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Predicting addiction potential based on sensation-seeking, psychological hardiness and assertiveness in students in western Iran: an analytical study

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ABSTRACT

Background: Addiction has been reported as a major personal, social and political challenge in people of different strata and education levels in all countries. The present study was conducted to predict addiction potential based on sensation-seeking, psychological hardiness and assertiveness in students.
Methods: The present correlational study was conducted in 2018 on a statistical population comprising all the students of the School of Medicine in Kermanshah University of Medical Sciences, Kermanshah, Iran. Convenience sampling was used to select 200 subjects. The data collection tools included the sensation-seeking scale, the psychological hardiness questionnaire, the assertion inventory and the addiction potential scale. The data collected were analyzed in SPSS using the statistical methods of the Pearson correlation coefficient and regression analysis.
Results: Analyzing the findings showed the total scores of addiction potential and active addiction potential are positively associated with the total score of sensation-seeking and negatively and significantly correlated with that of psychological hardiness.
Conclusions: Given the role of sensation-seeking, psychological hardiness and assertiveness in addiction potential, university authorities are recommended to hold workshops and seminars to enhance the awareness of students of the personality traits conducive to addiction.

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Sensation-seeking; psychological hardiness; assertiveness; addiction potential

Introduction

In the recent years, substance use has been widespread not only among the adults but also high school and college students. The issue has raised severe concerns since substance use among students leads to adverse repercussions on the individual and society (Rahimi Pordanjani et al., 2018).

Addiction as the personal and social damage has different causes and entails different socioeconomic and cultural consequences (Farnia et al., 2018). Given the high prevalence of drug dependence and its treatment difficulties, making efforts to identify the risk factors for being afflicted with this problem is crucial in different populations, especially in university students (Skidmore et al., 2016).

Addiction can cause absenteeism, poor interpersonal relationships and academic problems in students (Shahdadi et al., 2013). Different factors affecting addiction potential in students (Karami-Matin et al., 2016) include sensation-seeking, which is defined as the need for acquiring diverse, new and complex experiences and the willingness to take psychological and social risks to achieve this type of experiences. Individuals with high levels of sensation-seeking tend to perform highly active and stimulating activities, which can lay the foundations for their addiction (Banerjee & Greene, 2009; Lydon-Staley & Geier, 2018).

Psychological hardiness is another personality trait associated with addiction that makes individuals use coping strategies to solve problems. These individuals tend to directly face life events rather than adopt backward coping strategies such as denial and avoidance, as observed in drug and alcohol use (Nabizdeh, 2017; Soleimani et al., 2016). Hard-headed individuals perceive life events as comprehensible and diverse. In contrast, people with lower levels of pertinacity may turn to addiction in the face of events, as they feel alienated, disabled and threatened with less control on them (Bartone et al., 2012; Saremi et al., 2016).

Another variable affecting addiction potential, assertiveness refers to defending one's rights and directly, honestly and properly expressing one's thoughts and feelings (Bigman et al., 2018; Newins et al., 2018). Self-assertive individuals respect themselves and others, are not passive and do not allow others to abuse them. On the other hand, less assertive people are more likely to feel passive in the face of unreasonable requests by others such as trying substances, and may positively respond to these requests against their wishes (Aspropoulos et al., 2018; Sethabouppha et al., 2012).

Given the relationships of drug use with problems such as psychological disorders, running away from home, social violence and aggressiveness and academic failure (Taremian et al., 2007), identifying predisposing factors to addiction is essential in the young, especially in university students. A picture of addiction potential is therefore required to be developed in

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people of different social strata through a rapid and applicable collection and analysis of data. Moreover, being aware of the variables predicting addiction potential in students facilitates the implementation of educational, cultural, therapeutic and other appropriate measures. The present research was therefore conducted to predict addiction potential in students based on sensation-seeking, psychological hardiness and assertiveness.

Materials and methods

Research design and setting

The present correlational study was conducted in 2018 on a statistical population comprising all the students of the School of Medicine in Kermanshah University of Medical Sciences in western Iran. The minimum sample size required was calculated as 154 according to the sample size determination formula in correlational studies and using the Pearson correlation coefficient with a 5% error and a 90% power. Considering a drop-out rate of 30% (n = 46), the final sample size was calculated as 200. The subjects were selected using convenience sampling based on the inclusion and exclusion criteria. The eligible candidates comprised sophomores and students of higher levels with no history of using psychotropic drugs and no disabilities, who were willing to participate in the study. Freshmen were excluded owing to their inappropriate adaptation to student conditions and dormitory life and their lack of awareness of certain addictive substances.

