



Original Article

Investigation of Addiction Potential and Its Related Health Profile in Medical Students

Kiomars Najafi¹, Mohammad Hassan Novin¹, Mahdi Rafigh¹, Seyedeh Maryam Zavarmousavi¹, Adele Isanazar¹, Nasim Nekouei Shoja¹

¹Kavosh Cognitive Behavior Sciences and Addiction Research Center, Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

Abstract

Background: Substance use among medical students is a concern due to its relationship with students' health and the nature of the medical profession. Therefore, this study aimed to assess addiction potential and its relationship with health in medical students.

Methods: This cross-sectional study was conducted on 200 medical students who were selected through convenience sampling. Students' demographic information, including age, gender, marital status, place of residence, educational level, and substance abuse in first-degree relatives (FDRs), as well as information obtained from the Duke Health Profile and Iranian Addiction Potential Scale (IAPS), were collected in person or online and analyzed using SPSS software (v. 26).

Findings: The mean age of the participants was 23.27 ± 2.4 years and 57.5% of the participants were female. The results indicated a statistically significant relationship between addiction potential score and gender, family history of substance use, and educational level, but not with age, marital status, or place of residence. Moreover, a significant negative correlation was observed between addiction potential and physical, mental, social, and general health scores.

Conclusion: This study demonstrated that paying special attention to the health of medical students and planning to improve their health indicators can effectively reduce addiction potential.

Keywords: Addiction, Health, Addiction potential, Medical students

Citation: Najafi K, Novin MH, Rafigh M, Zavarmousavi SM, Isanazar A, Nekouei Shoja A. Investigation of addiction potential and its related health profile in medical students. *Addict Health*. 2023;15(2):105–111. doi:10.34172/ahj.2023.1416

Received: November 11, 2022, **Accepted:** January 1, 2023, **ePublished:** April 29, 2023

Introduction

Substance abuse is a major problem worldwide, affecting health, society, and the economy. Studies indicate that drug addiction is a multidimensional or multifactorial issue involving various psychological, social, cultural, and genetic factors.¹ Addiction is a social hazard that plays a significant role in the chronic social exclusion and deprivation of certain groups of people in societies and imposes considerable costs on these individuals.^{2,3}

Drug addiction has numerous reasons, including the urge to be accepted by society and to appear more attractive and developed.⁴ The decreased average age of initiation among adolescents and young adults and the increased prevalence of drug use among adolescents and youth are both concerning and noteworthy. Consequently, the phenomenon of addiction grows and spreads.⁵ To this end, Ghavidel et al investigated the prevalence of psychoactive substance abuse and related factors among third-year high school students in Nazarabad. The findings revealed that 24.5% of students used cigarettes, alcohol, opium, heroin, heroin crack, lysergic acid diethylamide (LSD), cannabis, and cocaine.⁶

Numerous experimental findings indicate that

approximately 13% of adults have admitted to drug abuse.⁷ Available data show that substance abuse is at an all-time high among college students; without long-term solutions, this phenomenon will worsen and eventually cause a social crisis. This group is elite and significantly impacts society as a whole, and their addiction would undoubtedly hinder their efficiency within the community.⁸⁻¹⁰

Even after college graduation, substance abuse is prevalent among young adults. Identifying and intervening with students at risk for drug use is essential to mitigate possible academic and health consequences.¹¹ On the other hand, medical students, as one of the most influential groups in society, are vulnerable to mental health issues due to their unique circumstances, such as isolation from family and loneliness, entering large groups, having problems related to patients and the use of medical equipment, economic issues and inadequate income, hospital environment, longer study period, intense competitions, and low physical activity.^{12,13}

The World Health Organization (WHO) defined Health in 1948 as “a state of complete physical, mental, and social well-being and not merely the absence of disease



or infirmity".¹⁴ According to this proposed definition, health is a multifaceted concept encompassing various variations. Over the past two decades, measuring health and keeping track of diseases have received considerable attention. The quality-of-life index has been widely used as a criterion for health outcomes measurement, where this index can measure health outcomes beyond disease and biological dysfunction.¹⁴

To the researchers' knowledge, no study has been conducted on the addiction potential of medical students and their health profiles on a national scale. Consequently, the current study examined the potential for addiction among medical students at Guilan University of Medical Sciences and its relationship with health indicators.

