

Association between Binge Drinking Practice and the Report of Negative Consequences and Violence among Medical Students at a Brazilian Public University

Michelle Ralil da Costa¹, Adalgisa Peixoto Ribeiro² and Graziella Lage Oliveira^{2*}

¹*Doctor in Adult Health, Federal University of Minas Gerais - UFMG, Belo Horizonte, MG, Brazil*

²*Professor in Department of Preventive and Social Medicine, Federal University of Minas Gerais - UFMG, Belo Horizonte, MG, Brazil*

***Corresponding Author:** Graziella Lage Oliveira, Professor in Department of Preventive and Social Medicine, Federal University of Minas Gerais - UFMG, Belo Horizonte, MG, Brazil.

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Abstract

Objective: To evaluate the practice and frequency of binge drinking (BD) among medical students at a Brazilian public university and its association with self-report of negative consequences and violence.

Methods: Cross-sectional study, carried out between June and December 2018 with 1,470 university students. Alcohol consumption was measured by the Alcohol Use Disorders Identification Test (AUDIT). Descriptive and comparative analysis were performed using Pearson's Chi-square and Poisson Regression with robust variance to estimate prevalence ratios in the SPSS software.

Results: The prevalence of BD was 73.3% among drinkers and 62.3% (N = 904) in the entire sample (56.3% in males, 43.7% in females). 41.1% of students practiced BD occasionally and 21.2% frequently. Almost all negative consequences were associated with the practice of BD, except for thinking about ending one's life and attempting suicide (p-value > 0.05). The following remained associated with the practice of BD: the occurrence of falls (PR = 1.08; CI = 1.01 - 1.16), difficulties in sexual relations (PR = 1.15; CI = 1.08 - 1.23), having unprotected sex (RP = 1.23; CI = 1.15 - 1.32), aggressiveness (RP = 1.17; CI = 1.09 - 1.24) and missing classes/shifts (RP = 1.17; CI = 1.09 - 1.25). All situations of risk and violence evaluated were more prevalent among students who practice BD, particularly among those who use it frequently.

Conclusion: Given the high prevalence of BD among medical students studied, it is recommended to adopt health education and harm reduction strategies.

Keywords: Alcohol; Binge Drinking; Medical Students; College Students; Alcohol-Related Injuries; Violence

Abbreviations

AUDIT: Alcohol Use Disorders Identification Test; BD: Binge Drinking; CI: Confidence Interval; UFMG: Federal University of Minas Gerais; PR: Prevalence Ratios; STI: Sexually Transmitted Infections; SPSS: Statistical Package for Social Science; WHO: World Health Organization

Introduction

The practice of Binge Drinking (BD) refers to the excessive consumption of alcohol on a single occasion, defined as 60 or more grams of pure alcohol on at least one single occasion at least once per month, which varies widely between countries [1,2]. It is considered an

important epidemiological marker to determine the burden of disease resulting from alcohol use [2] and its increase places it as a significant public health problem.

The prevalence of BD may vary due to the adoption of different criteria for its measurement related to the period (month, year), the reference population (adults, young adults, university students, adolescents), and the cutoff point chosen for its classification [1,2]. Both the practice and frequency of BD are higher among adults aged 18 and 24 years, being very prevalent among university students [3-9].

The consumption of large amounts of alcohol among university students may imply the adoption of more risk behaviors for themselves and others when compared to those who do not consume alcohol [7]. In addition to affecting physical, emotional, and social development, the practice of BD by this group can impact their permanence at university and the quality of professional training [7,8], causing poor academic performance and absences from classes or appointments [4,9]. Those who practice BD are more than twice as likely to have sexual intercourse problems (gaining a sexual advantage or unplanned sex), four times more likely to be physically injured, more than twice as likely to report thoughts of suicide than those who do not drink [10].

Medical students have shown a higher prevalence of BD when compared to their peers from other courses, ranging from 48.7% [11] to 68.5% [12,13], being more frequent among male students. The prevalence of BD in this group is even higher than in the general population worldwide, which is around 39.5% among drinkers [2].

