

Factors associated with the use of cannabis by students at a public university



Fatores associados ao uso de cannabis por estudantes de uma universidade pública
Factores asociados al consumo de cannabis por estudiantes de una universidad pública

Isadora Laroca Bernardino^a

Gabriella de Andrade Boska^b

Daniela Viganó Zanott^a

Marília Daniella Machado Araújo Cavalcante^a

Heloísa Garcia Claro Fernandes^c

Priscilla de Oliveira Luz^d

Tatiana da Silva Melo Malaquias^a

Márcia Aparecida Ferreira de Oliveira^d

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ABSTRACT

Objective: To identify frequency and factors associated with the use of cannabis among students at a public university in the state of Paraná.

Method: Cross-sectional study, conducted with 168 students from a public university in central Paraná, Brazil. Data were collected between August and November 2022 through the RedCap platform containing sociodemographic variables, on the use of cannabis, problems related to consumption, and the Depression, Anxiety and Stress Scale. Descriptive analysis and ordinary least squares multiple regression models were performed. The research was approved by the Ethics Committee.

Results: Cannabis use was reported by 84.5% of students and 13.7% had some problem related to consumption. The factors sexual orientation (homosexual p-value=0.02/asexual p-value =0.01), living with college friends (p-value=0.03) and higher income (p-value <0.001), were associated with both more days of consumption and problems. Tobacco use in the last 30 days was associated with more days of cannabis consumption (p-value=0.02) and higher levels of stress linked to consumption-related problems (p-value=0.05).

Conclusion: Cannabis use is frequent among students, and sociodemographic characteristics, the use of other substances, and stress were associated with both the number of consumption days and reported problems.

Descriptors: Cannabis; Students; University; Mental health; Substance-related disorders.

RESUMO

Objetivo: Identificar a frequência e os fatores associados ao uso de cannabis entre estudantes de uma universidade pública do estado do Paraná.

Método: Estudo transversal realizado com 168 estudantes de uma universidade pública do centro do Paraná, Brasil. Os dados foram coletados entre agosto e novembro de 2022 pela plataforma RedCap contendo variáveis sociodemográficas sobre o uso de cannabis, problemas relacionados ao consumo e a Escala de Depressão, Ansiedade e Estresse. Realizou-se análise descritiva e modelos de regressão múltipla de mínimos quadrados ordinários. A pesquisa foi aprovada pelo Comitê de Ética.

Resultados: O uso de cannabis foi relatado por 84,5% dos estudantes e 13,7% apresentaram algum problema relacionado ao consumo. Os fatores orientação sexual (homossexual p-valor=0,02/assexual p-valor =0,01), residir com colegas de faculdades (p-valor=0,03) e ter maior renda (p-valor <0,001), associaram-se tanto a mais dias de consumo como aos problemas. O uso de tabaco nos últimos 30 dias associou-se a mais dias de consumo (p-valor=0,02) e índices mais elevados de estresse aos problemas com o uso (p-valor=0,05).

Conclusão: O uso de cannabis é frequente entre os estudantes e identificou-se que as características sociodemográficas, o uso de outras substâncias e o estresse associaram-se tanto aos dias de consumo como aos problemas relatados.

Descritores: Cannabis; Estudantes; Universidade; Saúde mental; Transtornos relacionados ao uso de substâncias.

^a Universidade Estadual do Centro-Oeste do Paraná (Unicentro). Guarapuá, Paraná, Brasil.

^b Universidade Federal do Rio Grande do Sul (UFRGS). Porto Alegre, Rio Grande do Sul, Brasil.

^c Universidade Estadual de Campinas (UNICAMP). Campinas, São Paulo, Brasil.

^d Universidade de São Paulo (USP). São Paulo, São Paulo, Brasil.

RESUMEN

Objetivo: Identificar frecuencia y factores asociados al uso de cannabis entre estudiantes de una universidad pública del estado de Paraná.

