# Prevalence of Cannabis use among students at a public university in Bahia: comparison between repeated surveys

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**Abstract**

The aim of this study was to compare the prevalence of *Cannabis* use between two repeated surveys among university students at a public higher education institution in Bahia. Two repeated surveys were carried out with university students from the same institution in the years 2012 and 2014. This study investigated Cannabis use during the 30 days prior to the survey. The comparisons between the surveys were performed using the Chi-squared test and Fisher's exact test. The participation was 1,085 and 1,041 university students in the years 2012 and 2014, respectively. The prevalence of Cannabis use, one or more times in the previous 30 days, increased between surveys from 2.4% to 5.8%. This increase was observed among women, university students aged 21 to 23 years and aged 24 and over, students with a father who had higher education level and a mother with a high school education; moreover, there was an increase in consumption for university students with and without a partner, and between those who studied either during the day or night. There was also an increase in consumption among university students who did not smoke and those who reported excessive alcohol consumption. The university students who reported not playing team sports, stood out with the increase in consumption between surveys, going from 1.9% in 2012 to 5.9% in 2014. It can be concluded that there was an increase in the consumption of *Cannabis* use between two surveys, with an emphasis on the increase in different groups, such as women and university students who drank alcohol excessively and who did not play team sports.

**Keywords:** Illicit Drugs, Marijuana Use, Students

## INTRODUCTION

The use of psychoactive substances, such as *Cannabis*, commonly reported as marijuana, in a recreational way can develop into an addiction, due to regular consumption, in addition to the risk of chronic bronchitis and impaired respiratory function, psychotic symptoms and disorders, in cases with a history of psychosis, as well as educational impairment[1]. However, it is important to consider the need for in-depth studies in order to expose the potential effects resulting from this use, such as the appearance of bipolar disorder[2] and vocal disorders[3].

The consumption of this type of substance during their life was demonstrated in the young Brazilian population (18 to 24 years old) in general (17%; CI95%: 13.3 - 20.7), but also in Brazilian (26.9% ; CI95%: 22.9 - 31.0) and American (52.9%; CI95%: 51.2

- 54.6) university students of the same age group[4]. In a systematic review study on the use of psychoactive substances in university students, it was observed that *Cannabis* was the third most consumed type, behind alcoholic beverages and tobacco[5].

College men stand out as the main group that consumes *Cannabis*[5]. However, it is essential to characterize other potential groups related to this behavior, especially when considering aspects related to the link with the university, as studies have shown the characterization of consumption in terms of academic performance[6] and association with the university[7]. However, understanding this in relation to other attributes, such as in relation to health-related behaviors, such as the practice of team sports, is extremely relevant, given the relationship observed between the use of other psychoactive substances such as alcohol and the consumption of *Cannabis*[8,9].

Considering the importance of monitoring *Cannabis* use among university students, as they represent a group that has expanded in recent years in Brazil, and due to the transition from adolescence to adulthood, as well as the process of entering the labor market, knowledge on this theme can contribute to the application of projects and intervention programs. In view of this, the objectives of this study were to compare the prevalence of *Cannabis* use between two repeated surveys and to estimate the factors associated with this use in each survey, in university students from a public higher education institution in Bahia.

## METHODS

The information in this study comes from the Monitoring of Health and Quality of Life Indicators in Academics (MONISA), referring to surveys conducted in the years 2012 and 2014, in a public higher education institution located in the southern region of the state of Bahia, Brazil. The MONISA Study was approved by the local Research Ethics Committee under protocol number 382/10. The study design and methodological details were previously presented by Sousa *et al.*[10]

The target population was composed of university students enrolled in the second academic semester of the survey years. Students who had a special type of enrollment (those already with a diploma, individually enrolled in course subjects) and those who started their studies in the second academic semester of the year under investigation were excluded from the target population.

The sample calculation considered the target population to be 5,767 in 2012 and 5,224 in 2014, with a relative error of three percentage points, a prevalence of 50% and a confidence level of 95%. Samples increased by 20% and 15% to remedy losses/refusals and for association estimates, respectively. The samples estimated based on the equation proposed by Luiz and Magnanini11 were 1,243 in 2012 and 1,223 in 2014.

The samples, in each year of survey, were stratified according to the number of courses, with 34 courses in 2012 and 33 courses in 2014, study period (day and night), and the year of entry into the institution which was categorized into four categories (the 2012 survey: years 2012, 2011, 2010 and 2009 or earlier; the 2014 survey: years 2014, 2013, 2012 and 2011 or earlier). Finally, the simple random selection process was used to select university students in each stratum, considering the enrollment list in alphabetical order. Searches of university students were carried out in up to three attempts, changing the days and

times. University students not found were considered as losses and those who refused to participate were considered as refusals, and there was no replacement of losses and refusals.

