



Frequency of Smoking, Alcohol Consumption, and Substance Use in Relation to General Health Indicators in Guilan University of Medical Sciences

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Abstract

Background: The risk of substance use is increasing among university students, especially medical students. This study aimed to investigate the frequency of smoking, alcohol consumption, and substance use and its relationship with general health indicators among the students of Guilan University of Medical Sciences (GUMS) in 2020. The differences in the frequency of substance use were also investigated from 2005.

Methods: This was a cross-sectional analytical study conducted on 406 students of GUMS, Iran, in 2020. The data were collected through three online questionnaires including a demographic questionnaire, the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), and the General Health Questionnaire (GHQ). The data were entered into SPSS software version 22 and analyzed using Chi-square, Fisher's Exact tests, and logistic regression at a significance level of 0.05.

Findings: In this study, 53.9% of the participants were female, 46.1% were male, and 54.4% of them experienced using substances in their lifetime. The highest prevalence of use was in consumers of tobacco (46.8%), alcoholic beverages (34.7%), and cannabinoid compounds (19%). Besides, 48.5% of the participants were suspected of having some degree of psychiatric disorders, among which depression (11.6%) and anxiety (8.4%) were the most common. Moreover, substance use during students' lifetime had a statistically significant association with anxiety, depression, and mental health.

Conclusion: The results of this study showed the prevalence of smoking, alcohol consumption, and substance use among the students of GUMS is worrying. The relationship between consumption and consumer's health indicators highlights the necessity of intervention and purposeful planning by policymakers in this field.

Keywords: Medical students, Substance, Alcohol, Smoking, General health

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Introduction

Substance use and its widespread and unpleasant side effects are among the most important concerns and the worst social harms today. The relationship of substance use and addictive behaviors with other deviances and misbehaviors, such as mental disorders, violence, committing a crime, academic failure, suicide attempts, and physical illnesses (AIDS, hepatitis, etc.) point to the importance of rethinking this issue.¹ Furthermore, psychological, social, familial, spiritual, and biological factors are involved in substance use disorder, among which psychological factors are more prominent.²

According to epidemiological studies, illicit substance use is more common among young people and university students than in other age groups.³ In a meta-analysis study on the prevalence of substance use in Iranian university students, the prevalence of one-year use in three groups including alcohol consumption, cigarette

smoking, and other substance use were reported at 23% (95% CI 8-39), 21% (95% CI 6-37), and 14% (95% CI 10-18), respectively.⁴ In addition, the prevalence of substance use was reported 37.5% and 33% among the students of Tehran University of Medical Sciences.⁵

The mental health of young people and university students is one of the biggest concerns of decision-makers. A research on Canadian medical students in 2021 reported that 27% of students suffered from mental disorders, with anxiety or depression showing the highest prevalence.⁶ In other studies, mental illness has been reported as a risk factor for substance use.^{7,8}

University students are prone to lose mental health due to their special conditions, such as being away from family, having economic problems, studying a large volume of materials during their courses, and having intense competition. Furthermore, medical students experience particular problems, including undergoing psychological



stress imposed by the environment, dealing with the problems and issues of the patients, the lengthy education process, and not having a bright job future.^{9,10} Globally, medical students have reported high anxiety, depression, burnout, and general psychological stress.^{11,12} Numerous studies have shown that medical students experience extreme stress while studying.¹³⁻¹⁵ Moreover, the findings have identified several stressors for students, including multiple exams, worries about grades, competition, and lack of time for family, friends, and recreation.¹³

Some studies have revealed that the prevalence of substance use increases from the first to the sixth year of medical education for most substances. A study on Turkish medical students showed a higher prevalence of tobacco, alcohol, and illicit substance use among students in the last year of the study than in the first year.¹⁶ Furthermore, another study on Spanish medical students showed higher drug use in the second cycle of education.¹⁷ During the last years of the medical course, the highest emotional pressures are imposed on medical students. This is due to more direct contact with patients and the rigors of the internship.¹⁸

Understanding the factors inducing substance use disorders in each area and timely identification of at-risk populations will help the effectiveness of preventive activities. Regarding the high prevalence of mental health disorders and its possible association with substance use, the present study aimed to investigate the frequency of different types of substance consumption and general health indicators among the students of Guilan University of Medical Sciences to help take some necessary preventive measures.

