

Suicidal Ideation Among Brazilian Male University: Prevalence And Associated Factors

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Abstract:

Background: The objective was to analyze sociodemographic, academic, health coverage, occupational, and behavioral factors associated with suicidal ideation in male college students at a Brazilian public university.

Materials and Methods: This is a cross-sectional study with a representative sample of 375 students from a Federal University in the southeastern region of Brazil. Data were collected in 2019 through a validated questionnaire. The variable "suicidal ideation" was investigated by the question: "In the last 12 months, have you seriously considered attempting suicide?". Prevalence ratios (PR) and their respective 95% confidence intervals (95%CI) were adjusted using the multivariate Poisson regression technique.

Results: The prevalence of suicidal ideation was 17.9%. The following variables remained independently associated with suicidal ideation after multivariate adjustment of the data: being in the age groups of 34 to 41 years (PR=0.82; 95%CI=0.77-0.88) and 42 years or older (PR=0.84; 95%CI=0.79-0.90), having no religion (PR=1.09; 95%CI=1.02-1.17), having health coverage, including insurance or prepaid plan (PR=0.92; 95%CI=0.86-0.98), and having used pills or injections of steroids without a medical prescription 10 to 39 times during life (PR=1.67; 95%CI=1.60-1.73) and 40 times or more (PR=1.31; 95%CI=1.12-1.25).

Conclusion: It's essential to understand male university students as a population in the process of behavioral transition and more susceptible to adopting risky behaviors, especially related to suicide. The university should offer support to this group, articulating with other sectors of society, especially the Primary Health Care services, stimulating team actions within the university spaces, to bring men closer to primary care about their health.

Key Word: Suicidal ideation; Risk behaviors; Men's health; University; Students.

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I. Introduction

Suicidal ideation is a significant component in the complex process known as "suicidal behavior"; it acts as a potential precursor to other components: suicide attempts and completed suicide.¹⁻² Among college students, suicidal ideation is particularly relevant, given the transition from adolescence to young adulthood and the entrance into academic life; these periods involve various overlapping transformations, encompassing personal and social aspects as well as those arising from the challenges of academic environments.¹⁻³⁻⁴⁻⁵

According to data from the Global Burden of Disease Study (GBD), between 1990 and 2016, the total number of suicide deaths worldwide increased by 6.7%, reaching 817,000 cases in 2016. When analyzed by sex, considering the mortality rate per 100,000 inhabitants, men exhibited higher rates than women, 15.6 and 7.0, respectively.⁶ In Brazil, in 2016, there were 11,433 recorded suicide deaths, representing a 2.3% increase from the previous year; and the suicide rate was higher among male individuals (9.2/100,000) than among females (2.4/100,000).⁷ Both nationally and globally, the age group with the highest occurrence of suicide deaths was young individuals aged 15 to 29 years.⁶⁻⁷

When focusing on the segment of young undergraduate students, suicide is already recognized as one of the leading causes of death.⁴⁻⁵⁻⁸⁻⁹ Several triggering factors and processes for suicide among these young individuals have been identified in the literature, including family disintegration, sexual orientation, religious practices, economic class, suicidal behavior within the family and among friends, alcohol consumption, depressive symptoms, and aspects such as hopelessness, impulsivity, aggressiveness, family and community violence, communication difficulties, and a lack of belonging.⁴⁻⁵⁻¹⁰⁻¹¹⁻¹²⁻¹³⁻¹⁴⁻¹⁻¹⁵⁻¹⁶ An important aspect found in studies is the sex-specific analysis, with research indicating a higher prevalence of suicidal ideation among male college

students¹⁷⁻¹⁸⁻¹⁹ compared to female students.¹⁻²⁰⁻²¹ Therefore, this disparity justifies the assessment of this condition in a sample of male college students, aiming to understand the factors involved in the outcome.

Despite international literature delving into the identification of variables associated with suicidal ideation in college students³⁻⁴⁻⁵⁻⁹⁻¹¹⁻²²⁻²³⁻²⁴, national research still requires further investigation. Moreover, the emphasis on young male undergraduate students, understood as a population with specific demands within men's health studies, highlights the growing need for research on this topic²¹⁻²⁵. In situations generating stress and potential suicidal thoughts, men tend to exhibit "fight or flight" responses, while women protect themselves by forming social networks.²⁶ Understanding young male college students as a population undergoing behavioral transition becomes essential, as they are more susceptible to adopting behaviors that compromise their physical, mental, and psychological well-being.²⁵

Therefore, the aim of this study was to analyze sociodemographic, academic, health coverage, occupational, and behavioral factors associated with suicidal ideation in male university students at a Brazilian Public University.