Método: Estudio transversal, realizado con 168 estudiantes de una universidad pública del centro de Paraná, Brasil. Los datos fueron recolectados entre agosto y noviembre de 2022 por la plataforma RedCap que contiene variables sociodemográficas, sobre el uso de cannabis y la Escala de Depresión, Ansiedad y Estrés. Se realizaron análisis descriptivos y modelos de regresión múltiple de mínimos cuadrados ordinarios. La investigación fue aprobada por el comité de ética.

Resultados: El consumo de cannabis fue reportado por el 84,5% de los estudiantes y el 13,7% tuvo algún problema relacionado con el consumo. Los factores orientación sexual (valor p homosexual = 0,02/valor p asexual = 0,01), vivir con amigos de la universidad (valor p = 0,03) y tener mayores ingresos (valor p < 0,001), se asociaron con más días de consumo y problemas. El consumo de tabaco en los últimos 30 días se asoció con más días de consumo de cannabis (valor p = 0,02) y mayores niveles de estrés y problemas con el consumo (valor p = 0,05).

Conclusión: El consumo de cannabis es frecuente entre los estudiantes y se identificó que las características sociodemográficas, el uso de otras sustancias y lo estrés, inherentes al contexto universitario, se asociaron tanto con los días de consumo como con los problemas reportados.

Descriptores: Cannabis; Estudiantes; Universidad; Salud mental; Trastornos relacionados con sustancias.

■ INTRODUCTION

According to the World Drug Report, after alcohol and tobacco, cannabis is the most widely consumed psychoactive substance in the world. Of the 296 million people who reported using some type of substance in 2021, an increase of 23% over the past ten years, 219 million used cannabis⁽¹⁾. In Brazil, the prevalence of cannabis use was confirmed by the III National Survey on Drug Use by the Brazilian Population (*Levantamento Nacional Sobre o Uso de Drogas pela População Brasileira - III LNUD*), which found that 7.7% of people between the ages of 12 and 65 reported using cannabis at least once in their lifetime, reaching 2.2 million in the last 30 days preceding the survey. The regions with the highest rates were the Southeast (4.7%) and South (4.1%)⁽²⁾.

Among university students, cannabis is also the most widely used substance, after alcohol and tobacco, and data from the I National Survey on Drug Use by University Students (*Levantamento Nacional Sobre o Uso de Drogas por Universitários*) in the 27 Brazilian Capitals showed higher prevalences than in the general population, with 26.1% having used it in their lifetime, 13.8% in the last year, and 9.1% in the last 30 days preceding the survey. Regarding the student profile, the majority were male, aged 18 to 34, living in the South region, enrolled in private universities, studying Humanities, and with a similar distribution between morning, afternoon, full-time, and evening periods. Cannabis use generally began between the ages of 17 and 18, which, for many, corresponded to the first years of undergraduate studies⁽³⁾. Other recent studies conducted at Brazilian public universities found similar profiles⁽⁴⁻⁵⁾.

These data reveal that the use of cannabis is common and increasingly frequent but does not necessarily indicate a rise in consumption-related problems.

Research shows that a large proportion of university students use cannabis recreationally, mainly in party settings, for socializing, relaxation, enhancing academic activities and as a resource for dealing with mental health issues such as anxiety and sadness⁽⁶⁻⁹⁾.

Studies assessing risk criteria have identified that high-risk consumption, characterized by use that brings biopsychosocial consequences such as tolerance, withdrawal symptoms, loss of interest and motivation in daily activities, interpersonal problems, and worsening of mental health problems, is observed in a small proportion of students, who require monitoring by healthcare services^(3-4,9). Additionally, advances in recent decades in regulating the use of medicinal cannabis for health treatments for specific groups may be related to the increasing prevalence of non-problematic consumption, since research is still insufficient to make this distinction⁽¹⁾.

In general, university students perceive cannabis consumption as more beneficial than risky and often more effective in managing mental health issues than psychotropic medications, which often leads to the substance as the first option for improving self-efficacy and as a coping strategy for daily situations, which often involve an academic environment marked by overload, high demands and competitiveness^(6,8). There is no consensus in the literature on use of cannabis and academic performance. A study conducted with health science students at a public university found no association⁽⁴⁾.