Methods

Study design and sampling

This was a cross-sectional analytical study to investigate the frequency of smoking, alcohol consumption, and substance use and in relation to general health indicators among the students of Guilan University of Medical Sciences (GUMS) in 2020. This study was conducted using the census method. The inclusion criteria were studying in the medical school of GUMS and willingness to participate in the study. Incomplete questionnaires and participants with a history of severe psychological disorders were excluded. Three online questionnaires were completed by the participants anonymously, and their links were available to the students.

Measures

1. Demographic questionnaire: This questionnaire included items on age, gender, marital status, residence status, family economic status, parents' level of education, family structure, students' level of education and grade point average (GPA), history of smoking, and alcohol and substance use in the family.

2. Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST): The ASSIST version 3.0 is an 8-item questionnaire. It collects respondents' information about substance use in the lifetime and the last three months. To ensure the validity and reliability of this scale in international settings and the ability to link with a brief intervention of the questionnaire, ASSIST has passed three main stages as follows: Phase one: the WHO ASSIST project, which was conducted between 1997 and 1998¹⁹; Phase two: an international study to validate the ASSIST questionnaire in various primary care and addiction treatment settings which showed that ASSIST had good concurrent, predictive, and discriminative validity with the cut-off scores for "low", "moderate", and "high" risk¹⁹⁻²¹; and Phase three: a controlled trial that tested the effectiveness of brief intervention associated with ASSIST scores.²²

The translated version of the ASSIST questionnaire was prepared by the Department of Prevention and Treatment of Substance Abuse of the Ministry of Health. The questionnaire's content validity was confirmed by a group of researchers, and its face validity was assessed by pre-testing the questionnaire in a group of Master Public Health (MPH) students.²³

In this study, the first two items of the ASSIST questionnaire were used.

3. General Health Questionnaire-28 (GHQ-28): This screening and self-report instrument was used to assess general health. It was developed by Goldberg (1972) and has been widely used to diagnose mild psychological symptoms in various situations.²⁴ It has four subscales (each with seven items), including somatic symptoms, anxiety and insomnia, severe depression, and social dysfunction. The Likert scale is usually used for scoring (0 = not at all, 1 = no more than usual, 2 = rather more than usual, and 3 = much more than usual). The total score of the test varies from 0 to 84, and a higher score is associated with lower general health. The cut-off point for diagnosing people with the probable disorder is > 23 for the total score and > 14 for the subscales.^{25,26} The total reliability coefficient of the questionnaire was 96%.²⁷ The reliability coefficient of the Persian version of GHQ based on test-retest, half-split, and Cronbach's alpha were 0.7, 0.93, and 0.9, respectively.^{28,29}

Statistical analysis

The sample size of the present study was calculated considering the 30% prevalence of substance use in students³ and the precision of 0.05. SPSS software (version 22) was used for data analysis. Frequency tables and graphs were used for descriptive statistics, and chi-square, Fisher's exact tests, and logistic regression were utilized for inferential statistics. The significance level was considered to be $P < 0.05$.

Results

A total of 406 medical students (female: 53.9%; male: 46.1%) from basic sciences and pathophysiology as well as externship and internship periods participated in the present study. The mean \pm SD (min-max) age of the participants was 22.71 ± 2.67 (18-34) years. Besides, 54.4% of medical students experienced substance use during their lifetime, and 44.8% used substances in the last three months.

Table 1 shows the demographic characteristics of the participants and the prevalence of substance use during their lifetime and the last three months. The chi-square test showed there was a statistically significant relationship between age, residence status, father's education, mother's education, family structure, history of mental illness, history of family substance use, and substance use through the lifetime ($P < 0.05$). Furthermore, there was a statistically significant relationship between age, residence status, father's education, mother's education, history of mental illness, history of family substance use,

and substance use in the last three months ($P < 0.05$).

The highest percentage of substance use among medical students was in the tobacco types group, including cigarettes, hookahs, and naswar during lifetime and the last three months (Figure 1).

Table 2 shows the frequency of consumption of various substances in the last three months. Permanent use of different types of tobacco was reported 10.1% and use of cannabis was 2.2% among medical students. Alcoholic beverages were consumed occasionally during the last three months, occasionally during the last month, or weekly (16.3%, 9.1%, and 2.5%, respectively).