The training of the teams responsible for data collection was carried out in July and August, which were composed of university students, not included in the sample, and teachers from different courses at the institution. Data collections were carried out from September to November in each survey year in the institution's classrooms, before, during, or at the end of classes.

To obtain the information, the ISAQ-A questionnaire (Indicators of Health and Quality of Life in Academics)[12] was used. The consumption of illicit drugs (*Cannabis*) was measured by the following statement "in the last 30 days, how many times have you used drugs, such as ...". The illicit drug option was on the list, along with other illicit drugs. The answer options were: "never", "not once", "1 or 2 times", "3 to 9 times", "10 or more times", "I do not know", and "I do not want to answer". The outcome of this study was the report of consumption of the illicit drug, at least once in the last 30 days. The options "I do not know" and "I do not want to answer" were excluded from the analysis. The reproducibility levels of the consumption option of this drug were Kappa 0.49[12].

The independent sociodemographic variables were: sex, age group in thirds (2012 survey: 18 to 20 years old, 1st third; 21 to 23 years, 2nd third; 24 to 54 years, 3rd third; 2014 survey: 18 to 20 years old, 1st third; 21 to 23 years old, 2nd third; 24 to 57 years old, 3rd third), marital status (without partner and with partner), and father's and mother's education (never studied, incomplete elementary school, complete elementary school, complete high school and complete higher education).

The variables related to the university were: period of study (day and night), years of enrollment at the university (for the 2012 survey: 1st year, admission in 2012; 2nd year, admission in 2011; 3rd year, admission in 2010; 4th year or earlier, entered in 2009 or previous years; for the 2014 survey: 1st year, entered in 2014; 2nd year, entered in 2013; 3rd year, entered in 2012; 4th year or earlier, entered in 2011 or previous years), study area according to the institution's courses, classified according to the knowledge areas of CAPES (Coordination for the Improvement of Higher Education Personnel)[13] in Health Sciences, Exact and Earth Sciences; Biological Sciences, Engineering, Agricultural Sciences, Applied Social Sciences, Humanities and Linguistics, Languages, and Arts.

The variables referring to life habits were: practice of collective sports, categorized as no (does not practice) and yes (referring to the practice of at least one modality, being football, basketball, volleyball, or handball, on at least one day of the week); smoking habit, related to the the current situation of cigarette consumption per day, classified as never smoked, ex-smoker (quit smoking less than two years ago or two years or more) and smokers (smokes 1 cigarette or more per day)[14]; and consumption of binge drinking alcohol, through the consumption of five or more doses of alcoholic drinks on the same occasion, within the last thirty days, classified as no, yes on one occasion, and yes on more than one occasion (1 dose: half a bottle of beer, or 1 can of beer, or 1 glass of wine, or 1 dose of whiskey, cognac, sugarcane liquor, or vodka)[14].

The data were tabulated using the *EpiData* software version 3.1 and the analyses

were performed using SPSS version 24.0. Descriptive statistics were used, through the analysis of prevalences, mean, standard deviation (SD), minimum and maximum values. The prevalence of marijuana use among the surveys was compared using the chi-squared test, and in specific cases, Fisher's exact test. Prevalence Ratios (PR), through Poisson regression in crude and adjusted analyzes, with adjustment for robust variance, were used for the association between exploratory variables and the outcome of this study in each year of the survey. To perform the multivariate analysis, all independent variables were inserted into the model and removed using the backward variable selection method, with those that presented the Wald test p-value <0.20 at the end of the adjustment. The level of significance adopted was 5%.

## RESULTS

In the 2012 and 2014 surveys, 1,085 and 1,041 university students participated, respectively. The mean age was 24.0 years old (SD=6.0) with a range of 17 to 54 years in 2012, and 23.6 years old (SD=5.8) with a range of 17 to 57 years in 2014.

Table 1 shows the sociodemographic characteristics, the link with the university, and the students' lifestyle in the surveys. There were a majority of women, university students without a partner, and were linked to the daytime study period in the surveys. There was a predominance of older university students, who did not play team sports, did not smoke, and did not consume alcoholic beverages in excess on the same occasion.

**Table 1-** Sociodemographic description, link to the university, and life habits of university students. Bahia. 2012 and 2014.