In addition to the high prevalence of BD observed among medical students, this group also has a higher prevalence of mental health problems than undergraduates from other courses [14]. Many factors inherent to the course can contribute to these rates, including the high workload, contact with pain and death, lack of leisure activities, and free time [14], increasing excessive alcohol consumption.

Although it is known that in this group of students, the practice of BD is high, little is known about the occurrence of negative consequences and violence associated with the practice of BD. Therefore, it is hypothesized that the prevalence of these consequences is equally high according to the frequency of BD practice. In this sense, understanding this relationship is a fundamental public health issue so that prevention and health promotion measures aimed at this group can be implemented.

Aim of the Study

This article aimed to evaluate the practice and frequency of binge drinking among medical students at a Brazilian public university and its association with self-report of negative consequences and violence.

Materials and Methods

This is a quantitative, cross-sectional study that analyzed data from the epidemiological study called QualiMed, which aims to investigate the health conditions and quality of life of undergraduate medical students at the Federal University of Minas Gerais (UFMG), Brazil, and to verify associated factors with possible mental health problems. It is organized into two phases: 1) cross-sectional study and 2) prospective observational study.

For this article, the data obtained in the cross-sectional study, carried out between June and December 2018, with all medical students regularly enrolled in the course were used. Students were asked to answer a self-administered online questionnaire with sociodemographic information related to the course, behaviors, mental health, consumption of alcohol and other substances, the occurrence of negative consequences after drinking and violence suffered in the last year.

All students regularly enrolled in undergraduate medicine at UFMG in 2018, attending the first to twelfth period, were included in the research. Students who had been totally or partially withdrawn from the semester were excluded. The recruitment of participants took place through an Awareness Commission composed of at least two representatives from each of the twelve existing groups in 2018 (1st to 12th period). The Commission was trained to act in the awareness of colleagues to participate in the research. In addition to creating the Commission, the link to the data collection instrument and a cover letter with the research objectives were sent via e-mail and student social network groups.

Alcohol consumption was assessed using the Alcohol Use Disorders Identification Test (AUDIT), developed by the World Health Organization (WHO), which includes questions about consequences, quantity, and frequency of alcohol consumption [15].

Binge drinking (BD) was assessed through the AUDIT question: "How often do you take 'six or more doses' on one occasion?" whose answer options are (0) never, (1) once a month or less, (2) two to four times a month, (3) two to three times a week, and (4) four or more times a week. For the practice of BD, the answers were dichotomized into yes (1 to 4) and no (0). The frequency of BD was categorized into never (0), occasional (1), and frequent (2 to 4).

The practice and frequency of BD were analyzed according to sociodemographic data (gender, age, skin color, sexual orientation, being a beneficiary of financial aid - as a proxy for income), to the course (year of study, status in the course), to behaviors (practice of religion and regular physical activity, use of tobacco, alcohol and other psychoactive substances) and the occurrence of negative consequences after the use of alcohol (problems with the family, health problems, sexual difficulties, unprotected sex, sexual harassment, emotional problems, aggressiveness, involvement in accidents and missing classes/shifts) and violence in the last twelve months (physical aggression, verbal aggression, bullying, falling, thinking about ending one's life and attempted suicide).

Data were analyzed using the Statistical Package for Social Science software (SPSS, version 22.0). Descriptive analyses were performed through frequency distribution and uni and multivariate comparatives. In the univariate analysis, alcohol consumption and the practice of binge drinking were compared according to sociodemographic variables, using Pearson's Chi-Square or Fisher's Exact Test. In addition, the association between the practice of BD and the occurrence of negative consequences after alcohol consumption and the occurrence of situations of violence in the last 12 months was evaluated. Negative consequences and situations of violence that obtained a p-value < 0.05 in the univariate analysis were included in the logistic model.

Crude and adjusted Prevalence Ratios (PR) and their respective 95% confidence intervals (95%CI) were estimated using Poisson regression with robust estimation. Finally, the adjustment of the model was performed considering the variables gender and receiving financial assistance as a proxy for income.