There was a statistically significant association between medical students' education and recent substance use, with the highest frequency in the internship group, and the lowest prevalence in the physiopathology group. Moreover, the results showed a significant relationship between GPA and recent substance use (Table 3).

Based on the results, 97% of the participants were physically healthy, and 8.4% of them suffered from

Table 1. The frequency of substance use during lifetime and the last three months according to demographic characteristics of medical students

Variable	Status	No. (%) Total = 406	Use during lifetime		P value*	Use during the last 3 months		P value*
			NO N (%)	Yes N (%)		No N (%)	Yes N (%)	
Gender	Male	187 (46.1)	79 (42.2)	108 (57.8)	0.25	96 (51.3)	91 (48.7)	0.105
	Female	219 (53.9)	105 (47.9)	114 (52.1)		130 (59.4)	89 (40.6)	
Age (year)	<20	97 (23.9)	69 (71.1)	28 (28.9)	0.0001	76 (78.4)	21 (21.6)	0.0001
	21-25	244 (60.1)	101 (41.4)	143 (58.6)		132 (54.1)	112 (45.9)	
	>25	65 (16)	14 (21.5)	51 (78.5)		18 (27.7)	47 (72.3)	
Marital status	Single	376 (92.6)	170 (45.2)	206 (54.8)	0.878	208 (55.3)	168 (44.7)	0.619
	Married	30 (7.4)	14 (46.7)	16 (53.3)		18 (60)	12 (40)	
Residence status	With spouse or family	227 (55.9)	122 (53.7)	105 (46.3)	0.0001	145 (63.9)	82 (36.1)	0.0001
	Alone or with friends	98 (24.1)	24 (24.5)	74 (75.5)		33 (33.7)	65 (66.3)	
Socioeconomic position	Living in dormitory	81 (20)	38 (46.9)	43 (53.1)	0.221	48 (59.3)	33 (40.7)	0.483
	Low	15 (3.7)	8 (53.3)	7 (46.7)		9 (60)	6 (40)	
	Middle	339 (83.5)	158 (46.6)	181 (53.4)		192 (56.6)	147 (43.4)	
Father's education	High	52 (12.8)	18 (34.6)	34 (65.4)	0.005	25 (48.1)	27 (51.9)	0.003
	Under diploma	26 (6.4)	16 (61.5)	10 (38.5)		20 (76.9)	6 (23.1)	
	Diploma	106 (26.8)	36 (33)	73 (67)		48 (44)	61 (56)	
Mother's education	College	271 (66.7)	132 (48.7)	139 (51.3)	0.007	158 (58.3)	113 (41.7)	0.0001
	Under diploma	45 (11.1)	22 (48.9)	23 (51.1)		31 (68.9)	14 (31.1)	
	Diploma	120 (29.6)	41 (34.2)	79 (65.8)		50 (41.7)	70 (58.3)	
Family structure	College	241 (59.4)	121 (50.2)	120 (49.8)	0.027	145 (60.2)	96 (39.8)	0.116
	Living with family	369 (90.9)	175 (47.4)	194 (52.6)		211 (57.2)	158 (42.8)	
	Living with a family member	17 (4.2)	4 (23.5)	13 (76.5)		8 (47.1)	9 (52.9)	
Mental disease history	Others	20 (4.9)	5 (25)	15 (75)	0.003	7 (35)	13 (65)	0.018
	Yes	56 (13.8)	15 (26.8)	41 (73.2)		23 (41.1)	33 (58.9)	
	No	350 (86.2)	169 (48.3)	181 (51.7)		203 (58)	147 (42)	
Smoking, alcohol consumption, and substance abuse history in family	Yes	145 (35.7)	32 (22.1)	113 (77.9)	0.0001	50 (34.5)	95 (65.5)	0.0001
	No	261 (64.3)	152 (58.2)	109 (41.8)		176 (67.4)	85 (32.6)	

* Chi-square test.

