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Evaluation of stress-coping strategies and their association with relapse rate in people with methamphetamine use disorder: an analytical study

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ABSTRACT

The growing prevalence of methamphetamine use and the relevant relapse have become major issues across the world presently. Thus, the current study aims to investigate the stress-coping strategies and their relationship with the relapse rate among people with methamphetamine use disorder. The statistical population in the present analytical research comprises all methamphetamine-dependent patients referred to Farabi Hospital in Kermanshah in 2018, out of which 172 are included in the study by an accessible sampling method. The research instruments include Cassidy-Long Problem-Solving Styles Questionnaire (PSS) and Time to Relapse Questionnaire (TRQ). Data analysis shows that 51 (29.1%) subjects benefit from effective stress-coping strategies, while 124 (70.9%) apply ineffective stress-coping strategies. Further, the relapse rate among the people who used effective stress-coping strategies is ($P < .05$). The mean of the total relapse risk score is higher among the women and the methamphetamine-dependent patients with withdrawal history ($P < .05$). The present research findings reveal that the relapse rate among individuals who decide to use ineffective stress-coping strategies is higher. Therefore, it is recommended to consider stress-coping strategies applied by methamphetamine users in order to be able to diminish their relapse rate.

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Introduction

Substance use disorder (SUD) is one of the most critical problems of the modern era; it has globally been widespread, leading to destroying millions of lives and wasting huge national funds on the fight or compensation for its injuries. The pattern of substance use has transformed dramatically in recent years, from traditional opiates to newer forms of opioids and artificial substances (Farnia et al., 2018)

In 2017, the United Nations Office on Drugs and Crime (UNODC) reported the prevalence of opioids 0.38% (opioids 0.27% – opiates 0.49%) (UNODC, 2017). In Iran, the prevalence of substance-dependency over the last four decades has been fluctuating; for example, in 2011, this number among the 15- to 64-year-olds was estimated to be 1.325.000 people (Fard et al., 2014).

The major problem in substance use treatment process, even with a long detoxification period, is a high rate of relapse (Chie et al., 2016; McLellan et al., 2005). In their research, McLellan et al. (2005) revealed that about 50% to 60% of patients began reusing substances within 3 years of treatment, disregarding the type of discharge or substance used. In the relapse process, an individual faces a general lack of control over substance use, and this behavior leads to suffering more; consequently, it results in excessive and out of control consumption.

Various factors are effective in the incidence and persistence of relapse, including stress (Sinha, 2007). Stress is a condition the individual confronts with, in workplaces and living environments; it contributes to social conflicts, internal distresses, and an incongruent inconsistency in terms of individual potential and opportunities (Sinha, 2012). On the other hand, what affects one's personal and social health is not stress itself but stress-coping strategies (Sinha & Li, 2007). The ways one chooses to deal with stress are part of its vulnerability profile. Adopting an ineffective stress-coping strategy may actually increase stress while using an effective one can contribute to greater mental health (Sinha, 2007).

Research on the factors associated with substance use disorders has proved stress as one of the strongest predictors of substance use relapse rate (Halim & Sabri, 2013; Sinha, 2008). In the research performed by Halim and Sabri (2013), the authors examined the association between coping styles and relapse rate in 120 individuals randomly selected from a central region in Malaysia. The findings indicated that neurotic defense mechanisms and ineffective coping-stress mechanisms were often used by substance used with high substance use relapse rates.

On the other hand, emotion regulation strategies have always been involved in drug use disorder. Positive emotion regulation strategies have a protective role, and negative emotion regulation strategies have a resonating role in psychiatric damages and disorders.

People with a problem in emotion regulation are more likely to use drugs to relieve the distress caused by the lack of emotion

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regulation. Negative and maladaptive emotion regulation strategies lead to a higher recurrence rate in individuals. Emotion regulation strategies are of the most important determinants of how individuals respond to their emotions, and increased use of maladaptive strategies is associated with continued drug use. For example, Axelrod et al. (2011) found that improving emotional regulation can lead to reduced impulsive behaviors, such as drug use. The results showed that those with more emotion regulation skills were able to reduce their drug use. Berking et al. (2011) also found that emotion regulation skills can predict alcohol use. Moreover, Mafi et al. (2018) stated in a study that difficulty in emotion regulation is associated with alcohol use and that alcohol users are less likely to tolerate and control negative emotions.

