Original Article

Consumption of licit and illicit drugs among medical students in a Brazilian capital

Consumo de drogas lícitas e ilícitas entre estudantes de medicina de uma capital do Brasil

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ABSTRACT: *Introduction:* The use of alcohol, tobacco and illicit drugs is a global public health problem, bringing serious issues to users and people around them. It was observed that the use among medical students seems to be higher compared to other young people, which reveals a contradiction, given that this behavior fails to reflect the greater access to scientific information and knowledge about the problems caused by this consumption. *Objective:* To determine the pattern of consumption of licit and illicit drugs among medical students. *Methodology:* Cross-sectional observational study on medical students from the capital of Paraná. Data collection was carried out through an online questionnaire about the consumption of these drugs and application of validated questionnaires. Results were expressed as means, standard deviations and frequencies; p-values < 0.05 were considered significant. *Results:* There was a greater consumption of alcoholic beverages among females. A greater consumption of tobacco related to the influence of family and friends. Increasing consumption of illicit drugs over time in medical school, especially during internship. *Conclusion:* In view of the results, the importance of addressing this issue to university students is shown in a way to curb consumption, assess the level of stress students are experiencing, looking for ways to make them not use drugs as means of recreation, blocking this vicious cycle.

Keywords: Medicine; Drugs; Medical students.

RESUMO: *Introdução:* O uso de álcool, tabaco e drogas ilícitas é um problema de saúde pública mundial, trazendo sérios problemas aos indivíduos que fazem o uso e para as pessoas que estão ao seu redor. Foi observado que o uso entre estudantes do curso de medicina parece ser maior comparado com outros jovens, o que gera uma contradição, tendo em vista que esse comportamento acaba não refletindo o maior acesso e conhecimento sobre informações científicas a respeito dos problemas que esse consumo trás. *Objetivo:* Determinar o padrão de consumo de drogas lícitas e ilícitas entre os estudantes de medicina *Metodologia:* Estudo observacional transversal, incluindo estudantes de medicina da capital do Paraná. Realizou-se a coleta de dados por meio de questionário online a respeito do consumo dessas drogas e aplicação de questionários validados. Os resultados foram expressos por médias, desvios padrões, frequências e percentuais. Valores de p < 0,05 foram considerados significativos. *Resultados:* Evidenciou-se um maior consumo de bebidas alcoólicas entre o sexo feminino. Um maior consumo de tabaco relacionado com influência de familiares e amigos. Maior consumo de drogas ilícitas com o passar do curso, principalmente durante o internato. *Conclusão:* Tendo em vista os resultados obtidos, mostra-se a importância de abordar esse tema com os universitários de uma maneira a incentivar frear esse consumo, avaliar o nível do estresse que os alunos estão passando, buscando formas de fazer com que não usem as drogas como meio para se distrair, bloqueando esse ciclo vicioso.

Palavras-chave: Medicina; Drogas; Estudantes de medicina.

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INTRODUCTION

The use of alcohol, tobacco, and illicit drugs is a worldwide public health problem. The complications end up affecting users' social, family, and occupational lives, thus generating a significant impact on individuals and society[1,2]. Among the problems these licit and illicit drugs bring, we can mention psychic suffering, accidents, violence, unprotected sexual activity, innumerable chronic diseases, cancer, intoxication and overdose[3].

Several surveys have been conducted in various countries on the consumption of these substances, showing that the onset of consumption has been increasingly earlier, intensifying with age[1,2]. Alcohol is the most consumed substance among young Brazilians, followed by tobacco, cannabis and stimulants[1].

Among young people, one group that stands out are university students, and it has been found that consumption among this public is more frequent than in the general population. According to the study released in 2010 called "1st National Survey on Alcohol, Tobacco and Other Drugs Use Among College Students from 27 Brazilian Capitals", approximately 86% of university students have consumed alcohol, 47% tobacco and 49% some type of illicit drug[1].

Moreover, it was observed that the use among medical students seems to be higher compared to students from other areas, which reveals a contradiction, since this behavior does not reflect the greater access to scientific information and knowledge about the problems brought by this consumption, especially when compared with other young people in the same age group[4].