The study was approved by the Research Ethics Committee of the Federal University of Minas Gerais (UFMG) under opinion n^o. 2,659,876 and all participants signed the Free and Informed Consent Term online.

Results

The study population included 1470 individuals, with a mean age of 22.5 years (SD = 3.29), corresponding to 74.2% of students enrolled in the Medicine course at UFMG during the research period. Most participants were female (50.7%), white (62.2%), without a partner (53.6%) and with heterosexual sexual orientation (79.9%). Approximately 46% were attending the Basic Cycle (which corresponds to the first two years of the Medicine course) and about 93% remained in a regular situation in the course, that is, they continued with the same university admission class (Table 1).

Characteristics N (%)		Overall N = 1470	Alcohol Consumption ¹ N = 1240 (85.0%)	Binge Drinking ² N = 904 (62.3%)
		N (%)	N (%)	
Sex/gender	Female	743 (50.7)	613 (49.6)*	394 (43.7)**
	Male	723 (49.3)	623 (50.4)	507 (56.3)
Skin color	White	914 (62.2)	796 (64.2)**	588 (65.0)*
	Non-white	556 (37.8)	444 (35.8)	316 (35.0)
Sex orientation ⁴	Heterosexual	1172 (79.9)	963 (77.8)**	684 (75.7)**
	Non heterosexual	294 (20.1)	274 (22.2)	219 (24.3)
Age	Up to 22 anos	818 (55.6)	680 (54.8)	492 (54.4)
	23 years or more	652 (44.4)	560 (45.2)	412 (45.6)
Do you have a partner?	Yes	678 (46.4)	575 (46.7)	429 (47.7)
	No	782 (53.6)	655 (53.3)	470 (52.3)
Financial support beneficiary ⁵	Yes	321 (22.0)	259 (21.0)*	177 (19.7)*
	No	1138 (78.0)	973 (79.0)	721 (80.3)
Cycle ⁶	Basic	656 (45.8)	534 (44.2)*	372 (42.5)*
	Theoretical-practical	431 (30.1)	378 (31.3)	279 (31.9)
	Clinical	345 (24.1)	295 (24.4)	224 (25.6)
Class status	Regular	1374 (93.5)	1160 (93.5)	845 (93.5)
	Irregular	96 (6.5)	80 (6.5)	59 (6.5)
Practice some religion	Yes	718 (49.0)	563 (45.6)**	362 (40.1)**
	No	746 (51.0)	673 (54.4)	541 (59.9)
Regular practice of physical activity ⁷	Yes	813 (55.3)	7171 (57.8)**	557 (61.6)**
	No	657 (44.7)	523 (42.2)	347 (38.4)
Tobacco Use	Yes	234 (21.4)	233 (25.5)**	213 (32.5)**
	No	860 (78.6)	682 (74.5)	443 (67.5)
Use of at least 1 substance in the last year ⁸	Yes	803 (54.7)	744 (60.0)**	603 (66.7)**
	No	666 (45.3)	495 (40.0)	301 (33.3)

Table 1: Profile of medical students at a Brazilian public university and according to alcohol consumption and Binge Drinking practice: QualiMed Study, 2018.

1 - The total varied according to the exclusion of missing answers (N = 12).

2 - The total varied according to the exclusion of missing answers (N = 19).

3 - Non-white skin color included blacks, browns, yellows, and others.

4 - Non-heterosexual sexual orientation included homosexuals, bisexuals, and asexual.

5 - Logistical support for students with financial difficulties to stay at the university. used as income proxy.

6 - Basic cycle corresponds to the first two years of graduation; theoretical-practical cycle at 3rd and 4th years; clinical cycle at the 5th and 6th years of graduation.

7 - Considered regular if practiced for 20 minutes at least twice a week.

