prevention of suicide attempts in different population groups (adolescents, young adults, women), and support professionals in their clinical practice in terms of decision-making and strategic planning.

Regarding study limitations, an exclusively documentary extraction of data, with a high percentage of missing data for the variables of education, marital status, use of psychotropic drugs, and psychoactive substances was a study limitation, and may have overestimated or underestimated the prevalence.

Although limited, the results of our study can guide training actions for teams working in these outpatient care services in order to qualify the user embracement of mental health patients, with a focus on suicide prevention. Another possible contribution of this study is the distinct approach to suicidal behavior and suicide attempts, since professionals should seek to evaluate both phenomena.

Future studies should address the accuracy of health professionals to identify these phenomena, and factors that can explain the reasons for the variations in suicide rates, suicidal behavior, and suicide attempts when comparing the regions of the country.

## CONCLUSION

Health professionals must know how to identify suicidal behavior, suicide attempts, and their risk factors, improving the qualification of mental health care, not only in specialized services, but also in PHC services as well.

The prevalence of suicidal behavior (7.8%) and suicide attempts (4.8%) identified at the user embracement of reference services for mental health care highlights the need for comprehensive and specific actions based on associated factors for these events, particularly for female patients, of younger age, with a prior diagnosis of mental disorder, and use of psychoactive substances.

These findings support the planning of actions to improve the user embracement of people with mental distress; develop more accurate screening instruments to detect people at risk in a timely manner; assessing, managing, and monitoring suicidal behavior and develop specific actions for vulnerable groups such as women and young people.

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