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Conceptions about the Use of Cannabis among Medical Students from Public Universities

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Original Article

Abstract

Background: Substance abuse is a public health concern given its high prevalence worldwide. The early onset of such abuse predicts greater severity of addiction, morbidity, and use of multiple drugs. The use of psychoactive substances among Brazilian university students is frequent and cannabis stands out as the most consumed illicit drug. This study aimed to assess the prevalence of cannabis use among medical students from public universities in the state of São Paulo, correlating it with socioeconomic data, perceptions, and conceptions about use, triggering factors and possible implications in academic performance.

Methods: The data were collected using an anonymous online survey, which was sent to students attending public medical universities in the state of São Paulo in the year 2020.

Findings: The survey was answered by 225 participants. Among all participants, 147 (65.3%) reported at least one episode of cannabis use during their study in university. 91 (61.9%) reported the first use before entering university, while 56 (38.1%) used it for the first time during the university years. The frequent group included 41 (27.9%) people and the sporadic group included 106 (72.1%) people.

Conclusion: The present study indicated that the medical students in public universities in the state of São Paulo have higher cannabis use rates compared to the general Brazilian population and to other medical students worldwide. The users are aware of the possible damages caused by cannabis use, but this does not stop them from smoking.

Keywords: Cannabis; Medical students; Substance-related disorders; Perception

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Introduction

Substance abuse is defined as the use of any sort of drug, usually self-administered, in a way that deviates from medical or socially accepted standards. Among its determining factors, the role of the limbic system and the reward system is studied, in which the main neurotransmitters involved are the opioid, catecholamine (dopamine), and γ-aminobutyric acid (GABA) systems.[1]

It is estimated that 35 million people worldwide suffer from the drug use disorder,[2] which highlights the importance of treating this issue as a problem from an economic and social point of view. The United States spends approximately U$ 148 billion annually on the problems related to alcohol abuse and U$ 98 billion on disorders caused by illicit drugs.[3] From the social point of view, the abuse of legal and illegal substances predisposes the individual to accidents, interpersonal violence, risk behaviors, sleep disorders, and physical or psychological dependence.[4] The early onset of substance abuse predicts greater severity of addiction and morbidity, including the use of multiple drugs;[5] added to this is the evidence that late adolescence and early adulthood are the periods of greatest risk for the establishment of substance abuse disorders, since the average age of onset of these disorders is 20 years old.[3,6]

Among Brazilian university students, the use of psychoactive substances seems to be a frequent practice, and has been analyzed by some scientific studies.[4] According to a study carried out in the 27 Brazilian state capitals, 49% of the 12711 participating university students had already tried some illicit drugs at least once in their lives.[7] Another study carried out in the state of São Paulo revealed that the frequency of use of psychoactive substances by Brazilian university students between 18 and 24 years of age is higher than that in the Brazilian population in the same age group.[8] Among these substances, cannabis appears as the most used illicit drug among students.[4] It is worth mentioning that it is also the most consumed illicit substance in the world and in Brazil.[2,9]

At the university scope, the medical course, because of its extensive workload of studies and content, psychological pressure, abuse of authority by preceptors and institutional evaluative methods, leaves medical students little time to be with their family and friends, perform activities outside medical reality, or take care of their own health.[10,11] These stressing factors possibly contribute to the high rate of drug use among academics on this course, which is one of the numerous relief valves for psychological or resilience problems caused by the stressful routine. Among these students, cannabis also appears as the most consumed illicit drug.[12]

The purpose of this study was to evaluate the prevalence of cannabis use among medical students from public universities in the state of São Paulo, correlating it with socioeconomic data, perceptions and conceptions about use, and triggering factors and possible implications in academic performance.

Methods

The data for the study were collected using an anonymous online survey, which was sent to students attending public medical universities in the state of São Paulo in the year 2020. There were no excluding factors.

The survey consisted of 33 items, divided in three sections: socioeconomic data, frequency and personal history of cannabis use, and perceptions and conceptions about cannabis use. Only the first section was answered by all participants, while the second and the third ones were answered only by those who reported at least one episode of cannabis use during the university period.

For statistical analysis of the quantitative variables, the Kolmogorov-Smirnov (KS) test and Student's T-test were used. For frequency comparison, the chi-square test and Fisher's exact test were employed.