There are differences between the results of studies conducted in places where cannabis use is decriminalized or legalized and in places governed by prohibitionist policies such as Brazil. One example is that, in countries where medical cannabis is accessible to the entire population, such as Greece and Canada,

research shows that university students frequently use prescribed cannabis for anxiety, sleep problems, depression, pain, and harm reduction from other illicit substances, with guaranteed monitoring by healthcare professionals⁽¹⁰⁻¹¹⁾. In the Brazilian context, criminalization reinforces stereotypes and stigmas regarding users of illicit substances, reduces the search by university students for specialized public services, such as the Psychosocial Care Centers for Alcohol and Drugs (*Centros de Atenção Psicossocial Álcool e Drogas - CAPS AD*), and hinders the development of welcoming spaces both inside and outside the university where students can openly discuss their consumption, constituting a barrier to accessing healthcare services^(4,5).

It is worth noting that, despite the lack of consensus in the scientific literature regarding the direct and exclusive relationship between frequent cannabis use and the development of problems, recent studies have reinforced impairments in executive function, as well as the risk of developing a severe psychotic episodes, identifying a prevalence of one in every 200 individuals, especially among young women, with pre-existing mental health conditions, who used higher doses of cannabis, specifically THC (tetrahydrocannabinol)⁽¹²⁻¹³⁾.

When cannabis use becomes problematic and causes harm and damage to this population, it is not just a consequence of consumption, but rather a set of situations emerging from this stage of life, which directly depends on the sociocultural context and individual characteristics⁽¹⁴⁾. A study conducted with Spanish university students concluded that subjective norms and self-efficacy were the main predictors of use of cannabis and related problems⁽¹⁵⁾. Other studies show that sociodemographic characteristics such as gender, sexual orientation, marital status, support network and use of other substances are also commonly associated with the development of problems related to its use^(5,14).

Even though there is a similar profile of university students who use cannabis, there are individual, pharmacological and life context differences that may arise depending on the studied scenario. Therefore, studies conducted in different universities and regions are necessary to better understand the phenomenon.

Universities are not only spaces for an educational environment but also have resources that can strengthen the health and well-being of students, playing a fundamental role in supporting mental health care

in the academic community. Studies highlight a scarcity of projects, programs, and interventions aimed at mental health and psychoactive substance use among students, despite their recognized need for such initiatives^(9,16-17).

Given the frequency of cannabis use by university students, healthcare professionals, who occupy a strategic position in prevention and care promotion actions, must be able to welcome, assess and detect potential problems related to its use at an early stage. Therefore, psychosocial interventions that reduce harm and promote the comprehensive health of university students must be developed, not only in healthcare services but also in universities⁽⁸⁾. To contribute to the knowledge production in this field, and to provide evidence that supports intervention and care actions, it is necessary to understand how cannabis consumption occurs, and the factors associated with it.

This study aims to identify the frequency and associated factors of cannabis use among students at a public university in the state of Paraná, Brazil.

■ METHODS

This is a descriptive and exploratory cross-sectional study conducted between August and November 2022. The writing of this article followed the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist, which ensures that observational studies are reported clearly and comprehensively⁽¹⁸⁾.

The research was conducted at a public state university located in the central region of Paraná, Brazil. This institution has three main campuses and serves students from various regions of the state. In 2022, the university offered 41 undergraduate courses and had 6,492 enrolled students.

The sample size calculation was based on the total number of enrolled students, considering a 5% margin of error and a 95% confidence interval. This resulted in a sample of 363 students. However, participation was defined by convenience, resulting in a final sample of 168 students who completed all questions in the data collection instrument. To ensure data quality, complete case analysis was applied, that is, participants who did not answer all questions were excluded from the final analysis. This procedure is widely used in cross-sectional

studies to prevent biases that may arise due to the lack of responses in essential parts of the questionnaire.