| Variables | 2012 Survey (n) % | 2014 Survey (n) % |
|---|---|---|
| **Sex** | | |
| Male | (489) 45.1 | (494) 47.5 |
| Female | (595) 54.9 | (547) 52.5 |
| **Age group** | | |
| 1st third | (304) 28.3 | (322) 31.2 |
| 2nd third | (354) 33.3 | (352) 34.1 |
| 3rd third | (412) 38.4 | (357) 34.6 |
| **Father's Education** | | |
| Never studied | (29) 2.8 | (21) 2.1 |
| Incomplete elementary school | (298) 28.7 | (220) 22.4 |
| Complete elementary school | (165) 15.9 | (134) 13.7 |
| Complete high school | (441) 42.5 | (429) 43.8 |
| Complete higher education | (104) 10.0 | (176) 18.0 |
| **Mother's Education** | | |
| Never studied | (25) 2.3 | (12) 1.2 |
| Incomplete elementary school | (256) 24.1 | (155) 15.4 |
| Complete elementary school | (142) 13.3 | (122) 12.1 |
| Complete high school | (443) 41.6 | (444) 44.0 |
| Complete higher education | (198) 18.6 | (276) 27.4 |
| **Marital Status** | | |
| Without partner | (921) 85.3 | (905) 87.4 |
| With partner | (159) 14.7 | (131) 12.6 |
| **Study Period** | | |
| Daytime | (731) 67.4 | (747) 71.8 |
| Nighttime | (354) 32.6 | (294) 28.2 |
| **Years of university exposure** | | |
| 1st year | (230) 21.2 | (200) 19.2 |
| 2nd year | (263) 24.2 | (199) 19.1 |
| 3rd year | (216) 19.9 | (227) 21.8 |
| 4th year and more | (376) 34.7 | (415) 39.9 |
| **Area of Study** | | |
| Agricultural Sciences | (91) 34.2 | (80) 30.1 |
| Exact and Earth Sciences | (190) 35.3 | (168) 31.2 |
| Applied Social Sciences | (237) 31.8 | (219) 29.4 |
| Biological Sciences | (75) 31.9 | (84) 35.7 |
| Engineering | (92) 34.3 | (138) 51.5 |
| Humanities | (164) 36.3 | (143) 31.6 |
| Health Sciences | (113) 32.6 | (108) 31.1 |
| Linguistics, Languages, and Arts | (123) 34.5 | (101) 28.3 |
| **Practices team sports** | | |
| No | (874) 81.5 | (840) 81.6 |
| Yes | (198) 18.5 | (189) 18.4 |

*to be continued...*

| Variables | 2012 Survey(n) % | 2014 Survey(n) % |
|---|---|---|
| Smoker | | |
| Never smoked | (1.037) 96.0 | (964) 95.2 |
| Ex-smokers | (19) 1.8 | (25) 2.5 |
| Smokers | (24) 2.2 | (24) 2.2 |
| Alcohol consumption | | |
| No | (659) 61.5 | (618) 61.2 |
| Yes, on one occasion | (257) 24.0 | (243) 24.1 |
| Yes, on more than one occasion | (155) 14.5 | (149) 14.8 |

2012 survey: 17 to 20 years, 1st tertile; 21 to 23 years, 2nd tertile; 24 to 54 years, 3rd tertile; 2014 survey: 17 to 20 years, 1st tertile; 21 to 23 years, 2nd tertile; 24 to 57 years, 3rd tertile.

The prevalence of *Cannabis* use, one or more times in the last 30 days (Figure 1), increased between surveys, from 2.4% to 5.8% (p<0.05). The increase in *Cannabis* use from 2012 to 2014 was seen in women, university students aged 21 to 23 years, those aged 24 and over, with a father possessing a degree in higher education and a mother with a high school education (Table 2).
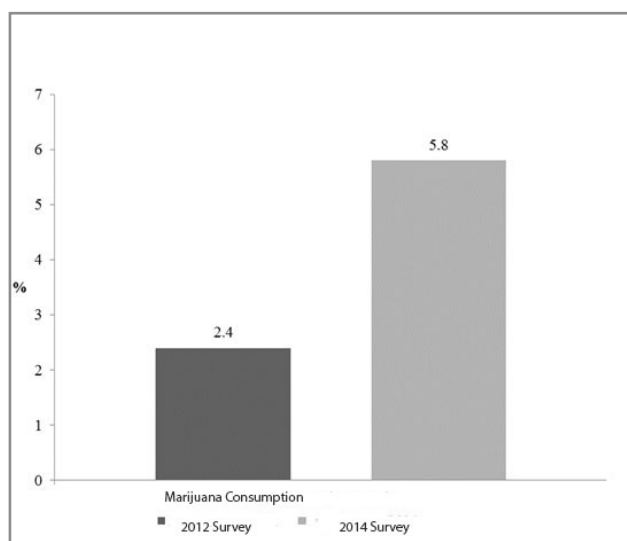


**Figure 1-** Prevalence of illicit drug use (*Cannabis*) among the surveys. Bahia. 2012 and 2014.

The prevalence of Cannabis use also increased among the surveys, for university students with and without a partner, and for those linked to daytime or nighttime study periods (Table 2). In addition, there was a higher consumption of Cannabis among university students in the first years of exposure to the university; however, among those with 4 years and more of exposure, the prevalence increased from 3.7% to 7.2%, between 2012 and 2014, respectively; and a higher prevalence of this behavior was observed in university students from courses in the area of Applied Social Sciences and Linguistics, Languages, and Arts.

