

Abstract

Objective: This study was an attempt to compare impulsive decision-making between AIDS sufferers, people suffering substance abuse and nonclinical populations. **Method:** This was a causal-comparative study which was conducted within the first six months of 2011. In this study, 30 AIDS sufferers, 30 drug abusers, and 30 healthy subjects from nonclinical population in the 15-67 age range were selected through convenience sampling. The selected participants were matched in terms of age, education, and gender. Barratt Impulsivity Scale (1997) was administered to the three groups. **Results:** The results showed that there was a significant difference among the three groups in impulsivity subscales. **Conclusion:** The results showed that there existed some degree of deficiency in decision-making processes in AIDS sufferers and drug-dependent persons. It may be rooted in a number of personality traits; neurological damage; drug use; the insufficiency of appropriate training in life skills, problem-solving, and decision-making; and the availability of emotions and personal and cultural thoughts and beliefs around protective behaviors in sexual relationships.

Keywords: Impulsivity, AIDS, Drug Abuse

On the Comparison of Impulsivity between HIV Positive Persons, Drug-Dependent Persons and Healthy Counterparts

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Introduction

The ability to think and act quickly and effectively in some cases can guarantee our survival and be responsive to our needs in today's dynamic world and can even make it possible for some people to boldly express their demands in a secure manner. In this regard, taking an unscheduled vacation, making large purchases without prior plan, and spending a day away from work can bring a sense of relief and comfort (Stratton, 2006). Such measures are called impulsivity. In parallel with the concept of impulsivity, some other concepts such as venturesome, sensation seeking and risk-taking behavior come into existence which are followed by more specialized concepts such as novelty seeking, harm avoidance and reward dependence (Zuckerman, 1993). However, impulsive actions often lead to unpleasant consequences.

Impulsivity is considered as a pivotal factor in the emergence of suicidal behaviors, substance abuse, aggression, personality disorders, attention deficit problems, and criminal behavior (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). Although impulsivity has been introduced as a cause of some disorders in Diagnostic and Statistical Manual of Mental Disorders, few researches have been conducted about the role of impulsivity in the prevalence of mental disorders (Stratton, 2006). Such terms as cognitive impulsivity, impulsive decision-making, and risk-taking decision-making are sometimes interchangeably used in the related literature. For instance, several studies have used gambling task to evaluate this cognitive disorder and have referred to poor performance on this test as cognitive impulsivity (Martin et al., 1994), decision-making deficits (Ernest et al., 2003; Bechara & Martin, 2004), and risk-taking decisions (Hardy, Hinkin, Levine, Castellon, & Lam, 2006). Patton, Stanford & Barratt (1995) define impulsivity as an immediate attempt to action, lack of focus on the ongoing activity, and lack of any planning and thinking. Elsewhere, it is also defined as some part of a behavioral pattern and a predisposition rather than a single act (Moeller et al., 2001). Consistent with these definitions, Moeller et al. (2001) proposed a model of impulsivity as the decreased sensitivity to negative consequences of behavior; rapid unplanned reactions to stimuli before complete processing of information; and lack of regard for long-term consequences. Recent research has indicated that the prefrontal cortical areas of the brain wherein the brain's supervisory management system is located show some functioning impairments that interfere with deliberative behavior. Manuck, Flory, Ferrell, Mann, & Muldoon (2000) came to some preliminary evidence in terms of the relationship between a variant of the gene for monoamine oxidase-A. They also showed that the male participants had significantly less active monoamine oxidase-A. Such genetic predispositions can be combined with perplexing experiences of life and lead to a model of impulsivity in individuals.

Although impulsivity can be at play with or without psychiatric disorders, impulsive behaviors are probably derived from the constituent components of

specific disorders such as personality disorders, mania, and substance abuse (American Psychiatric Association, 1994). Despite the prevalence of impulsivity in psychiatric disorders, no effective treatment has been offered for it in the related studies. Many studies have examined impulsive aggression since this type of behavior can be more simply measured compared to other aspects of impulsivity. In fact, impulsivity is emerged as maximum under the conditions of high risk; therefore, its investigation becomes very difficult as an experimental design (Carey, 2006). Impulsivity is associated with negative emotional states and dysregulation, although it is not clearly shown whether or not impulsivity is a contributory factor to or the consequence of emotional dysregulation (Erismann, Salters-Pedneault, & Roemer, 2005). Considering this issue that impulsivity is the core of many social ills such as drug abuse, gambling, personality disorders and acting towards aggression (Arce & Santisteban, 2006), the present study is an attempt to determine and compare impulsivity between AIDS sufferers, people suffering substance abuse and nonclinical populations.