Given the above, this study aims to identify, estimate and analyze the consumption pattern of alcoholic beverages, tobacco and illicit drugs among medical students. With the results obtained, it will be possible to encourage the development of prevention and early intervention programs, preventing the use and abuse of these substances and avoiding both personal and social problems related to alcohol, tobacco and illicit drugs.

MATERIAL AND METHOD

This is a cross-sectional observational study in which all first to sixth-year medical students from faculties in Curitiba were invited to participate and received explanations about the nature of the research. The students were invited through a questionnaire link on social networks (WhatsApp, Instagram, and Facebook). A questionnaire was applied using Google Forms. It is divided into 9 sessions. Initially, a Free and Informed Consent Form is presented to participants; after that, students' socio demographic data, such as age, gender, course period, religion and household in Curitiba, was requested. Then, in session 3, we ask about the use of alcoholic beverages:

whether the student uses them, whether he/she tried them for the first time after entering college, when, and what were the motivations that made him/her start using them. Likewise, in the following sessions, the same questions are explored, but regarding the use of tobacco and illicit drugs. If the individual had affirmed in previous responses that he has used one of these substances, he will be directed to some more specific questions with the purpose of knowing about drug dependence. In the section concerning alcohol, a validated questionnaire known as "AUDIT" is applied; in the tobacco part, the "Fargeström" test; and, later on in the illicit drugs part, the "ASSIST" questionnaire.

The Alcohol Use Disorder Identification Test (AUDIT) is a 10-question self-administered survey. Questions 1, 2, and 3 refer to the amount consumed; questions 4, 5, and 6, to consumer behavior and attitudes; questions 7 and 8 refer to adverse reactions; and the last two questions are related to alcohol consumption. The score the subject reaches when answering AUDIT items allows the classification of the substance use as follows: low risk - 0 to 7 points; risky use - 8 to 15 points; harmful use - 16 to 19 points; probable dependence - 20 to 40 points[5].

The Fargeström Test is also a self-administered survey, but with 6 questions, which include: time the individual smokes the first cigarette after waking up, difficulty to not smoke in places where smoking is prohibited, amount he/she smokes during the day, which cigarette of the day brings more satisfaction, whether he/she smokes more in the morning, and whether he/she smokes even when ill. The score allows the evaluation of nicotine dependence degree, being: very low - 0-2 points; low - 3-4 points; medium - 5 points; high - 6-7 points; very high - 8-9 points[6].

Finally, in the project initially sent, the ASSIST questionnaire was not included, since the assessment of illicit drug use would be done through the creation of our own questionnaire; however, we realized that a validated questionnaire would be more interesting and reliable. The screening test for involvement with alcohol, tobacco, and other substances (ASSIST) is a structured questionnaire containing eight questions about the use of nine classes of psychoactive substances. The questions address use frequency, in life and in the last three months, problems related to use, concern about use on the part of people close to the user, impairment in the execution of expected tasks, unsuccessful attempts to stop or reduce use, feeling of compulsion, and injecting use. Each answer corresponds to a score, ranging from 0 to 4, and the total sum can vary from 0 to 20. A score range of 0 to 3 is considered indicative of occasional use, 4 to 15 indicative of abuse, and ≥ 16 suggestive of dependence[7].

The collected data were stored in a Microsoft Excel spreadsheet. Data analysis was performed using SPSS v.22.0. The results were expressed as means and standard deviations (quantitative variables) and frequencies

(qualitative variables). Inferential analysis was performed using statistical tests pertinent to the study (e.g. Chi Square, Fisher's exact test, Student's t test), p-values lower than 0.05 were considered significant.

Because it involves humans, the research was approved by the Research Ethics Committee of Positivo University on 11/19/2021. Review number: 5.115.062.

RESULTS

Overview

The sample was comprised of 367 students, with a mean age of 22.1 (SD 2.6). When asked about consumption of alcoholic beverages, tobacco and illicit drugs, 92.9%, 50.3% and 48.1%, respectively, were the responses about having used them. Moreover, as can be seen in the charts, the most experimented drugs after entering college were illicit drugs, 39.5%, also with a higher increase in their consumption during internship (7.5%), when compared to licit drugs (Chart 1).