II. Material And Methods

This is an epidemiological, cross-sectional, and analytical study. The eligible population was composed of male university students from a federal university located in the southeastern region of Brazil who were actively enrolled in the second semester of 2018 and/or in the first semester of 2019 in face-to-face undergraduate courses at the Educational Units of the selected institution.

The total population of students (both sexes) was 7,050. The sample selection method was a two-stage stratified cluster probabilistic sampling. In the first stage, all male and female students were divided according to areas of knowledge, following the classification of the Ministry of Education Brazil²⁷ (Applied Social Sciences; Exact and Earth Sciences; Biological and Health Sciences; Engineering; Agricultural Sciences; Humanities; Linguistics, Arts and Letters; Multidisciplinary). Courses from each knowledge area were randomly sampled using simple random sampling (SRS). Since only on-site courses were considered, as access and questionnaire administration in distance learning courses would hinder the study, 35 courses were eligible. The selected courses were: Economics, Social Communication, Chemistry, Mathematics, Biological Sciences, Medicine, Industrial Engineering, Electrical Engineering, Psychology, Music, Architecture, Bachelor's in Geography, and Teaching Degree in Geography. The total number of students enrolled in these courses, of both sexes, was 2,501. For the second stage sampling calculation, only the number of male students in the selected courses was considered (1,334). Thus, a maximum expected prevalence of 50%, a confidence level of 95%, and a margin of error of 5% were considered. After correction for the design effect (deff equal to two) and a 20% increase for non-response rate, a minimum sample size of 359 male students was determined. In total, 375 students participated in the study.

Students were approached in classrooms, with inclusion criteria being: male gender, cisgender man; regular student in the course; age equal to or older than 18 years. Exclusion criteria were: not being in the room during the questionnaire application; and being a student in an elective discipline without regular ties to university.

Data collection took place from September 2018 to May 2019, in the morning, afternoon, and evening shifts, face-to-face, using a questionnaire composed of questions from other instruments used and/or validated in Brazil, adapted for this research. The National College Health Risk Behavior Survey (NCHRBBS) questionnaire, developed by the Center for Disease Control and Prevention (CDC) in the United States and already validated in Brazil by Franca and Colares²⁹, was used. Additionally, questions from other studies were used, addressing sociodemographic²⁸⁻³⁰, academic³¹, occupational³⁰⁻³¹, and health care/conditions.^{29,32}

The questionnaires were self-administered collectively in classrooms, with prior authorization from course coordinators and present teachers, and after the participant signed the Informed Consent Form.

The outcome variable "suicidal ideation" was obtained from the question: "During the last 12 months, have you seriously considered attempting suicide?" The independent variables included in the study were: a) Sociodemographic: age group; self-declared race/color; religious practice (assessed as having or not having a religion); sexual orientation; marital status; with whom they live; main source of income; family income. b) Academic: course, period, and study shift. c) Occupational: current occupation; completion of extracurricular internship; weekly hours of paid work; weekly days of paid work. d) Health coverage, including insurance or prepaid plan. e) Behavioral: use of alcohol and other drugs.

For data analysis, the Statistical Software for Professionals (Stata) - version 13.0 was used. Sample characterization was performed by calculating the absolute and relative frequencies of sociodemographic, academic, occupational, health coverage, and behavioral variables.

Bivariate analysis was conducted to assess the unadjusted (crude) association of independent variables of interest with the "suicidal ideation" variable, using the Pearson chi-square test. The strength of associations was measured by prevalence ratios (PR) and their respective 95% confidence intervals (CI), estimated by Poisson regression with robust variance.

In the multivariate analysis, variables that showed statistical significance of less than 20% in the bivariate analysis were considered in the elaboration of the final Poisson regression model with robust variance. In the selection of the final model, a step-by-step strategy was used, with the inclusion of all variables selected during the bivariate analysis in descending order of statistical significance. Variables with a "p" value greater than or equal to 0.05 were removed one by one from the model and considered excluded if the decrease in the explanation of the outcome was not statistically significant. The level of statistical significance established for multivariate analysis was 5%.

The research was approved by the Research Ethics Committee Involving Human Beings - CAAE: 80352517.7.0000.5151.

III. Result

The prevalence of suicidal ideation in the studied population was 17.9% (n = 67). Regarding the sample characterization, the majority were in the age group of 18 to 24 years (74.93%), of white ethnicity (52%); without religious affiliation (42.40%); heterosexual (75.73%); single/divorced/widowed (89.60%); living with friends or others (50.67%); without health insurance coverage (56.80%); and had parents and family members or partner's income as the main source of income (55.73%); family income between 2 to 4 minimum wages (34.13%).