Methods

The present study was an analytical cross-sectional one, and the population consisted of all medical students at Guilan University of Medical Science during the academic year 2020-2021. The entire population of medical students was sampled. All medical students enrolled in the basic sciences, external and internal courses, at Guilan University of Medical Sciences during the academic year 2020-2021 who provided informed consent were included in the study.

Incomplete questionnaires served as the sole exclusion criteria for this investigation. After obtaining approval from the research deputy and informed consent from students, addiction potential questionnaires and the Duke Health Profile were administered. The Duke Health Profile (DUKE) was presented to the students of basic sciences via in-person or online training courses. In addition, it was made accessible to extern and intern students via university educational hospitals and online methods. The checklist developed by the researchers was used to record the necessary information for this study.

This study utilized the following instruments to collect data: (1) a demographic information questionnaire (including age, gender, marital status, place of residence, drug use among first-degree relatives (FDRs), and level of education) (Table 1); (2) the 41-item Iranian Addiction Potential Scale (IAPS), and (3) the Duke Health Profile (DUKE) questionnaire.

Table 1 details the demographic characteristics of the research population.

Iranian addiction potential scale

The addiction potential questionnaire comprises 41 items, 36 of which were considered in this study; the remaining five items are typically used in polygraph (lie detector) tests. Each question has four possible responses: "completely disagree" receives a score of zero, "somewhat disagree" receives a score of 1, "somewhat agree" receives a score of 2, and "completely agree" receives a score of 3. Regarding the students' responses, the possible range

Table 1. Medical students' demographic characteristics

Variable	Status	Number	Percent
Gender	Male	85	42.5
	Female	115	57.5
Age (y)	Under 23	103	51.5
	Over 23	97	48.5
	Mean \pm SD (Min-Max)	23.27 \pm 2.44 (18-35)	
Place of residence	Family home	119	59.5
	Private home	59	29.5
	Dormitory	22	11
Educational level	Basic sciences	63	31.5
	Extern	74	37
	Intern	63	31.5
Marital status	Single	189	94.5
	Married	11	5.5
Drug use experience in family	Yes	18	9
	No	182	91

of scores was between 0 and 108. The greater the score, the greater the probability of substance abuse, and vice versa. This scale examines the potential for both active and passive addiction. Weed et al developed this scale in 1992.¹⁵ Zargar determined the validity and reliability of the Persian version of the scale and reported the Cronbach's alpha as 0.9.¹⁶

Duke Health Profile

The Duke Health Profile is a 17-item generic tool used to determine the health profile. This study measured three indices of physical health, mental health, and social health, in addition to general health. According to the scoring scheme of this questionnaire, scores of 100 and 0 for four indices represent the best and worst health conditions, respectively. The questionnaire was initially developed by Parkerson et al in 1990.¹⁷ Novin et al investigated the psychometric properties of the Persian version of the Duke Health Profile using confirmatory factor analysis; the data fit the model well, and Cronbach's alpha for the questionnaire was 0.77.¹⁴

Results

According to the Duke Health Profile scoring pattern, the mean score obtained by the investigated population for physical health was 77.35 ± 18.79 , while the minimum and maximum scores obtained were 0 and 100, respectively. Meanwhile, the mean scores for mental, social, and general health were 66.7 ± 21.69 , 51.5 ± 21.33 , and 65.18 ± 16.3 , respectively. The frequency of various aspects of the student's health status is presented in Table 2 by tertile.

As shown in Table 3, there was a significant difference between physical health and gender. Male students scored

higher in physical health than female students. However, no significant correlation was observed between medical students' mental health scores and their demographic characteristics.

In terms of social health, the t-test and analysis of variance (ANOVA) indicated no statistically significant difference ($P > 0.05$) between the social health and demographic characteristics of the investigated medical students. Regarding general health, the t-test results revealed a statistically significant difference in terms of gender ($P = 0.033$). However, there was no statistically significant difference between general health scores and demographic characteristics.