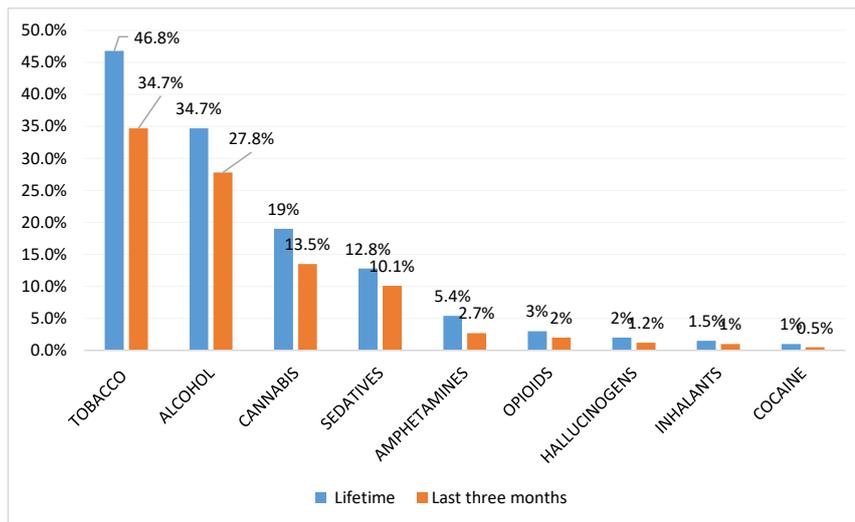


Figure 1. The frequency distribution of substance use in medical students during lifetime and the last three months

Table 2. The frequency distribution of substance use in medical students in the last three months

Substance types	Use	1-2 Times in the last three months			
		No. (%)	No. (%)	No. (%)	No. (%)
Tobacco types	265 (65.3)	52 (12.8)	26 (6.4)	22 (5.4)	41 (10.1)
Opioids	398 (98)	4 (1)	2 (0.5)	1 (0.2)	1 (0.2)
Cannabis	351 (86.5)	36 (8.9)	5 (1.2)	5 (1.2)	9 (2.2)
Amphetamine stimuli	395 (97.3)	8 (2)	3 (0.7)	0 (0)	0 (0)
Sedatives	365 (89.9)	24 (5.9)	9 (2.2)	4 (1)	4 (1)
Alcoholic beverages	293 (72.2)	66 (16.3)	37 (9.1)	10 (2.5)	0 (0)
Inhalants	402 (99)	4 (1)	0 (0)	0 (0)	0 (0)
Hallucinogens	401 (98.8)	4 (1)	1 (0.2)	0 (0)	0 (0)
Cocaine	404 (99.5)	2 (0.5)	0 (0)	0 (0)	0 (0)

Table 3. Substance use in the last three months in medical students with different educational status

Variable		Use				P value*
		No		Recent		
		No.	%	No.	%	
Education status	Externship	62	56.4	48	43.6	0.0001
	Internship	37	34.9	69	65.1	
	Basic sciences	87	72.5	33	27.5	
	Physiopathology	40	57.1	30	42.9	
GPA	17-20	105	69.1	47	30.9	0.0001
	14-17	106	48.2	114	51.8	

GPA, grade point average; * Chi-square test.

different levels of anxiety. In addition, some degrees of depression were observed in 11.6% of the participants, while 91.6% of medical students showed healthy social function. The study revealed there was no statistically

significant relationship between physical health status and substance use during the lifetime of medical students ($P=0.151$) as well as between social function and lifetime substance use ($P=0.113$). However, substance use during lifetime had a significant relationship with anxiety, depression, and mental health status ($P=0.001$, $P=0.0001$, and $P=0.008$, respectively) (Table 4).

The Chi-square test demonstrated that substance use in the last three months had no statistically significant relationship with physical health status, social function, depression, and mental health status ($P>0.05$). Only a statistically significant relationship was found between anxiety and substance use in the last three months ($P=0.012$).

Using logistic regression, the subscales of GHQ were entered into an equation using the Enter method to examine the effect of the scores obtained from these subscales on substance use during lifetime. In the anxiety and depression subscales, high scores above the normal increased the chances of substance use during the medical students' lifetime by 2.8 and 2.6 times, respectively (Table 5).

Furthermore, logistic regression showed that none of the subscales of GHQ increased the likelihood of substance use in medical students during the last three months.