> According to the findings, this study is conducted on the assumption that people with methamphetamine use disorder apply ineffective stress-coping strategies; this may be related to more recurrence.

In general, the lack of effective stress regulation can make methamphetamine users more vulnerable to stressful conditions and environmental stimuli associated with methamphetamine, which, in turn, can contribute to an increase in relapse risk. Within the framework of the research performed on the people with methamphetamine use disorder, there exists no research on the effect of stress-coping strategies on methamphetamine users. Accordingly, benefitting from an acceptable novelty, the current research aims to examine stress-coping strategies and their association with relapse rates among methamphetamine users.

Methods

Study design and population

This study was an analytical study approved by the Ethics Committee of Kermanshah University of Medical Sciences (No: 97466). The study population consisted of all patients with methamphetamine use disorder who referred to Farabi Hospital in Kermanshah from April to December 2018. One hundred seventy-two individuals were selected from this statistical population by an available method.

After the approval of the research design in the Ethics Committee of Kermanshah University of Medical Sciences and coordination with the head of Farabi Hospital, researchers attended the hospital. Then, the research objectives were explained for psychiatrists and psychologists, who were directly in contact with these individuals by holding meetings. Subsequently, individuals referred to this hospital for treatment of methamphetamine use disorder were evaluated and clinically interviewed based on DSM-5 by a team of psychiatrists and psychologists. In addition to clinical evaluation, they were also evaluated by Thin Layer Chromatography (TLC), and their positive methamphetamine use was reported by (TLC) test. Next, the study goals were explained to those who had exclusive methamphetamine use, and informed consent was obtained from people who were willing to participate; they were informed that there was no need to mention their names and that their information would be kept confidential.

Inclusion criteria included exclusive use of methamphetamine for at least 6 months and dependency diagnosis based on DSM-5 criteria. Exclusion criteria included having diagnostic criteria for other psychiatric disorders, alcohol abuse during the past 5 years, along with medical and neurological diseases, such as stroke or seizure disorder, and mental retardation.

Given that, the study aimed to examine strategies for coping with stress in people with methamphetamine use disorder; thus, the study population was clinically evaluated by a team of psychiatrists and psychologists working in the hospital, and only people with methamphetamine use disorder were included in the study. This was since researchers can control the effects of other psychiatric disorders and get more accurate results. Indeed, the researchers hypothesized that concurrent alcohol use or other psychiatric disorders might affect the study results, making it ultimately challenging to determine the relationship between recurrence rate and methamphetamine use disorder.

Once the individuals were identified according to the inclusion and exclusion criteria and presented their informed consent, the research questionnaires were completed by self-report from April to December 2018.

It should be noted that the division of individuals into two groups with effective and ineffective coping strategies was done after the implementation of the Cassidy-Long Problem-Solving Styles Questionnaire. Indeed, subjects who scored higher on the scales of helplessness, control, and avoidance styles were classified as people with ineffective stress-coping styles, and the subjects who scored higher on the styles of approach, creativity, and confidence were categorized into people with effective stress-coping styles.

Cassidy-Long Problem-Solving Styles Questionnaire (PSS)

Problem-Solving Style Questionnaire (PSSQ) was developed by Cassidy and Long (1996) to measure different problem-solving styles. It consisted of 20 items based on four subscales, including Sensing (Item no. 4, 5, 10, 16, & 19), Intuitive (item no. 3, 8, 11, 13, & 18), Feeling (item no. 2, 6, 9, 14, and 17), and Thinking (item no. 1, 7, 12, 15, & 20), for problem-solving styles of individuals. The responses were rated on a 5-point rating scale ranging from 1 = strongly disagree to 5 = strongly agree. The score for each subscale ranged from 1 to 25. Problem-Solving Styles Questionnaire showed adequate reliability and strong internal consistency ranging from.83 to 96 (Stead et al., 2010).

Time to Relapse Questionnaire (TRQ)

The questionnaire consists of nine items and three subscales rated on a 4-point Likert scale (False = 1, Somewhat True = 2, Fairly True = 3, Fully True = 4). Of the nine items, three belongs to the Sudden Relapse Scale, three to the Short Delay Relapse Subscale, and three to Long Delay Relapse Subscale. The subscale scores range from 3 to 12. The reliability and validity of the TRQ tool in Iran were measured by Pashaie et al. (2013) in which the reliability was measured via Cronbach alpha (0.81%) and test-retest ($r > 0.6$), and the tool validation was validated through formal and content validity. Outside Iran, the validity and reliability of this questionnaire were confirmed by Adinoff et al. (2010).

