



Compare impulsivity between traditional and industrial drug-dependent people and healthy people

Compare impulsivity

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Abstract

Aim: This study compares the impulsivity in patients addicted to industrial and traditional narcotics and healthy people. **Material and Method:** In this comparative study, 40 people addicted to traditional narcotics (20 males and 20 females), 40 patients addicted to industrial narcotics (20 males and 20 females) and 40 healthy subjects (20 males and 20 females) were evaluated and selected by convenience sampling method from all male and female patients addicted to traditional and industrial narcotics at Shahid Modarres hospital of Najafabad in Isfahan during September 2016 to January 2017. Barratt's revised scale was individually used to collect data. Kolmogorov-Smirnov test was applied to analyze normality of data. Multivariate analysis of variance (MANOVA) was used to compare variance. **Results:** Based on the results of Kolmogorov-Smirnov test, distribution of all data was normal ($0.051 < P < 1.000$) and there was not any significant difference between the industrial-traditional narcotics consuming people in terms of impulsivity subscales [attention ($P=0.539$), mobility (0.196), self-control ($P=0.051$), recognition plexus ($P=0.077$), assiduity ($P=0.133$), and personality instability ($P=0.116$)]. However, there was a significant difference between healthy people regarding these variables. **Discussion:** Based on the results of this study, it seems that there is an appropriate relationship between impulsivity and industrial and traditional narcotics consumption.

Keywords

Impulsivity; Industrial Narcotics; Traditional Narcotics

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Introduction

Drug addiction can be considered as a brain injury [1] which is associated with cognitive impairment. A part of the prefrontal cortex (for instance the orbitofrontal cortex) plays a role in the process of drug addiction by reducing the inhibition of impulsive behavior [2]. Impulsivity is defined as the cause of unplanned and rapid response to internal or external stimuli regardless of negative consequences for ourselves and others [3]. Impulsivity plays a major role in the diagnosis of a variety of clinical disorders such as drug dependence [4]. The drug consumers are less sensitive to adverse consequences of their activities [5] and are less able to use negative feedback of their behavior for adaption of future behavior [6]. Impaired decision-making can be considered as one of the most fundamental mechanisms of impulsivity compulsive behavior and addiction. Its diagnosis can estimate the actual incidence of the disorder. The neural imaging studies support a variety of abnormalities in the prefrontal cortex of people who consume drugs such as amphetamines [7]. The excitement and impulsivity are very important in patients who consume industrial and traditional narcotics. Emotions are the models of organism reaction to internal and external stimuli, and they are manifested in pleasant-unpleasant (proximity-avoidance), and irritation-inhibition dimensions and they are gradually distinct from motives. According to the literature review on impulsivity, the impulsive behavior is the core of numerous mental disorders such as attention-deficit/ hyperactivity, conduct disorder, impulse control disorders, drug abuse, bulimia, suicidal behavior, and some personality disorders [8]. Several studies have been conducted on the relationship between impulsivity and drug abuse disorder, and they consider the impulsive behavior as one of the risks and persisting factors of this disorder, and also as the determinant of the type of narcotics consumed by addicts such as the tendency to use stimulants [9, 10]. This study seeks to compare impulsivity in patients with impaired use of traditional and industrial narcotics and healthy individuals.

Material and Method

This research is casual-comparative and performs a retrospective comparison of impulsivity in healthy subjects and all male and female patients addicted to traditional and industrial narcotics in Modarres Hospital of Najafabad in Isfahan between October and February 2015. The healthy population included all healthy males and females in Isfahan, and they were compared regarding gender, age, and educational level, and they were selected from people admitted to Shahid Modarres Hospital of Najafabad in Isfahan by convenience sampling. 120 participants were randomly selected: 40 subjects were addicted to traditional narcotics (20 males and 20 females), 40 subjects were addicted to industrial narcotics (20 males and 20 females), and 40 healthy subjects were (20 males and 20 females). In this research, the criteria for patient inclusion were as follows: lack of DSM-IV diagnostic criteria for the risk of any mental illness without comorbidity or suffering from disorders axes 1 and 2 of DSM-IV according to clinical psychologist or psychiatrist's diagnosis; at least 18 years of age; at least literacy (primary-school degree); lack of concurrent use of traditional and industrial narcotics; and the ability to respond to questionnaire. The