Chart 1. Use of licit and illicit drugs, comparing use onset and student period.

Source: Authors.
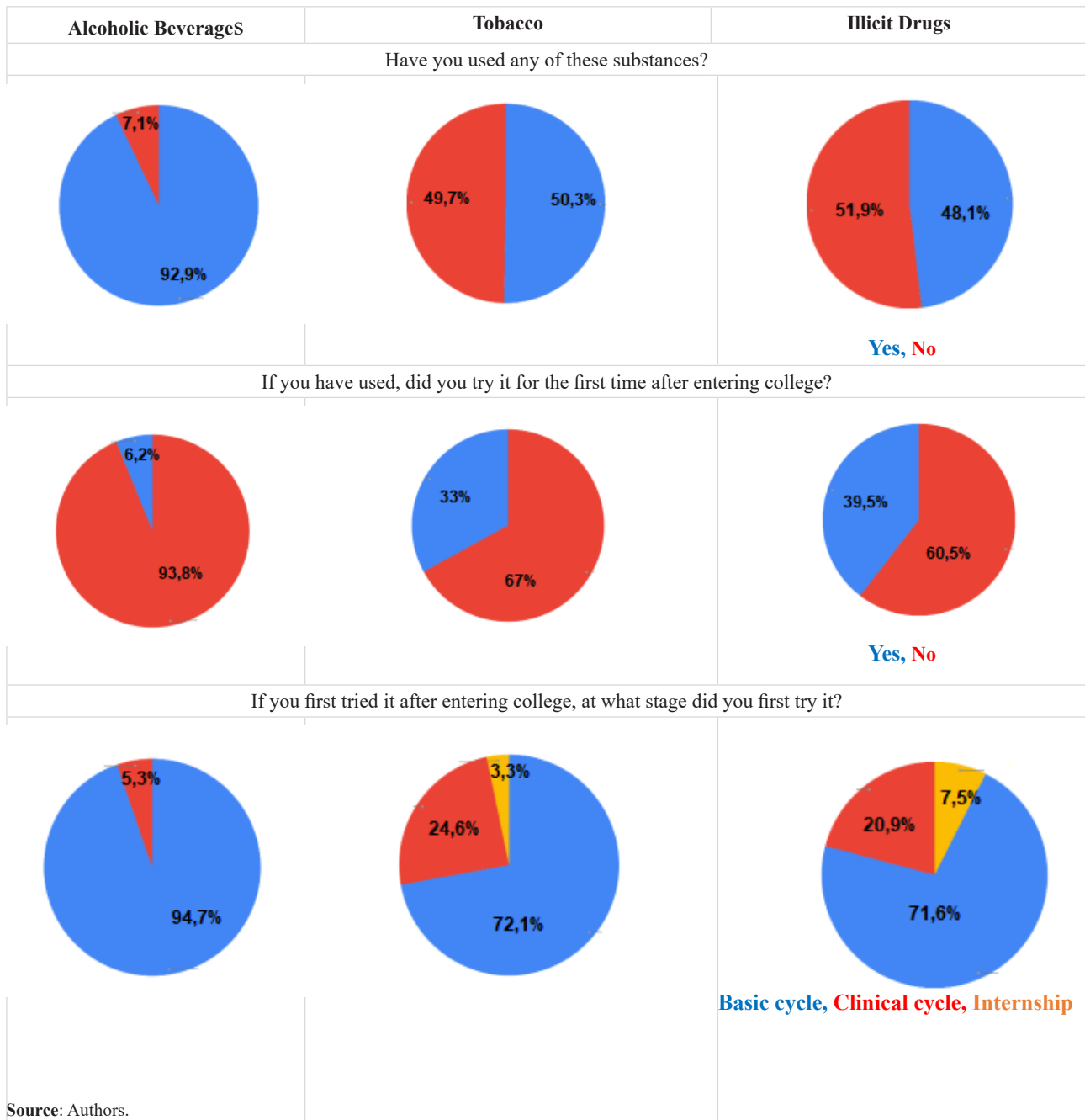
Licit drug use

Table 1 shows a higher alcohol consumption among females, p <0.0001. There is also higher tobacco consumption among students who had a relative who was a smoker (p 0.024).