Among life habits, there were no differences between the prevalence of Cannabis use among college students who practice team sports, however, there was a difference between those who do not practice; in addition, the prevalence of Cannabis use increased for those who do not smoke and among university students who reported excessive alcohol consumption on more than one occasion, from 8.1% in 2012 to 16.7% in 2014 (Table 2).

**Table 2-** Prevalence of Cannabis use among surveys, according to sociodemographic variables, association with the university, and lifestyle habits. Bahia. 2012 and 2014.

| Variables | Cannabis Consumption | | | | p |
|---|---|---|---|---|---|
| | 2012 | | 2014 | | |
| | n | % | n | % | |
| Sex | | | | | |
| Male | 20 | 4.3 | 32 | 6.9 | 0.08 |
| Female | 5 | 0.9 | 25 | 4.8 | <0.01 |
| Age group | | | | | |
| 1st third | 6 | 2.1 | 15 | 4.9 | 0.07 |
| 2nd third | 8 | 2.4 | 21 | 6.2 | 0.01 |
| 3rd third | 11 | 2.8 | 21 | 6.5 | 0.02 |
| Father's Education | | | | | |
| Never studied | - | - | 1 | 5.0 | 0.43 * |
| Incomplete elementary school | 6 | 2.1 | 8 | 4.0 | 0.23 |
| Complete elementary school | 6 | 3.7 | 5 | 4.0 | 0.89 |
| Complete high school | 11 | 2.7 | 19 | 4.7 | 0.14 |
| Complete higher education | 2 | 1.9 | 18 | 10.5 | <0.01 * |
| Mother's Education | | | | | |
| Never studied | - | - | - | - | - |
| Incomplete elementary school | 4 | 1.7 | 3 | 2.1 | 1.00 * |
| Complete elementary school | 2 | 1.4 | 4 | 3.6 | 0.41 * |
| Complete high school | 12 | 2.9 | 31 | 7.3 | <0.01 |
| Complete higher education | 7 | 3.7 | 18 | 6.8 | 0.16 |
| Marital Status | | | | | |
| Without partner | 24 | 2.8 | 47 | 5.5 | <0.01 |
| With partner | 1 | 0.7 | 9 | 7.4 | <0.01 * |
| Study Period | | | | | |
| Daytime | 20 | 2.9 | 42 | 5.9 | <0.01 |
| Nighttime | 5 | 1.5 | 15 | 5.5 | <0.01 |
| Years of university exposure | | | | | |

| Variables | Cannabis Consumption | | | | p |
|---|---|---|---|---|---|
| | 2012 | | 2014 | | |
| | n | % | n | % | |
| 1st year | 3 | 1.4 | 12 | 6.3 | 0.01 * |
| 2nd year | 1 | 0.4 | 12 | 6.3 | <0.01 * |
| 3rd year | 8 | 4.0 | 5 | 2.4 | 0.35 |
| 4th year and more | 13 | 3.7 | 28 | 7.2 | 0.03 |
| Area of Study | | | | | |
| Agricultural Sciences | 3 | 3.5 | 4 | 5.6 | 0.70 * |
| Exact and Earth Sciences | 6 | 3.4 | 8 | 5.0 | 0.48 |
| Applied Social Sciences | 2 | 0.9 | 9 | 4.3 | 0.03 * |
| Biological Sciences | 2 | 2.7 | 4 | 4.9 | 0.68 * |
| Engineering | 2 | 2.2 | 3 | 2.3 | 1.00 * |
| Humanities | 4 | 2.6 | 10 | 8.1 | 0.05 * |
| Health Sciences | 3 | 2.8 | 4 | 3.8 | 0.72 * |
| Linguistics, Languages, and Arts | 3 | 2.6 | 15 | 16.0 | <0.01 * |
| Practices team sports | | | | | |
| No | 16 | 1.9 | 47 | 5.9 | <0.01 |
| Yes | 8 | 4.2 | 9 | 4.9 | 0.74 |
| Smoker | | | | | |
| Never smoked | 14 | 1.4 | 35 | 3.8 | <0.01 |
| Ex-smokers | 2 | 11.1 | 6 | 26.1 | 0.43 * |
| Smokers | 9 | 40.9 | 16 | 69.6 | 0.05 |
| Alcohol consumption | | | | | |
| No | 5 | 0.8 | 15 | 2.5 | 0.02 |
| Yes, on one occasion | 8 | 3.4 | 19 | 8.3 | 0.02 |
| Yes, on more than one occasion | 12 | 8.1 | 23 | 16.7 | 0.03 |

2012 Survey: 17 to 20 years, 1st third; 21 to 23 years old, 2nd third; 24 to 54 years old, 3rd third; 2014 Survey: 17 to 20 years, 1st third; 21 to 23 years old, 2nd third; 24 to 54 years old, 3rd third; *Fisher's exact test.