Statistical analysis

Descriptive statistics methods were used to determine the distribution of the subjects' demographic characteristics in the form of percentage and frequency. The chi-square test was used to examine the relationship between demographic variables and clinical history with the subjects' stress-coping strategy. Furthermore, the Fisher Exact Test was utilized in case of required modification.

To compare the mean of sudden relapse, short delay relapse, and long delay relapse among the subjects in the present research with effective and ineffective stress-coping strategies, the assumption of normality of the score relevant to the studied concepts was confirmed using Two-Sample Kolmogorov–Smirnov Test, and then Independent Samples T-test was used. Finally, in order to investigate the linear relationship between consumption recurrence rate and type of stress-coping style in individuals, a simple linear regression model (by artificializing the predictor variable between the type of stress-coping style) was used. All analyses were performed using SPSS 20 software at a 5% error level.

Results

One hundred seventy-five methamphetamine abusers undergoing treatment agreed to participate in the study. Evaluation of the subjects' demographic characteristics and clinical history in two groups, including the people with effective coping strategies and those with ineffective coping strategies, indicated that more than half of the people 67 (%54.0) in the first group were older than 35 years. Other demographic characteristics are shown in Table 1.

Table 1. Distribution of demographic characteristics and clinical history among the methamphetamine abusers undergoing treatment.

		Studied groups n(%)				
Variable	Levels	Effective strategies	Ineffective strategies	Total	Degree of freedom	P-value
Age range	≤ 25	21(41.2)	34(27.4)	55(31.4)	2	0.185
	26–35	9(17.6)	23(18.5)	32(18.3)		
	> 35	21(41.2)	67(54.0)	88(50.3)		
Gender	Female	9(17.6)	35(28.2)	44(25.1)	1	0.10
	Male	42(82.4)	89(71.8)	131(74.9)		
Marital status	Single	32(62.7)	67(54.0)	99(56.6)	2	0.46
	Married	11(21.6)	38(30.6)	49(28.0)		
	Divorced	8(15.7)	19(15.3)	27(15.4)		
Education level	Secondary school & lower	8(15.7)	37(29.8)	45(25.7)	2	0.016
	High school & diploma	33(64.7)	51(41.1)	84(48.0)		
	College	10(19.6)	36(29.0)	46(26.3)		
Occupation	Employed	10(19.6)	30(24.2)	40(22.9)	2	0.77
	Self-employed	23(45.1)	50(40.3)	73(41.7)		
	Non-employed	18(35.3)	44(35.5)	62(35.4)		
Economic situation	Low	8(15.7)	32(25.8)	40(22.9)	2	0.34
	High	30(58.8)	66(53.2)	96(54.9)		
	Good	13(25.5)	26(21.0)	39(22.3)		
Trauma history	Yes	1(2.0)	2(1.6)	3(1.7)	1	0.647
	No	50(98.0)	122(98.4)	172(98.3)		
Mental disease history in the patient	Yes	6(11.8)	24(19.4)	30(17.1)	1	0.161
	No	45(88.2)	100(80.6)	145(82.9)		
Physical disease history in the patient	Yes	2(3.9)	7(5.6)	9(5.1)	1	0.483
	No	49(96.1)	117(94.4)	166(94.9)		
Type of the substance abused by the patient	Opium	18(35.3)	50(40.3)	68(38.9)	3	0.187
	Stimulant	6(11.8)	24(19.4)	30(17.1)		
	Delusional	3(5.9)	12(9.7)	15(8.6)		
	Multi-substance abuser	24(47.1)	38(30.6)	62(35.4)		
Initial age of substance abuse	15–25	35(68.6)	67(54.0)	102(58.3)	2	0.161
	26–35	14(27.5)	45(36.3)	59(33.7)		
	> 35	2(3.9)	12(9.7)	14(8.0)		
Average dose of substance abuse in gram	≤ 1	36(70.6)	84(67.7)	120(68.8)	2	0.64
	1–2	8(15.7)	16(12.9)	24(13.7)		
	> 2	7(13.7)	24(19.4)	31(17.7)		
Number of methamphetamine abuse by year	Yes	50(98.0)	120(96.8)	170(97.1)	1	0.55
	No	1(2.0)	4(3.2)	5(2.9)		
Initial age of methamphetamine use	15–25	28(54.9)	45(36.3)	73(41.7)	3	0.098
	26–35	18(35.3)	54(43.5)	72(41.1)		
	36–45	5(9.8)	22(17.7)	27(15.4)		
	> 45	0(0.0)	3(2.4)	3(1.7)		
Initial dose of methamphetamine use in gram	≤ 1	51(100.0)	123(99.2)	174(99.4)	1	0.71
	≥ 3	0(0.0)	1(0.8)	1(0.6)		
Average dose of methamphetamine use	≤ 1	45(88.2)	100(80.6)	145(82.9)	2	0.14
	2–1	6(11.8)	15(12.1)	21(12.0)		
	> 2	0(0.0)	9(7.3)	9(5.1)		
Number of methamphetamine use in year	1 ≤	20(39.2)	44(35.5)	64(36.6)	2	0.39
	1–3	22(43.1)	46(37.1)	68(38.9)		
	> 3	9(17.6)	34(27.4)	43(24.6)		

