

# Craving and psychological injury, with the mediating role of codependency and self-control in patients undergoing maintenance therapy

Jabar Heydari Fard<sup>1</sup>, Bahram Mirzaian<sup>1</sup>, Seyed Hamzeh Hoseini<sup>2</sup>

<sup>1</sup>Department of Psychology, Islamic Azad University, Sari Branch, <sup>2</sup>Department of Psychiatry, Mazandaran University of Medical Sciences, Sari, Iran

## Abstract

**Context:** Craving is a strong and irresistible urge for abusing drugs. If the drug urge is not met, psychological injuries and physical suffering such as weakness, anorexia, anxiety, insomnia, aggression and depression would be manifested.

**Aim:** The aim of this study was structural equation modelling (SEM) of craving and psychological injury, with the mediating role of co-dependency and self-control in patients undergoing maintenance therapy.

**Settings and Design:** This is a descriptive analytic study. All patients undergoing maintenance therapy in outpatient departments of Sari in 2018 were evaluated.

**Materials and Methods:** 400 patients were selected randomly based on the inclusion criteria. The questionnaires on craving, psychological injury, co-dependency, and self-control were used for data collection.

**Statistical Analysis Used:** Data were analysed using SEM in particular regression equations. SPSS and AMOS were used for the analysis of the collected data.

**Results:** The results indicated that the value of direct effect of craving on psychological injury was 0.207. Moreover, the value of indirect effect of craving on psychological injury with the mediating role of co-dependency was 0.114. The total effect was 0.321, i.e.,  $P < 0.001$ . As a result, the effect of mediating variable of co-dependency in the relationship between craving and psychological injury was significant. The value of the direct effect of self-control was 0.134; the value of the indirect effect of craving on psychological injury with the mediating role of self-control was 0.186; i.e.,  $P < 0.001$ .

**Conclusion:** Craving, co-dependency and self-control are important factors causing psychological injury in patients undergoing maintenance therapy.

**Keywords:** Addiction, Codependency, Craving, Psychological injury, Self-control

**Address for correspondence:** Dr. Bahram Mirzaian, Department of Psychology, Islamic Azad University, Sari Branch, Sari, Iran.

E-mail: bahrammirzaian@gmail.com

**Received:** 04 February 2019; **Accepted:** 17 April 2019; **Published:** 11 July 2019.

## INTRODUCTION

Addiction is one of the most common psychiatric disorders which increasingly threaten human societies.

Drug dependency is a physical, psychological, and mental illness that due to its progressive nature, endangers the health of individuals, families, and society in all aspects of

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Quick Response Code:	Website: <a href="http://www.jnmsjournal.org">www.jnmsjournal.org</a>
	DOI: 10.4103/JNMS.JNMS_4_19

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**How to cite this article:** Heydari Fard J, Mirzaian B, Hoseini SH. Craving and psychological injury, with the mediating role of codependency and self-control in patients undergoing maintenance therapy. *J Nurs Midwifery Sci* 2019;6:118-24.

life.<sup>[1]</sup> About 90% of people with opioid dependency are also diagnosed with another psychiatric problem, the most common ones include major depressive disorder, alcohol use disorder, antisocial personality, and anxiety disorder. In addition, 15% of opioid-dependent people have a history of at least one suicide.<sup>[2]</sup>

Craving plays a very important role in the relapse after the treatment and preserves the status of drug use and substance dependency. In the treatment process of the addicts, having reached the stage of maintenance of abstinence, there is a strong desire to experience the effects of a psychedelic substance again. This feeling may be seen from the hours after the treatment begins to days and months after its end. The frequency and severity of craving decrease slowly, but it rarely disappears. Therefore, the diagnosis and treatment of this clinical phenomenon, as one of the contributing factors in treatment failure, are of prominent importance.<sup>[3]</sup> Craving can be defined as a strong and resistant desire for substance use. If the desire is not met, it will result in psychological and physical suffering such as weakness, anorexia, anxiety, insomnia, hostility, and depression.<sup>[4]</sup> Another important variable that affects substance abuse is self-control. Self-control means that the person has the ability to control his behavior, emotions, and instincts despite the stimulation to act.<sup>[5]</sup> In a study, it was concluded that low self-control and impulsiveness had a positive and significant relationship with substance abuse.<sup>[6]</sup> Codependency can be considered as a contributing factor in feeling resistance during addiction recovery.<sup>[7]</sup> The evidence suggested that self-control is a key factor in substance abuse among young people.<sup>[8]</sup> Some studies have identified low self-control as a major cause of substance abuse.<sup>[9]</sup> Researchers have shown that codependency addiction can cause harm and high-risk behaviors in individuals' relationships with others and specifically with the family members.<sup>[10]</sup> Therefore, the purpose of this study was the structural equation modeling (SEM) of craving and psychological injury, with the mediating role of codependency and self-control in patients undergoing maintenance therapy. It is hoped that the present study results could provide a proper information resource for substance abuse patients to improve their mental health and life quality.