The crude and adjusted analyses between the exploratory characteristics and the outcome of this study in relation to the 2012 survey are shown in Table 3. Men were associated with higher prevalences of Cannabis use, in the crude analysis. On the other hand, university students who reported not having a smoking habit (PR: 0.03; CI95%: 0.02 – 0.07) and not having consumed alcoholic beverages (PR: 0.10; CI95%: 0.03 – 0.27) demonstrated lower prevalences. In the adjusted analysis, these associations remained the same.

**Table 3-** Association between exploratory characteristics and Cannabis use in university students in the 2012 survey. Bahia.

| Variables | Cannabis Consumption | | | |
| --- | --- | --- | --- | --- |
| | Gross Analysis | | Ajusted Analysis | |
| | PR (CI95%) | p | PR (CI95%) | p |
| Sex | | <0.01 | | 0.05 |
| Male | 4.82 (1.82 – 12.74) | | 2.80 (1.01 – 7.82) | |
| Female | 1.00 | | 1.00 | |
| Age group | | 0,53 | | 0.75 |
| 1st third | 0.74 (0.28 - 1.97) | | 1.35 (0.31 - 5.90) | |
| 2nd third | 0.83 (0.34 - 2.05) | | 0.94 (0.38 - 2.37) | |
| 3rd third | 1.00 | | 1.00 | |
| Father's Education | | 0.67 | | 0.36 |
| Never studied | - | | - | |
| Incomplete elementary school | 1.10 (0.22 - 5.36) | | 1.62 (0.32 - 8.16) | |
| Complete elementary school | 1.92 (0.39 - 9.36) | | 2.13 (0.46 - 9.98) | |
| Complete high school | 1.40 (0.31 - 6.23) | | 1.08 (0.25 - 4.76) | |
| Complete higher education | 1.00 | | 1.00 | |
| Mother's Education | | 0.09 | | 0.98 |
| Never studied | - | | - | |
| Incomplete elementary school | 0.46 (0.14 - 1.55) | | 1.22 (0.26 - 5.81) | |
| Complete elementary school | 0.38 (0.08 - 1.81) | | 0.80 (0.16 - 3.91) | |
| Complete high school | 0.77 (0.31 - 1.93) | | 1.08 (0.44 - 2.64) | |
| Complete higher education | 1.00 | | 1.00 | |
| Marital Status | | 0.17 | | 0.13 |
| Without partner | 4.08 (0.56 - 29.92) | | 4.29 (0.66 - 27.89) | |
| With partner | 1.00 | | 1.00 | |
| Study Period | | 0.18 | | 0.42 |
| Daytime | 1.94 (0.73 - 5.11) | | 1.67 (0.48 - 5.88) | |
| Nighttime | 1.00 | | 1.00 | |
| Years of university exposure | | 0.02 | | 0.13 |
| 1st year | 0.38 (0.11 - 1.30) | | 0.56 (0.18 - 1.78) | |
| 2nd year | 0.11 (0.01 - 0.83) | | 0.18 (0.02 - 1.36) | |
| 3rd year | 1.08 (0.46 - 2.56) | | 1.48 (0.65 - 3.35) | |
| 4th year and more | 1.00 | | 1.00 | |
| Area of Study | | 0.87 | | 0.62 |
| Agricultural Sciences | 1.34 (0.28 - 6.46) | | 0.82 (0.23 - 2.83) | |
| Exact and Earth Sciences | 1.32 (0.34 - 5.18) | | 1.20 (0.33 - 4.40) | |
| Applied Social Sciences | 0.34 (0.06 - 2.00) | | 0.36 (0.08 - 1.52) | |
| Biological Sciences | 1.04 (0.18 - 6.05) | | 0.53 (0.17 - 1.64) | |
| Engineering | 0.86 (0.15 - 5.05) | | 0.52 (0.08 - 3.52) | |
| Humanities | 1.01 (0.23 - 4.42) | | 1.02 (0.25 - 4.23) | |
| Health Sciences | 1.06 (0.22 - 5.16) | | 0.72 (0.15 - 3.58) | |
| Linguistics, Languages, and Arts | 1.00 | | 1.00 | |

*to be continued...*

*...continuation - Table 3*

| Variables | Consumo de *Cannabis* | | | |
| | Análise bruta | | Análise ajustada | |
| | PR (CI95%) | p | PR (CI95%) | p |
|---|---|---|---|---|
| Practices team sports | | 0.07 | | 0.68 |
| No | 0.46 (0.20 - 1.06) | | 1.21 (0.49 - 2.97) | |
| Yes | 1.00 | | 1.00 | |
| Smoker | | <0.01 | | <0.01 |
| Never smoked | 0.03 (0.02 - 0.07) | | 0.09 (0.03 - 0.24) | |
| Ex-smokers | 0.27 (0.07 - 1.10) | | 0.53 (0.15 - 1.88) | |
| Smokers | 1.00 | | 1.00 | |
| Alcohol consumption | | <0.01 | | 0.02 |
| No | 0.10 (0.03 - 0.27) | | 0.26 (0.08 - 0.87) | |
| Yes, on one occasion | 0.41 (0.17 - 0.99) | | 0.73 (0.29 - 1.88) | |
| Yes, on more than one occasion | 1.00 | | 1.00 | |

2012 survey: 17 to 20 years, 1st third; 21 to 23 years old, 2nd third; 24 to 54 years old, 3rd third; PR: Prevalence Ratios; CI95%: 95% Confidence Interval; * p-value of the Wald test for linear trend.