The mean addiction potential score obtained by the investigated students was 24.9 ± 13.2 , with the lowest and highest scores obtained from the questionnaire being 0 and 64, respectively. The potential for active and passive addiction scores were 13.8 ± 10.7 and 11.01 ± 4.5 ,

Table 2. Physical, mental, social, and general health status of medical students based on Duke Health Profile scores

	Health status	Number	Percent
Physical health	Poor (<33.33)	3	1.5
	Average (33.34-66.66)	47	23.5
	Good (66.67-100)	150	75
Mental health	Poor (<33.33)	16	8
	Average (33.34-66.66)	73	36.5
	Good (66.67-100)	111	55.5
Social health	Poor (<33.33)	42	21
	Average (33.34-66.66)	104	52
	Good (66.67-100)	54	27
General Health	Poor (<33.33)	6	3
	Average (33.34-66.66)	107	53.5
	Good (66.67-100)	87	43.5

Table 3. Physical and mental health according to Duke Health Profile based on demographic characteristics of medical students

Variable	Status	Physical health		Mental health	
		Mean \pm SD	Statistics	Mean \pm SD	Statistics
Gender	Male	83.05 \pm 15.88	$t = 3.94$	68.58 \pm 22.52	$t = 1.05$
	Female	73.13 \pm 19.7	$P = 0.0001$	65.3 \pm 21.03	$P = 0.291$
Age (y)	Under 23	77.08 \pm 17.35	$t = 0.203$	65.75 \pm 21.76	$t = 0.652$
	Over 23	77.62 \pm 20.29	$P = 0.839$	67.73 \pm 21.67	$P = 0.515$
Place of residence	Family home	76.63 \pm 18.87	$F = 0.228$ $P = 0.797$	65.21 \pm 21.42	$F = 2.12$ $P = 0.123$
	Private home	78.64 \pm 18.97		71.35 \pm 20.71	
	Dormitory	77.72 \pm 18.49		62.27 \pm 24.48	
Educational level	Basic sciences	79.2 \pm 16.78	$F = 0.789$ $P = 0.465$	66.98 \pm 22.62	$F = 0.584$ $P = 0.559$
	Extern	75.27 \pm 19.18		64.72 \pm 21.91	
	Intern	77.93 \pm 19.52		68.73 \pm 20.59	
Marital status	Single	77.14 \pm 18.8	$t = 0.645$	77.14 \pm 18.8	$t = 0.24$
	Married	80.9 \pm 19.21	$P = 0.52$	80.9 \pm 19.21	$P = 0.815$
Drug use experience in family	Yes	79.44 \pm 17.31	$t = 0.495$	63.33 \pm 23.76	$t = 0.698$
	No	77.14 \pm 18.96	$P = 0.621$	67.03 \pm 21.51	$P = 0.491$

respectively. It was determined that 45.5% of the students had scores above the mean score of 25 (Table 4).

The t test results indicated a statistically significant difference between male and female students' addiction potential scores ($P = 0.002$). However, no statistically significant difference was observed in addiction potential scores based on age ($P = 0.091$). Moreover, there was no significant difference in their scores based on marital status ($P = 0.965$) but there was a statistically significant difference in the addiction potential scores of students whose families had a history of substance use ($P = 0.031$).

The findings revealed no statistically significant difference in the students' addiction potential scores based on place of residence ($P = 0.194$). Furthermore, significant difference was observed in the addiction potential scores based on educational level ($P = 0.049$; Table 5).

The Pearson correlation coefficient (r) revealed a negative correlation between physical health scores and addiction potential scores ($P = 0.0001$), and the increase in physical health scores was inversely proportional to the decrease in addiction potential scores and vice versa ($r = -0.419$). A negative correlation was also observed between mental health and addiction potential scores ($P = 0.0001$), and an increase in mental health scores was correlated with a decrease in addiction potential scores and vice versa ($r = -0.538$). In addition, there was a negative correlation between social health scores and addiction potential scores ($P = 0.0001$), and an increase in social health scores was associated with a decrease

Table 4. Addiction potential based on IAPS scores

Addiction potential	Number	Percent
Lower tendency to use drugs	109	54.5
Tendency to addiction	91	45.5
Total	200	100

in addiction potential scores and vice versa ($r = -0.358$). Furthermore, there was a negative relationship between general health scores and addiction potential scores ($P = 0.0001$), and an increase in general health scores was correlated with a decrease in addiction potential scores and vice versa ($r = -0.556$) (Table 6).