Complete data analysis is an approach used to deal with missing data, in which only cases with all variables complete are included in the analysis. Instead of imputing or estimating missing values, this technique excludes participants who did not answer all relevant questions. Although it can reduce the sample size, this approach is considered robust when the amount of missing data is small or when missing data occurs randomly, meaning that the absence of responses is not related to the variables of interest. In this study, complete data analysis was chosen because excluding incomplete cases minimized potential biases without compromising the representativeness of the sample. Additionally this strategy ensured that the statistical analysis was performed only with complete and consistent data, providing greater confidence in the results obtained⁽¹⁹⁾.

Data collection was conducted online using the RedCap platform, a secure tool for data collection and management. The data collection instrument was developed by the researchers based on a literature review and included three main sections:

1. Sociodemographic data: gender, age, sexual orientation, race/color, academic course, city of residence, living arrangement, religion, and family income.
2. Cannabis use: questions about use of cannabis in the last 30 days, such as the method of consumption, whether smoked, ingested, etc., whether consumption was prescribed or monitored by a healthcare professional, in addition to questions about the concomitant use of other psychoactive substances such as alcohol and tobacco.
3. Problems related to cannabis use: five questions with yes/no answers, based on the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V)⁽²⁰⁾. These questions investigated, for example, whether the participant had ever unsuccessfully tried to stop using cannabis or whether they had ever abandoned important activities due to consumption. This measure was chosen due to the lack of instruments that

address problems related to consumption, as most of them focus only on usage patterns.

4. Depression, Anxiety, and Stress Scale (DASS-21): used to assess students' depression, anxiety, and stress. The DASS-21 is a self-report scale consisting of 21 items. The version used was adapted and validated for the Brazilian population, presenting good reliability indices (between 0.92 and 0.96)⁽²¹⁾.

At the end of data collection, there were 427 accesses to the questionnaire, but 239 responses were excluded for being incomplete, and 20 responses were removed due to duplication. Thus, the final analysis was performed with 168 students.

Data analysis was performed using the statistical software STATA 15. Initially, descriptive analyses were performed to calculate the frequencies, means, and standard deviations of the sociodemographic variables and the DASS-21 results. To investigate the associations between sociodemographic factors and cannabis use, it was applied a multiple ordinary least squares regression model. This type of analysis is ideal for identifying which factors are most strongly associated with cannabis use and related problems. For example, variables such as sexual orientation, income, living arrangement, and concomitant tobacco use were included as predictors in the model.

To ensure the robustness of the results, heteroscedasticity-robust standard errors was used to correct potential issues that may arise when the variability of the errors is not constant across different groups. When used heteroscedasticity-robust standard errors in an OLS regression, it was automatically adjusted for violations of certain assumptions of the model, without needing to test whether the data follow a normal distribution. Specifically, these robust standard errors correct error calculations when heteroscedasticity is present, that is, when the variance of the residuals is not constant across observations⁽²²⁾.

Standard errors assume that this variance is homogeneous, but when this assumption is violated, traditional significance tests may produce incorrect results. Robust standard errors correct for this by adjusting for errors without relying on the normality assumption, based on the actual observed variances in the model residuals. This means that even if the data does not

follow a normal distribution or present heteroscedasticity, robust standard errors still provide reliable and adjusted estimates. Therefore, this approach eliminates the need to check the normality of the residuals, as the standard errors are adjusted to address these potential inconsistencies.

The research was conducted in compliance with the ethical precepts established by Resolution 466/2012 of the National Health Council and approved by the Research Ethics Committee of the *Universidade Estadual do Centro-Oeste* under number CAAE: 59502222.2.0000.0106. All participants signed the Informed Consent Form (ICF) online before responding to the questionnaire.

■ RESULTS

Of the 168 university students participating in the study, the average age was 21.6 years ($SD=2.37$), and most were in the early years of Nursing (12.5%), Veterinary Medicine (8.9%), Agronomy, and Journalism (5.3%). Most reported receiving financial support from family or friends to stay in university (78.6%). The other sociodemographic data are presented in Table 1.

In the analysis of the DASS-21 scale, as presented in Table 2, moderate levels of stress and depression were identified among students. The average level of anxiety was low, but with a maximum value close to the stress level.