After obtaining permission and a letter of introduction from the authorities of Kermanshah University of Medical Sciences, making the necessary arrangements with the relevant authorities, explaining the study objectives to the students in a face-to-face manner and obtaining their informed consent, the researchers included the eligible students. After completing the demographic and self-report questionnaires and the other data collection instruments, the students were evaluated in terms of the levels of sensation-seeking, psychological hardiness, assertiveness and addiction potential.

Data collection tools

Sensation-seeking scale (SSS-IV)

The present study used a shortened version of the fourth form of the sensation-seeking scale (SSS-IV) developed by Marvin Zuckerman in 1987. This 40-item scale contains a general description of sensation seeking and four factors, namely thrill and adventure seeking, experience-seeking, disinhibition and boredom susceptibility. An internal reliability coefficient of 0.84–0.87 has confirmed the reliability of this scale, which was also confirmed in Iran by calculating a coefficient of 0.85 using the Kuder-Richardson formula-21 (Eysenck & Zuckerman, 1978; Nikkhoo, 2007).

Addiction potential scale

This scale was developed by Weed et al., (1992), and its Persian version by Zargar according to the psychosocial conditions of the Iranian community. Efforts have been made to determine the validity of this scale in Iran. The items are scored on a scale ranging from Zero: "Completely disagree" to Three: "Completely agree". This scale is a combination of active potential and passive potential.

This 36-item scale comprises 5 lie detection items. The total score of the scale can be obtained by adding the scores of all the items except for those of the lie detection items, resulting in an overall score of 0–108, with higher scores denoting higher addiction potential in the respondent.

Zargar and Ghafari (2009) obtained a construct validity coefficient of 0.45 for this scale by correlating it with the 25-item list of clinical symptoms. The validity of this scale was confirmed by calculating a Cronbach's alpha of 0.90 for the total score, 0.91 for active potential and 0.75 for passive potential (Sajadi et al., 2014; Zargar & Ghaffari, 2009).

Assertion inventory

This 40-item inventory was developed by Gambrill and Richey (1975). Every item has five options, which are scored as 5: Very high, 4: High, 3: Moderate, 2: Low and 1: Very low. According to Gambrill and Richey, the dimensions of this test are highly correlated with one another in terms of validity. They also reported the construct validity of different dimensions of the original test as 0.39–0.70 and its reliability coefficient as 0.81 (Rasouli & Ghamarizare, 2015).

Psychological hardiness scale

This 27-item scale was developed by Kiamarsi for the Iranian community. Every item has four options, including 0: Never, 1: Rarely, 2: Sometimes and 3: Often. Kiamarsi et al., (1998) reported a reliability coefficient of 0.84 for this scale using the test-retest method. A validity coefficient of 0.55 was also reported using the criterion validity (Kiamarsi et al., 1998).

Ethical considerations

The present study was approved by the Ethics Committee of the Vice Chancellery of research and technology, Kermanshah University of Medical Sciences (KUMS.REC.1396.621) and written informed consent was obtained from individual participants after briefing them on the study objectives.

Data analysis

Descriptive statistics, including frequency and relative frequency, were used to determine the distribution of demographic data, and the Pearson correlation coefficient to determine the correlation of addiction potential with sensation-seeking, psychological hardiness and assertiveness. Stepwise multivariate linear regression was used to investigate the multiple relationship of sensation-seeking, psychological hardiness and assertiveness with the total addiction potential and active and passive addiction potential. The significance level was set as 0.05 for the inclusion of variables in the regression model and 0.01 for their exclusion. All the analyses were performed in SPSS-20 at a 5% error level.

Table 1. Distribution of demographic details, and the results of comparing the total mean score of addiction potential in the students in terms of demographic details.