Table 1 describes the sociodemographic characteristics and health coverage of the participants according to the suicidal ideation variable. It was observed that being between 34 and 41 years old and being 42 years old or older, being black, living with spouse/partner(s)/parents or guardians, and having health coverage, including insurance or prepaid plan, were related to suicidal ideation at a bivariate level, decreasing the prevalence of the outcome (p < 0.05). Additionally, not having religious practice and identifying as homosexual also related to suicidal ideation at a bivariate level (p < 0.05), increasing the prevalence of the outcome.

Table 1. Association of sociodemographic characteristics and health coverage with suicidal ideation among male university students at a Brazilian Federal University. Brazil, 2019.

Variables			Suicidal ideation in the last 12 months				PR	95% CI	p-value*
	Total (n = 375)		No (n = 308)		Yes (n = 67)				
	n	%	n	%	n	%			
Age group									
18 - 24 years	281	74.93	225	73.05	56	83.58	1.00	--	--
25 - 33 years	76	20.27	65	21.10	11	16.42	0.95	0.88-1.03	0.251
34 - 41 years	11	2.93	11	3.57	00	0.00	0.83	0.80-0.86	< 0.001**
≥ 42 years	07	1.87	07	2.27	00	0.00	0.83	0.80-0.86	< 0.001**
Self-declared race/color									
White	195	52.00	157	50.97	38	56.72	1.00		
Black	41	10.93	40	12.99	01	1.49	0.85	0.80-0.91	< 0.001**
Brown	132	35.20	105	34.09	27	40.30	1.00	0.93-1.08	0.830
Indigenous/Yellow	07	1.87	06	1.95	01	1.49	0.95	0.75-1.20	0.707
Religious practice (having a religion)									
Yes	216	57.60	187	60.71	29	43.28	1.00	--	--
No	159	24.40	121	39.29	38	56.72	1.09	1.02-1.16	0.010**
Sexual orientation									
Heterosexual	284	75.73	243	78.90	41	61.19	1.00	--	--
Homosexual	55	14.67	39	12.66	16	23.88	1.12	1.02-1.24	0.018**
Bisexual/Asexual/Pansexual/Other	36	9.60	26	8.44	10	14.93	1.11	0.99-1.25	0.072
Marital status									
Single/Divorced/Widowed	336	89.60	274	88.96	62	92.54	1.00	--	--
Married/Common-law union	39	10.40	34	11.04	05	7.46	0.95	0.86-1.05	0.337
Living arrangements									
Alone	47	12.53	35	11.36	12	17.91	1.00	-	-
Spouse/Partner(s)/Parents or guardians	138	36.80	122	39.61	16	23.88	0.88	0.79-0.99	0.037**
Friends/Others	190	50.67	151	49.03	39	58.21	0.96	0.85-1.07	0.470
Health coverage, including insurance or prepaid plan									
No	213	56.80	167	54.22	46	68.66	1.00	--	--
Yes	162	43.20	141	45.78	21	31.34	0.92	0.87-0.99	0.025**
Main source of income									
Own employment	86	22.93	75	24.35	11	16.42	1.00	--	--

Scholarships/Unemployment benefits/Social assistance	80	21.33		68	22.08	12	17.91	1.01	0.92-1.11	0.681
Parents and relatives/Partner's income	209	55.73		165	53.57	44	65.67	1.07	0.99-1.15	0.074
Family income (minimum wages)***										
≤ 2 wages (up to R\$ 1,874.00)	81	21.60		67	21.75	14	20.90	1.00	--	--
2 - 4 wages (R\$ 1,874.00 to R\$ 3,748.00)	128	34.13		105	34.09	23	34.33	1.00	0.91-1.10	0.899
4 - 10 wages (R\$ 3,748.00 to R\$ 9,370.00)	119	31.73		99	32.14	20	29.85	0.99	0.90-1.09	0.930
10 - 20 wages (R\$ 9,370.00 to R\$ 18,470.00)	30	8.00		24	7.79	06	8.96	1.02	0.89-1.17	0.746
≥ 20 wages (above R\$ 18,470.00)	17	4.53		13	4.22	04	5.97	1.05	0.88-1.25	0.568

Notes: PR: Prevalence Ratio; 95% CI 95%: Confidence Interval; * p-values from Pearson's Chi-square test; ** Variables with statistical significance (p < 0.05); *** Value of the minimum wage considered: R\$ 937.00.