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The present study was approved by the Research Committee of Faculdade de Medicina de São José do Rio Preto. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 1975 Declaration of Helsinki (DoH), as revised in 2000. Informed consent was obtained from all participants included in the study.

Results

General aspects: The survey was answered by 225 participants as 120 (53.3%) boys and 105 (46.7%) girls, which corresponds to 5.3% of the studied

population. The mean age of the participants was 22.6 years. Regarding the year of study, 34 (15.1%), 46 (20.4%), 28 (12.4%), 70 (31.1%), 35 (15.6%), and 12 (5.3%) were attending the first year, the second year, the third year, the fourth year, the fifth year, and the sixth year medical school, respectively. Among all participants, 147 (65.3%) reported at least one episode of cannabis use during their stay in university.

Cannabis use in university: In the group that reported cannabis use in university (n = 147), the mean age was 23.1 years, which is significant (P < 0.01) in comparison to the mean age of the group that never used cannabis during university (21.7 years). In addition, in the group that reported cannabis use, 80 (54.4%) and 67 (45.6%) were boys and girls, respectively.

When asked about the first time of cannabis use, 91 (61.9%) reported the first use before entering university, while 56 (38.1%) used it for the first time during university years. The mean age of the first use among those who started smoking cannabis before university was 17.1 years, while for those who used it for the first time in university, the mean age of the first use was 20.5 years (P < 0.01). Table 1 compares both groups, including the frequency of use between them.

Comparisons regarding the frequency of use: For comparison purposes, the frequency was separated into two groups: frequent use (once a week or more) and sporadic use (less than once a week). Therefore, the frequent use group and the sporadic use group comprehended 41 (27.9%) and 106 (72.1%) people, respectively.

Comparing both groups, the mean age of the frequent use group and the sporadic use group was respectively 22.9 and 23.2 years; the frequent use group comprehended 30 (73.2%) boys and 11 (26.8%) girls, whereas the sporadic group comprehended 50 (47.2%) boys and 56 (52.8%) girls (P < 0.01).

Regarding the age of the first use, 31 (75.6%) people in the frequent use group used cannabis for the first time before university and 10 (24.4%) used it for the first time during university, while 60 (56.6%) people in the sporadic use group used it first before university and 46 (43.4%) used it for the first time during university (P = 0.03). Table 2 compares the two groups.

Conceptions and Perceptions of Cannabis Use: For further analysis on the conceptions and perceptions of cannabis use, the third part of the survey comprehended a series of Likert scale items, the answers of which are presented on table 3.

Considering the participants that used cannabis for the first time after entering university, 39 (69.6%) agreed that when their friends were smoking cannabis, they would feel like smoking too; and 27 (48.2%) usually smoked at university parties. The use of alcohol or tobacco at parties increased the desire to smoke cannabis for 22 (39.3%) of these participants. Regarding the influence of the routine, only 7 (12.5%) people usually smoked after an exhaustive day of classes and 6 (10.8%) usually smoked when they were feeling anxious.

Correlating the answers on Likert scale items to the frequency of use, there were significant differences between the answers of the two groups - frequent and sporadic use.

Table 1. Comparing the first use of cannabis before and during medical university

Variable	First use before university (n = 91)	First use during university (n = 56)	P
Age (year) (Mean ± SD)	23.1 ± 2.5	23.1 ± 1.6	NS
Gender [n (%)]			NS
Male	54 (59.3)	26 (46.4)	
Female	37 (40.7)	30 (53.6)	
Age of first use	17.1 ± 2.0	20.5 ± 1.9	< 0.01
Frequency of use [n (%)]			< 0.01
Daily	9 (9.9)	3 (5.3)	
At least three times a week	6 (6.6)	0 (0.0)	
At least once a week	16 (17.6)	7 (12.5)	
At least three times a month	22 (24.2)	9 (16.1)	
At least once a year	37 (40.6)	29 (51.8)	
Used just once	1 (1.1)	8 (14.3)	