Discussion

The present study aimed to investigate the frequency of smoking, alcohol consumption, and substance abuse in relation to general health indicators among the students of Guilan University of Medical Sciences in 2020. The differences in frequency of substance use were also examined from 2005. According to the findings, the frequency of substance use has increased over the past years among medical students at GUMS. Figures 2 and 3 demonstrate the changes in the prevalence of substance

Table 4. Substance use during the lifetime of medical students according to the frequency distribution of GHQ-28 subscales

Subscale	Status	No. (%)	Lifetime substance abuse		P value*
			Yes No. (%)	No No. (%)	
Somatic symptoms	Healthy (0-13)	394 (97)	213 (54.1)	181 (45.9)	0.151
	Unhealthy (14-21)	12 (3)	9 (75)	3 (25)	
Anxiety	No (0-13)	372 (91.6)	194 (52.2)	178 (47.8)	0.001
	Yes (14-21)	34 (8.4)	28 (82.4)	6 (17.6)	
Social dysfunction	Healthy (0-13)	372 (91.6)	199 (53.5)	173 (46.5)	0.113
	Unhealthy (14-21)	34 (8.4)	23 (67.6)	11 (32.4)	
Depression	No (0-13)	359 (88.4)	185 (51.5)	174 (48.5)	0.0001
	Yes (14-21)	47 (11.6)	37 (78.7)	10 (21.3)	
General health	Healthy (0-23)	209 (51.5)	101 (48.3)	108 (51.7)	0.008
	Unhealthy (24-84)	197 (48.5)	121 (61.4)	76 (38.6)	

* Chi-square test.

Table 5. Logistic regression of the impact of general health indicators on lifetime substance use

	B	SE	Wald	df	Sig.	Exp(B)	95.0% C.I for EXP(B)	
							Lower	Upper
Somatic symptoms	-0.235	0.724	0.106	1	0.745	0.790	0.191	3.267
Anxiety	1.038	0.517	4.034	1	0.045	2.823	1.025	7.771
Social dysfunction	-0.375	0.472	0.632	1	0.427	0.687	0.273	1.733
Depression	0.960	0.419	5.256	1	0.022	2.610	1.149	5.929
Constant	-1.346	0.749	3.232	1	0.072	0.260		

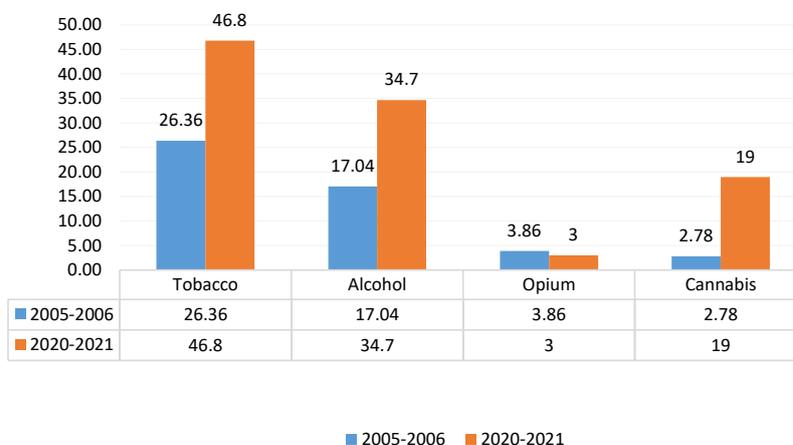


Figure 2. The frequency of lifetime use of different substances among medical students in a 15-year period

consumption within 15 years after the previous study among GUMS students. Apart from opium whose frequency changes were not statistically significant, there was a significant increase in consumption of other substances in recent and lifetime abuse.

A similar study by Zarrabi et al on the prevalence of substance use among the students of GUMS from 2005 to 2006 showed at least 30.1% of students used substance once in their lifetime. It was also found that 26.36% of students used cigarettes, 17.04% alcohol, 3.86% opium, 2.78% hashish, 2.05% ecstasy, and 1.08% used heroin.³

The frequency of substance use in some domestic^{2,7,30-32}

and foreign^{11,33} studies was compared with the present study. In this study, the lifetime consumption of all tobacco products was 46.8%, which was higher compared to the results of other studies. This increase might be partly related to hookah, traditionally used in Iran. In domestic studies, the prevalence of cigarette smoking and using hookah was investigated either separately or totally (Table 6).