In Table 2 it was observed with statistically significant p that 50% of the students who tried tobacco for the first time after entering college had some peer influence which was important for the experience.

Table 1 – Use of legal drugs related to gender, period and family history

		Has used alcohol			**Has used tobacco**		
		No	**Yes**		**No**	**Yes**	
		N (%)	**N (%)**	**p-value**	**N (%)**	**N (%)**	**p-value**
Sex	Female	10 (38,5)	248 (72,7)	**<0,0001**	134 (73,6)	124 (67,0)	0,167
	Male	16 (61,5)	93 (27,3)		48 (26,4)	61 (33,0)	
Period	Basic cycle	17 (65,4)	149 (43,7)	0,053	90 (49,5)	76 (41,1)	0,140
	Clinical cylce	4 (15,4)	129 (37,8)		57 (31,3)	76 (41,1)	
	Internship	5 (19,2)	63 (18,5)		35 (19,2)	33 (17,8)	
Alcoholic / Smoker Relative	No	15 (57,7)	193 (56,6)	0,914	83 (45,6)	63 (34,1)	**0,024**
	Yes	11 (42,3)	148 (43,4)		99 (54,4)	122 (65,9)	

Source: Authors.

Table 2 – Motivations for using tobacco for the first time

		Tried tobacco after starting college		
		No	**Yes**	
		N (%)	**N (%)**	**p-value**
Curiosity	No	8 (22,2)	11 (34,4)	0,265
	Yes	28 (77,8)	21 (65,6)	
Fun	No	33 (91,7)	28 (87,5)	0,573
	Yes	3 (8,3)	4 (12,5)	
Friends	No	29 (80,6)	16 (50,0)	**0,008**
	Yes	7 (19,4)	16 (50,0)	
Other	No	28 (77,8)	27 (84,4)	0,490
	Yes	8 (22,2)	5 (15,6)	

Source: Authors.

As for licit drugs, the AUDIT and Fargeström questionnaires were applied to evaluate, respectively, the degree of dependence on alcoholic beverages and tobacco. When comparing the results obtained from the questionnaires with factors that could influence this consumption, no statistical significance was observed.

Illicit drugs use

When students were asked if they had ever used any type of illicit drug, 177 out of 367 confirmed they had. Cannabis was the most consumed drug, with 95.5% having tried it. After that came amphetamines with 47.5% and inhalants with 45.8% (Figure 1).
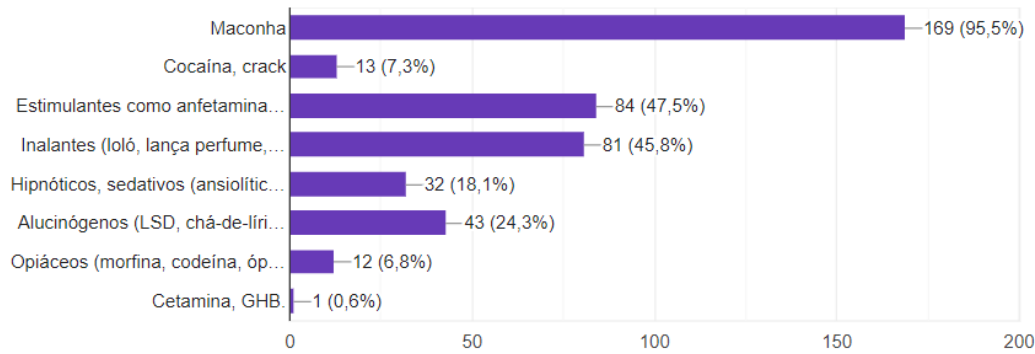
Source: Authors.

Figure 1 – Types of drugs tried by students who have used some type of illicit drug

When analyzing consumption by sex, period, and family history, we can see a higher consumption of illicit drugs in males (p 0.031), higher in individuals who have a family member who uses drugs (p 0.017) and, as previously commented, higher consumption in internship compared to licit drugs; in the table below, we can see increasing consumption along periods, especially during internship (p 0.003).