In stepwise multiple linear regression, general health, mental health, social health, and physical health were used as independent variables and addiction potential was considered a dependent variable. The regression results revealed that only the general health variable justified 30% of the changes in the addiction potential, while all other independent variables were excluded from the model (Tables 7 and 8).

Discussion

According to research, drug addiction is caused by various

mental, social, cultural, and genetic factors.¹ Therefore, the present study was conducted to evaluate addiction potential and its relationship with various aspects of medical students' general health profiles.

The average score for addiction potential obtained by the investigated population using the questionnaire was 24.9 ± 13.2 , and meticulous investigation revealed that 45.5% of the students displayed addictive tendencies. In a study conducted at the same university by Zarrabi et al, it was observed that 30.1% of students at Guilan University of Medical Sciences had used one of the addictive drugs at least once in their lifetime with cigarette smoking (36.26%) and alcohol consumption (17%) the most prevalent ones.¹⁸ This demonstrates the high prevalence of addiction potential among students in this region.

According to a study conducted by Fajani et al, only 6.67% of students in Isfahan reported drug abuse.¹⁹ In a separate study by Kabir et al in Karaj, only 7% of students reported substance abuse.²⁰ Furthermore, Bucher et al reported 14% drug abuse among medical students,²¹ considerably lower than the rate in the current study.

However, it should be noted that any amount of drug use is concerning. Some studies, such as the one conducted by Merlo et al, reported the prevalence of alcohol use among American students to be 70% and the prevalence of marijuana use to be 22.7%,²² significantly higher than the rates reported in the present study.

According to the obtained results, there was a statistically significant difference between addiction potential scores and the male gender, positive history of drug use in the family, and internship educational level. Several studies conducted in Iran and other countries worldwide reported that men are more likely than women to use drugs.¹⁸⁻²⁴ The higher prevalence of potential addiction among men may be attributable to cultural factors and a greater social acceptance of drug use as a social norm among men compared to women. In addition, studies indicate that risk-taking behaviors are typically prevalent in communities.²⁰ Therefore, being in groups where drug use is common can increase the likelihood of developing an addiction.

Moreover, the results of various studies indicated that drug-using friends and family members have a positive and significant relationship with the development of drug-use tendencies and drug consumption among individuals.²⁰ These results are also consistent with those of the present study.

The study by Arora et al also demonstrated that drug use increases significantly during the final years of

Table 5. Addiction potential score obtained from IAPS based on demographic characteristics of medical students

Variable	Status	Mean ± SD	Statistics
Gender	Male	28.22 ± 13.92	t = 3.12 P = 0.002
	Female	22.44 ± 12.13	
Age (y)	Under 23	23.36 ± 12.69	t = 1.69 P = 0.091
	Over 23	26.52 ± 13.6	
Place of residence	Family home	23.52 ± 12.14	F = 1.65 P = 0.194
	Private home	26.61 ± 13.9	
	Dormitory	27.72 ± 16.18	
Educational level	Basic sciences	22.84 ± 12.52	F = 3.06 P = 0.049
	Extern	23.82 ± 12.71	
	Intern	28.22 ± 13.98	
Marital status	Single	24.91 ± 12.86	t = 0.045 P = 0.965
	Married	24.72 ± 18.85	
Drug use experience in family	Yes	31.27 ± 13.72	t = 2.16 P = 0.031
	No	24.26 ± 13.02	

Table 6. Correlation between IAPS addiction potential scores and Duke Health Profile physical, mental, social, and general health scores in medical students

Variable	Addiction potential score	
Physical health score	Pearson correlation	- 0.419
	P value	P = 0.0001
	Correlation type	Negative correlation
Mental health score	Pearson correlation	- 0.538
	P-value	P = 0.0001
	Correlation type	Negative correlation
Social health score	Pearson correlation	- 0.358
	P value	P = 0.0001
	Correlation type	Negative correlation
General health score	Pearson correlation	- 0.556
	P value	P = 0.0001
	Correlation type	Negative correlation

Table 7. Model summary of addiction potential and health profile multiple linear regression

Model	R	R-square	Adjusted R-square	Std. Error of the Estimate
1	0.556 ^a	0.309	0.305	11.00389

^a Predictors: (Constant); general health score.