8 - Included an affirmative answer to using at least one of the following psychoactive substances in the last year: medicine to lose weight or stay awake, substance to "feel cheap," marijuana, a tranquilizer, anxiolytic, soothing or anti-dystonic, sedative or barbiturate, anabolic, cocaine, crack or coca paste, a remedy to improve concentration.

*: p-value < 0.05 - Obtained using Pearson's Chi-square or Fisher's Exact Test when appropriate. Comparison between alcohol consumers and non-consumers and binge drinkers and non-practitioners.

**.: p-value < 0.001 - Obtained using Pearson's Chi-square or Fisher's Exact Test when appropriate. Comparison between alcohol consumers and non-consumers and binge drinkers and non-practitioners.

The study population included 1470 individuals, with a mean age of 22.5 years (SD = 3.29), corresponding to 74.2% of students enrolled in the Medicine course at UFMG during the research period. Most participants were female (50.7), white (62.2%), without a partner (53.6%), and with heterosexual sexual orientation (79.9%). Approximately 46% attended the Basic Cycle (which corresponds to the first two years of the Medicine course). About 93% remained in a regular situation in the course; that is, they continued with the same university admission class (Table 1).

Alcohol consumption was reported by 85% (N = 1240) of the participants, regardless of quantity or frequency. Among them, it is identified that most are male, white, heterosexual, not receiving financial assistance, who do not practice religion, perform regular physical activity, and do not use tobacco but use other psychoactive substances. The prevalence of BD was 62.3% (N = 904) in the evaluated group and 73.3% among drinkers with a profile very similar to those who reported alcohol consumption (Table 1).

Binge drinking was associated with almost all negative consequences and violence assessed. Only the outcomes “thought about ending his own life” and “attempted suicide” were not associated with the practice of BD. The prevalence of negative consequences and violence was higher among students who practice binge drinking than those who do not (Table 2).

Adverse situations/Violence	Binge drinking ¹		P-value ²
	No N (%)	Yes N (%)	
After drinking			
Problems with the family	31 (15.7)	167 (84.3)	< 0.001
Health problems	27 (15.3)	150 (84.7)	< 0.001
Difficulty in sexual intercourse ³	19 (10.5)	162 (89.5)	< 0.001
Unprotected sex	39 (11.1)	313 (88.9)	< 0.001
Sexual assault	29 (19.2)	122 (80.8)	0.003
Emotional problems	79 (20.1)	314 (79.9)	< 0.001
Aggressiveness	12 (7.5)	148 (92.5)	< 0.001
Involved in accidents	5 (6.0)	78 (94.0)	< 0.001
Skipping classes/shifts	46 (13.6)	293 (86.4)	< 0.001
Violence situations in the last months	N (%)	N (%)	P-value²
Physical aggression	18 (24.3)	56 (75.7)	0.009
Verbal assault	194 (34.6)	366 (65.4)	0.032
Moral assault	100 (31.2)	221 (68.8)	0.003
Fall	83 (26.9)	225 (73.1)	<0.001
Thought of ending his own life	129 (36.6)	223 (63.4)	0.344
Attempted suicide	8 (26.7)	22 (73.3)	0.142

Table 2: Adverse situations and violence associated with the practice of Binge Drinking among medical students at a Brazilian public university: QualiMed Study, 2018.

1 - Obtained through question 3 of the AUDIT: “How often do you take six or more doses on one occasion?”. Answers (0) were never considered “no” and other answers, “yes” (1 time a month or less; 2 to 4 times a month; 2 to 3 times a week; 4 or more times a week). 2 - P-value obtained through Pearson’s Chi-square. 3 - Any difficulty perceived by the respondent during sexual intercourse.

The frequency of BD was considered occasional for 41.1% of students, frequent for 21.2%, and absent for 37.7%. All situations of risk and violence evaluated showed a higher prevalence among students who frequently practice BD (Figure 1). Among them, the following stand out: getting involved in accidents (55.4%), being aggressive after alcohol use (51.9%), and having unprotected sex (without using a condom) (44.6%). Among those who occasionally practice BD, the most prevalent risk situation was having suffered sexual assault in the last year (52.3%), having emotional problems after drinking (45.3%), and having some difficulty in sexual intercourse (45.3%) (Figure 1).