The crude and adjusted analyses between the exploratory characteristics and the outcome of this study in relation to the 2014 survey are shown in Table 4. In the crude analysis, lower prevalence of Cannabis use were associated with students with a father who had an incomplete elementary education and complete high school education, those with three years of university experience, those linked to the study areas of Exact and Earth Sciences, Social and Applied Sciences, Biological Sciences, Engineering and Health Sciences, those who reported not having the habit of smoking (PR: 0.05; CI95%: 0.03 - 0.08) or being an ex-smoker (PR: 0.37; CI95%: 0.18 - 0.78), and not having consumed alcohol (PR: 0.15; CI95%: 0.08 - 0.28) or having consumed alcohol in excess on one occasion (PR: 0.50; CI95%: 0.28 - 0.88). In the adjusted analysis, there was an association with lower rates of prevalence of psychoactive drug consumption, students with a father who had a complete high school education, those associated with Applied Social Sciences and Engineering, and those who did not smoke and did not consume alcohol excessively.

**Table 4-** Association between exploratory characteristics and Cannabis use in university students in the 2014 survey. Bahia.

| Variables | Cannabis Consumption | | | |
| | Gross Analysis | | Ajusted Analysis | |
| | RP (IC95%) | p | RP (IC95%) | p |
|---|---|---|---|---|
| Sex | | 0.17 | | 0.35 |
| Male | 1.43 (0.86 - 2.37) | | 1.34 (0.73 - 2.48) | |
| Female | 1.00 | | 1.00 | |
| Age group | | 0.39 | | 0.52* |
| 1st third | 0.75 (0.40 - 1.43) | | 0.76 (0.35 - 1.66) | |
| 2nd third | 0.96 (0.54 - 1.73) | | 1.16 (0.58 - 2.35) | |
| 3rd third | 1.00 | | 1.00 | |

*to be continued...*

| Variables | Cannabis Consumption | | | |
| --- | --- | --- | --- | --- |
| | Gross Analysis | | Ajusted Analysis | |
| | PR (CI95%) | p | PR (CI95%) | p |
| Father's Education | | 0.05 | | 0.29* |
| Never studied | 0.47 (0.07 - 3.37) | | 1.26 (0.13 - 11.75) | |
| Incomplete elementary school | 0.38 (0.17 - 0.84) | | 0.52 (0.20 - 1.37) | |
| Complete elementary school | 0.38 (0.15 - 1.00) | | 0.52 (0.18 - 1.46) | |
| Complete high school | 0.44 (0.24 - 0.82) | | 0.48 (0.26 - 0.89) | |
| Complete higher education | 1.00 | | 1.00 | |
| Mother's Education | | <0.01 | | 0.05* |
| Never studied | - | | - | |
| Incomplete elementary school | 0.31 (0.09 - 1.05) | | 0.38 (0.11 - 1.34) | |
| Complete elementary school | 0.53 (0.18 - 1.53) | | 0.78 (0.25 - 2.41) | |
| Complete high school | 1.08 (0.61 - 1.89) | | 1.45 (0.84 - 2.52) | |
| Complete higher education | 1.00 | | 1.00 | |
| Marital Status | | 0.39 | | 0.86 |
| Without partner | 0.74 (0.37 - 1.47) | | 1.09 (0.43 - 2.72) | |
| With partner | 1.00 | | 1.00 | |
| Study Period | | 0.79 | | 0.42 |
| Daytime | 1.08 (0.61 - 1.92) | | 1.32 (0.67 - 2.62) | |
| Nighttime | 1.00 | | 1.00 | |
| Years of university exposure | | 0.77 | | 0.45* |
| 1st year | 0.87 (0.45 - 1.67) | | 1.25 (0.62 - 2.51) | |
| 2nd year | 0.88 (0.46 - 1.69) | | 1.20 (0.58 - 2.47) | |
| 3rd year | 0.33 (0.13 - 0.83) | | 0.31 (0.09 - 1.09) | |
| 4th year and more | 1.00 | | 1.00 | |
| Area of Study | | <0.01 | | 0.19 |
| Agricultural Sciences | 0.35 (0.12 - 1.02) | | 0.48 (0.18 - 1.29) | |
| Exact and Earth Sciences | 0.31 (0.14 - 0.71) | | 0.48 (0.20 - 1.16) | |
| Applied Social Sciences | 0.27 (0.12 - 0.59) | | 0.38 (0.17 - 0.83) | |
| Biological Sciences | 0.31 (0.11 - 0.89) | | 0.51 (0.19 - 1.38) | |
| Engineering | 0.14 (0.04 - 0.47) | | 0.21 (0.06 - 0.71) | |
| Humanities | 0.50 (0.24 - 1.07) | | 0.57 (0.27 - 1.19) | |
| Health Sciences | 0.24 (0.08 - 0.69) | | 0.32 (0.09 - 1.07) | |
| Linguistics, Languages, and Arts | 1.00 | | 1.00 | |
| Practices team sports | | 0.60 | | 0.98 |
| No | 1.20 (0.60 - 2.41) | | 0.99 (0.44 - 2.21) | |
| Yes | 1.00 | | 1.00 | |
| Smoker | | <0.01 | | <0.01 |
| Never smoked | 0.05 (0.03 - 0.08) | | 0.12 (0.06 - 0.24) | |
| Ex-smokers | 0.37 (0.18 - 0.78) | | 0.67 (0.26 - 1.76) | |
| Smokers | 1.00 | | 1.00 | |