Lifetime consumption of alcohol in the current study was 34%, which was higher than in other studies in Iran. The studies by Afrashteh et al³² and Mozafarinia et al³¹ showed a higher prevalence of alcohol consumption,

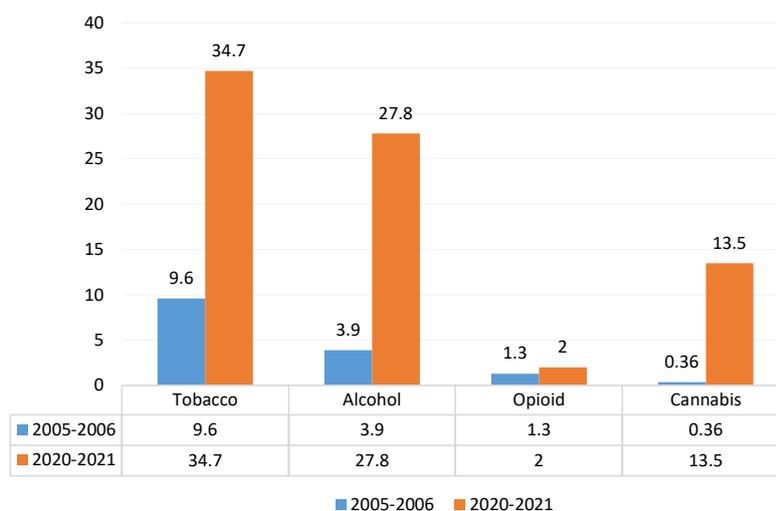


Figure 3. The frequency of recent use of different substances among medical students in a 15-year period

Table 6. Comparison of substance use among students in some domestic and foreign studies

Study	Substance			
	Tobacco	Alcohol	Cannabis	Opioid
Taremiyan et al (2014) ⁷	Cigarette 18% Hookah 25.7%	11.8%	2.2%	2.3%
Armani Kian et al (2020) ²	Cigarette and hookah 29%	10.4%	-	-
Akbari Zardkhaneh et al (2012) ³⁰	Cigarette 20% Hookah 30%	13%	3.1%	2.8%
Afrashteh et al (2021) ³²	-	18.3%	6.1%	5.7%
Mozafarinia et al (2017) ³¹	Cigarette 26.3%	19.9%	7.1%	5.5%
Gignon et al (2015) ³³	Cigarette 16%	97%	77%	3%
Merlo et al (2017) ¹¹	Cigarette 26.9%	96%	46.8%	9.1%

similar to the findings of the present study. A comparison of the frequency of alcohol abuse among students inside and outside Iran indicated that the frequency of alcohol abuse abroad was several times higher than that inside the country, which can partly be due to the religious and legal prohibition of alcohol consumption in Iran. The consumption of opioids in this study was equal to or less than that in previous studies, while the present study showed a higher use of cannabinoids compared to all domestic studies.

In terms of recent substance use, the results of the present study were compared with those of some domestic studies as shown in Table 7. The highest frequency of recent cannabis use was reported by Afrashteh et al.³² Although the lifetime consumption of alcohol in the present study (34.7%) was different from that of similar studies in Iran, this difference was not observed in recent consumption. In a meta-analysis study on Iranian university students, the one-year prevalence was reported at 23% for alcohol use, 21% for cigarette smoking, and 14% for other substances.⁴

In the current study, there was a significant relationship

between age group and consumption of cigarettes, alcohol, and substances during the lifetime and the last three months. The relative frequency of consumption was higher in older age groups. This finding was consistent with that of the studies by Zarrabi et al³ and Akbari et al.³⁰

Based on the results of this study, no significant relationship was found between gender and consumption of cigarettes, alcohol, and substances during the lifetime and the last three months, which was not in line with most studies in Iran and abroad.^{3,7,11,30} However, the results of the study by Armani Kian^{et al}² were consistent with those of the current study. In addition, the results of the study by Mozafarinia et al³¹ showed alcohol and cigarette consumption had no significant association with gender. This finding might indicate that the consumption of cigarettes, alcohol, and substances has increased in women compared to men in recent years. The studies close to the current study made similar conclusions.^{2,31}

The present study also indicated that the history of substance abuse in the family had a significant relationship with the history of smoking, alcohol consumption, and substance use during the lifetime and the last three months. It can be due to the availability of these substances and familiarity with them at younger ages. Various studies have implicated that the presence of a substance abuser in the family is effective on the tendency of other family members to use substances.³⁴