Table 3 – Illicit drug use related to gender, time period and family history

		Has used illicit drugs		
		No	Yes	
		N (%)	N (%)	p-value
Sex	Female	143 (75,3)	115 (65,0)	**0,031**
	Male	47 (24,7)	62 (35,0)	
Period	Basic cycle	102 (53,7)	64 (36,2)	**0,003**
	Clinical cycle	60 (31,6)	73 (41,2)	
	Internship	28 (14,7)	40 (22,6)	
Relative who is a user	No	145 (76,3)	115 (65,0)	**0,017**
	Yes	45 (23,7)	62 (35,0)	

Source: Authors.

When a more detailed analysis of this consumption was made, asking specifically about the type of drug, then relating it to sex, period, cohabitants and family history, the results showed, with statistical significance, that the male sex is related to a greater consumption of cocaine, inhalants, hallucinogens and opioids. In addition, a higher number of students were observed to have taken amphetamines, ecstasy, inhalants, hypnotics, and opioids as college went on, especially in internship, all also with statistically significant p, as shown in Table 4.

In Table 4 presented above, cannabis was the only drug that did not show a statistically significant p-value in any relationship; however, when ASSIST questionnaire was applied, assessing abuse and dependence on illicit drugs, the only drug that showed a significant p-value was cannabis, with a p-value 0.031, suggesting that a factor that generates dependence on this drug is living with friends (Table 5).

Table 4 – Illicit drug use, specifying drug type related to gender, period, cohabitants and family history

		Cannabis			Cocaine, crack			Amphetamines or ecstasy			Inhalants			Sedative-Hypnotic drugs			Hallucinogens			Opioids		
		No N	Yes N	p-value	No N	Yes N	p-value	No N	Yes N	p-value	No N	Yes N	p-value	No N	Yes N	p-value	No N	Yes N	p-value	No N	Yes N	p-value
Sex	Fem	7	108		111	4		64	51		69	46		99	16		96	19		112	3	
	Male	1	61	0,172	53	9	**0,007**	29	33	0,259	27	35	**0,036**	46	16	0,050	38	24	**0,001**	53	9	**0,003**
Period	Basic	4	60		59	5		44	20		49	15		58	6		48	16		64	0	
	Clinical	3	70	0,654	70	3	0,259	40	33	**<0,0001**	36	37	**<0,0001**	61	12	**0,004**	59	14	0,284	69	4	**<0,0001**
	Internship	1	39		35	5		9	31		11	29		26	14		27	13		32	8	
Cohabitants	Friends	0	15		12	3		9	6		9	6		12	3		12	3		14	1	
	Family	6	108	0,647	106	8	0,119	60	54	0,795	64	50	0,566	94	20	0,964	85	29	0,869	104	10	0,303
	Alone	2	46		46	2		24	24		23	25		39	9		37	11		47	1	
Relative is a user	No	6	109	0,543	107	8	0,787	56	59	0,163	57	58	0,089	95	20	0,746	83	32	0,136	109	6	0,260
	Yes	2	60		57	5		37	25		39	23		50	12		51	11		56	6	

Source: Authors.

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Table 5 - ASSIST questionnaire related to factors that could influence the degree of cannabis abuse or dependence

		ASSIST - Cannabis			
		suggestive of abuse	suggestive of dependence	occasional use	
		N (%)	N (%)	N (%)	p-value
Sex	Female	15 (50,0)	0 (,0)	94 (67,6)	0,077
	Male	15 (50,0)	1 (100,0)	45 (32,4)	
Age	Mean (SD)	22,1 (2,7)	23	22,4 (2,8)	0,567
Period	Basic cycle	8 (26,7)	1 (100,0)	52 (37,4)	0,518
	Clinical cycle	15 (50,0)	0 (,0)	55 (39,6)	
	Internship	7 (23,3)	0 (,0)	32 (23,0)	
Came to Curitiba to study	No	4 (28,6)	0 (,0)	14 (19,7)	0,663
	Yes	10 (71,4)	1 (100,0)	57 (80,3)	
Cohabitants	Friends	2 (6,7)	1 (100,0)	12 (8,6)	**0,031**
	Family	19 (63,3)	0 (,0)	90 (64,7)	
	Alone	9 (30,0)	0 (,0)	37 (26,6)	
Relative is a user	No	15 (50,0)	1 (100,0)	94 (67,6)	0,142
	Yes	15 (50,0)	0 (,0)	45 (32,4)	
Tried illicit drug after entering college	No	21 (70,0)	1 (100,0)	82 (59,0)	0,381
	Yes	9 (30,0)	0 (,0)	57 (41,0)	

Source: Authors.