NS: Not significant; SD: Standard deviation

Table 2. Comparing the frequency of use: frequent and sporadic

Variable	Frequent use (n = 41)	Sporadic use (n = 106)	P
Mean age (year) (Mean ± SD)	22.9 ± 1.8	23.2 ± 2.4	NS
Gender [n (%)]			
Male	30 (73.2)	50 (47.2)	< 0.01
Female	11 (26.8)	56 (52.8)	
Age of first use (year) (Mean ± SD)	17.8 ± 2.3	18.6 ± 2.7	NS
First use [n (%)]			
Before university	31 (75.6)	60 (56.6)	0.03
During university	10 (24.4)	46 (43.4)	

NS: Not significant; SD: Standard deviation

When asked about smoking cannabis after an exhausting day of classes, respectively 27 (65.8%) people of the frequent use group and 8 (7.5%) people of the sporadic use group confirmed or strongly confirmed it. When asked about smoking cannabis while feeling anxious, 16 (39.0%) people in the frequent use group and 8 (7.5%) people in the sporadic use group confirmed or strongly confirmed it, respectively.

When asked if the use of cannabis by friends could tempt the participant to smoke too, 21 (19.8%) people on the sporadic use group disagreed or strongly disagreed and none of the subjects in the frequent use group disagreed or strongly disagreed to that. Considering the habit of smoking cannabis in university parties, respectively 40 (37.8%) people in the sporadic use group and 3 (7.3%) people in the frequent use group disagreed or strongly disagreed to that.

When asked if cannabis damaged the memory, 24 (58.5%) people in the frequent use group agreed or strongly agreed, while 32 (30.3%) people in the sporadic group use agreed or strongly agreed to that.

When asked about the need to use increasing quantities of cannabis to have the same effect, 15 (36.6%) people in the frequent use group agreed or strongly agreed, whereas 9 (8.5%) people in the sporadic use group agreed or strongly agreed. When asked if they thought they could stop using cannabis, 6 (14.6%) people in the frequent use group disagreed or strongly disagreed to that. The full comparison is presented in table 4.

The third section of the survey included two questions: one to evaluate whether the participant had an experience of decreased academic performance due to cannabis use and the other to evaluate if the participant used cannabis to help him/her study well.

Table 3. Likert scale survey results considering all the participants who reported cannabis use at least once during university years (n = 147)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	[n (%)]				
I usually smoke cannabis after an exhaustive day of classes.	17 (11.6)	18 (12.2)	13 (8.8)	12 (8.2)	87 (59.2)
I usually smoke cannabis when I am feeling anxious.	10 (6.8)	14 (9.5)	16 (10.9)	13 (8.8)	94 (63.9)
When I am with my friends and some of them are smoking cannabis, I feel like smoking too.	68 (46.3)	48 (32.7)	10 (6.8)	7 (4.8)	14 (9.5)
I usually smoke cannabis at university parties.	44 (29.9)	41 (27.9)	19 (12.9)	17 (11.6)	26 (17.7)
The use of alcohol or tobacco at university parties increases my desire to smoke cannabis.	32 (21.8)	36 (24.5)	23 (15.6)	17 (11.6)	39 (26.5)
Cannabis is disseminated at my university.	72 (49.0)	48 (32.7)	12 (8.2)	12 (8.2)	3 (2.0)
Cannabis is a plant, therefore it is harmless for users.	2 (1.4)	16 (10.9)	13 (8.8)	70 (47.6)	46 (31.3)
I believe cannabis damages my memory.	9 (6.1)	47 (32.0)	48 (32.7)	18 (12.2)	25 (17.0)
I believe cannabis could decrease my academic performance.	20 (13.6)	48 (32.7)	28 (19.0)	26 (17.7)	25 (17.0)
I feel I need to use increasing quantities of cannabis to have the same effect.	6 (4.1)	18 (12.2)	24 (16.3)	24 (16.3)	75 (51.0)
I think I could stop using cannabis.	110 (74.8)	14 (9.5)	16 (10.9)	3 (2.0)	4 (2.7)