Variable	Levels	Frequency (%)	Total score of addiction potential: Mean (Std. Deviation)	Total score of addiction potential: Sig
Age	1820	49(24.5%)	35.10(16.75)	F = 0.733
	2123	73(36.5%)	34.05(18.53)	(0.533)
	2426	48(24.0%)	38.48(22.27)	
	> 26	30(15.0%)	32.30(2303)	
Sex	Male	179(89.5%)	33.74(18.86)	T = −2.91
	Female	21(10.5%)	46.76(23.69)	(0.004**)
Marital status	Single	176(88.0%)	33.77(18.83)	T = −2.21
	Married	24(12.0%)	44.96(23.84)	(0.036*)
Place of life	Dormitory	174(87.0%)	33.43(18.81)	T = −2.77
	Non-dormitory	26(13.0%)	46.35(22.60)	(0.009**)
History of addiction in the family	Yes	18(9.0%)	52.94(19.18)	T = 4.17
	No	182(91.0%)	33.35(18.98)	(< 0.0001**)
History of mental illness in the family	Yes	5(2.5%)	43.60(27.59)	T = 0.97
	No	195(97.5%)	34.89(19.57)	(0.332)

*Significant at an error level below 0.05.
**Significant at an error level below 0.01.

Results

Table 1 suggests that 36.5% (n = 73) of the students were 21–23 years old, 24.5% (n = 49) were 18–20 and 24% (n = 48) 24–26, while 15% (n = 30) were over the age of 26. Other details are also presented in Table 1. The total mean score of addiction potential was found to be significantly higher in the male and married students as well as in those with a positive family history of addiction compared to in the female and single students with a negative family history of addiction ($P < .05$) (Table 1). Table 2 presents the descriptive statistics and other details, e.g., a mean psychological hardiness of 47.71 ± 8.86.

The total addiction potential was found to be positively and significantly correlated with the total scores of thrill and adventure seeking, experience-seeking and disinhibition, and to be negatively and significantly correlated with psychological hardiness. Moreover, active addiction potential was found to be positively and significantly correlated with the total score of thrill and adventure seeking, experience-seeking and disinhibition, and to be negatively and significantly correlated with psychological hardiness. In addition, passive addiction potential was found to be positively and significantly correlated with disinhibition, and to be negatively and significantly correlated with psychological hardiness and assertiveness ($P < .05$) (Table 3).

Stepwise linear regression demonstrated the non-significance of thrill and adventure seeking, experience-seeking and boredom susceptibility in the multivariate linear regression model. After eliminating the effect of these variables in the third step, the final model was found to be significant as a linear combination of psychological hardiness, disinhibition and assertiveness with $R_{adj}^2 = 0.19$ and $F = 17.27$ ($P < .001$). These variables contributed the most to explaining the variance of the total addiction potential. As for active addiction potential, the final model was developed as a linear combination of disinhibition, psychological hardiness, assertiveness and experience-seeking in the fourth step with significant values of $R_{adj}^2 = 0.194$ and $F = 12.97$ ($P < .001$). Thrill and adventure seeking and boredom susceptibility were eliminated from the regression equation given that their contribution to the regression model was insignificant. As for passive addiction potential, the final model was developed in the second step as a linear combination of disinhibition and psychological hardiness, and the significant values of $R_{adj}^2 = 0.207$ and $F = 26.65$ ($P < .001$) showed that these variables contributed the most to explaining the variance of active addiction potential, whereas assertiveness, thrill and adventure seeking, experience-seeking and boredom susceptibility with no significant effects on the model were excluded from the regression equation (Table 4).

Discussion

The present study was conducted to predict addiction potential based on sensation-seeking, psychological hardiness and assertiveness in students. The male participants were found to be more susceptible to addiction than the females, probably due to the fact that men have a more dominant social role and seek new experiences, which makes them more prone to

Table 2. Descriptive statistics of sensation-seeking, psychological hardiness, assertiveness and addiction potential in the students.

Factor		Count	Min-Max	First and third quartiles	Median (Mode)	Mean (SD)
Psychological hardiness		200	971	42(54)	47.50(45)	47.71(8.86)
Assertiveness			67195	118(145)	131.0(131)	132.44(22.83)
Sensation-seeking	Total score of sensation-seeking		531	15(22)	19.0(20)	18.36(5.06)
	Experience-seeking		09	3(5)	4.0(3)	4.03(1.91)
	Adventure seeking		010	4(8)	6.0(3)	5.70(2.61)
	Boredom Susceptibility		19	3(5)	4.0(4)	4.13(1.69)
	Disinhibition		110	3(6)	4.0(4)	4.50(1.73)
Addiction potential	Total		189	19(50)	30.0(18)	35.11(19.76)
	Active		067	8(32.75)	15.0(7)	21.42(16.70)
	Passive		026	10(18)	13.0(12)	13.70(5.229)

Table 3. Coefficient of correlations of students' addiction potential with thrill and adventure seeking, psychological hardiness and assertiveness.