DISCUSSION

When comparing the use of alcohol and tobacco with characteristics such as gender, period and family history, we observe a higher consumption of alcohol in females; this result contradicts other studies, which show a higher prevalence in males[1,5,8].

Furthermore, there is a higher consumption of tobacco in individuals with a family member who is a smoker, and this can be explained by the literature showing that the family unit is considered the main source of transmission of the social, cultural, genetic and biological factors that can influence tobacco consumption[9].

When questioning students who had already used or do use tobacco about what motivated them, it was observed that half of the students who tried it for the first time after starting college were influenced by a friend. In fact, studies show that friendship can influence tobacco use behavior, considering that smoking is closely related to the acceptance and permanence of the young person in certain social groups[10,11].

In addition, electronic cigarettes are currently very widespread in the university environment; a recent study among medical students showed that more than half of students believe this object makes people feel more comfortable during parties and social gatherings[12].

As for illicit drugs, consumption was more expressive among males; this data corroborates literature showing, in a survey, that male university students consumed more illicit substances than females[1].

Furthermore, the most consumed drugs were cannabis, amphetamines and inhalants. These are in accordance with the "I National Survey on the Use of Alcohol, Tobacco and Other Drugs among University Students in the 27 National Capitals"[1]. In addition, one of the reasons given for the high consumption of inhalants among medical and health students is that, despite being illegal, this drug is easily found, perhaps because students have easier access to ether and to chloroform within faculties[8].

Finding that a greater number of students have

already consumed amphetamines, ecstasy, inhalants, hypnotics and opioids, over the course of the Medicine program, mainly the internship, corroborates literature, considering that studies have already reported that the use of illicit drug use among students in later school years is mainly due to easier access and contact with other professionals who are already recreational users. Also, this use is seen as a way to achieve better academic and work performance. The attempt to relieve psychological and physical stress, along with schedule hours overload and subsequent work overload, has also led medical students to practice self-medication and abuse of these substances[4].

Finally, cannabis consumption generates greater dependence among individuals who live with friends. We have studies in literature demonstrating that university students who live with their parents, and those whose parents live together in harmony, generally present the lowest levels of illicit drug use[13,14].

As for limitations of the study, it is possible to mention the fact that research was carried out with the application of questionnaires, which can result in memory errors and incorrect classification by the participants. In addition, the results were influenced by the COVID-19 pandemic, since most students were in a completely online environment for studies, which may have increased or decreased the consumption of these substances, both licit and illicit, in addition to the interference in their own mental health that social isolation may have caused.

CONCLUSION

Bearing in mind the results and analysis of responses from 367 students, we can see a pattern of licit and illicit drug consumption that tends to repeat among medical students and other patterns which need to be better studied. In this regard, the first relevant data is the consumption of alcoholic beverages shown to be higher among females, differing from other similar studies, so these data need to be better analyzed and studied so we can understand the reasons for this change in pattern.

As for tobacco, it is visible how the influence of family and friends makes consumption increase. Despite public policies to reduce such use, there is still the obstacle of electronic cigarettes, widespread in the university environment and very related to social acceptance. Unfortunately, regarding illicit drug use, it is important to mention the increase in consumption over time, especially in the final period. Since medical students and future doctors play a very important role in transmitting information about the damage these substances bring, they should be better informed on the subject and protect themselves, setting an example for the population.

It is clear that there is a need for further study on the subject and the importance of developing interventions aimed at reducing the consumption of both licit and illicit drugs. In this sense, according to the data presented, interventions to prevent the consequences of stress in the academic environment and a way to improve students' lifestyles can be very beneficial, and can help, mainly, reduce the consumption patterns of illicit drugs, which is very prevalent in this environment.

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