Table 4. Correlating frequency of use and Likert scale questions

Questions	Frequent use (n = 41)	Sporadic use (n = 106)	P
I usually smoke cannabis after an exhaustive day of classes.			< 0.01
Strongly agree	16 (39.0)	1 (0.9)	
Agree	11 (26.8)	7 (6.6)	
Neutral	5 (12.2)	8 (7.6)	
Disagree	2 (4.9)	10 (9.4)	
Strongly disagree	7 (17.1)	80 (75.5)	
I usually smoke cannabis when I am feeling anxious.			< 0.01
Strongly agree	7 (17.1)	3 (2.8)	
Agree	9 (21.9)	5 (4.7)	
Neutral	8 (19.5)	8 (7.6)	
Disagree	8 (19.5%)	5 (4.7)	
Strongly disagree	9 (21.9)	85 (80.2)	
When I am with my friends and some of them are smoking cannabis, I feel like smoking too.			< 0.01
Strongly agree	29 (70.7)	39 (36.8)	
Agree	9 (21.9)	39 (36.8)	
Neutral	3 (7.3)	7 (6.6)	
Disagree	0 (0.0)	7 (6.6)	
Strongly disagree	0 (0.0)	14 (13.2)	
I usually smoke cannabis at university parties.			< 0.01
Strongly agree	28 (68.3)	16 (15.1)	
Agree	8 (19.5)	33 (31.1)	
Neutral	2 (4.9)	17 (16.0)	
Disagree	3 (7.3)	14 (13.2)	
Strongly disagree	0 (0.0)	26 (24.6)	
The use of alcohol or tobacco at university parties increases my desire to smoke cannabis.			0.03
Strongly agree	13 (31.7)	19 (17.9)	
Agree	9 (21.9)	27 (25.5)	
Neutral	6 (14.7)	17 (16.0)	
Disagree	8 (19.5)	9 (8.5)	
Strongly disagree	5 (12.2)	34 (32.1)	
Cannabis is disseminated at my university.			< 0.01
Strongly agree	14 (34.1)	58 (54.7)	
Agree	11 (26.8)	37 (34.9)	
Neutral	6 (14.7)	6 (5.7)	
Disagree	8 (19.5)	4 (3.8)	
Strongly disagree	2 (4.9)	1 (0.9)	
Cannabis is a plant, therefore it is harmless for users.			NS
Strongly agree	1 (2.4)	1 (0.9)	
Agree	5 (12.2)	11 (10.4)	
Neutral	5 (12.%)	8 (7.6)	
Disagree	20 (48.8)	50 (47.2)	
Strongly disagree	10 (24.4)	36 (33.9)	
I believe cannabis damages my memory.			0.02
Strongly agree	3 (7.3)	6 (5.7)	
Agree	21 (51.2)	26 (24.6)	
Neutral	8 (19.5)	40 (37.7)	
Disagree	4 (9.8)	14 (13.2)	
Strongly disagree	5 (12.2)	20 (18.8)	
I believe cannabis could decrease my academic performance.			NS
Strongly agree	5 (12.2)	15 (14.2)	
Agree	17 (41.4)	31 (29.3)	
Neutral	4 (9.8)	24 (22.6)	
Disagree	9 (21.9)	17 (16.0)	
Strongly disagree	6 (14.7)	19 (17.9)	

Table 4. Correlating frequency of use and Likert scale questions (continue)

Questions	Frequent use (n = 41)	Sporadic use (n = 106)	P
I feel I need to use increasing quantities of cannabis to have the same effect.			< 0.01
Strongly agree	4 (9.8)	2 (1.9)	
Agree	11 (26.8)	7 (6.6)	
Neutral	8 (19.5)	16 (15.1)	
Disagree	8 (19.5)	16 (15.1)	
Strongly disagree	10 (24.4)	65 (61.3)	
I think I could stop using cannabis.			< 0.01
Strongly agree	24 (58.6)	86 (81.1)	
Agree	8 (19.5)	6 (5.7)	
Neutral	3 (7.3)	13 (12.3)	
Disagree	3 (7.3)	0 (0.0)	
Strongly disagree	3 (7.3)	1 (0.9)	

NS: Not significant

In the frequent use group, 11 (26.8%) people reported decrease in academic performance due to cannabis use, while 13 (12.3%) people in the sporadic use group reported this decrease (P = 0.03). Regarding the use of cannabis to study, 12 (29.3%) people in the frequent use group reported this habit, and 4 (9.8%) of them believed its use increased their study performance. On the other hand, only 2 (1.9%) people of the sporadic use group reported the use of cannabis to study, but both of them believed that this habit decreased their performance. Additionally, 104 (98.1%) people in the sporadic use group did not use cannabis to study, compared to 29 (70.7%) in the frequent use group (P < 0.01).