Table 1. Sociodemographic profile of university students. Guarapuava, PR, Brazil, 2022 (n=168).

Variables	n	%	
Gender	Female	96	57.1
	Male	68	40.4
	I don't know, I prefer not to say	4	2.3
Sexual orientation	Heterosexual	83	49.4
	Homosexual	10	5.9
	Bisexual	67	39.8
	Other	4	2.4
	I don't know, I prefer not to say	4	2.3
Self-declared color	White	133	79.1
	Black	6	3.6
	Brown	26	15.4
	Yellow	2	1.2
	I don't know, I prefer not to say	1	0.6
Marital status	With a partner	19	11.3
	Without a partner	147	87.5
	I don't know, I prefer not to say	2	1.2

Table 1. Cont.

Variables	n	%
Religion	No religion	48.2
	Religious	22.0
	I don't know, I prefer not to say	29.7
Income	Up to 1,900 BRL	70.2
	Above 1,900 BRL	24.4
	I don't know, I prefer not to say	5.4
Living arrangement	Family members	44.6
	College peers and friends	26.7
	Others	28.5

Source: Research data, 2022.

Table 2. Levels of depression, anxiety and stress among university students according to the Depression, Anxiety and Stress-21 scale. Guarapuava, PR, Brazil, 2022 (n=168).

	Depression	Anxiety	Stress
Mean	9.92	7.78	11.25
Standard deviation	10.59	8.31	9.89
Minimum	0	0	0
Maximum	42	36	38

Source: Research data, 2022.

Regarding substance use in the 30 days prior to the study, 84.5% of students reported using cannabis, as well as 84.5% reporting alcohol use, 47.1% tobacco, 42.7% e-cigarettes, 26.8% psychedelics, 5.9% cocaine and 5.3% inhalants. Other substances were not mentioned.

Specifically regarding use of cannabis, as shown in Table 3, 26 (15.5%) reported daily use. Consumption associated with other substances was reported by 92 students (54.7%), mainly alcohol, tobacco and the psychedelics ecstasy and LSD. Regarding the method of consumption, 112 reported smoking cannabis (66.7%) and 26 (15.5%) used both smoking and ingestion methods. Only one student reported using cannabis oil to

treat epilepsy, however without a medical prescription or monitoring by a healthcare team.

The main reasons for consumption were relaxation (82.7%), stress and anxiety reduction (63.1%) and interaction with friends (61.9%). Most students used cannabis recreationally and did not meet the criteria for risky consumption (86.3%). Twenty-three participants (13.7%) answered "yes" to three or more criteria indicating risky consumption with signs of tolerance in 154 (92%), a perceived need for consumption in 46 (27.4%), and a reduction in previously common activities in 30 (17.8%). These were the students who reported daily use of cannabis.

Table 3. Cannabis consumption by university students. Guarapuava, PR, Brazil, 2022 (n=168).

Variables	n	%
Days of consumption in the last 30 days	0	18.4
	1-10	38.7
	11-29	27.3
	30	15.4
Consumption associated with other substances	Never	40.4
	Rarely	9.5
	Weekly	19.6
	Monthly	25
	I don't know, I prefer not to say	5.3
Reasons for consumption	Relaxation	82.7
	Reducing stress and anxiety	63.1
	Interacting with friends	61.9
	Forgetting problems	36.9
	Improving attention, concentration or performance	34.5
	Parties or specific occasions	29.7
	Other reasons	5.9
	I don't know, I prefer not to say	5.3
Consumption-related problems score	0-2	86.3
	3-5 – problems with use	13.6

Source: Research data, 2022.

When analyzing the factors associated with days of cannabis use and the problems score, as presented in Table 4, it was identified that sexual orientation (homosexual p-value = 0.02 / asexual p-value = 0.01), living with college friends (p-value = 0.03) and having a higher income (p-value <0.001) were associated with both more days of consumption and the development of problems. Tobacco use in the last 30 days was associated

with more days of consumption (p-value = 0.02) and higher stress levels on the DASS-21 scale were associated with more problems with use (p-value = 0.05).