## MATERIALS AND METHODS

In the present study, the statistical population included all the addicted patients within the age range of 18–70 years old undergoing maintenance therapy for 6 months in clinics of Sari in 2018. The participants of the present study were

all addicted and underwent maintenance therapy in 95 healthcare centers of Sari. The selection of centers was based on random number table and the homogeneity of the population in terms of variables such as being under the effect of maintenance therapy, substance abuse, being male, and not be affected by a specific treatment center. At first, 32 centers were selected randomly among 95 centers; then, approximately, 13 patients were selected randomly as samples from each center. These centers were homogeneous in terms of the variables studied and were not affected by a specific treatment center. On the other hand, the number of items was 91, and according to the researchers' recommendation, in this case, it would be better to increase the sample size at least four times as much as the number of items. Thus, 364 samples were obtained again, which was assumed to be 400 samples for assurance.<sup>[11]</sup> In the implementation stage, having received the research license from the Ethics Committee of the university and having received the ethics code from the Deputy of Research and Technology (IR.IAU.SARI.REC.1398.002), and subsequent to sample selection and explanation of the study goals to them, they were assured of the research confidentiality using anonymous questionnaires. Finally, their filled informed consent was obtained.

## Inclusion criteria

The inclusion criteria included patients residing in Sari for 1 year, male gender, age range of 18–70 and older, having no acute mental illness, no intoxication, having the ability to understand the research protocol and follow the simple guidelines, having the inclination to sign, and giving informed consent written or oral for patients who were illiterate and unable to read and write.

## Exclusion criteria

People having a severe chronic physical (inability to cooperate) or mental illnesses would be excluded from the study. Incomplete questionnaires and lack of data integrity or accuracy provided in the questionnaires also were among exclusion criteria.

## Methodology and instruments of data analysis

The present research was cross-sectional in terms of the data collection method. For data analysis, the descriptive-analytical method was used, which was of SEM type. Data were analyzed based on descriptive statistics such as the mean, standard deviation, percentage, and frequency. A path analysis, structural equations, and the bootstrap method were used to test the research hypotheses. SPSS, version 22 (SPSS Inc., Chicago, Ill., USA) and AMOS, version 23 (AMOS 23.0.x., IBM, SPSS Inc., Chicago, Ill.,

USA) softwares were used for the analysis of the collected data.

### Data collection tool and its usage method

#### *Demographic questionnaire*

The questionnaire included variables such as age, gender, marital status, level of education, occupation, and type of medicine.

#### *Desire for drug questionnaire*

The desire for drug questionnaire was focused on craving as a stimulation state (at the present time). The questionnaire contained 13 questions and was based on a 7-point Likert scale (completely agree to completely disagree) with scores ranging from 1 to 7. The answers of completely disagree scored 1 point and completely agree scored 7 points. It measured three main factors of craving, namely, the willingness and intention of consumption, negative reinforcement, and control. The first factor was the desire and intention to use the substance, which included questions (1, 2, 4, 6, 9, 12, and 13). The second factor was the negative reinforcement or in other words the belief that solving the problems of life and gaining pleasure would occur simultaneously with substance consumption, including questions (5, 8, 10, and 11). The third factor was the pleasure and the severity of the lack of control, which included questions (3 and 7). These three components were highly correlated. The internal consistency of the components of this questionnaire in the study of Mokri *et al.* conducted on the abusers of different opiate types such as crack and heroin was 0.89, 0.79, respectively, and regarding the abusers of methamphetamine, it was 0.78.<sup>[12]</sup> In the research, the internal consistency using the Cronbach's alpha method was 96% for opium users, 95% for crack, 90% for methamphetamine, 94% for oral heroin, 94% for inhaled heroin, and 98% for injected heroin.<sup>[5]</sup> Besides, internal consistency using Cronbach's alpha for the three main factors were 81%, 85%, 84%, respectively, and the reliability of the three factors of the questionnaire was confirmed in test-retest section, which was 1.7, 4.5, and 1.4, respectively.<sup>[13]</sup>