Table 8. Addiction and health profile multiple linear regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	54.244	3.215		16.874	0.000
	General health score	-0.450	0.048	-0.556	-9.408	0.000

medical school.²³ Numerous factors, including the volume of course materials, the pressure of multiple exams, interpersonal competitions, lengthy educational periods, and lack of free time have contributed to high anxiety levels in medical students. These tensions increase during the final years of education and internship, as students are immersed in society and a more serious working environment, multiple night shifts, heavy workload, a significant decrease in free time, dealing with emergency patients, the necessity of correct implementation of various procedures for patients, and the continuous evaluation of interns' performance. Besides, strict regulations and sporadic requests for expulsion exacerbate the interns' anxiety, which is now greater than ever because of the COVID-19 pandemic. These factors can increase an individual's propensity to engage in drug use.

In this study, however, there was no statistically significant difference in the addiction potential scores of students regarding age, marital status, or place of residence. Although students who lived independently from their families in a dorm or private home appeared to have greater addiction potential, this was not observed in this study.

According to the results, the mean Duke Health Profile score for students' physical health was 77.35 ± 18.79 , and 75% were in a "good" state. There was a statistically significant difference between the physical health scores of male and female students, with male students' physical health scores being significantly higher.

According to the findings of this study, there was a statistically significant and negative correlation between physical health scores and addiction potential scores ($P=0.0001$), and an increase in physical health scores was associated with a decrease in addiction potential scores and vice versa ($r=0.419$). The choice of lifestyle may be one of the causes of this condition, as people with active lifestyles and healthy diets exhibit less desire for antisocial behaviors such as drug use. On the other hand, one of the leading causes of addiction is the inability to cope with problems. In such circumstances, the individual may self-medicate with drugs to temporarily feel freedom and peace. In addition, suffering from complications is one of the causes of low self-esteem and helplessness. Nonetheless, additional research is necessary to confirm these hypotheses.

The present study revealed that the average mental health score of the students was 66.7 ± 21.69 and that more than half (55.5%) were deemed to be in a "good"

state. Furthermore, there was no statistically significant difference in mental health scores based on gender, age, level of education, marital status, place of residence, or drug use in the family. This study did not reveal a gender difference in mental health scores, even though such a difference may exist. The increase in mental health scores is correlated with the decrease in addiction potential scores and vice versa ($r = -0.538$).

The study conducted by Merlo et al indicated that the mental health of 66.6% of medical students was compromised during their education. This was especially evident among female students and was associated with elevated levels of anxiety disorders, such that 10% of students had frequent suicidal thoughts. Additionally, although 70.1% of students indicated that they would appreciate mental health services, only 39% of them were able to utilize such services.²² Arora et al found that the prevalence of drug use among medical students was 20.43%. Although 91.7% of students participating in this study were aware of the dangers of substance abuse, 34.4% cited psychological stress as a cause of substance abuse.²³ Moreover, Arora and colleagues' study revealed that 59.6% of students tried to quit using drugs at least once but eventually relapsed.²³

It should also be noted that personality traits and coping abilities can influence a person's desire to use drugs. As a result, it may be advantageous to conduct additional detailed studies to investigate the relationship between personality types and drug use. In general, however, it can be stated that awareness and environmental stress reduction promote good mental health in these individuals and increase the effectiveness of service delivery and the health system.

According to the results, the mean social health score of the students was 51.5 ± 21.33 , and 52% were in an "average" state. There was no statistically significant difference in the students' social health scores based on gender, age, level of education, marital status, place of residence, or drug use in the family. Although presence in environments such as the workplace and hospital can affect mental and social health, the present study found no significant correlation between educational level and students' mental and social health dimensions. The evaluation demonstrated that addiction risk scores decrease as social health scores increase. This was expected, given that social acceptance and approval are associated with higher self-esteem and can be viewed as a protective factor against addictive tendencies.

The mean general health score obtained by the investigated students was 65.18 ± 16.3 , indicating that 53.5% of the students were in an average state of general health, and the correlation between an increase in general health scores and a decrease in addiction potential scores was significant. In addition, male students received higher scores in terms of general health, which is justified by their higher mean physical health score. There was, however, no statistically significant difference between the students' general health scores based on age, level of education, marital status, place of residence, or drug use in the family.