Table 2 shows the association between “the academic and occupational variables of the participants” with “suicidal ideation”. It was observed that the most of respondents were from the Economics course (12.27%); were in the first and second periods (33.07%); studied in the evening (49.60%); did not work (65.07%); did not engage in extracurricular internships (77.60%). Regarding the weekly hours of paid work, 14.93% reported working 20 or fewer hours, and 18.67% reported working five or more days a week. Being enrolled in the Architecture course and not currently working were related to suicidal ideation at a bivariate level (p < 0.05), increasing the prevalence of the outcome. Being in the 7th and 8th periods, working 40 hours or more, and five or more days a week also remained associated with the outcome at a bivariate level, decreasing the prevalence of the outcome (p < 0.05).

Table 2. Association of academic and occupational characteristics with suicidal ideation among male college students at a Brazilian Federal University. Brazil, 2019.

Variables			Suicidal ideation in the last 12 months				PR	95% CI	p-value*
	Total (n = 375)		No (n = 308)		Yes (n = 67)				
	n	%	n	%	n	%			
Undergraduate program									
Economics	46	12.27	41	13.31	05	7.46	1.00	--	--
Social Communication	22	5.87	16	5.19	06	8.96	1.14	0.97-1.35	0.106
Chemistry	22	5.87	16	5.19	06	8.96	1.14	0.97-1.35	0.106
Mathematics	21	5.60	18	5.48	03	4.48	1.03	0.88-1.20	0.700
Biological Sciences	29	7.73	26	8.44	03	4.48	0.99	0.87-1.13	0.943
Medicine	25	6.67	20	6.49	05	7.46	1.08	0.92-1.26	0.314
Industrial Engineering	23	6.13	19	6.17	04	5.97	1.05	0.90-1.23	0.470
Electrical Engineering	39	10.40	35	11.36	04	5.97	0.99	0.88-1.11	0.927
Psychology	20	5.33	15	4.87	05	7.46	1.12	0.94-1.33	0.173
Bachelor's in Geography	17	4.53	13	4.22	04	5.97	1.11	0.92-1.33	0.246
Teaching Degree in Geography	28	7.47	23	7.47	05	7.46	1.06	0.91-1.22	0.410
Music	39	10.40	34	11.04	05	7.46	1.01	0.89-1.15	0.782
Architecture	44	11.73	32	10.39	12	17.91	1.14	1.02-1.20	0.040**
Enrollment Period									
1 th - 2 th period	124	33.07	101	32.79	23	34.33	1.00	--	--
3 th - 4 th period	94	25.07	77	25.00	17	25.37	0.99	0.91-1.08	0.930
5 th - 6 th period	66	17.60	47	15.26	19	28.36	1.08	0.98-1.20	0.114
7 th - 8 th period	59	15.73	55	17.86	04	5.97	0.90	0.82-0.97	0.0148*
9 th - 10 th period	23	6.13	20	6.49	03	4.48	0.95	0.83-1.09	0.490
11 th - 12 th period	09	2.40	08	2.60	01	1.49	0.93	0.77-1.13	0.512
Study Shift									
Full-time	164	43.73	133	43.18	31	46.27	1.00	--	--
Morning or afternoon	03	0.80	02	0.65	01	1.49	1.12	0.74-1.67	0.578
Day	22	5.87	17	5.52	05	7.46	1.03	0.88-1.20	0.682
Night	186	49.60	156	50.65	30	44.78	0.97	0.91-1.04	0.496
Main current occupation									
Fixed or self-employed work	94	25.07	84	27.27	10	14.93	1.00	--	--
Periodic work	37	9.87	31	10.06	06	8.96	1.05	0.93-1.18	0.409
Not currently working	244	65.07	193	62.66	51	76.12	1.09	1.01-1.17	0.014**
Extracurricular internship									
Yes	84	22.40	65	21.10	19	28.36	1.00	--	--

Suicidal Ideation Among Brazilian Male University: Prevalence And Associated Factors

No	291	77.60	243	78.90	48	71.64	0.95	0.87-1.03	0.219
Weekly hours of paid work									
≤ 20 hours	56	14.93	44	14.29	12	17.91	1.00	--	--
20 – 40 hours	38	10.13	33	10.71	05	7.46	0.93	0.81-1.06	0.288
≥ 40 hours	29	7.73	27	8.77	02	2.99	0.88	0.77-0.99	0.044**
No work or undefined schedule	252	67.20	204	66.23	48	71.64	0.98	0.88-1.08	0.691
Weekly days of paid work									
No response or not working	198	52.80	155	50.32	43	64.18	1.00	--	--
1-2 days	64	17.07	55	17.86	09	13.43	0.93	0.85-1.02	0.150
3-4 days	43	11.47	34	11.04	09	13.43	0.99	0.88-1.11	0.909
≥ 5 days	70	18.67	64	20.78	06	8.96	0.89	0.82-0.96	0.004**

Notes: PR: Prevalence Ratio; 95% CI: 95% Confidence Interval; * p-values from Pearson's Chi-square test; ** Variables with statistical significance (p < 0.05).