(*Continued*)

Table 1. (Continued).

Variable	Levels	Studied groups n(%)		Total	Degree of freedom	P-value
		Effective strategies	Ineffective strategies			
History of relapse	Yes	23(45.1)	70(56.5)	93(53.1)	1	0.115
	No	28(54.9)	54(43.5)	82(46.9)		
History of addiction in the family	Yes	7(13.7)	37(29.8)	44(25.1)	1	0.018
	No	44(86.3)	87(70.2)	131(74.9)		
History of psychiatric disease in the family	Yes	1(2.0)	5(4.0)	6(3.4)	1	0.44
	No	50(98.0)	119(96.0)	169(96.6)		
Total		51(100.0)	124(100.0)	175(100.0)		

Table 2. Evaluation of frequency distribution of different stress coping strategies among methamphetamine abusers undergoing treatment.

	Stress coping strategy	Frequency (%)	Coping style subscales	Frequency (%)
Coping strategies	Effective	51(29.1)	Trust	14(8.0)
			Creativity	12(6.9)
			Tendency	25(14.3)
	Ineffective	124(70.9)	Avoidance	41(23.4)
			Haplessness	68(38.9)
			Inhibition	15(8.6)
	Total			175(100.0)

The results in Table 2 showed that 51 (29.1%) of the subjects benefitted from effective coping strategies, and 124 (70.9%) applied ineffective coping strategies.

The results obtained from the comparison of the means using a two-sample independent t-test showed a statistically significant difference between the mean of the total relapse risk score and its subscales among the people with effective coping strategy and those with ineffective coping strategy ($P < .05$). This signified that the mean relapse score and its subscales among the people with ineffective coping strategies were significantly higher than those with effective coping strategies (Table 3).

A comparison of the mean of the methamphetamine relapse risk score showed that the mean of the total methamphetamine relapse risk score was significant only at two levels, including gender and withdrawal history, among the methamphetamine users ($P < .05$) (Table 4).

The study results on the linear relationship between the risk of recurrence of consumption based on the type of stress-coping style, with the help of simple linear regression, are presented in the table. It should be noted that the two-sided variable of the type of stress-coping style (effective and ineffective) after conversion to an artificial variable with the coding of ineffective decision-making style = 0 and effective decision-making style = 1 as the only predictor was introduced into the regression model. The results of this modeling showed that a variable of the stress-coping style type in the simple linear regression model was significant; also, the final model was in the form of a constant linear combination of regression and the type of stress-coping style with F = 47.28, which was significant at the $P < .0001$ level. The correlation between the rate of recurrence risk and the type of stress-coping style (R = 0.463) indicated a moderate and positive correlation between response and predictor variables. This means that increasing the predictor variable levels is associated with an increase in the amount of variable response to the recurrence risk. The adjusted coefficient of determination used in the regression model, with the value of Adjusted R Square = 0.210, also shows that the predictor variable of the type of stress-coping style is able to predict 21.0% of the changes in the variable of response to the risk of recurrence; also, about 79% of the remaining changes in the recurrence risk of the use are explained by other variables that are not present in the regression model. The value of the standardized beta coefficient also shows that changing a standard deviation in the variable of stress-coping style causes the changes of −0.463 in the variable risk of recurrence. This means that by going from a stress-coping style to an effective stress-coping style, the risk of recurrence in the

Table 3. Comparison of total methamphetamine relapse rate score and its subscales among the individuals who applied effective and ineffective coping strategies.