One of the limitations of this study was the absence of an examination of the relationship between personality type and addiction potential. The relationship between personality types and the students' desire to use drugs warrants further investigation.

Conclusion

This study demonstrated that the students' mean addiction potential score was relatively high, and approximately 50% exhibited addictive tendencies. This is concerning and calls for intervention. There was a positive and statistically significant relationship between addiction potential score and male gender, positive family history of drug use, and internship. However, it did not correlate with the students' age, marital status, or place of residence. Moreover, there was a negative and significant correlation between addiction potential and physical, mental, social, and general health scores.

Acknowledgments

The authors are grateful to the medical students at Guilan University of Medical Sciences for participating in this study.

Authors' Contribution

Conceptualization: Mohammad Hassan Novin, Kiomars Najafi.

Data curation: Mahdi Rafigh, Adele Isanazar.

Formal analysis: Mohammad Hassan Novin, Nasim Nekouei Shoja.

Investigation: Mahdi Rafigh, Adele Isanazar.

Methodology: Mohammad Hassan Novin, Kiomars Najafi.

Project administration: Mohammad Hassan Novin.

Supervision: Mohammad Hassan Novin, Seyedeh Maryam Zavarmousavi.

Writing—original draft: Seyedeh Maryam Zavarmousavi, Mohammad Hassan Novin.

Writing—review & editing: Mohammad Hassan Novin.

Competing Interests

The authors declare no potential conflict of interest.

Ethical Approval

This study was approved by the ethical committee of Guilan University of Medical Sciences (No. IR.GUMS.REC.1399.500).

Funding

This research received no specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- Sarkhel S. Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry. 10th ed. Medknow Publications; 2009. p. 331.
- Ghazinezhad M, Savalanpour E. Social exclusion and addiction potential among female university students in Tehran. *Iranian Journal of Social Problems*. 2009;16(3):139-80. [Persian].
- Saah T. The evolutionary origins and significance of drug addiction. *Harm Reduct J*. 2005;2:8. doi: [10.1186/1477-7517-2-8](https://doi.org/10.1186/1477-7517-2-8).
- Mahmoodi H, Abolghasemi A, Soleimani E. The role of attachment styles and defense mechanisms in discriminating cigarette smoker students from non-smokers. *J Sabzevar Univ Med Sci*. 1970;16(3):134-41. [Persian].
- Rahimi Movaghar A, Mohammad K, Razaghi E. Trend of drug abuse situation in Iran: a three decade survey. *Hakim Res J*. 2002;5(3):171-81. [Persian].
- Ghavidel N, Samadi M, Kharmanbiz A, Asadi A, Feyzi A, Ahmadi R, et al. Investigation of substance use prevalence and the interrelated factors involved through third-year high school students in Nazarabad city from January 2008 to June 2008. *Razi J Med Sci*. 2012;19(97):29-37. [Persian].
- Zhao J, Kong F, Wang Y. Self-esteem and humor style as mediators of the effects of shyness on loneliness among Chinese college students. *Pers Individ Dif*. 2012;52(6):686-90. doi: [10.1016/j.paid.2011.12.024](https://doi.org/10.1016/j.paid.2011.12.024).
- Najafi M, Sheikhatvan M, Montazeri A, Sheikhfathollahi M. Quality of life in opium-addicted patients with coronary artery disease as measured with WHOQOL-BREF. *Int J Soc Psychiatry*. 2009;55(3):247-56. doi: [10.1177/0020764008093600](https://doi.org/10.1177/0020764008093600).
- Safaii N, Kazemi B. Effect of opium use on short-term outcome in patients undergoing coronary artery bypass surgery. *Gen Thorac Cardiovasc Surg*. 2010;58(2):62-7. doi: [10.1007/s11748-009-0529-7](https://doi.org/10.1007/s11748-009-0529-7).
- Sadeghian S, Karimi A, Dowlathshahi S, Ahmadi SH, Davoodi S, Marzban M, et al. The association of opium dependence and postoperative complications following coronary artery bypass graft surgery: a propensity-matched study. *J Opioid Manag*. 2009;5(6):365-72. doi: [10.5055/jom.2009.0036](https://doi.org/10.5055/jom.2009.0036).
- Arria AM, Caldeira KM, Allen HK, Bugbee BA, Vincent KB, O'Grady KE. Prevalence and incidence of drug use among college students: an 8-year longitudinal analysis. *Am J Drug Alcohol Abuse*. 2017;43(6):711-8. doi: [10.1080/00952990.2017.1310219](https://doi.org/10.1080/00952990.2017.1310219).
- Solaimanizadeh L, Solaimanizadeh F, Javadi M, Abasszadeh A. Association between mental health and educational stressful factors among students of Razi Nursing and Midwifery School in Kerman. *Iran J Med Educ*. 2011;11(3):200-9. [Persian].
- Pulido-Martos M, Augusto-Landa JM, Lopez-Zafra E. Sources of stress in nursing students: a systematic review of quantitative studies. *Int Nurs Rev*. 2012;59(1):15-25. doi: [10.1111/j.1466-7657.2011.00939.x](https://doi.org/10.1111/j.1466-7657.2011.00939.x).
- Novin MH, Farzadfar F, Pashaei T, Razaghi E. Cross-culture adaptation and psychometric properties of the Persian version of Duke Health Profile. *Iran J Psychiatry Behav Sci*. 2020;14(4):e102765. doi: [10.5812/ijpbs.102765](https://doi.org/10.5812/ijpbs.102765).
- Weed NC, Butcher JN, McKenna T, Ben-Porath YS. New measures for assessing alcohol and drug abuse with the MMPI-2: the APS and AAS. *J Pers Assess*. 1992;58(2):389-404. doi: [10.1207/s15327752jpa5802_15](https://doi.org/10.1207/s15327752jpa5802_15).
- Zargar Y. Construction of Iranian Addiction Potential Scale. *Proceedings of the 2nd Congress on Iranian Psychology Association*; 2008. [Persian].
- Parkerson GR Jr, Broadhead WE, Tse CK. The Duke Health Profile. A 17-item measure of health and dysfunction. *Med*