Table 3 presents the association of behavioral characteristics (alcohol and other drug use) with suicidal ideation. In the bivariate analysis, using marijuana 10 to 39 times in life and using pills or injections of steroids without a medical prescription 10 to 39 times in life remained associated with the outcome (p < 0.05).

Table 3. Association of behavioral characteristics (alcohol and other drug use) with suicidal ideation among male college students at a Brazilian Federal University, Brazil, 2019.

Variables	Total (n = 375)		Suicidal ideation in the last 12 months				PR	95% CI	p-value *
			No (n = 308)		Yes (n = 67)				
	n	%	n	%	n	%			
Use of cocaine, crack, or freebase during life									
None	312	83.20	256	83.12	56	83.56	1.00	--	--
1 to 9 times	41	10.93	34	11.04	07	10.45	0.99	0.89-1.10	0.889
10 to 39 times	11	2.93	08	2.60	03	4.48	1.07	087-1.33	0.478
40 times or more	11	2.93	10	3.25	01	1.49	0.92	0.78-1.08	0.339
Use of marijuana during life									
None	151	40.27	128	41.56	23	34.33	1.00	--	--
1 to 9 times	75	20.00	63	20.45	12	17.91	1.00	0.92-1.09	0.881
10 to 39 times	60	16.00	42	13.64	18	26.87	1.12	1.01-1.24	0.021**
40 times or more	89	23.73	75	24.35	14	20.90	1.00	0.92-1.09	0.918
Use of pills or injections of steroids without a medical prescription during life									
None	357	95.20	295	95.78	62	92.54	1.00	--	--
1 to 9 times	14	3.73	12	3.90	02	2.99	0.97	0.82-1.14	0.715
10 to 39 times	02	0.53	00	0.00	02	2.99	1.70	1.64-1.76	< 0.001**
40 times or more	02	0.53	01	0.32	01	1.49	1.27	0.80-2.03	0.300
Use of lysergic acid diethylamide (LSD), phencyclidine (PCP), ecstasy, mushroom, amphetamine (speed or ice), or heroin during life									
None	263	70.13	218	70.78	45	67.16	1.00	--	--
1 to 9 times	65	17.33	50	16.23	15	22.39	1.05	0.95-1.15	0.290
10 or more	47	12.53	40	12.99	07	10.45	0.98	0.89-1.08	0.699
Use of inhalants (glue, aerosol, paint, or spray) to escape reality during life									
None	319	85.07	262	85.06	57	85.07	1.00	--	--
1 to 9 times	39	10.40	32	10.39	07	10.45	1.00	0.89-1.11	0.990
10 or more	17	4.53	14	4.55	03	4.48	0.99	0.85-1.16	0.981
Smoking habit or history of smoking									
Yes	220	58.67	176	57.14	44	65.67	1.00	--	--
No	155	41.33	132	42.86	23	34.33	0.95	0.89-1.02	0.190
Alcohol consumption in the last 30 days									
None	73	19.47	62	20.13	11	16.42	1.00	--	--
1 to 9 days	234	62.40	191	62.01	43	64.18	1.02	0.94-1.11	0.503
10 to 29 days	66	17.60	54	17.53	12	17.91	1.02	092-1.14	0.623
Every day	02	0.53	01	0.32	01	1.49	1.30	081-2.08	0.267

Notes: PR: Prevalence Ratio; **95% CI:** 95% Confidence Interval; * p-values from Pearson's Chi-square test; ** Variables with statistical significance (p < 0.05).

Table 4 presents the multivariate analysis of the data, highlighting that the following variables remained independently associated with suicidal ideation: being in the age groups of 34 to 41 years and 42 or more, having no religion, lacking health coverage, including insurance or prepaid plan, and using pills or injections of steroids without a medical prescription 10 to 39 times and 40 times or more during a lifetime.

Table 4. Final model after Poisson Regression analysis. Brazil, 2019

Variables	PR	95% CI	p-value*
Age group			
18 - 24 years	1.00	--	--
25 - 33 years	0.94	0.87-1.2	0.180
34 - 41 years	0.82	0.77-0.88	< 0.001
≥ 42 years	0.84	0.79-0.90	< 0.001
Religious practice (having a religion)			
Yes	1.00	--	--
No	1.09	1.02-1.17	0.005
Health coverage, including insurance or prepaid plan			
No	1.00	--	--
Yes	0.92	0.86-0.98	0.013
Use of pills or injections of steroids without a medical prescription during life			
None	1.00	--	--
1 to 9 times	0.97	0.83-1.12	0.701
10 to 39 times	1.67	1.60-1.73	< 0.001
40 times or more	1.31	1.12-1.25	0.046

Notes: RP: Prevalence Ratio; **95% CI:** 95% Confidence Interval; * p-value from Poisson Regression.