#### *The symptom checklist-25 for the assessment of mental health*

In this research, symptom checklist-25 (SCL-25) scale, a shortened form of SCL-90-R, was used to measure mental health. The questionnaire evaluated the psychopathology and its main dimensions were as follows: somatization, obsessive-compulsive, interpersonal sensitivity, depression, hostility, anxiety, phobia, paranoia ideation, and psychoticism. The shortened form of the mentioned scale was standardized in a sample of Ahwaz University students. The correlation between the 25-point scale and 90-point scale was 95%, and all correlation coefficients of SCL-25 items with nine dimensions and SCL-90-R additional items were

at the significance level of  $P < 0.001$ . Hence, the 25-point scale had a high correlation with 90-point scale and it was a valid and reliable scale for the measurement of psychological injury.<sup>[14]</sup> In the present study, the 25-point scale was used, and each of the items was measured in terms of Likert spectrum (in five categories of not at all, slightly, moderately, and very extremely). Lower scores suggested lower mental health, and higher scores above 65 indicated that the person was suspected of having a mental disorder. The reliability coefficient based on the Cronbach's alpha coefficient was 93%, which indicated a very strong internal homogeneity between the written items of the scale.<sup>[15]</sup>

#### *The Spann-Fischer Codependency Scale*

The Spann-Fischer Codependency Scale was a 16-item test for measuring codependency, which was answered in the form of the 6-point Likert spectrum, and questions 5 and 6 were reversely scored. This test under the abbreviation of SfcS was represented to the academic community and after it was validated in terms of validity and reliability. Cronbach's alpha, split-half, and retest methods were used to assess the reliability of the questionnaire. Criterion validity and construct validity were used to test the validity of the questionnaire. The Cronbach's alpha coefficient for the test was 0.73. To assess the criterion validity, the questionnaire was also administered to a group labeled as drug dependent based on the underlying assumptions of having a common life with an addicted person and to a normal group. The mentioned questionnaire was also used in another research entitled "investigating the relationship between codependency and divorce."<sup>[16]</sup>

#### *Tangney brief self-control scale*

This questionnaire consisted of 13 items that was derived from its 36-item form. The higher the scores of an individual, the better was his self-control. Scoring was based on 5-option Likert scale from 1 to 5 and the items ranged from "always true to me" to "never true to me." Some questions were reversely scored. The Cronbach's alpha in two sample studies was reported as 0.89 for 36-item form and 0.83 and 0.85 for 13-item form. In the research, two subscales of initiatory and inhibitory self-control were considered. Questions 1, 2, 5, 6, 9, and 12 were related to the subscale of inhibitory self-control, questions 3, 10, 11, and 13 were related to the initiatory self-control, and questions 4, 7, and 8 were unclassified items and were 0.67.<sup>[17]</sup>

## RESULTS

Descriptive statistics of age, educational status, occupation, and drug type have been divided into groups and

represented in table. The descriptive demographic variable is presented in Table 1.

Table 2 represents the descriptive data obtained from the research variables.

For mental health components, the minimum number of comments was given to hostility 1, paranoia ideation 1, and depression 1, whereas a maximum number of comments was given to somatization 27, anxiety 15, obsessive-compulsive, and interpersonal sensitivity 14. The craving component received at least two comments and the willingness and intention component received at maximum 41 comments. The codependency component received at least 19 comments and at maximum 104 comments. Besides the received self-control component, there were at least 26 comments and at maximum 65 comments.

**Table 1: Participants' demographic characteristics**

Variables	Set	Frequency (%)
Age	Below 20	15 (3.75)
	21-30	46 (11.5)
	31-40	75 (18.75)
	41-50	71(17.75)
	51-60	95 (23.75)
	61-70	98 (24.5)
Marital status	Married	308 (77)
	Single	38 (9.5)
	Separated	37 (9.25)
	Widow	17 (4.25)
Level of education	Illiterate	125 (31.25)
	Primary education	96 (24)
	Diploma	87 (21.75)
	Bachelor	65 (16.25)
	Master and above master's degree	27 (6.75)
Occupation	Farmer	147 (36.75)
	Technical	45 (11.25)
	Employee	57 (14.25)
	Freelance	97 (24.25)
	Retired	54 (13.25)
Drug type	Methadone	204 (51)
	Buprenorphine	92 (23)
	Opioid syrup	104 (26)

Among the indicators, the maximum mean obtained for the relationship was relevant to codependency 50.10, self-control 42.78, somatization 13.09, and the minimum mean was relevant to the components of hostility 1.35 and paranoia ideation 1.95. Moreover, the minimum standard deviation for hostility was 0.73 and paranoid ideation was 1.17, and the maximum standard deviation was related to the components of codependency 11.31, and the willingness and intention and craving 04.7.