- Care. 1990;28(11):1056-72. doi: [10.1097/00005650-199011000-00007](https://doi.org/10.1097/00005650-199011000-00007).
18. Zarrabi H, Najafi K, Shirazi M, Borna S, Sabahi E, Nazifi F. Prevalence of substance use among students of Guilan University of Medical Sciences (2005-2006). *J Qazvin Univ Med Sci*. 2009;12(4):69-74. [Persian].
 19. Fajani S, Janghorbani M, Khosravi A. Prevalence of substance abuse and its association with cigarette smoking in Isfahan University of Medical Sciences students in 2013. *Koomesh*. 2015;16(4):544-54. [Persian].
 20. Kabir K, Mohammadpoorasl A, Esmaeelpour R, Aghazamani F, Rostami F. Tobacco use and substance abuse in students of Karaj Universities. *Int J Prev Med*. 2016;7:105. doi: [10.4103/2008-7802.190091](https://doi.org/10.4103/2008-7802.190091).
 21. Bucher JT, Vu DM, Hojat M. Psychostimulant drug abuse and personality factors in medical students. *Med Teach*. 2013;35(1):53-7. doi: [10.3109/0142159x.2012.731099](https://doi.org/10.3109/0142159x.2012.731099).
 22. Merlo LJ, Curran JS, Watson R. Gender differences in substance use and psychiatric distress among medical students: a comprehensive statewide evaluation. *Subst Abuse*. 2017;38(4):401-6. doi: [10.1080/08897077.2017.1355871](https://doi.org/10.1080/08897077.2017.1355871).
 23. Arora A, Kannan S, Gowri S, Choudhary S, Sudarasanan S, Khosla PP. Substance abuse amongst the medical graduate students in a developing country. *Indian J Med Res*. 2016;143(1):101-3. doi: [10.4103/0971-5916.178617](https://doi.org/10.4103/0971-5916.178617).
 24. Dumitrascu CI, Mannes PZ, Gamble LJ, Selzer JA. Substance use among physicians and medical students. *Med Student Res J*. 2014;3(Winter):26-35.

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