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RESEARCH ARTICLE

Addiction Potential and its Correlates Among Medical Students

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Abstract:

Background:

Drug dependency can be seen in all occupations, educational levels, and socioeconomic classes, and it is one of the most prevalent psychiatric disorders worldwide. The purpose of this study was to determine the addiction potential status and its correlates among medical students.

Methods:

In 2019, a total of 500 students were selected randomly from Shahroud University of Medical Sciences and asked to complete Addiction Potential Scale and Attitude to Addiction Questionnaires. Data were analyzed using ANOVA, Chi-square, t-test and Pearson correlation coefficient and linear regression model at the significant level of 0.05.

Results:

The mean score of addiction potential was 32.7 ± 17.2. In the majority of the students (62.8%), the addiction potential status was low. Most of the students (66.8%) had used no tobacco or addictive substance. There was a significant relationship between addiction potential with gender, marital status, student's current place of residence, student's economic status, student's economic activity, along with education and semester ($P \leq 0.05$). In the regression model, 6 predictor factors of the knowledge and awareness of drugs, tendency to use drugs, field of study, history of drug use, alcohol and smoking history had significant relationships with potential addiction ($P \leq 0.05$).

Conclusion:

Given the relationship between potential addiction score and drug use tendency and noting that more than one-third of students had moderate and high drug addiction, more attention to this issue and interventional measures can be effective in reducing the tendency to drug abuse, and control of drug abuse.

Keywords: Behavior, Addictive, Students, Medical, Attitude, Drug dependency.

1. INTRODUCTION

Today, substance abuse and drug addiction have become one of the most prevalent psychiatric disorders worldwide [1], and it is one of the four crises of the 21st century that threaten public health, political and economic stability and social structures of different countries [2]. In developing countries, due to the young population, addiction is one of the major pro-

blems [3 - 5]. Drug dependency or drug addiction is found in all occupations, educational levels, and socioeconomic classes and is not specific to individuals or classes [4]. The World Health Organization (WHO) defines addiction as a physiological or psychological dependence on any psychoactive substance that is characterized by changes in behavior and other psychological reactions and maintains that the final diagnosis of addiction requires the existence of three of the six criteria for substance abuse, including difficulties in controlling drug use, persistence in abuse despite knowing its detrimental consequences, extreme preference for drug use over other

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activities and tasks, the existence of increased drug tolerance and the presence of some physical states of substance withdrawal [6].

The theory of addiction potential states that some people are susceptible to addiction when conditions are met, while others may not be so susceptible [7]. Addiction potential is the beliefs and attitudes to the use of addictive substances despite understanding their positive and negative consequences [8]. Addiction potential consists of a combination of both active potentiality and passive potentiality. Active potentiality is related to antisocial behaviors, desire for substance use, positive attitude to substances, depression, and emotion seeking, and in the second factor (passive potentiality), non-assertiveness and depression are important [9]. In general, the factors that influence youth addiction potential are divided into two categories of internal and external factors. External factors include family (poor parent-child relationships), presence of addicts in the family, peer pressure (friends who are addicted), economic and social status (unemployment, urbanization and geographic proximity to drug production areas), community policies, feelings of loneliness and isolation [10]. The most important internal factors affecting addiction potential include genetics, depression, stress, lack of confidence and self-esteem, lack of ability to say no to others' demands, lack of mental health, personality traits, and poor religious beliefs [10, 11].

Young people, and especially students, are more vulnerable to mental health problems [12],and high-risk behaviors such as smoking, alcohol and opioid abuse [13].In Iran, the prevalence of high-risk behaviors in adolescents, including alcohol, tobacco and substance use, varies 20-25 percent [14]. Prevention of high-risk behaviors can, therefore, prevent the community from bearing high costs. Therefore, efforts to identify risk factors for this problem in different populations, especially students, are essential [15].

The results of some studies have shown that the tendency for addictive and drug abuse among youth is increasing [2]. According to an interesting study on Iranian medical students in 2008, the prevalence of opium was 2.3%, 2.2% cannabis and 0.7% ecstasy [16].