	Factor	Group	Kolmogorov–Smirnov (*p*-value)	ANOVA′ F test (*p*-value)	T-test (*p*-value)	Mean difference
Relapse	Sudden Relapse	Effective	1.11(0.17)	0.72	−7.04**	−2.70
		Ineffective	1.32(0.06)	(0.40)	(< 0.0001)	
	Short Delay Relapse	Effective	0.98(0.29)	2.26	−5.19**	−2.07
		Ineffective	1.22(0.053)	(0.13)	(< 0.0001)	
	Long Delay Relapse	Effective	0.89(0.41)	0.89	−3.91**	−1.52
		Ineffective	1.13(0.16)	(0.35)	(< 0.0001)	
	Total substance abuse relapse risk score	Effective	0.80(0.55)	0.77	−6.88**	−6.85
		Ineffective	1.24(0.09)	(0.38)	(< 0.0001)	

* is significant at the error level smaller than 5%.
** is significant at the error level smaller than 1%.

Table 4. Comparison of mean of total relapse risk score in terms of demographic characteristics and clinical history of methamphetamine abusers undergoing treatment.

Variable		Number	Abuse relapse risk score		Test statistics for the means (p-value)	Multiple comparison of means	
			Min–Max	Mean (st. deviation)		Groups	p-value
Age range	≤ 25	34	8–37	5.80(0.99)	$F_{(2,121)} = 1.07$	(1),(2)	0.357
	26–35	23	13–37	6.51(1.36)	(0.34)	(1),(3)	1.21
	> 35	67	13–36	5.45(0.67)		(2),(3)	0.85
Gender	Male	35	14–37	23.8(5.63)	$T_{(0.05,122)} = 2.45$	(1),(2)	0.016
	Female	89	8–37	21.01(5.65)	(0.016)		
Marital status	Single	67	8–37	21.63(5.97)	$F_{(2.121)} = 1.184$	(1),(2)	0.58
	Married	38	14–37	22.79(5.99)	(0.31)	(1),(3)	0.68
	Divorced	19	13–27	20.37(4.17)		(2),(3)	0.29
Education level	Single & lower	37	14–37	22.32(5.52)	$F_{(2.121)} = 1.04$	(1),(2)	0.45
	High school & diploma	51	11–37	20.90(5.58)	(0.36)	(1),(3)	0.99
	College	36	8–36	22.50(6.20)		(2),(3)	0.41
Occupation	Employed	30	11–36	20.77(6.12)	$F_{(2.121)} = 1.06$	(1),(2)	0.81
	Self-employed	50	13–37	21.60(5.24)	(0.35)	(1),(3)	0.33
	Non-employed	44	8–37	22.70(6.05)		(2),(3)	0.62
Economic condition	Low	32	15–37	23.31(5.84)	$F_{(2.121)} = 2.35$	(1),(2)	0.10
	Moderate	66	11–35	20.79(0.61)	(0.10)	(1),(3)	0.84
	Good	26	8–36	22.46(7.23)		(2),(3)	0.41
Trauma history	Yes	2	17–26	21.80(6.36)	$T_{(0.05,122)} = -0.07$	(1),(2)	0.94
	No	122	8–37	21.50(5.77)	(0.94)		
Mental disease history in the patient	Yes	24	13–27	22.08(4.48)	$T_{(0.05,122)} = 0.28$	(1),(2)	0.78
	No	100	8–37	21.72(6.03)	(0.78)		
Physical disease history in the patient	Yes	7	15–26	21.87(4.39)	$T_{(0.05,122)} = -0.64$	(1),(2)	0.52
	No	117	8–37	20.43(5.83)	(0.52)		
Type of the substance abused by the patient	Opium	50	8–37	21.90(6.03)	$F_{(2.121)} = 2.17$	(2),(3)	0.12
	Stimulant	24	17–37	24.04(5.12)	(0.09)	(2),(4)	0.16
	Delusional	12	13–27	19.58(3.68)		(1),(3)	0.58
	Multi-substance	38	11–35	20.92(5.98)		(1),(2)	0.43
Initial age of substance abuse	15–25	67	8–37	21.45(5.86)	$F_{(2.121)} = 0.28$	(1),(2)	0.73
	26–35	45	13–32	22.29(5.70)	(0.75)	(1),(3)	0.97
	> 35	12	14–36	21.83(5.72)		(2),(3)	0.97
Average dose of substance abuse in gram	1 ≤	84	8–37	21.88(5.64)	$F_{(2.121)} = 2.18$	(1),(2)	5.64
	1–2	16	13–24	19.31(3.63)	(0.12)	(1),(3)	3.63
	2>	24	13–37	23.13(6.90)		(2),(3)	6.90
Methamphetamine abuse history	Yes	120	8–37	21.75(5.81)	$T_{(0.05,122)} = -0.43$	(1),(2)	0.67
	No	4	18–27	23.0(4.24)	(0.67)		
Initial age of methamphetamine abuse	15–25	45	21–26	23.33(2.52)	$F_{(3.121)} = 1.04$	(1),(4)	0.89
	26–35	54	13–35	22.74(5.59)	(0.38)	(1),(3)	0.92
	36–45	22	14–36	21.05(6.05)		(2),(4)	0.39
	> 45	3	8–37	20.91(5.90)		(3),(4)	0.65
Initial age of methamphetamine abuse in gram	1 ≤	123	8–37	21.7(5.7)	$T_{(0.05,122)} = -1.80$	(1),(2)	0.075
	≥ 3	1	32	32.0(–)	(0.075)		
Average dose of substance abuse in gram	≤ 1	100	8–37	21.58(5.82)	$F_{(2.121)} = 0.37$	(1),(2)	0.70
	1–2	15	18–32	22.87(3.66)	(0.69)	(1),(3)	0.93
	2 <	9	13–36	22.33(7.98)		(2),(3)	0.97
Number of methamphetamine abuse by year	1 ≤	44	11–33	20.64(5.99)	$F_{(3.121)} = 1.40$	(1),(2)	0.36
	1–3	46	8–37	22.30(5.52)	(0.25)	(1),(3)	0.30
	> 3	34	13–37	22.59(5.68)		(2),(3)	0.97
Drug withdrawal history	Yes	70	8–37	20.84(5.60)	$T_{(0.05,122)} = -2.12$	(1),(2)	0.036
	No	54	14–37	23.02(5.76)	(0.036)		
History of addiction in the family	Yes	37	11–37	22.51(5.74)	$T_{(0.05,122)} = 0.912$	(1),(2)	0.36
	No	87	8–37	21.48(5.76)	(0.36)		
History of psychiatric disease in the family	Yes	5	11–37	24.40(10.83)	$T_{(0.05,122)} = 1.04$	(1),(2)	2.72
	No	119	8–37	21.68(5.50)	(0.302)		(0.302)
Total		157	8–37	21.79(5.75)			