exclusion criteria were: Utilization of DSM-IV diagnostic criteria for the risk of any mental illness without comorbidity or suffering from disorders axes 1 and 2 of DSM-IV according to clinical psychologist or psychiatrist's diagnosis; lack of at least 18 years of age; lack of literacy (primary-school degree); background of concurrent use of traditional and industrial narcotics; and lack of ability to respond to questionnaire. The impulsivity as considered as the dependent variable; and the patients addicted to narcotics (traditional and industrial) were considered as the independent variables. This research was conducted by receiving a referral from the Islamic Azad University of Najafabad to Shahid Modarres Psychiatric Hospital of Najafabad in Isfahan of patients, and then by investigating the patient records according to psychiatrist's diagnosis and structured diagnostic interview, and selecting the target samples based on the research conditions. Finally, Barratt Impulsiveness Scale (BIS) was individually implemented at the hospital by the researcher. The demographic characteristics were studied based on the level of education, marital status and duration of drug consumption separately for those addicted to traditional and industrial narcotics and healthy people.

The axis-1 disorders of DSM-IV were diagnosed through a diagnostic interview by psychiatrists or psychologists. Barratt Impulsiveness Scale (BIS): This questionnaire (eleventh edition) was introduced by Ernest Barratt. Its validity and reliability are examined by Ekhtiari et al. in 2008 [11]. It is based on Barratt's theory of personality and consists of 30 questions and evaluates six factors (attention, mobility, self-control, recognition plexus, assiduity, and personality instability). The questions are multiple-choice and ranked from rare to almost always. The highest obtained score will be 120. The results indicate the appropriate reliability and validity of the questionnaire. Barratt concludes that the impulsiveness scale is a proper tool with high validity for investigating the impulsivity in people.

The statistical analysis was performed at the level of descriptive statistics in terms of frequency percentage, frequency, mean and standard deviation, and the research hypotheses were confirmed by the inferential statistics through multivariate analysis of variance (MANOVA). Statistical results were analyzed using SPSS20 software. First, the normality of data distribution was examined by Kolmogorov-Smirnov test. The MANOVA was used to compare variances. Data of those variables, which had significant difference according to comparison test of variance was evaluated by Tukey post hoc test to find the variance of which groups had a significant difference and which groups had a statistical significant difference.

Results

All studied subjects in Shahid Modarres hospital of Najafabad were classified into three groups as; the people addicted to; traditional narcotics, industrial narcotics and healthy subjects. Their demographic information is presented in Table 1. 50% of subjects were male, and other 50% were female. As shown, the number of males and females were equal to 50% in all three groups. Among people addicted to traditional narcotics, 35% (n=14) had primary school degrees, 30% (n = 12) had secondary school degrees, and 35% (n= 14) had high school diploma or associate degrees. Among people addicted to traditional nar-

cotics, 30% (n=12) had primary school degrees, 37.5% (n=15) had secondary school degrees, 30% (n=12) had high school diploma or associate degrees, and 27.5% (n=11) had bachelor or master's degrees. According to Table 1, 2.5% (n= 1) of healthy people had bachelor or master's degrees. 35% (n=14) of people addicted to industrial narcotics were married and 65% (n=26) were single. 40% (n= 16) of people addicted to traditional narcotics were married and 60% (n=24) were single. However, 32% of healthy people (n= 13) were married, and 67.5% (n=27) were single as shown in Figure 1.

Table 1. Demographic data of studied subjects based on the frequency and relative frequency

Demographic characteristics		Industrial consumer		Traditional consumer		Healthy people	
		Frequency	Relative frequency	Frequency	Relative frequency	Frequency	Relative frequency
Gender	Male	20	50	20	50	20	50
	Female	20	50	20	50	20	50
Educational level	Primary school	14	35.0	12	30.0	13	32.5
	Secondary school	12	30.0	15	37.5	15	37.5
	High school diploma/ Associate degree	14	35.0	12	30.0	11	27.5
	Bachelor/ master's degree	0	0	1	2.5	1	2.5
	Marital status	Single	26	65	24	40	27
	Married	14	35	16	60	13	32.5

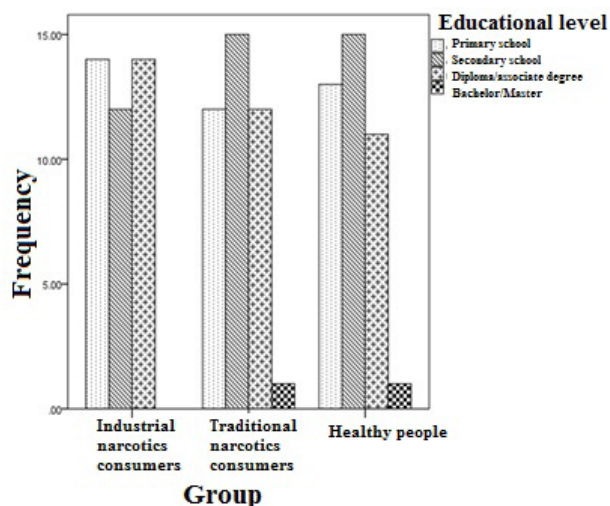


Figure 1. Bar graph of educational level separated for individual groups

Furthermore, the information about the average duration of traditional and industrial narcotics consumption in years is presented in Table 2.