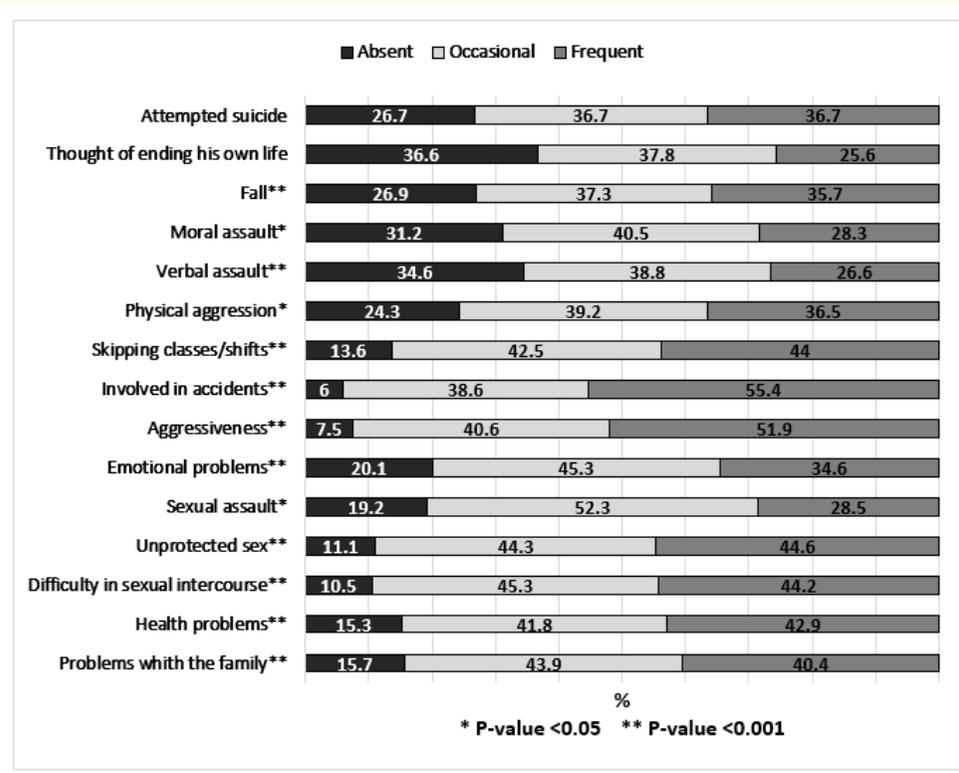


Figure 1: Distribution of negative consequences reported by medical students at a Brazilian public university according to the frequency of Binge Drinking practice. QualiMed Study, 2018.

Of the thirteen variables related to negative consequences and violence added to the multivariate regression model (p-value < 0.05), five remained in the final model (Table 3). Binge drinking practitioners had a prevalence of occurrence of falls 1.08 times higher (95%CI = 1.01 - 1.16) when compared to non-practitioners; of having sexual difficulty 1.15 times greater (95%CI = 1.08 - 1.23); of having unprotected sex 1.23 times higher (95%CI = 1.15 - 1.32); of presenting aggressiveness 1.17 times greater (95%CI = 1.09 - 1.24) and of missing classes/shifts 1.17 times greater (95%CI = 1.09 - 1.25). The adjustment of the model by sex and income (receiving financial assistance) did not show significant differences between the models.