Medical students upon graduation will be among the main health care providers, and any long-term harm to them, including addiction, can endanger themselves and a wide range of the general population; thus identifying risk factors of addiction and the factors that influence their tendency to addictive substances are important. The aim of this study was to determine the addiction potential status and its correlates among students at ShahroudUniversity of Medical Sciences.

2. METHODS

In this cross-sectional study, 500 undergraduate and postgraduate students of Shahroud University of Medical Sciences were recruited using a multi-stage stratified random sampling. In this study, based on the total number of university students (n = 1700), the first stage sampling was performed at four faculties of Medicine, Nursing-Midwifery, Paramedical and Health through a stratified procedure. In the second stage, after specifying the number of students in each faculty, based on the list of students active in each semester, some classes

were randomly selected according to the sample number and were studied as clusters. A total of 510 questionnaires were distributed, and finally, the data of 500 individuals were completed and therefore analyzed. This study has been approved by the Ethics Council of Shahroud Medical Sciences with the code of IR.SHMU.REC.1397.129.Administrating the questionnaire was a volunteer, and verbal informed consent was obtained after explaining the goals of the study.

2.1. Measurements

The Addiction Potential Scale and the Individuals' Attitude Questionnaire on addiction were administered to them in 2019. The participants were asked 17 questions about their demographic and general characteristics, 41 specific questions about addiction potential, and 20 questions about the attitude toward addiction. The specifications of the questionnaires used are presented below. In general questions, we have questions about the type of substance use and motivation factors of substance using.

A). Addiction Potential Scale

The Addiction Potential Scale was developed by Weed and colleagues [9].We used an Iranian modified version of this scale, which was developed by Zargar based on the psychosocial conditions of Iranian society [17]. The questionnaire consists of two main factors, including active and passive potential and 36 items plus 5 lie-detecting items. The active potential is related to anti-social acting out, the tendency to drug use, positive attitude to drug, depression and excitement. Passive potential items are related to non-assertiveness and depression [17]. The score for each item ranges on a four-point continuum from zero (strongly disagree) to 3 (strongly agree). Items 6, 12, 15, 21 are reverse-scored. This questionnaire has lie-detecting items, including items 12, 13, 15, 21 and 33. The final score will range from 0 to 108. Higher scores indicate the greater potential of the respondent for addiction and vice versa (score ranging from 0 to 36 indicates the low potential of respondents for addiction. A score between 36 and 54 indicates a moderate potential of respondents for addiction. A score above 54 indicates the greater potential of the respondents for addiction). Zargar and colleagues showed that the Addiction Potential Scale clearly distinguished the two groups of addicts and non-addicts (criterion validity). The construct validity of the scale was calculated as 0.45 by calculating its correlation coefficient with the 25-item Clinical Symptom Index. The reliability of the scale was calculated as 0.90 using Cronbach's alpha method [17].

B). Questionnaire to Assess the Individual's Attitude Toward Addiction

This questionnaire consisted of 20 five-pointitems Likert scale (responses ranges from 'not at all true of me', to "totally true of me', which were scored from1 to 5). Item 1 to 5 were on the knowledge and awareness of drugs, items 6 to 10 were on the effect of information sources of addiction on knowledge, items 11 to 15 were on the attitude to addiction as a benign problem, and items 16 to 20 were on the tendency to use drugs. The validity and reliability of this tool were examined by

Ghaemiand colleagues, and the Cronbach's alpha coefficients were reported for the first ($\alpha = 0.72$), second ($\alpha = 0.71$), third ($\alpha = 0.80$) and fourth ($\alpha = 0.76$) sections [18].

The questionnaires were given to the students and were completed after they were informed of the purpose of the study and shown how to answer the items.

2.2. Data Analysis

Data were analyzed using SPSS 16 through ANOVA, Chi-square, t-test, Pearson correlation coefficient and linear regression model at a significant level of 0.05.

3. RESULTS

In this study, 212 (42.4%) of the students were male, and the rest were female. Students of medicine had the highest frequency (30.6%), followed by nursing students (21.2%). The majority of the students (92.2%, n=461) were single, and the rest were married. The response rate was 98.04%. The mean score of addiction potential was 32.7± 17.2. The results showed that 62.8% (n =314)of students had low potential, 24% (n = 120) had moderate and 13.2% (n= 66) had high potential status.