As seen in Table 3, the standardized path coefficient of the craving variable on codependency was 0.22., the  $t = 3.241$ , and the  $P < 0.5$ . The results indicated that craving had a significantly positive effect on codependency. The standardized path coefficient of the craving variable on the psychological injury was 0.12, the  $t = 2.212$ , and the  $P < 0.5$ . As a result, the craving had a significantly positive effect on psychological injury. The standardized path coefficient of the craving variable on self-control was 0.34, the  $t = 3.784$ , and the  $P < 0.5$ . The results indicated that craving had a significant effect on self-control. The standardized path coefficient of the codependency variable on the psychological injury was 0.43, the  $t = 4.911$ , and the  $P < 0.5$ . As a result, codependency had a significantly positive effect on psychological injury. The standardized path coefficient of the codependency variable on self-control was 0.32, the  $t = 0.32$  and  $-3.241$ , and the  $P < 0.5$ . As a result, the codependency had a significantly negative effect on self-control. The standardized path coefficient of the self-control variable on the psychological injury was  $-0.24$ , the  $t = -3.043$  and the  $P < 0.5$ . As a result, self-control had a significantly negative effect on psychological injury.

According to Table 4, the value of the direct effect of craving on the psychological injury was 0.207, the value of the indirect effect of craving on psychological injury through

**Table 2: Dimensions of mental health, craving and codependency in participants**

Variables	Dimensions	Minimum	Maximum	Mean X	SD
Mental health	Somatization	6	27	13.09	4.12
	Obsessive-compulsive	2	14	7.15	2.37
	Interpersonal sensitivity	3	14	7.41	2.99
	Depression	1	10	4.07	1.72
	Anxiety	3	15	7.08	3.20
Craving	Phobia	3	13	5.22	2.11
	Paranoia ideation	1	6	1.95	1.17
	Psychoticism	2	12	5.08	1.89
	Hostility	1	5	1.35	0.73
	Craving	6	41	11.61	7.04
	Negative reinforcement	4	24	6.80	4.37
	Control	2	14	3.63	2.46
	Codependency		19	104	50.10
Self-controlling	Self-control	26	65	42.78	7

SD: Standard deviation

the path of codependency was 0.114, and value of the total effect was 0.321. As a result, the mediating effect of the codependency variable in the relationship between craving and the psychological injury was significant. The value of the direct effect of craving on the psychological injury was 0.134, and the value of the indirect effect of craving on psychological injury through self-control was 0.186, and the total value was 0.320. Significance level was considered as  $P > 0.05$  for indirect path and  $P < 0.05$  total effect. As a result, the mediating effect of self-control variable between craving and the psychological injury was significant.

## DISCUSSION

The purpose of this study was to investigate craving and psychological injury, with the mediating role of codependency and self-control in patients undergoing (amphetamine, buprenorphine, and opioid syrup) maintenance therapy. The results of the present study indicated that self-control could play a mediating role in the relationship between craving and psychological injury.

Self-control is to control one's behaviors, feelings, and instincts despite the stimulation to act. Self-control helps the child or adolescent to take time and think about the alternatives and their possible outcomes, and then to choose the best possible option.<sup>[5]</sup> The results showed that self-control could act as a mediator in the relationship between craving and psychological injury. The present study findings were consistent with other studies on the relationship between self-control and psychological injury, including Taylor *et al.*,<sup>[6]</sup> Vera and Moon,<sup>[18]</sup> Ford and Blumenstein,<sup>[9]</sup> and Yen *et al.*<sup>[19]</sup> In this study, self-control did not directly affect psychological injury. To explain the finding, self-control is a set of mechanisms that controls delinquency and similar behaviors, and individuals with low self-control cannot resist the temptations and take unlawful

behaviors to calm themselves.<sup>[20]</sup> Marci *et al.* concluded the same way in their study. Those who achieved high scores in the freedom of conscience had highly irrational ideas, low self-control, and were much weaker than others when coping with stress and exhibited more delinquent behaviors.<sup>[21]</sup>

The results showed that codependency had a significantly positive effect on psychological injury. The present study findings were consistent with other studies conducted on the relationship between codependency and psychological injury including the study of Wegscheider-Cruse *et al.*<sup>[10]</sup>