Factors N = 200	Statistics	Psychological hardiness	Assertiveness	Total score of sensation-seeking	experience-seeking	Namely thrill and adventure seeking,	Boredom susceptibility	Disinhibition
Total Addict	ρ	−.273**	.038	.219*	.229*	−.016	.094	.320*
Active Addict		−.186*	.118	.267*	.280*	.018	.115	.334*
Passive Addict		−.431*	−.232*	−.028	−.029	−.118	−.012	.140*

Table 4. Multiple relationship of the students' addiction potential with psychological hardiness, assertiveness and sensation-seeking.

			Model Summary	ANOVA	Coefficients				Collinearity Diagnostics		
Dependent variable	Model	Independent variable	R(Adjusted R Square)	F (Sig)	Beta	t (Sig)	Partial Correlations	Tolerance (VIF)	Dimension	Eigen value	Condition Index
Total Addict (y_1)	1	(Constant)	0.32	22.52	–	5.05(<0.0001)	–	–	1	1.93	1.00
		Disinhibition	(0.098)	(<0.0001)	0.32	4.74(<0.0001)	0.32	1.0(1.0)	2	0.066	5.39
	2	(Constant)	0.43	22.99	–	6.56(<0.0001)	–	–	1	2.89	1.00
		Disinhibition	(0.181)	(<0.0001)	0.34	5.28(<0.0001)	0.35	0.99(1.005)	2	0.091	5.65
		Psychological hardiness			−0.29	−4.60(<0.0001)	−0.31	0.99(1.005)	3	0.016	13.37
	3[a]	(Constant)	0.46	17.27	–	4.35(<0.0001)	–	–	1	3.867	1.00
		Disinhibition	(0.197)	(<0.0001)	0.33	5.18(<0.0001)	0.35	0.991(1.009)	2	0.101	6.19
		Psychological hardiness			−0.36	−5.14(<0.0001)	−0.34	0.835(1.198)	3	0.019	14.36
		Assertiveness			0.15	2.22(<0.0001)	0.16	0.832(1.201)	4	0.014	16.69
Active Addict (y_2)	1	(Constant)	0.34	24.84	–	2.23(0.027)	–	–	1	1.93	1.00
		Disinhibition	(0.107)	(<0.0001)	0.33	4.98(<0.0001)	0.33	1.0(1.0)	2	0.066	5.39
	2	(Constant)	0.39	18.12	–	3.89(<0.0001)	–	–	1	2.89	1.00
		Disinhibition	(0.147)	(<0.0001)	0.35	5.31(<0.0001)	0.35	0.995(1.005)	2	0.091	5.64
		Psychological hardiness			−0.21	−3.20(0.002)	−0.22	0.995(1.005)	3	0.016	13.37
	3	(Constant)	0.44	15.47	–	1.73(0.086)	–	–	1	3.87	1.00
		Disinhibition	(0.179)	(<0.0001)	0.34	5.21(<0.0001)	0.35	0.991(1.009)	2	0.101	6.19
		Psychological hardiness			−0.29	−4.18(<0.0001)	−0.29	0.835(1.198)	3	0.019	14.36
		Assertiveness			0.21	2.96(0.003)	0.21	0.832(1.201)	4	0.014	16.69
	4[b]	(Constant)	0.46	12.97	–	1.38(0.17)	–	–	1	4.73	1.00
		Disinhibition	(0.194)	(<0.0001)	0.29	4.30(<0.0001)	0.29	0.89(1.125)	2	0.147	5.67
		Psychological hardiness			−0.27	−3.88(<0.0001)	−0.27	0.82(1.221)	3	0.093	7.11
		Assertiveness			0.18	2.58(0.010)	0.18	0.81(1.24)	4	0.018	16.27
		Experience-seeking			0.15	2.14(0.033)	0.15	0.87(1.155)	5	0.014	18.49
Passive Addict (y_3)	1	(Constant)	0.43	45.22	–	13.99(<0.0001)	–	–	1	1.98	1.0
		Psychological hardiness	(0.182)	(<0.0001)	−0.43	−0.67 (<0.0001)	−0.43	1.0(1.0)	2	0.017	10.88
	2 [c]	(Constant)	0.46	26.65	–	12.14(<0.0001)	–	–	1	2.89	1.0
		Psychological hardiness	(0.207)	(<0.0001)	−0.44	−6.99 (<0.0001)	−0.45	0.99(1.005)	2	0.091	5.64
		Disinhibition			0.17	2.70(0.008)	0.19	0.99(1.005)	3	0.016	13.37