Negative consequences/ violence	Binge Drinking			
	Unadjusted model		Adjusted model ²	
	PR [CI 95%] ¹	p-value	aPR [CI 95%] ¹	p-value
Fall	1.08 [1.01 - 1.16]	0.026	1.09 [1.02 - 1.18]	0.012
Difficulty in sexual intercourse	1.15 [1.08 - 1.23]	< 0.001	1.08 [1.01 - 1.16]	0.023
Unprotected sex	1.23 [1.15 - 1.32]	< 0.001	1.22 [1.14 - 1.30]	< 0.001
Aggressiveness	1.17 [1.09 - 1.24]	< 0.001	1.17 [1.09 - 1.24]	< 0.001
Skipping classes/shifts	1.17 [1.09 - 1.25]	< 0.001	1.18 [1.10 - 1.26]	< 0.001

Table 3: Association between the practice of binge drinking and the report of negative consequences and violence among medical students at a Brazilian public university: QualiMed Study, 2018.

1 - PR: Prevalence Ratio; 95%CI: 95% Confidence Interval; aPR: Adjusted Prevalence Ratio. Obtained through Poisson Regression with robust estimation.

2 - Model adjusted by sex and being a beneficiary of financial support, as income proxy.

Discussion

The results showed a high prevalence of binge drinking (BD), a practice reported by more than half of the evaluated students, and more frequent among male students. The prevalence of negative consequences and situations of violence were higher among students who reported practicing BD, and, in this group, they were higher among those who reported frequent BD. These findings corroborate the hypotheses proposed by this study that the prevalence of negative consequences and situations of violence are higher among students who practice BD and among those who practice BD more frequently.

The prevalence of BD found in this study (62.3%) is higher than that observed in 2016, among people aged 15 or over, worldwide (18.2%), in Europe (26.4%), in the Americas (21.3%), in Brazil (19.4%), in an assessment that considered all respondents. Considering only students who consume alcohol, the prevalence observed in this study (73.3%) is even more alarming and higher than that described worldwide (39.5%), in the Americas (40.5%) and in Africa (50.2%) in an assessment that also considered only drinkers [2].

Considering the specific group of medical students, the findings of the present study were also greater than those observed in other studies carried out in Brazil. The rates identified by these studies were 48.7% among students in the first three years of graduation in Rio de Janeiro [11] and 25% among students from Juiz de Fora [16]. However, the prevalence rate of BD was lower than that observed among students from the Rio Grande do Sul (68.5%) [12].

It is known that the prevalence and patterns of alcohol use vary throughout the world, mainly due to cultural reasons. Although a growing increase in alcohol consumption among women is observed [17], in general, men have a higher prevalence of alcohol use, consume it in greater quantity and frequency, and are more prone to excessive consumption and the practice of BD [2,18].

In addition to being more prevalent among men, the practice of BD was higher among those with heterosexual orientation, non-religious, and who used at least one psychoactive substance in the last year (except alcohol), a result similar to that found among French university students [4]. This trend towards greater consumption among men was observed in the present study when analyzing the variables associated with the practice of binge drinking.

The prevalence of all negative consequences surveyed was higher among students who reported BD than those who did not. The most frequent negative consequences were getting involved in accidents, being aggressive, having difficulties in sexual intercourse (perfor-

mance), having unprotected sex, missing academic commitments (classes or shifts), having health problems, problems with family, sexual assault, and emotional problems.

Similar consequences were found in other studies, however, in smaller proportions. Among them, there is a Brazilian survey carried out among university students that observed an association between the practice of comics and driving vehicles, more frequently observed among men, compared to women (21% and 3.9%, respectively) [19]; greater vulnerability to situations of violence, falls, death [5], physical injuries [20] in addition to the association with stress and depression [4].

Being aggressive after drinking remained associated with BD in the final multivariate model, whose prevalence was 1.17 times higher among students who practice BD. According to the WHO, alcohol is involved in approximately 3 million deaths per year worldwide, 13.7% of which result from intentional causes [2]. Aggressive behavior associated with alcohol consumption has been explained by several theories, such as the neurobiological model in which aggressive behavior under the acute influence of alcohol is approached based on the effect of this substance on cognitive functions. Thus, the impairment of executive functions such as control and inhibition, as well as information processing, would be associated with an increase in aggression manifestations related to alcohol, in addition to individual characteristics [21]. This perspective strengthens the evidence that high levels of impulsivity can potentiate aggressive behavior under the influence of alcohol [22].