Students who self-identified as female (p-value = 0.03), white (p-value = 0.01), yellow (p-value <0.001), brown (p-value = 0.02) and those who repeated a semester of their course (p-value = 0.03) had fewer problems related to consumption.

Table 4. Multiple regression model of response variables in relation to days of cannabis consumption and problems score. Guarapuava, PR, Brazil, 2022 (n=168).

Response variables	Days of cannabis consumption		Problems score	
	Beta coefficient (β)	p value*	Beta coefficient (β)	p value*
Age	0.88	0.11	0.05	0.49
Female	-2.20	0.43	-0.61	0.03†
Other	-4.34	0.50	-0.49	0.46
Sexual orientation (heterosexual)*				
Homosexual	8.42	0.02†	0.92	0.14
Bisexual	-1.13	0.64	-0.13	0.60
Pansexual	-2.52	0.77	1.25	0.09
Asexual	-12.68	0.01†	-1.63	0.01†
Self-declared color (black)*				
Brown	-3.41	0.51	-1.76	0.02†
White	-4.11	0.44	-2.04	0.01†
Yellow	4.06	0.50	-2.98	< 0.001‡
Religion (Catholic)*				
Evangelical	-2.39	0.50	-0.38	0.31
Spiritist	3.93	0.36	-0.43	0.20
African-based religions	-0.29	0.96	0.43	0.68
Atheist	-0.20	0.94	-0.02	0.94
Current living arrangement: family members*				

Table 4. Cont.

Response variables	Days of cannabis consumption		Problems score	
	Beta coefficient (β)	p value*	Beta coefficient (β)	p value*
College friends	6.88	0.03†	0.56	0.03†
Student housing	-1.12	0.86	-0.19	0.72
Income	0.00	<0.001‡	0.00	<0.001‡
Repeated a semester	-4.29	0.10	-0.65	0.03†
Depression (DASS-21)	-0.14	0.28	-0.02	0.17
Anxiety (DASS-21)	-0.16	0.42	0.00	0.92
Stress (DASS-21)	0.22	0.20	0.04	0.05†
Mental disorder diagnosis	1.78	0.40	0.08	0.72
Tobacco consumption (30 days)	0.25	0.02†	0.02	0.15
Alcohol consumption (30 days)	-0.04	0.80	0.00	0.88

Source: Research data, 2022.

*Reference category; †p-value ≤ 0.05 ; ‡p-value < 0.001

■ DISCUSSION

The use of cannabis was frequent among university students. To better understand this, it is necessary to consider the influences of university dynamics, as well as the intersections between sociodemographic characteristics, use of other substances and mental health needs.

Most students who participated in this research used cannabis in the last 30 days (84.5%), which differs from the findings of studies conducted in other public universities, national and international, which, despite having similar profiles, found rates ranging from 24% to 57%^(4-6,8). The national survey conducted in Brazilian capitals revealed that 9.1% had used it in the last 30 days⁽³⁾ before the survey. As for other substances, similar results were found, with alcohol and tobacco being the most consumed^(4,23).

Regarding problems related to cannabis consumption, it was identified in less than 15% of students, corroborating the findings of other studies conducted in Brazil and Norway^(7,14,24). However, distinct values are observed depending on the context. Studies analyzing substance use more generally, without focusing on cannabis, found lower prevalence rates. A study with African university students found that 4.7% met the criteria for risky consumption⁽⁹⁾, and the Brazilian survey showed 0.6%⁽³⁾. A Canadian study that investigated only the use of cannabis, similar to the present research, identified a higher prevalence of 23.1%. In that case, the participants were mostly male, who tend to have more problems with consumption, differing from the profile found in this study⁽¹⁵⁾.

The reasons for cannabis use are commonly associated with recreational use, socialization, and coping with the consequences of the university environment,

particularly insomnia, the need for relaxation, introspection, and increased creativity, as also found in this study^(6,10,15). It is worth noting that one student reported using cannabis oil for medical treatment, a demand that tends to grow in Brazil with recent advances in this field. Healthcare professionals and the university environment, when equipped, can contribute to addressing this issue in the university context, as suggested by a study conducted in Greece⁽¹⁰⁾.