IV. Discussion

The study at hand presented a prevalence of suicidal ideation of 17.9% (considering the last 12 months). Similar results were found in research conducted in João Pessoa, state of Paraíba, Brazil, with 22.2% ²¹; at an American university, with 22.5% ⁹; in universities in Sweden and Italy, with 13.7% and 14.3%, respectively ³³; in universities in Austria and Turkey, with 11.3% and 12%, respectively ³⁴; in a study conducted in China, with 13.03% ⁴. Lower proportions were found in a study conducted at a university in Portugal, with 10.7% ²²; in a study conducted with 105,000 university students in the United States of America, with 3.7% ³⁵; at a university in China, with 9.2% ⁵; in six universities also in China, with 7.6% ³; and at a public university in Brazil, state of Mato Grosso, with 9.9% ideation, but this study considered the last 30 days.¹

There are significant variations in the literature according to the time frame for suicidal ideation, varying the percentages depending on whether it is considered over a lifetime, in the last 12 months, or the last week. Additionally, authors consider other factors, such as the instrument used and the mode of application, as well as local characteristics. Considering the last 12 months, rates vary between 5.3% and 45% ²¹, emphasizing that studies analyzed by Moreira²¹ *et al.* (2015) considered university students of both sexes. Thus, it reinforces that the prevalence found here may be influenced by the sex cut, as studies indicate that men tend to have lower prevalence of suicidal ideation and attempts than women, whether university students or not ¹⁻⁶⁻⁷⁻¹⁴⁻²⁰⁻³⁶. Authors argue that the rationale is that in adolescence or younger phases, women have higher rates of depression and hopelessness than men.⁴⁻³⁷⁻³⁹

Regarding age, students in the age group of 18 to 24 years showed a higher prevalence of suicidal ideation (n = 56; 83.58%). However, it was observed that with increasing age, the prevalence of the outcome decreased, showing statistical significance in both bivariate and, mainly, in multivariate analysis (being in the age groups of 34 to 41 years - PR = 0.82; 95% CI = 0.77-0.88; and 42 years or more - PR = 0.84; 95% CI = 0.79-0.90). These results corroborate those of other studies ⁵⁻¹⁴⁻³⁷⁻⁴⁰. Authors also argue that among young people aged 10 to 24, suicide was the second leading cause of death, justifying that younger or adolescent individuals exhibit impulsive and suicidal behaviors seeking to solve their problems.¹⁵⁻³⁸ On the other hand, studies also point to contrary results, that is, suicidal ideation increases with advancing age.²⁰⁻⁴¹ Thus, attention in all age groups is necessary in this population to prevent episodes of completed suicide.

Taking into account the variable sexual orientation, suicidal ideation was higher among those who declared themselves heterosexual (61.19%); however, homosexual orientation showed significance in bivariate analysis (p = 0.018), increasing the prevalence of the outcome by 12% (PR = 1.12) compared to heterosexual. A similar result was found in the studies.^{1,10} However, it is worth noting that these authors assessed both sexes. Studies with only male university students are scarcer in the literature; nevertheless, on issues of sexuality related to suicidal ideation in the university population, studies show similar results for both sexes.¹⁻¹⁰ Socially, the

condition of heterosexuality is still defined as the standard, and options that differ from this reference, such as homosexuality and bisexuality, are more likely to suffer from prejudice and feelings of inferiority, which is directly related to emotional fragility and a greater propensity for suicidal ideation.¹⁻⁴² Additionally, when evaluating this characteristic among male individuals, the issue is even more complex, as issues of sexuality, patriarchy, and the position of superiority of heterosexual status among "men" are more deeply rooted, even influencing health-related behaviors and events.²⁵⁻⁴³ Even though this variable did not remain in multivariate analysis, it is necessary to build and encourage a new way of experiencing sexuality, since the patriarchal model is anachronistic and heavy, requiring the stimulation and permission for men to live masculinity in other ways, less toxic and in a lighter manner, not causing harm to health, whether physical or psychological.