This study showed a significant relationship between higher education level and consumption of cigarettes, alcohol, and substances during the lifetime and the last three months in medical students, which was consistent with some previous studies in other countries.^{2,16} More work pressure and stress at higher levels due to direct communication with the patients and the rigors of the internship period may be a reason for the greater tendency of this group to use substances.¹⁸

In the current study, substance use in the last three

Table 7. Comparison of recent substance use in three studies

Study	Substance use									
	Alcohol		Cannabis		Methamphetamine		Ecstasy		Opioid	
	Daily	Recent month	Daily	Recent month	Daily	Recent month	Daily	Recent month	Daily	Recent month
The present study	0	9.1	2.2	1.2	0	0.7	0	0.2	0.2	0.5
Afrashteh et al ³²	1	6.9	4	14	0.4	1.9	0.8	2.3	0.6	3.8
Mozafarinia et al ³¹	3.1	4.3	0.5	0.9	0.2	0.2	0	0	0.7	0.7

months was significantly higher among students with lower GPAs. In the study on French medical students by Gignon et al, the probability of failure in medical school exams was higher among cannabis users than non-users.³³

In the current study, 49.5% of the medical students had some degree of mental disorders. This result was consistent with the findings of other studies among Iranian university students, whose reports were between 19% and 55%.³⁵⁻³⁷ Besides, in the meta-analysis study conducted by Zare et al., mental disorders were significantly heterogeneous among university students, and almost 33% of students were suspected of having mental disorders, which gradually increased over time.²⁶

In addition, substance use during the lifetime had a significant association with anxiety, depression, and general health of the students. However, there was no significant relationship between physical health status and substance use and between social functioning and substance use. Depression and anxiety could increase the chance of substance use during the lifetime in the study group by 2.6 and 2.8 times, respectively. Symptoms of depression were common in substance abusers. Almost one-third to one-half of all people with opioid addiction or abuse and 40% of people with alcohol addiction showed symptoms of major depression at some point in their lives.³⁴ Indeed, the primary anxiety and mood disorders in patients might have led to drug use. Meanwhile, long-term drug use might lead to substance-induced mood and anxiety disorders.

In the current study, only anxiety disorder, as one of the general health variables, had a significant relationship with recent substance use (last three months) in students. Many people drink alcohol to relieve their anxiety symptoms. Phobia and panic are particularly common in alcohol users.³⁴ Alcohol, like benzodiazepine, facilitates the inhibitory function of GABA receptors. A study by Walters et al. on university students in 2018, showed no significant relationship between substance abuse in the last year and anxiety symptoms, which was contrary to the findings of the present study.³⁸ Furthermore, a study on Canadian students found that the simultaneous presence of depression and anxiety symptoms in women increased the chance of being in a group of multiple substance abusers by four times. This chance was reported to be 2.5 times in men.³⁹

According to the results, the frequency of substance use among medical students of GUMS increased significantly during the last two decades. Furthermore, recent studies in other universities of medical sciences have shown similar results, which indicate an increase in the prevalence of substance consumption among medical students. It is necessary to pay more attention to this issue on the part of the policy-makers in this field and to carry out screening studies to identify students with moderate-to-high-risk consumption for prevention and treatment measures. The relationship between public health and the consumption of various substances highlights the need to pay attention to the physical and mental health of students. The living conditions of students, importance of academic pressures and shifts, hope for job security, and academic advancement are the topics that can be further studied.

During this study, the COVID-19 pandemic and quarantine might have affected the prevalence of substance consumption among the university students leading to a change in the students' daily habits. Moreover, since the questionnaires were completed online, it was not possible to check the proportion of the population of each group in the sampling process.

Conclusion

According to the present study, the prevalence of smoking, alcohol consumption, and substance use among the students of GUMS in the lifetime and last three months is worrying. The relationship between substance use and the health indicators of consumers necessitates intervention and purposeful planning by policy-makers in this field.

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Competing Interests

The authors declare no potential conflict of interest.

Ethical Approval

The research was approved by the ethics committee of Guilan University of Medical Sciences (No. IR.GUMS.REC.1399.392), and informed consent was obtained from all participants.

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