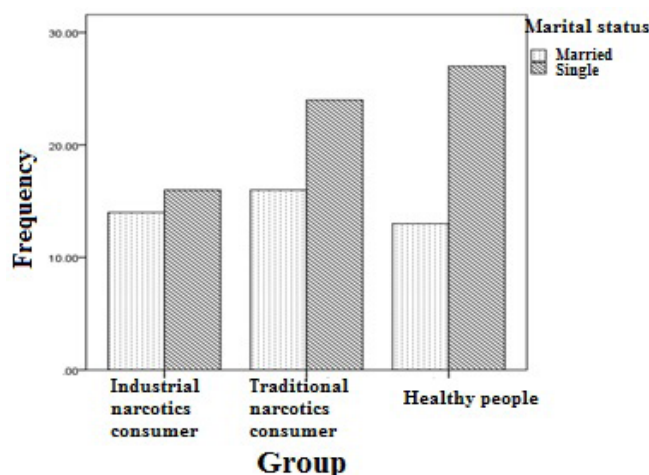


Figure 2. Bar graph of marital status for individual groups

Table 2. Average age and duration of narcotics consumption in research participants in 2015-16

Samples' age				Narcotics consumption duration			
Industrial narcotics consumers		Traditional narcotics consumers		Industrial narcotics consumers		Traditional narcotics consumers	
Mean	standard deviation	Mean	standard deviation	Mean	standard deviation	Mean	standard deviation
35.48	9.12	39.51	8.32	11	7.56	9.43	7.18

According to the obtained mean values, the mean consumption in samples of traditional narcotics group is less than the mean consumption in samples of industrial narcotics group, while the traditional narcotics consumers' age is higher than the industrial narcotics users.

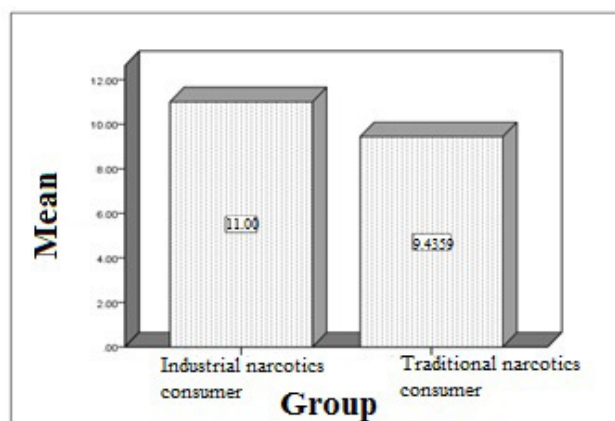


Figure 3. Bar graph of narcotics consumption duration for individual groups

Table 3 presents the descriptive information including the mean and standard deviation, minimum and maximum for subscales of attention, mobility, self-control, recognition plexus, assiduity, and personality instability.

Table 3. Descriptive statistics of impulsivity variable and its subscales

Group		Mean	Standard deviation	Minimum	Maximum
Attention	Industrial narcotics consumers	2.09	0.66	1.0	3.40
	Traditional narcotics consumers	2.50	0.63	1.0	3.60
	Healthy people	3.50	0.41	2.60	4.0
Mobility	Industrial narcotics consumers	1.94	0.36	1.14	2.57
	Traditional narcotics consumers	2.29	0.66	1.14	3.57
	Healthy people	3.40	0.52	2.0	4.0
Self-control	Industrial narcotics consumers	2.15	0.72	1.33	3.33
	Traditional narcotics consumers	2.68	0.59	1.50	3.67
	Healthy people	3.45	0.42	2.33	4.0
Recognition plexus	Industrial narcotics consumers	2.04	0.69	1.0	3.40
	Traditional narcotics consumers	2.21	0.61	1.0	3.40
	Healthy people	2.72	0.46	1.60	3.60
Assiduity	Industrial narcotics consumers	2.31	0.80	1.25	4.0
	Traditional narcotics consumers	2.93	0.53	1.75	4.0
	Healthy people	3.32	0.33	2.50	4.0
Personality instability	Industrial narcotics consumers	2.15	0.68	1.0	3.0
	Traditional narcotics consumers	2.49	0.82	1.0	4.0
	Healthy people	3.11	0.64	1.67	4.0

According to Kolmogorov-Smirnov test, distribution of all data is normal ($P>0.05$).