Race and economic parameters had no statistical significance in any of the comparisons, either comparing students that started smoking cannabis before university and those who smoked for the first time in university or comparing frequent and sporadic use groups.

Discussion

It was concluded in the present study that 65.3% of the medical students from public universities in the state of São Paulo have tried cannabis at least once during their academic period. This number is double the findings of a systematic review and meta-analysis that evaluated the prevalence of cannabis use among medical students and concluded that the prevalence of lifetime cannabis use was 31.4%.[13]

Considering all participants of the present study, 18.2% of them made frequent use of the substance. The prevalence of regular cannabis smoking in Brazil from 15 to 64 years old in 2016 was 2.5%,[14] indicating that the university population tends to use cannabis more frequently than the general population.

One of the objectives of this study was to identify whether the university setting is an influential factor in the use of cannabis. From the participants who reported cannabis use at least once in university, 56 (38.1%) used it for the first time after entering the medical school, indicating that university is an important influential environment. For better analysis, the Likert scale questions were used in the study to try to determine which situations in university could trigger the use of cannabis. The most relevant situations were the use of cannabis by friends and its use in university parties, both of which had substantial influence on the participants that started smoking cannabis during university years. On the other hand, factors such as anxiety or exhaustive periods of classes showed less influence. These findings corroborate previous studies which stated that the achievement of pleasure, fitting in a group, experimenting new feelings, and socializing are some of the main reasons for cannabis use among students.[15,16]

Among the 41 participants who reported frequent use, 30 (73.2%) were boys and 11 (26.8%) were girls. This represents that almost three quarters of the frequent users were boys, which is relevant because male users are at greater risk of developing cannabis dependence when compared to female users, especially in the first five years of use.[17] Most of these frequent users (73.2%) disagreed or strongly disagreed to the statement that cannabis - because it is a plant - is harmless to the users. In other words, the frequent use group

was aware of the damage cannabis could cause, but it did not stop them from regular use. This is reinforced by the fact that 58.5% of the frequent users believed that cannabis could damage their memory and 53.6% believed that it could decrease their academic performance. This behaviour could be explained by the desire to achieve short-term pleasure. Foddy and Savulescu[18] stated that when an extremely pleasurable experience is regularly engaged, it is natural that it will achieve higher importance among the users and they will want to repeat using it more often. This pleasure-oriented behavior, however, seems to have greater importance in the first years of drug use, diminishing over time, when users become increasingly resentful of the effects of the substance use.[19]

There were two main concerns that guided the present study: the consequences of cannabis use and the development of dependence. Regarding the effects of cannabis use, it was found out in the present study that frequent users have experienced greater negative impact on academic performance compared to the sporadic use group. The acute use of cannabis has important cognitive impacs and the most frequent ones are deficits on sustained attention; deficits on selective, focused, and divided attention tasks; and acute positive and negative psychotic symptoms, that can also impair verbal and operational memory.[20,21] The chronic use can lead to cannabis-induced psychotic disorder and to schizophrenia. This relation, however, is complex and it is unclear whether cannabis is a causal factor for schizophrenia or this association represents some shared vulnerability to both.[22] Another chronic aftermath can be the amotivational syndrome, characterized as apathy and diminished ability to concentrate and follow a routine.[23,24]

The second concern of the present study was also one of the most important consequences of chronic cannabis use: dependence. In the Likert scale questions, 36.6% of the frequent users felt that they needed to use increasing quantities to have the same effect and 14.6% felt like they could not stop using cannabis, answers that alert to the possibility of dependence. It is estimated that the risk of developing cannabis dependence is 9.0%,[25,26] which is lower than other drugs (i.e. 32.0% for nicotine), but still significant.[27] The factors that can increase the vulnerability for cannabis dependence are: being a young adult, having an early exposure to cannabis, male gender, low economic status, living in urban zones, the abuse of other substances, and presenting psychiatric disorders.[25,26,28] Therefore, according to the survey data, it is possible to conclude that the studied population can be classified as vulnerable.