When analyzing the factors associated with the days of cannabis use and the reported problems, it was identified that sociodemographic variables and markers such as gender, sexual orientation, race/color, and income were associated with both the days of use and the problems. The findings revealed that university students who self-identified as female, asexual, and non-black had fewer problems with consumption when compared to male, heterosexual, and black students. Similar results regarding gender and sexual orientation are found in several studies conducted in different national settings^(6,14,25). However, racial issues are presented differently: in an analysis of universities in Brazilian capitals, white people had a higher risk of developing problems with cannabis use compared to black people⁽²⁶⁾.

Other national studies did not analyze the race/color variable, highlighting a lack of attention to this important marker in the university context. It is important to emphasize that, among the general population, black people tend to have more problems with the use of psychoactive substances due to social inequality and historical and cultural factors such as structural racism and the criminalization of cannabis use associated with the black population⁽²⁷⁾. These aspects affect universities by intensifying mental suffering and substance use among this population and, therefore, must be investigated⁽¹⁴⁾.

Income showed a strong association with consumption and problems presented by students. As evidenced by other studies, the higher the income, the greater the access to purchase high-cost substances such as cannabis. Additionally, living with people with higher purchasing power who also use cannabis and coming from families with better economic conditions can facilitate consumption among university students^(6,26). A study conducted in Africa found that students with a

monthly income above 150 USD, approximately 750.00 BRL, were five times more likely to develop cannabis-related problems⁽⁹⁾.

Housing type is also discussed in other studies, confirming the association between living with college friends and cannabis use. Living with family members may reduce the frequency and pattern of use due to imposed restrictions, while living with colleagues provides a greater sense of freedom and the lack of monitoring and rules, facilitating access and autonomy for consumption^(6,10). A Spanish study that analyzed family climate and its relationship with cannabis use among university students found conflicts predictive of cannabis use and the problems developed. That is, while living with family members may delay the onset of consumption, a frequently conflictive environment can influence the intention to use⁽¹⁵⁾. Conversely, a study conducted at a public university in the state of São Paulo, where more than 50% of students lived with friends, almost double the number in this study, found no association between the type of housing and substance use⁽¹⁶⁾.

It was observed that it is common among students to use cannabis combined with other substances, especially legal ones, an aspect that should be explored in more depth, since alcohol and tobacco use is often considered less harmful, socially expected and even encouraged by social norms, both family and at the university itself. A study identifying the prevalence of use among students at a federal university in Rio Grande do Sul found that tobacco use in the last 30 days before the survey was related to more days of use of other illicit substances, corroborating the findings of this study⁽⁷⁾.

Another factor associated with cannabis use-related problems was the stress index measured by the DASS-21 scale. This finding has already been demonstrated by other studies that used the same instrument, that is, the higher the stress level of university students, the greater the risk of developing problems with use⁽²⁶⁻²⁷⁾. A study conducted with 111 health science students found that stress can be a triggering factor for cannabis use, as this substance induces relaxation and enhances feelings of relief and well-being⁽²⁸⁾. Another study conducted in Spain also found similar data, with a considerable prevalence of stress (34.5%), anxiety (23.6%) and

depression (18.4%) among university students who use cannabis⁽²⁹⁾. It is worth noting that most students in this study were enrolled in full-time courses, which has also been identified in the literature as a triggering factor for stress and problems with consumption⁽³⁾.

The only factor, besides sociodemographic characteristics, that showed an inversely proportional relationship with problems with cannabis use was repeating a semester of the course. Compared to students who did not repeat any semester, those who repeated experienced fewer problems. A different result was found by a national study conducted with more than 12,000 students from public and private universities, which confirmed that more than 50% of high-risk cannabis users assessed by the ASSIST scale passed all subjects compared to 66% of low-risk users. This study also confirmed that course satisfaction apparently had a greater influence on passing grades than cannabis use, a variable that was not analyzed in this study and requires further evidence for better interpretation⁽²⁶⁾.