The amount of alcohol ingested and the frequency of BD episodes are associated with a higher risk of alcohol-related acute consequences (hangover, fainting, risky sex, fights, and injuries) [23]. The more frequent the practice of BD, the higher the prevalence of accidents, fights, being a victim of robbery or theft, missing the day of school or work, being unable to perform school tasks, and having sex without condoms [11].

Suffering sexual assault after alcohol consumption was also associated with BD in univariate analyses. Sexual violence associated with alcohol consumption, regardless of the pattern of use, has been identified as a significant problem among university students [24,25], and the practice of BD is one of the predictors for the practice of sexual violence [26,27].

In addition to compromised risk perception, alcohol consumption also plays an important role in sexual performance. Although it is related to disinhibition [28], studies highlight its harmful effects on sexual functions, especially when consumed in excess [29]. This finding is corroborated in the present study, as reporting difficulties in sexual intercourse after drinking was 1.15 times more prevalent among binge practitioners when compared to non-practitioners. Considering the frequency of BD, the prevalence of difficulties in sexual intercourse was almost four times more prevalent (45.3% for occasional BD practice and 44.6% for frequent practice, when compared to non-practitioners - 10.5%).

Considering that alcohol consumption can compromise assessing risks, a high prevalence of unprotected sexual behaviors associated with BD [30] was expected. However, it was surprising that it was so high in the present study (P = 88.9%). In addition to the biological effect of alcohol, factors that reflect the perception of effects and risks, such as social standards and beliefs, also interfere in the relationship between excessive use of alcohol and the practice of unprotected sex [31]. Studies show that knowing the risks of sexually transmitted infections (STIs) and about alcohol consumption rules on the university campus is not enough to intimidate the practice of unprotected sex, especially under the influence of alcohol [27,31]. In this perspective, it is believed that the high prevalence of this practice among medical students who reported BD may be related to the culture of valuing the use of alcohol in groups and social spaces in which students live.

The harmful effects of alcohol use on health range from mild to severe and may be transient or permanent, including symptoms of a hangover, fainting with or without loss of consciousness, falls or injuries, sexual violence, unprotected sex, accidents of traffic, problems related to depression and anxiety, suicidal ideation and even death [32,33].

In the present study, no statistically significant difference was observed between suicidal ideation or between thinking about ending one's own life with the practice of BD, not even when evaluating such aspects related to the frequency of binge drinking. Students who practice BD frequently or occasionally had a similar prevalence (36.7%) of attempted suicide when compared to students who never practiced BD (26.7%).

Students who claimed to have thought about ending their own lives also had a similar prevalence, 36.6% for those who had never practiced BD, 37.8% for those who did it occasionally, and 25.6% for those who did it frequently. This finding may signal a weakness of students from the point of view of mental health, an aspect that is extensively detailed and discussed in the literature [14]. The fact that there is no statistically significant difference may indicate that the prevalence of these aspects is already high in the study population itself, regardless of alcohol use.

It is noteworthy that 21.2% of the students in the present study reported BD frequently (more than four or more days a month). This practice was associated with a higher prevalence of almost all negative consequences analyzed when compared to occasional use or non-use in BD.

Students who practiced BD frequently were more involved in accidents (55.4%), were more aggressive (51.9%), and had more unprotected sex (44.6%). In addition, suffering sexual assault was more prevalent among students who practiced BD occasionally (52.3%) and frequently (28.5%), a result greater than that observed among American university students, aged 18 to 24 years, whose report of sexual violence among frequent BD practitioners was 25% [2].

In addition to the physical effects itself, the practice of BD can compromise the professional training of medical students and university students in general. In the present study, it was observed that students who reported the practice of BD had a 1.17 times higher prevalence of absenteeism from classes or shifts. A Brazilian study with health care students also observed a greater chance (OR = 3.15; CI = 1.28 - 7.72) and higher risk (PR = 6.07; CI = 4.17 - 8.84) of non-compliance with academic activities among university students who practice BD [4,34].