*to be continued...*

*...continuation - Table 4*

| Variables | | | | |
|---|---|---|---|---|
| | PR (CI95%) | p | PP (CI95%) | p |
| Alcohol consumption | | <0.01 | | <0.01* |
| No | 0.15 (0.08 - 0.28) | | 0.27 (0.12 - 0.56) | |
| Yes, on one occasion | 0.50 (0.28 - 0.88) | | 0.62 (0.34 - 1.13) | |
| Yes, on more than one occasion | 1.00 | | 1.00 | |

2014 survey: 17 to 20 years, 1st third; 21 to 23 years old, 2nd third; 24 to 54 years old, 3rd third; PR: Prevalence Ratios; CI95%: 95% Confidence Interval; * p-value of the Wald test for linear trend.

## DISCUSSION

It was observed that psychoactive drug consumption increased among the surveys. There was greater consumption in the second survey, among university students with the following sociodemographic characteristics: women, university students aged 21 to 23 and aged 24 and over, students with a father who had a complete higher education and a mother with a complete high school education. Concerning variables related to the university, there was an increase in consumption among university students with and without a partner, those associated with daytime and nighttime study periods, those students in the first years of exposure to the university and in the 4th year and more of exposure. As for the characteristics related to life habits, an increase in the prevalence of consumption was observed for those who did not practice team sports, for those who never smoked, and for both university students who reported not having consumed alcohol in excess, as well as those who reported having consuming alcohol in excess. It was observed, in both surveys, that not smoking and not consuming alcohol in excess were less associated with the consumption of *Cannabis*.

In general, in this study, the increase of 3.4 percentage points in the prevalence of consumption among the surveys represents an increase of approximately 160 university students in the target population who behave this way, totaling an average of 300 university students in 2014. In a survey repeated with an interval of five years, no differences were observed in the prevalence of Cannabis use in the previous 30 days[15]. However, the occurrence of a decrease in the prevalence of Cannabis use, from 15.0% to 11.5%, were observed differences in surveys conducted with a 13-year difference[16].

It is important to characterize that the habit of using Cannabis, as well as hashish and skunk (forms of preparing the leaves of *Cannabis* Sativa L.), by Brazilian university students is prevalent in all administrative regions, as observed in a national survey in 2009, making up a prevalence of 9.1%, with higher prevalences for the Southeast and Southern regions, and 5.2% for the Northeastern region[17].

Men, in this study, were the predominant group who consumed Cannabis, as was also shown in a systematic review on the topic[5].

However, there was an increase in this behavior among women in the surveys, which is different from what was observed in university students in the State of São Paulo, where there were no differences between surveys concerning consumption in the previous 30 days, but only for consumption during lifetime and in the previous 12 months[18]. Cannabis use is observed in university students in Brazil[17,19] and in other countries, such as Colombia[20]. The adoption of this conduct in university women may be related to the occurrence of violent events, which predict Cannabis use at a later date[21]. Potential factors associated with Cannabis use behavior in Brazilian university students need to be analyzed in greater detail.

In this study, it was observed that university students in the higher age groups reported a higher consumption of *Cannabis* in 2014, when compared to those in 2012; however, it was not a specific characteristic that determined use in each year of the survey. This change among the surveys, with a higher prevalence in older university students, was noted in a national survey where the prevalence of Cannabis use reported by 30% of university students aged 35 and over, and 19.1% for those aged between 18 and 24 years[17].