For example, a study that explored the effects of cannabis use on the routine of English university students found that engagement with university activities was a protective factor against problems with consumption among certain student profiles, since the effects of the substance hindered the performance of academic activities, especially complex ones that required attention or verbal expression, making use less frequent and more recreational⁽¹³⁾. It is important to emphasize that it is not the increase in university activities that should be considered, but rather students' engagement with the proposed activities, with the university playing a central role in fostering diverse spaces of belonging for both professional and personal development.

Stands out the importance of individualizing the problems arising from use and considering the specificities of each student, since different factors and social markers can influence this issue. It is also necessary to expand life experiences beyond the university walls and create protected spaces with students where they can discuss mental health, the dynamics of the university and the use of substances, without judgments.

Enabling exchanges and fostering university students' understanding of the relationships they establish with cannabis use so that they can make informed decisions and minimize the development of problems, which is an opportune and necessary approach⁽³⁰⁾.

The main limitation identified in this study was the small number of participants who completed the data collection instrument, which limits the generalization of the findings about students at the studied public university. Although this issue is expected in online survey research, it may have been influenced by the length of the instrument and the collection of sensitive information. Another factor that may have limited the scope of other results was the exclusion of variables about the course, period and reasons for cannabis use in the inferential analysis model.

■ CONCLUSION

The use of cannabis was frequent among the university students who participated in the study, with less than 15% reporting problems related to consumption, such as tolerance, perception of the need to consume, and abandonment of activities. It was possible to identify that sexual orientation, whether homosexual or asexual, higher income, and living with college friends, were associated with more days of cannabis use. Regarding problems related to use, in addition to the previously mentioned variables, tobacco use, and stress were also associated. Females, non-blacks, and those who repeated a semester of the course experienced fewer problems with cannabis consumption.

These findings reinforce the evidence that cannabis use is common among university students and presents associated variables that broaden the understanding of this phenomenon. It is important to highlight that social markers such as gender, sexual orientation, race, and income, associated with use deserve emphasis in research and actions. This study contributed with data that can support the development of actions and systems of care and harm reduction related to cannabis use for university students.

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■ Data and material availability

Access to the dataset can be obtained upon request to the corresponding author.

■ Authorship contribution

Conceptualization: Isadora Laroca Bernardino, Gabriella de Andrade Boska, Heloísa Garcia Claro Fernandes.

Data curation: Gabriella de Andrade Boska, Heloísa Garcia Claro Fernandes.

Formal analysis: Heloísa Garcia Claro Fernandes.

Investigation: Isadora Laroca Bernardino.

Methodology: Isadora Laroca Bernardino, Gabriella de Andrade Boska, Heloísa Garcia Claro Fernandes.

Project administration: Gabriella de Andrade Boska.

Supervision: Gabriella de Andrade Boska, Daniela Viganó Zanott, Marília Daniella Machado Araújo Cavalcante, Márcia Aparecida Ferreira de Oliveira.

Validation: Daniela Viganó Zanott, Marília Daniella Machado Araújo Cavalcante, Priscilla de Oliveira Luz, Tatiana da Silva Melo Malaquias, Márcia Aparecida Ferreira de Oliveira.

Visualization: Gabriella de Andrade Boska, Heloísa Garcia Claro Fernandes, Daniela Viganó Zanott, Marília Daniella Machado Araújo Cavalcante, Priscilla de Oliveira Luz, Tatiana da Silva Melo Malaquias, Márcia Aparecida Ferreira de Oliveira.

Writing-original draft: Isadora Laroca Bernardino, Gabriella de Andrade Boska, Priscilla de Oliveira Luz.

Writing-review & editing: Heloísa Garcia Claro Fernandes, Daniela Viganó Zanott, Marília Daniella Machado Araújo Cavalcante, Tatiana da Silva Melo Malaquias, Márcia Aparecida Ferreira de Oliveira.

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■ Corresponding author

Isadora Laroca Bernardino

E-mail: isadora.laroca@gmail.com

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