Method

The present study was a causal-comparative one which was conducted within the first six months of 2011 on 30 AIDS sufferers from Ayatollah Taleghani Hospital, 30 drug abusers from Shemiranat Health Center, and 30 healthy subjects from Taleghani Hospital staff. The HIV positive participants, drug abusers and normal participants respectively lay in the 15-52 age range with the average of 23.70 years, 17-67 age range with the average of 31.60, and 18-47 age range with the average of 22 years. The results showed that there was no significant difference between the three groups in terms of age average ($F=.55$, $P>.05$). Diploma and associates educational degrees took up the highest frequency in the participants of the three groups. As well, the number of 34 participants was female and the number of 48 participants was male. In terms of the marital status, 58 participants were single and 24 ones were married. This is so while the number of 8 participants did not respond to the questions pertaining to gender and marital status.

Instrument

Barratt Impulsivity Scale: This questionnaire has been developed by Barratt, Stanford, Kent & Felthous (1997). It contains 30 four-choice items and three factors, namely cognitive impulsivity (rapid decision-making), motor impulsivity (action without thought), and non-planning impulsivity (lack of premeditation). Several studies have reported acceptable reliability for this scale (Stanford & Barratt, 2009; McLeish & Oxoby, 2006). This scale was translated into Persian by Ekhtiyari and his colleagues in 2008 and its effectiveness in Iranian population was proved (Hosseini et al., 2009). The Cronbach coefficient

reliability for the whole scale was obtained .84 and .83 on substance abusers and healthy subjects, respectively.

Results

The descriptive statistics for the components of impulsivity are presented in the table below.

Table 1: Descriptive statistics for the components of impulsivity

<i>Variable</i>	<i>Non-clinical</i>		<i>Substance abusers</i>		<i>HIV sufferers</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD.</i>
Attentional impulsivity	16.80	3.23	21.83	5.49	22.30	6.36
Motor impulsivity	20.00	3.14	27.07	6.31	24.93	8.37
Nonplanning impulsivity	23.33	4.55	29.50	5.77	30.07	8.09
Total impulsivity	60.13	9.07	78.40	15.36	80.10	21.60

MANOVA test was used to investigate differences in impulsivity among three groups. One of the assumptions of this test is the equality of covariance matrices. Box test results indicate the satisfaction of this assumption (Box's $M=39.11$, $F=2.23$, $P>.05$). Another assumption of this test is the equality of error variances. In the table below, Leven's test results are presented which indicate the satisfaction of this assumption.

Table 2: Leven's test results investigating the equality of error variances for each group

<i>Variables</i>	<i>F</i>	<i>Df</i>	<i>Sig.</i>
Attentional impulsivity	.66	87	.47
Motor impulsivity	.45	87	.65
Nonplanning impulsivity	.37	87	.74

Considering the satisfaction of the assumptions, MANOVA was conducted and the results indicated the existence of a significant difference between groups (Wilk's $\Lambda=.69$, $F=8.254$, $P<.05$). Univariate analysis of variance was used to evaluate differences in patterns as follows.

Table 3: Results of univariate analysis of variance

<i>Variables</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>
Attentional impulsivity	153.22	5.71	.01
Motor impulsivity	220.14	7.44	.01
Nonplanning impulsivity	184.38	5.14	.01

As it can be seen in the above table, there is a significant difference in all components. As well, Tukey's post-hoc test results indicated the existence of a significant difference between the non-clinical group and the other two groups

in all the components while there was no significant difference between substance abusers and HIV sufferers.