Conclusion

The present study observed higher cannabis use rates among medical students of public universities in the state of São Paulo compared to the general Brazilian population and compared to other medical students worldwide. Even though most of the cannabis users started smoking before entering university, it is possible to conclude that university is an important influential environment for cannabis use, especially considering the use by friends and the use in university parties. The survey also showed that the users are aware of the possible damages caused by cannabis use, but this does not stop them from smoking.

Considering the population studied - mainly composed by young adults with an early exposure to cannabis -, it is possible to assume that it is vulnerable to chronic cannabis use consequences, which indicates the need for further studies and long-term follow-up to evaluate dependence and possible chronic cognitive consequences.

Limitations: The present study was along with several limitations. Firstly, it was developed during the coronavirus disease 2019 (Covid-19) pandemic. This scenario paralyzed in-person classes at most universities in Brazil, which made 2020 an odd year to evaluate the influence of university on the use of cannabis, especially regarding the students of the first year. Another important limitation was the number of responses. The survey was answered by 225 participants, which corresponds to 5.3% of the public medical university students in the state of São Paulo. Finally, the definition for frequency used in the study was another limitation. There are no formal definitions for frequent or sporadic cannabis use, and the one used in this study was quite arbitrary.

Conflict of Interests

The Authors have no conflict of interest.

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Authors' Contribution

Research, Supervision, reviewing, and editing: GMAF; research, design of the study, statistical analysis, writing of original draft: VCM; research, design of the study, statistical analysis, writing of original draft: VGL.

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مفاهیمی در مورد استفاده از شاهدانه در بین دانشجویان پزشکی دانشگاه‌های دولتی

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مقاله پژوهشی

چکیده

مقدمه: سوء مصرف مواد با توجه به شیوع بالای آن در سراسر جهان، یک نگرانی بهداشت عمومی است. شروع زودهنگام چنین سوء مصرفی، شدت بیشتر اعتیاد، بیماری و استفاده از چندین دارو را پیش‌بینی می‌کند. استفاده از مواد روان‌گردان در بین دانشجویان دانشگاه برزیل شیوع بالایی دارد و شاهدانه به عنوان پرمصرف‌ترین مواد مخدر شناخته می‌شود. پژوهش حاضر با هدف بررسی شیوع استفاده از شاهدانه در بین دانشجویان پزشکی دانشگاه‌های دولتی ایالت سائوپائولو صورت گرفت و ارتباط آن با داده‌های اقتصادی- اجتماعی، تصورات مربوط به استفاده از آن، عوامل محرک و پیامدهای احتمالی در عملکرد تحصیلی بررسی گردید.

روش‌ها: داده‌ها با استفاده از یک نظرسنجی آنلاین ناشناس (بی‌نام) که در سال ۲۰۲۰ بر روی دانشجویان دانشگاه‌های پزشکی دولتی ایالت سائوپائولو ارسال شده بود، جمع‌آوری گردید.

یافته‌ها: ۲۲۵ شرکت‌کننده در این نظرسنجی شرکت نمودند. در بین شرکت‌کنندگان، ۱۴۷ نفر (۶۵/۳ درصد) مصرف حداقل یک بار شاهدانه را در طول تحصیل در دانشگاه گزارش کردند. ۹۱ نفر (۶۱/۹ درصد) اولین استفاده قبل از ورود به دانشگاه را بیان نمودند؛ در حالی که ۵۶ نفر (۳۸/۱ درصد) از آن برای اولین بار در طول دوره دانشگاه استفاده کردند. گروه استفاده مکرر شامل ۴۱ نفر (۲۷/۹ درصد) و گروه استفاده گاه و بی‌گاه (پراکنده) شامل ۱۰۶ نفر (۷۲/۱ درصد) بود.

نتیجه‌گیری: دانشجویان پزشکی در دانشگاه‌های دولتی ایالت سائوپائولو نسبت به جمعیت عمومی برزیل و سایر دانشجویان پزشکی در سراسر جهان میزان مصرف شاهدانه بالاتری دارند. کاربران از آسیب‌های احتمالی ناشی از سوء مصرف شاهدانه آگاه هستند، اما این امر آن‌ها را از استفاده از این ماده مخدر منع نمی‌کند.

واژگان کلیدی: شاهدانه؛ دانشجویان پزشکی؛ اختلالات ناشی از مواد مخدر؛ ادراک

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