The results showed that 334 of the students (66.8%) had not used any tobacco or addictive substances. 16 students (3.2%) had used grass, 16 (3.2%) had used marijuana, 11 (2.2%) had used hashish, 18 (3.6%) had used flower, 59 (11.8%)had used alcohol, 18 (3.6) had used opium, 21(4.2) had used exhilarating substances (Ecstasy, Ritalin, Amphetamine, Tramadol), 134 (26.8%) had used hookah and 92 students (18.4%) had used cigarettes. Out of 156 students (31.2%) who had a history of tobacco use and drug abuse, 104 (62.7%) said they had used it for recreation, 60 (36.1%) had used it to satisfy their curiosity, and 35 (21.1%) had used it for enjoyment. The most common causes of drug abuse were addicted friends (13.3%, n = 22) and unmet emotional needs (5.4%, n = 9).

Table **1** compares the mean of four components of attitude to addiction scale including the knowledge of addictive drugs, the effect of information sources on knowledge of drugs, attitude towards addiction as a benign problem, and tendency to use drugs in terms of addiction potential status (low, moderate and high). The results showed no statistical differences between the three groups except the tendency to addiction scores. (P<0.001). Pearson's correlation coefficients also did not show significant relationships between addiction potential scores with knowledge scores (r = -0.043, p = 0.34), the effect of information sources on knowledge (r = 0.006, p = 0.89), and attitude towards addiction as a benign problem (r = 0.062, p = 0.17), but there was a significant correlation between tendency to drug abuse and addiction potential score (r = 0.428, p = 0.001).

The results of the chi-square test showed that there was a significant relationship between gender, marital status, current student's place of residence, student's economic status, student's economic activity along with education and semester with the level of addiction potential (P≤0.05). However, there were no significant relationships between addiction potentials with educational level, being a local or non-local student, parents' place of residence, parents' life status, and family size (P≥0.05) (Table **2**).

In the regression model, among the factors displayed in Table **3**, only 6 factors, including the knowledge and awareness of drugs, tendency to use drugs, history of tobacco use, field of study and history of drug and alcohol abuse, were significantly correlated with the addiction potential(P≤0.05).

Table 1. Comparison of attitude to addiction component in terms of addiction potential status.

Variable	Addiction Potential Status				F	P.V
	Low (n=314)	Moderate (n=120)	High (n=66)	overall		
Age	21.41±2.57	21.58±2.78	21.30±1.66	21.4±2.5	0.285	0.75
Knowledge of drugs	14.49±4.28	14.30±3.94	14.23±4.54	14.41±4.23	0.154	0.85
Effect of the information source on knowledge of drugs	13.12±3.99	12.72±3.36	13.65±4.02	13.09±3.85	1.273	0.28
Attitude to addiction as a benign problem	14.87±3.57	15.63±3.97	15.47±3.93	15.13±3.73	2.09	0.12
Tendency to use drugs	7.65±3.82	10.98±4.19	12.85±4.64	9.13±4.49	62.17	<0.001

Table 2. Relationship between addiction potential status and demographic variables.

Variable		Addiction Potential N(%)			χ2	P.V
		Low (n=314)	Moderate (n=120)	High (n=66)		
Sex	Male	107(50.5)	68(32.1)	37(17.5)	23.95	<0.001
	Female	207(71.9)	52(18.1)	29(10.1)		
Education	Associate	6(66.7)	2(22.2)	1(11.1)	9.74	0.28
	Bachelor's	209(64.9)	71(22)	42(13)		
	MD	84(55.3)	45(29.6)	23(15.1)		
	Masters' and PhD	15(88.24)	2(11.76)	0(0)		
Marital status	single	292(63.3)	105(22.8)	64(13.9)	6.05	0.049
	married	22(56.4)	15(38.5)	2(5.1)		

(Table 2) contd.....