Discussion and Conclusion

Impulsive decision-making, in general, refers to the occurrence of problems in the process of decision-making that can lead a person to make some decisions with negative and, sometimes, irreversible impacts. This kind of decision may be made for different reasons which are derived from different origins. On the one hand, impulsive decision-making can be considered as a behavioral consequence of impulsivity scale in the individuals with high degree of novelty seeking; on the other hand, it may be due to weakness in decision-making skill and insufficiency of knowledge and skills in the field (Cloninger, 2000). Some studies have shown that learning life skills such as decision-making skill can diminish impulsive and risky decisions in drugs and alcohol users and also HIV sufferers (as well) (Woods, 2002). Although previous studies and treatment processes have mostly focused on compulsive aspects and drug craving, today, it has become clear that impulsivity is also considered as an important factor in the onset and continuation of substance use disorder. The results of this study showed that the level of impulsivity in normal subjects significantly differs from that in substance abusers and HIV sufferers. In this regard, no significant difference in impulsivity scores was found between substance abusers and HIV sufferers. Consistent with the results of the present study, Hoyle, Fejfar & Miller's quantitative review of 23 studies on the student populations exposed to risky behaviors showed that two personality traits, namely impulsivity and sensation seeking predict many sexual risk-taking behaviors such as sex with a stranger, having multiple sexual partners, and attempt to have sex after using drugs or alcohol (2000). Swann, Dougherty, Pazzaglia, Pham, & Moeller's study revealed that people with bipolar disorder and people experiencing substance abuse gained higher scores at Barratt Impulsiveness Scale (impulsivity as a stable trait) in comparison with healthy subjects (2004). In another study, Hardy and his colleagues found that HIV-positive participants employed weaker risky decision-making policies (2006). As well, HIV negative participants sometimes selected risky cards, but they quickly learned to avoid making risky decisions. Deuieux et al (2008) studied the role of impulsivity in the creation of high-risk behaviors and attitudes towards HIV infection in a sample of adolescents including 266 boys and 111 girls. Based on Millon Clinical Multiaxial Inventory for adolescents, the participants were divided into two groups with high impulsivity and low impulsivity. The results of their study showed that the group with high impulsivity used alcohol and marijuana with greater frequency during the last 3 months compared to the participants with low impulsivity. Donohew et al. (2012), in a preventive study on 2949 students from 17 high schools in two American cities, investigated the relationship between related sensation seeking

and impulsive decision-making with various indicators of sexual risk behaviors. In their study, sexual risk indicators were counted as intention to have sex, having sex in the past, having multiple sexual partners in life, pregnancy in the past, marijuana consumption, saying no to a sexual relationship, and alcohol use before sex. The results of the present study indicated that sensation seeking and impulsive decision-making were significantly related with the majority of sexual risk taking indicators. Sensation seeking and impulsive decision-making were revealed to have the strongest relationship with sexual risk-taking among the students who were sexually active. Martin et al. (1994) evaluated the role of aggression, inattention, hyperactivity, and impulsivity in vulnerability to drug dependence. The results showed that adolescents who have a familial history of drug dependence obtained higher scores in inattention, impulsivity, and aggression compared to the control group. This is so, while no significant difference was reported to exist between the two groups in the scores of hyperactivity. This study showed that the three indicators of aggression, inattention, and impulsivity can make young people susceptible to drug abuse in the future. Similarly, Martin et al. (2010) concluded that HIV positive individuals hold higher degrees of cognitive impulsivity. Makri, Ekhtiyari, Edalati, Ganjgahi & Naderi (2008) reached the conclusion that personality traits can be a significant predictor of drug use temptation.

As a whole, the review of related studies and the current study shows that there are some degrees of deficiencies and defects in the decision-making process of HIV positive and drug-dependent individuals. Such deficiencies and defects may be caused by a number of personality traits and tendencies, neurological damages, drug use, and not receiving adequate training in life skills. Our findings highlight the importance of the need for doing more extensive research about the role of decision-making defects and impulsive decision-making as two of the major risk factors in the development of drug addiction and AIDS. As one of the limitations of this study, it should be referred to the small sample size and the difficulty of access to and cooperation with clinical groups which jeopardize the generalizability of the results. Therefore, given the importance of the subject in theoretical and practical levels, it is highly recommended that the next researchers undertake studies with larger sample sizes and both genders to evaluate the issue more accurately.

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