Considering religious practice (assessed here as having or not having a religion), a higher association was found between university students who answered "no" to this question and suicidal ideation, both in bivariate and multivariate analysis (RP = 1.09; 95% CI = 1.02-1.17), a result similar to that found in other studies.¹⁻⁹ Religious practice, understood as engaging in activities such as meditation, prayer, or other manifestations of any belief, tends to promote greater understanding and emotional balance.¹⁻⁴⁵ Thus, having some form of religion (belief/habits) acts as a protective factor against suicidal ideation, highlighting the need for further research to explore this dimension among university students, especially among males, given the cultural and subjective value aspects involved.¹⁻⁴⁵

Concerning self-declared race/color, in bivariate analysis, being of black race demonstrated itself as a protective factor (RP = 0.85; 95% CI: 0.80-0.91) compared to white race/color. Although the literature indicates higher suicide rates affecting black youth [in Brazil, in 2016, out of every 10 suicides in adolescents and young people, approximately 6 occurred in black individuals and 4 in White individuals]⁴⁴, it is acknowledged that, historically, the black population faces socio-economic difficulties greater than those experienced by white individuals, including less access to higher education, especially public education. Thus, despite not finding support in the literature for our finding that belonging to the black race decreases the prevalence of the outcome by 85% (bivariate level), it is believed that the achievement of this space by this population is of utmost importance for changing their socio-economic context, potentially becoming a stimulating and protective factor for the individual. Additionally, a possible explanation could be that among those who reported suicidal ideation, only one (n = 1; 1.49%) declared themselves black, which could have influenced the result.

Regarding cohabitation, students living with a spouse, partner, parents, or guardians had a lower proportion of suicidal ideation compared to those living alone, maintaining statistical significance at the bivariate level (RP = 0.88; 95% CI = 0.79-0.99), but not in multivariate analysis. In a study with 637 university students at the Federal University of Mato Grosso, the authors found a higher prevalence of suicidal ideation among those living alone (11.5%) than among those who did not live alone (9.6%), but without statistical significance (p = 0.538).¹ Studies also demonstrate that being married or cohabiting with a romantic partner allows students to maintain higher levels of mental health and fewer suicidal thoughts. They further emphasize that living in university residences is associated with a lower manifestation of mental problems than living in non-university residences without parents/caregivers.^{14,45-47}

The quality and quantity of established interpersonal relationships, as well as the sense of belonging to a group and connection to significant people, play an important role in life satisfaction. Social isolation resulting from a young person not feeling socially integrated and not having developed a sense of belonging can create conditions conducive to suicidal ideation and suicide, especially in the transition to university, as it involves changes in family and peer relationships.^{4,14,36}

Regarding the variable health coverage (including insurance or prepaid plans), those who reported having it had lower proportions of the outcome at the bivariate level, remaining in multivariate analysis (RP = 0.92; 95% CI = 0.86-0.98). It is important to emphasize that this question was retained because the instrument used has American characteristics, as in Brazil, in addition to the option for insurance or prepaid plans, the population has access to the Unified Health System (SUS), which is universal, comprehensive, and equitable; it covers the university students investigated here, even though they are a temporary population (only during the graduation period) in the city of São João del Rei, as many come from other cities. Studies show that students from less privileged economic classes have more suicidal ideation when compared to those with better economic classification levels.^{1,14,16,47} This suggests that better financial conditions contribute to the possibility of acquiring private health insurance and greater health care, reducing the emergence of suicidal ideation.¹ Concerning monthly family income, most students indicated an income of 2 to 4 minimum wages (from R\$ 1,874.00 to R\$ 3,748.00), and this population, in fact, had the highest proportion of suicidal ideation (n = 23; 34.33%), but without statistical significance. However, this is only a hypothesis, and it is not possible to establish this relationship in our study.

About the academic and occupational characteristics, higher proportions of suicidal ideation were found among those enrolled in the initial periods: 1st or 2nd (n = 23; 34.33%) and 3rd or 4th (n = 17; 25.37%). However, only an association at the bivariate level was observed between being enrolled in the 7th and 8th periods (RP = 0.90; 95% CI = 0.82-0.97), compared to the 1st and 2nd periods. A possible explanation for the higher proportion

in the initial periods and the lower proportion in the final periods may be due to the life transition, leaving parents' homes to attend university, which can exacerbate psychological difficulties. Leaving the family and entering an unfamiliar environment with high academic standards can lead to depression or high levels of distress.^{1,38} Additionally, in the final periods, students are older, which is a protective factor discussed earlier.^{14,37,40}

An association was also observed only at the bivariate level in the Architecture course (RP = 1.14; 95% CI = 1.02-1.20), being the course that presented the highest proportion of suicidal ideation (17.91%). This result is challenging to discuss, as no studies specifically evaluate the Architecture course. However, a study conducted at a Portuguese university showed a higher percentage of students with suicidal ideation in the Humanities and Social Sciences (14.6%) compared to 7.2% of students in the Science and Technology area.²² Regarding differences between course areas, students in Social or Political Sciences tend to have higher levels of depression, anxiety, and stress compared to those studying Basic Applied Sciences, Engineering, or Medicine.⁴⁸