Variable		Addiction Potential N(%)			χ2	P.V
		Low (n=314)	Moderate (n=120)	High (n=66)		
Locality	**Local**	32(62.7)	11(21.6)	8(15.7)	0.41	0.82
	Non-local	282(62.8)	109(24.3)	58(12.9)		
Student's current residence	**Dormitory**	282(64.8)	97(22.3)	56(12.9)	24.51	<0.001
	Lodging	13(31.7(	21(51.2)	7(17.1)		
	With family or relatives	19(79.17)	2(8.33)	3(12.5)		
Economic status of the family	**poor**	21(50)	10(23.8)	11(26.2)	14.15	0.007
	moderate	221(61)	96(26.5)	45(12.4)		
	Good	72(75)	14(14.6)	10(10.4)		
Economic activity along with education	**Yes**	41(50.6)	27(33.3)	13(16)	6.39	0.04
	No	273(65.2)	93(22.2)	53(12.6)		
Parents' place of residence	**City**	284(62.6)	109(24)	61(13.4)	0.256	0.88
	Village	30(65.2)	11(23.9)	5(10.9)		
Family size	**3**	25(54.3)	11(23.9)	10(21.7)	10.83	0.09
	4	132(67.3)	47(24)	17(8.7)		
	5	86(56.6)	42(27.6)	24(15.8)		
	6 and more	71(67)	20(18.9)	15(14.2)		
Semester	**1-2**	110(71)	33(21.3)	12(7.7)	11.55	0.02
	3-4	131(57.7)	55(24.2)	41(18.1)		
	5 and higher	73(61.9)	32(27.1)	13(11)		
Life status of parents	**Both alive**	300(62.6)	116(24.2)	63(13.2)	1.14	0.89
	One alive	14(66.67)	4(19.05)	3(14.28)		

Table 3. The regression model to determine how attitude to addiction as predictor factors affect on addiction potential among students.

Variables	B	Std. Error	Standardized Beta	P.V
Knowledge of drugs	-0.55	0.19	-0.13	0.005
Effect of the information source on knowledge of drugs	-0.001	0.21	0.001	0.99
Attitude to addiction as a benign problem	-0.009	0.19	-0.002	0.96
Tendency to addiction	1.30	0.16	0.33	0.001
Gender	-2.26	1.49	-0.06	0.13
Marital status	0.29	2.66	0.005	0.91
Age	-0.40	0.31	-0.06	0.18
Field of study	-1.34	0.63	-0.09	0.03
History of addictive drugs abuse	9.21	3.01	0.13	0.002
History of tobacco use	7.02	1.57	0.19	<0.001
History of alcohol abuse	14.41	2.30	0.27	<0.001
(Constant)	42.02	9.46	-	<0.001

4. DISCUSSION

The mean score of addiction potential was 32.7 ± 17.2, which is consistent with the low mean score of addiction potential reported in some studies [8, 13]. In some studies, the mean score of addiction potential was higher than the results of this study, which is inconsistent with our results [19 - 21]. Perhaps one of the reasons for the difference in results is the type of universities and study environments. Medical students are more exposed because of their long study period compared with other students.

In our study, 334 (66.8%) of students had no experience of using any tobacco or addictive substances. In some studies, more than 40% of the consumption experience was reported which is inconsistent with the present results [15, 22]. Perhaps

one of the reasons for the large differences between the results is the geographical location and the study areas.

The prevalence of hookah smoking was 134 (26.8%) and cigarette smoking 92 (18.4%). In previous studies in Shahroud, the experience of smoking was 25.23 and 51% [22, 23]; in a study in Ilam, a city of Iran, it was 11.4%{ [24]; in Gilan, a city of Iran, it was 24.13% [15]; in Nigeria, it was 29.8% [25]; in Qazvin, a city of Iran, it was 1.5% [26], which in some cases were higher and in some cases lower than the present results. Early experience and permanent or recreational smoking are risk factors for susceptibility to addiction. The fact that cigarette smoking in adolescents and young people can justify and facilitate the consumption of other substances should receive serious attention.

Of the 156 (31.2%) students who had a history of using tobacco and addictive substances, the most frequent reasons for using the above-mentioned substances were recreation (62.7%, n=104), satisfying curiosity (36.1%, n=60) and enjoyment (21.1%, n=35). In a study in Guilan province in Iran, the reasons for the tendency to use addictive drugs were an imitation of friends and compliance with them (27.54%) followed by enjoyment (20.86%) [15]. In another study in Shahroud (northeast of Iran), the most important reasons were association with friends and entertainment [22], the order of which is not in line with the findings of the present study. This group of adolescents and young people may be assisted if healthy recreation opportunities are increased, and their assertiveness to say no, and their confidence are enhanced.