Table 4. Kolmogorov-Smirnov on research variables

	Attention	Mobility	Self-control	Recognition plexus	Assiduity	Personality instability
Z Test statistics	1.04	1.03	1.35	1.13	1.15	1.30
Significance level	0.23	0.24	0.051	0.153	0.14	0.067

The multivariate analysis of variance (MANOVA) was also performed on impulsivity variables in three groups and both genders according to Table 5.

Table 5. Results of MANOVA in impulsivity variable

Independent variable	Name of test	Value	Degree of freedom for hypothesis	Degree of freedom for error	F-test	Significance level
Group	Pillai's trace test	0.806	12	156	8.776	0.000
	Wilks' lambda test	0.237	12	154	13.53	0.000
	Hotelling trace test	3.04	12	152	19.25	0.000
	Roy's largest root	2.979	6	78	38.72	0.000
	Pillai's trace test	0.022	6	77	0.291	0.94
	Wilks' lambda test	0.978	6	77	0.291	0.94
	Hotelling trace test	0.023	6	77	0.291	0.94
Gender	Roy's largest root	0.023	6	77	0.291	0.94

There is a significant difference between the industrial and traditional narcotics consumers and healthy people at least in one of the variables namely the attention, mobility, self-control, recognition plexus, assiduity, and personality instability ($P=0.000$), but there is not any significant difference between the both female and male genders in terms of above-mentioned variables ($P=0.94$). According to results for mobility and personality instability, there is a significant difference between the interaction of gender and groups, but there is not any significant interaction between gender and group.

Conclusion

In group variable (industrial narcotics consumers, traditional narcotics consumers, and healthy subjects), the significance levels of all tests are less than 0.05 indicating that there is a significance difference between the industrial narcotics consumers, traditional narcotics consumers, and healthy subjects at least in one of the dependent variables (Attention, mobility, self-control, recognition plexus, assiduity, and personality instability) ($P<0.001$). According to this finding, there is a significance difference between the industrial narcotics consumers, traditional narcotics consumers, and healthy subjects in terms of all impulsivity subscales ($P<0.001$), but there is not any significance difference between the industrial narcotics consumers and traditional narcotics consumers in all studied variables, but there is a significance difference between narcotics consumers and healthy subjects. The mean value for healthy subjects is significantly higher than the mean value for narcotics consumers. Results of this research are consistent with research by Fox and Bergquist who studied the procedure of emotions and impulsivity in cocaine consumers [12], Mokri and Ekhtiari who studied the relationship between impulsivity indices and risk-seeking behavior with craving for in narcotics consumption in different groups of opiate addicts [13], Haddadi who compared the effects of Risperidone and Fluoxetine in combination with treatment group of impulse control on improving the impulsivity and slip in crack-heroin addicts under the Methadone maintenance treatment (MMT) [14], and Azami et al who investigated the effect of emotion regulation training based on Gross model on reduction of impulsivity in drug-dependent individuals [15]. The variety of causes, which can lead to impulsive behavior, is the complicated point in the study of impulsive behavior. Impulsivity is the main core of numerous kinds of social harm such as drug abuse, pathological gambling, and crime [16]. According to results, there is a significant difference between narcotics consumers and healthy subjects. The mean value for healthy subjects is significantly higher than the mean value for narcotics consumers. In general, the results of this research are consistent with previous findings confirming that both groups of traditional and industrial narcotics consumers have higher impulsivity than normal people. However, there is not any difference between these two groups in any aspect of impulsivity according to evaluation by impulsivity test. Following the explanation of these results, for instance, a narcotics consumer may show such impulsive behavior due to the tendency to risk-taking behaviors, much attention to incentives, neglect of harm, interest in experiencing the new issues, or other psychological traits. Furthermore, the impulsive behavior is different from the com-

pulsive behavior under which the person is aware of the behavior, and the purpose of behavior is not pleasure but generally avoidance of anxiety. Furthermore, it is different from behavior caused by a failure in judgment and decision-making; and the person is in fact at the disorder judgment stage.

Suggestions

Since the quantitative measurement of human behavior has been always affected by mental background such as feelings, emotions, attitudes and perceptions, and the use of questionnaire as a self-report tool cannot determine the exact status of subjects, and the research has this restriction, this study is conducted on a small population; hence, the generalization of its results to other population members should be done with caution.

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Competing interests

The authors declare that they have no competing interests.

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