Regarding occupation, a significant bivariate association was found between not working and an increased outcome (RP = 1.09; 95% CI = 1.01-1.17), as well as working 40 hours or more weekly (RP = 0.88; 95% CI = 0.77-0.99) and working five days or more (RP = 0.89; 95% CI = 0.82-0.96). About the lack of occupation, the results are similar to those found in other studies, indicating that unemployed youth tend to show higher levels of self-devaluation and risks of depression than employed individuals.¹⁶⁻³⁸ However, studies also show that higher study and work hours, as well as consequently higher levels of stress and increasing demands in education, have a negative effect on academic performance, physical health, and emotional well-being, being associated with suicidal thoughts.^{38,46} This contradicts our findings that working ≥ 40 hours and ≥ 5 days a week decreases the prevalence of the outcome. On the other hand, some authors argue one of the protective behaviors against suicide⁷ is occupying free time with a healthy and pleasurable activity, citing work as an example.⁴⁹

In the analysis of behaviors related to alcohol and other drug use, significant prevalences of substance use were observed. In the bivariate analysis, associations with the outcome remained for having used marijuana 10 to 39 times during life and having used pills or injections of steroids without a prescription 10 to 39 times during life ($p < 0.05$), remaining independently associated with suicidal ideation in the multivariate analysis having used pills or injections of steroids without a prescription 10 to 39 times (RP = 1.67; 95% CI = 1.60-1.73) and 40 times or more during life (RP = 1.31; 95% CI = 1.12-1.25). On these findings, studies consistently affirm a strong association between drug use and suicidal ideation among young university students.^{1,5,11,14,17,18,22} When this analysis is done among males, it is more concerning, as these behaviors are more frequent in this group.¹⁷ Authors argue that because many university students are in an environment that is not their place of residence, have little social support, and face difficulties in meeting academic obligations, they may develop harmful and risky habits related to the use and abuse of psychoactive substances.^{14,17,18,48}

No relationship was found between alcohol consumption, especially excessive use, and suicidal ideation in our sample, contrary to most studies showing a strong association between this habit and the outcome.^{1-14,17-18-47} This can be explained by the fact that the alcohol question refers to the last 30 days, unlike other questions about drug use, which took into account lifetime use.

Authors argue that, in approaching suicidal ideation and completed suicide among university students, an important factor to consider is the self-sufficiency of students and the stigma related to the topic as barriers to seeking professional help.⁵⁰ Thus, efforts by university managers, including rectors, coordinators, centers and academic directories, professors, and even classmates, should be strengthened to overcome such barriers, offering support and social support. A study conducted with male students at a university in South Korea, aiming to examine the effects of a brief stress management intervention on depression, anxiety, suicidal ideation, and aggression among university students, showed that such interventions can have a positive effect on the mental health of students who received the program.²⁶ Therefore, this is a strategy that can be expanded and used in universities.

The present study has limitations as it is a cross-sectional design, and causal relationships cannot be concluded because it is impossible to identify a temporality relationship between the variables of interest. In addition, the study does not include other important variables in the analysis of suicidal ideation, such as suicidal behavior in the family and among friends; depressive symptoms; and other subjective aspects such as hopelessness, impulsivity, aggression, communication difficulties, and lack of social belonging. However, the study's design - involving careful sampling and being representative of male university students from various knowledge areas at a large federal public university - is a strength of the study, allowing for understanding important aspects to outline measures and programs aimed at identifying and minimizing such a situation among male university students.

V. Conclusion

It was observed that the variables that remained independently associated with suicidal ideation after multivariate data adjustment were increased age; having health coverage, including insurance or prepaid plan; and having used pills or injections of steroids without a prescription 10 or more times during their lifetime.

Suicidal ideation and suicide are already considered global public health issues, especially among university students and young people, much of which results from sociocultural and relational changes of this time. It predicts the act, is a risk factor for actual suicide, and should not be underestimated by university administrators. Thus, it is necessary overcoming barriers and taboos surrounding the topic.

Concerning young male university students, issues of men's health and its specificities, along with the demands of university life, a period of extensive changes, adaptations to various contexts, and influences of different perspectives, are also significant. It becomes essential to understand the group of male university students as a population in a behavioral transition process and more susceptible to adopting behaviors that compromise their health.

In this sense, the results reinforce the need for the development of more research with representative samples, understanding not only the proportion of the event among university students but also the factors that may be related to suicidal ideation. The goal is the early detection of these thoughts, an appropriate and interdisciplinary approach, and the creation of programs with promotion actions, guided by a broad health perspective, allowing these university students to express themselves and seek help within the university when needed.

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