The prevalence of substance used, including opium, was 3.6%. It was higher than the previous study in Tehran [16].

The most common causes of drug abuse were addicted friends (n = 22, 13.3%) and unmet emotional needs (n=9, 5.4%). The results of another study in Rasht universities reported addiction of friends and family (29.14%) followed by unmet emotional needs (23.26%) [15], which is consistent with our results. The results of a study among medical students in Arak in the center of Iran showed that the most common causes were addiction in family members (31.8%), family conflicts (27%), addiction of close friends (16.1%), and family problems and divorce (12.5%) [8], part of which is consistent with our results. Given the importance of friends, perhaps one of the ways that can be effective in controlling tobacco use and addictive substance abuse is to use peers.

There were no significant relationships between addiction potential and age. This is in line with the results of some studies in Iran and the world [2, 8, 19]. But it is inconsistent with the results of some other studies [27]. Perhaps one of the reasons for the similarity of results is due to the similarity of the mean age of individuals in different studies.

A significant relationship was observed between addiction potential and gender. A number of studies have reported a relationship between gender and addiction potential, which is consistent with the present results [8, 19, 21]. On the other hand, some others reported no relationship between gender and addiction potential, which is inconsistent with the results [2, 27]. Men are more likely than women to engage in social, occupational and income issues. If they are unable to understand the goals of society and cannot feel satisfied through achieving these goals, they may turn to drug abuse to achieve that satisfaction, and this can be another reason for the increased susceptibility of men to substance abuse.

There was a significant relationship between addiction potential and marital status in the univariate analysis, which is consistent with the results of some studies [21]but not with some other studies [2, 8, 19]. Marriage is one of the preventive factors of psychological trauma that in the prognosis of treatment can be a promising factor.

There was a significant relationship between addiction potential and students' economic status. Some studies reported a relationship between student financial status and addiction potential, which is consistent with the present results [8, 27]. In other studies, there was no relationship between addiction potential and economic status, which contradicts our findings [2, 19]. Addiction and poverty seem to be closely linked. Both problems can reinforce each other in one way or another. Poverty can lead to mental conditions that lead one to seek refuge in addiction or drugs.

There was no significant relationship between addiction potential and family size. This is consistent with the results of some studies [22].In students' lives, perhaps this factor, when compared to the role of peers, may not have a significant effect on addiction potential.

Moreover, there was no significant relationship between students' addiction potential and their educational level. This is consistent with the results of some studies [2, 8] but not with those of other studies [19]. This may indicate that there are risk factors for drug addiction at all levels of education.

There was no significant relationship between addiction potential and knowledge of addictive substances, and the effects of information sources on knowledge of drugs. Some studies reported a relationship between knowledge of drugs, and the effect of information sources on drug knowledge with addiction potential, which is inconsistent with the present results [18]. Some other studies reported no relationship, which is consistent with our findings [22].

In the multivariable regression model, six factors, including the knowledge and awareness of drugs, tendency to use drugs, history of tobacco use, field of study and history of drug and alcohol abuse, were significantly correlated with addiction potential score. In a study in Karaj, a city of Iran, there was a significant relationship between addiction potential and the tendency to use drugs, which is consistent with the present results [13]. In a previous study in Shahroud, there was no significant relationship between knowledge and the tendency to addiction, which is inconsistent with recent results [22, 28]. A study in Khorasgan, a province of Iran, also reported no significant relationship between drug use and knowledge of drugs [18], which is inconsistent with recent results.

CONCLUSION

Given the association between addiction potential and tendency to use drugs, and noting that more than one-third of students had moderate and high levels of addiction potential, more attention to this issue and interventional measures can reduce the tendency to use drugs, and can improve the control of drug abuse.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study has been approved by the Ethics Council of Shahroud Medical Sciences, Iran with the code IR.SHMU. REC.1397.129.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human

experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

Verbal informed consent was obtained from the after explaining the goals of the study.

AVAILABILITY OF DATA AND MATERIALS

The raw data and materials used to support the findings of this study are available from the corresponding author [M. R] upon request.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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