The behavior adopted by future physicians responding to this study raises the possibility that such students have a distorted perception of the real risks involved in the practice of alcohol consumption. This hypothesis is corroborated by other studies [35], including a Brazilian study with 2,641 university students from all regions of the country that identified that students underestimate the negative effects of alcohol and, in particular, BD, which leads them to greater exposure to situations of risks and harm to their health [36]. According to the authors, 96.4% of the evaluated students had never heard about this pattern of alcohol consumption, although 75.8% of them had at least one episode of BD in the last year, and 51.4% perceive the practice as medium or low risk [36].

Individual and environmental factors may be associated with BD and the persistence of this behavior among university students [37,38]. Motivation for alcohol consumption, such as coping with unpleasant situations, can also play an important role in the relationship between violence and alcohol consumption, especially in cultures where aggressive behavior is considered an acceptable social interaction [22]. Theories such as the health belief model or the social cognitive theory have been considered relevant, especially because they contribute to successful intervention proposals based on health education [38]. The first focuses on the role of cultural perspectives involving alcohol use, added to little knowledge of its harmful effects [35,38], and the second considers the behavior of drinking, including in excess, due to social, family, and peer influences [39].

The low cost of alcoholic beverages, added to cultural acceptance and availability, possibly favor the acceptability of excessive alcohol consumption among university students. In addition to dealing with demands regarding professional choice, like most university students, young medical students are exposed to a large volume of content, rigid workload, tensions related to care, psychosocial aspects, and

common physical changes of age [14]. Added to this, the rites of passage, practiced in a university environment, are often opportunities for excessive alcohol consumption and BD.

Although the present study demonstrates that approximately one in four university students reported frequent BD and that the negative consequences were also more prevalent among those who practiced BD with this frequency, the limitations inherent to the type of epidemiological design performed (cross-sectional study). Thus, it is possible to say about the relationship between the practice of BD and the analyzed outcomes without, however, establishing the chronological order of occurrence of the events or attributing causality. However, as a screening strategy, this study was able to identify patterns of alcohol use and BD practice among medical students at a Brazilian public university, representing the total number of medical students at the institution.

In addition, the use of the AUDIT instrument allows greater comparability of results with national and international literature, as it is a widely used instrument. The choice to use question 3 of the AUDIT, which assesses the consumption of 6 or more doses of alcohol, both for men and women, on a single occasion as a cutoff point for detecting BD, may have resulted in underreporting of this practice among participants. Some studies adopt as a criterion the consumption of four or more doses for women and five or more doses for men in the last month [1]. Thus, we believe that university students' alcohol use scenario could be even worse if we chose to use a less conservative cutoff point.

This is a crucial aspect, considering that excessive alcohol consumption can cause problems to the health, training, and professional practice of future physicians [35-40]. Our results highlight the magnitude of this problem and the need for adequate interventions for this population group. Some proposals focusing on university students, especially from medical courses, have been pointed out by specialists, such as the adoption of campaigns that strengthen social norms [27], implementation of strategies to improve interpersonal communication in the classroom [31] and the inclusion of courses to promote health in the curriculum [41].

Conclusion

This study identified a high prevalence of binge drinking among medical students at a Brazilian public university and the association of this practice with reports of negative consequences and violence. These are consequences that affect the physical and mental health, personal and academic life of future doctors.

Considering that most students who consume alcohol in an abusive manner are in the first two years of the undergraduate course, it is recommended that preventive measures be taken early in their academic life. It is also important to consider that these students are going through a process of transition to higher education, far from their family and circle of friends, with a low perception of social support, an aspect known to be associated with worse indicators of mental health and substance abuse.

To reduce the practice of DB among medical students it is necessary that universities recognize this practice as a problem and adopt preventive and harm reduction policies that combine education for risk reduction, adoption of clearer rules on consumption of alcohol on their dependencies and strengthening of social skills and social support among university students.

Conflict of Interest

The authors deny any conflict of interest.

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