[a]. y1 = 0.33 (disinhibition) − 0.36 (psychological hardiness) + 0.15 (assertiveness).
[b]. y2 = 0.29 (disinhibition)+ 0.15 (experience-seeking)- 0.27 (psychological hardiness) + 0.18 (assertiveness)
[c]. y3 = 0.17 (disinhibition) − 0.44 (psychological hardiness).

performing high-risk behaviors. Addiction potential was also found to be higher in the married students, potentially owing to problems associated with marital conflicts and simultaneous educational and marital problems. Moreover, the family history of addiction was associated with addiction potential in the students, which can be explained by the effect of addicted family members on the other members as a result of family ties and affection.

The present results showed that psychological hardiness, disinhibition and assertiveness respectively contributed to explaining the variance of the total addiction potential. The role of psychological hardiness in addiction is consistent with the findings of Soleimani et al. (2016), Nabizdeh (2017), Bartone et al. (2012) and Bigman et al. (2018). This finding can be explained by the fact that individuals with the components of psychological hardiness, i.e. commitment, control and defiance, are more sustainable against occupational, familial and social pressures, and are less inclined to use irrational methods such as addiction to control their emotions. People with low levels of hardiness feel disabled and threatened in the face of events, and are more vulnerable to addiction (Nabiei et al., 2014).

Sensation-seeking was found to be positively and significantly associated with the total addiction potential and active and passive addiction potential, which is consistent with the findings obtained by Karami-Matin et al. (2016) and Banerjee and Greene (2009). Furthermore, individuals with lower levels of disinhibition control had higher addiction potential. According to Fillmore, sensation-seeking people have a poorer data processing and disinhibition control, and therefore suffer the effects of addiction more compared to individuals with low levels of sensation-seek (Fillmore et al., 2009). Sensation-seeking individuals always seek new experiences. Addiction can serve as means of developing rapid arousal, and can increase one's tendency toward new experiences. These individuals are therefore more inclined to use drugs, as a way of escaping monotony (Banerjee & Greene, 2009; Karami-Matin et al., 2016; Lydon-Staley & Geier, 2018).

In addition, assertiveness was found to be a predictor of addiction potential, which is consistent with the studies by Sethabouppha et al. (2012) and Aspropoulos et al. (2010). Poor assertiveness in individuals can reduce their tendency to actively participate in the community and lead to shyness in finding new friends, which can increase addiction potential in students. Given that assertiveness increases one's ability to turn down other people's inappropriate requests, highly-assertive individuals can resist other people's irrational requests for addiction (Aspropoulos et al., 2018; Sethabouppha et al., 2012).

Conclusion

The present findings showed that psychological hardiness, disinhibition and assertiveness respectively contribute the most to predicting addiction potential. Paying attention to educational and interventional programs is therefore crucial for promoting these characteristics in individuals, especially

university students, and thereby preventing tendency to addiction.

To sum up, parents and university authorities are recommended to supervise more effectively the young in terms of psychosocial and emotional problems. Other authorities are also recommended to take effective steps toward preventing addiction by laying the necessary plans for establishing recreational centers and holding sports and art classes to fill students' leisure time in different disciplines. In addition, they are recommended to hold seminars and conferences to improve students' awareness of the negative physical, psychological and social effects of addiction.

The present study limitations included using questionnaires for collecting data, which might have led to bias in the responses. Failing to control the effect of certain confounding variables such as students' socioeconomic status was another limitation. Moreover, the present study investigated only medical students. Addiction potential is therefore recommended to be investigated in all students of universities of medical sciences by school to identify the schools with the highest potential and take preventive measures while addressing the confounding variables.

Future studies are recommended to address factors such as family atmosphere, socioeconomic class and personality traits in terms of predicting addiction potential in university students.

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