The study results by Kendson Vetrel showed that there was a significant correlation between adult codependency and conflict with the family.<sup>[22]</sup> Besides, Marquez *et al.* in their research showed that codependency was significantly related to the higher levels of depression, anxiety, stress, and inefficiency in the family. While low scores of codependency were related to narcissism, self-confidence, and emotional expression.<sup>[7]</sup> In another research, it has been shown that there was a significant relationship among codependency, mental health, performance ability, and low self-esteem.<sup>[23]</sup> Schlauch *et al.* in their research showed that there was a significant relationship between psychiatric disorders, communicational problems, low self-esteem, and codependency.<sup>[24]</sup> The importance of craving is important to the extent that it is related to the individuals' positive and negative affections. In studies conducted so far, it was shown that individuals with highly negative affections had significantly more craving when exposed to cigarette or alcohol, whereas individuals with high-positive affections exhibited more abstinence when exposed to cigarette or alcohol. This indicated the importance of studying craving.<sup>[25]</sup> The study by Ekhtiari *et al.* conducted on craving showed that all craving was the central core of relapse into substance dependence.<sup>[13]</sup> Drug craving can lead to hazardous and impulsive behaviors.<sup>[12]</sup> According to the results of the present study, craving affected mental health. This study was consistent with the research of Verdejo-García *et al.*, Poursid Mosayee *et al.* and Fatseas *et al.*<sup>[26-28]</sup> The present study results showed that craving affected self-control. The findings were consistent with the researches by Taylor *et al.*, Vera and Moon, Ford and Blumenstein, Fatseas *et al.*, Neff *et al.*<sup>[3,6,9,18,28,29]</sup>

The result of the study showed that the craving affected self-controlling. The findings were consistent with Taylor *et al.*, Vera and Moon, Ford and Blumenstein, and Neff *et al.*<sup>[6,9,18,29]</sup> To explain this finding, the family sets out strict and rigid rules to control its members' behaviors, which results in the formation of rigorous judgments

**Table 3: The path analysis for the dependencies among the variables**

Examining the direct relationship among the variables of the model	Standard coefficient	t	P
Craving on codependency	0.22	3.241	0.001
Craving on psychological injury	0.12	2.212	0.027
Craving on self-control	0.34	-3.784	0.0009
Codependency on self-control	0.32	-3.241	0.001
Self-control on psychological injury	0.24	3.043	0.666

**Table 4: The mediating role of codependency and self-control between craving and psychological injury**

Variables	Direct effect	Indirect effect	Total effect	Direct P	Indirect P	Total P
Codependency	0.207	0.114	0.321	0.002	0.001	0.001
Self-control	0.134	0.186	0.320	0.063	0.009	0.001

by individuals toward themselves and others since the childhood period.<sup>[30]</sup> The emergence of such negative emotions and the individuals' perception of their inability to control their behaviors increases the craving tendency and likelihood of substance abuse. Moreover, the present research showed that craving affected self-controlling. The result of this study was consistent with the findings of Abrams,<sup>[3]</sup> Poursid Mosayee *et al.*,<sup>[27]</sup> and Fatseas *et al.*<sup>[28]</sup> Like other studies, this study had limitations that need to be considered when generalizing the results. The present study was a descriptive, analytical, and cross-sectional study, and it was a SEM that had to avoid any inferences about the cause and effect relationships in the findings. The research community included male addicts who underwent treatment in Sari. Therefore, the generalization of the results should be carried out with caution. It is suggested that in future studies, researchers consider both genders, the mediating role of other psychological variables in the relationship between addiction and psychological injury, and if possible, the implementation of the experimental design of the variables studied in the present study.

## CONCLUSION

Given the research results, craving, codependency, and self-control are important factors causing psychological injury in patients undergoing maintenance therapy. Therefore, it is essential to take into account the role of these factors in the treatment course of the patients undergoing maintenance therapy.

## Conflicts of interest

There are no conflicts of interest.

## Authors' contribution

All authors contributed to this research.

## Financial support and sponsorship

The study was financially supported by the Department of Psychology, Islamic Azad University, Sari Branch, Sari, Iran.

## Acknowledgments

The current article has been adopted from the research project approved with the code of ethics IR.IAU.SARI.REC.1398.002. The authors hereby would like to thank and appreciate the Deputy of Research at Islamic Azad University of Sari Branch and all participants in the study who had sincere cooperation.

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