Among the sociodemographic characteristics between surveys, there was an increase in Cannabis use among university students who reported that their father had a completed higher education and mother had completed high school. On the other hand, in the 2014 survey, university students with a father who had a high school education were less associated with Cannabis use. This result corroborates with a longitudinal study of high school students from the United States of America, where the relationship of socioeconomic status, measured by the educational level and income of parents, and the use of substances in adulthood. The higher education of the parents was associated with higher rates of excessive consumption of alcohol, marijuana, and cocaine in early adulthood[22]. Possibly, in the case of university students, parents' education does not have a protective influence on consumption, which can potentially be related to greater parental permissiveness or even a lesser influence on their children's behavior.

In addition, increases in the prevalence of Cannabis use between the years of the survey were also observed for university students with and without a partner. In a study with a sample of university students in the southern region of Brazil, it was observed that being single was associated with the use of Cannabis[23]. It is possible that the bonds of friendship established by single people favor this consumption. However, regarding the increase in consumption among university students with a partner, further studies are necessary, given the need to know if this partner demonstrates the same conduct or not, since in this study no association was observed in either survey.

As for the characteristics related to the association with the university, there was an increase in Cannabis use only among university students in the areas of Linguistics, Languages and Arts, and Applied Social Sciences. On the other hand, lower prevalence of Cannabis use was observed only in the 2014 survey, among university students in the fields of Engineering and Applied Social Sciences. In research with medical university students, there were no differences between the studies carried out between 1996 and 2001, for the consumption of Cannabis in the previous 30 days, as well as in relation to lifetime consumption and in the previous year[15]. In the Brazilian drug survey,

students from courses related to the biological field, including the health field, had a lower prevalence of use of illicit drugs, such as Cannabis, hashish, and skunk, when compared to the Exact Sciences and Humanities areas[17]. Possible explanations regarding the lower adherence to this behavior on the part of university students in areas related to Life Sciences, may be related to the proximity of contents that specifically deal with drugs and their consequences on health.

Another result that needs to be highlighted between the surveys, deals with the increase in the prevalence of Cannabis use among university students in the first years, and in the last year at the university; however, these results were not observed in another study of repeated surveys[15]. In addition, the increase in Cannabis use was observed in university students both during the daytime and nighttime study periods, which demonstrates the exposure of this habit in different periods (fulltime, morning, afternoon and nighttime)[17,24]. However, when the surveys were analyzed individually, there was no association between the study period and Cannabis use.

Among the attributes related to life habits, there was an increase in the prevalence of Cannabis use among university students who reported not playing team sports. However, associations between these characteristics were not discriminatory in each survey. In a study with university students from the Physical Education course, it was observed that students considered to be athletes in childhood and adolescence were associated with Cannabis use (OR: 2.13; CI95%: 1.23 - 3.65)25. In a study carried out with French university students in the Sport Sciences course, 33% reported that they had already used Cannabis several times, and the prevalence of repeated use of **Cannabis** was

higher for those students who practiced team sports (not related to football) and sliding sports (skiing, surfing and windsurfing). It can still be observed in this study, that university students who sought sporting performance regularly used Cannabis and consumed alcohol excessively[26]. However, in a study conducted with university students from other courses, the use of Cannabis was not related to the profile of practicing sports or not during university[27]. The positive conduct of sports practice can, potentially, inhibit adherence to Cannabis use in university students, and it is of fundamental importance to understand in this group the mediators of the relationship between the behavior of practicing sports and the use of this psychoactive drug.

The results of this study showed that the prevalence of Cannabis use increased between the surveys, among university students who never smoked. Moreover, this increase was observed both in university students who did not consume alcohol in excess, and in those who consumed alcohol this way on one or more occasions. In addition, even with this increase, the results of this research showed that the group of university students who did not smoke and did not drink alcohol were less associated with Cannabis use than their peers. It is noteworthy that the consumption of alcoholic beverages represents a behavior that is associated with the use of Cannabis, in a complementary way, which attributes more chances of adopting this behavior, regardless of other characteristics[28].

The limitations of this study may be related to the possible bias of information on the consumption of this psychoactive substance, as it represents a conduct that is not socially accepted in all social groups and, therefore, the prevalence of this study may have been underestimated. It is important to note that the emphasis on the use of psychoactive

substances in this instrument was directed to consumption in the previous 30 days, that is, during the academic semester, and those university students who had tried it (reported consuming 1 or 2 times), were included together with those who reported having consumed more often. The other psychoactive substances measured in this research were not included in this specific study due to the low prevalence in each survey (cocaine, 2012: 0.3% and 2014: 0.4%; crack, 2012: 0.1% and 2014: 0.1%; and inhalants, 2012: 0.3% and 2014: 0.4%).

Added to this is the use of the questionnaire to survey behavioral information. It is considered that the measure used in this study is adequate, given the reproducible values observed in the validation study12. On the other hand, this monitoring study presented a rigorous methodological process, with the participation of university students from different courses through a simple random selection procedure, which is an innovative aspect in studies with this population.

## CONCLUSION

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