subjects is reduced by 0.463 units, and vice versa. The value of T-statistics and its significance level also show the significant presence of the predictor factor of stress-coping style type in the regression model ($P < .0001$, T = −6.88). Therefore, a significant regression model and stress-coping style are determining factors in increasing the risk of recurrence in the subjects with methamphetamine use disorder (Table 5).

Discussion

The current study investigated stress-coping strategies and their relationship with the relapse rate among the people suffering from methamphetamine use disorder. Data analysis showed that ineffective coping strategies had the highest prevalence among methamphetamine misusers such that 51

(29.1%) usually applied effective coping strategies, and 124 (70.9%) applied ineffective coping strategies. This finding is consistent with other research findings. Lyness and Koehler (2014), in their research, reported that the majority of substance users apply ineffective stress-coping strategies. Investigating stress-coping strategies and substance misuse, Sinha (2008), in a study, sought to identify and predict substance use tendency and craving. The authors concluded that the type of stress-coping strategy predicts substance use in the future.

This finding indicates that effective coping strategies can protect people's health when encountering stressful incidents, and those lacking such privilege are further inclined to become addicted to a substance (Lyness & Koehler, 2014). Substance users facing psychic stresses and difficulties recourse to emotional reactions and ineffective stress-coping strategies than effective ones (Sudraba et al., 2015). For example, the research performed by Sudraba et al. (2015), shows that ineffective stress-coping strategies adopted by alcoholic are associated with an increased misuse of alcohol. People who use ineffective stress-coping strategies mainly attempt to control chaotic and distressing emotions and create an emotional equilibrium when encountering stressful conditions. Instead of immediate confrontation with stressful conditions and attempts to benefit from problem-solving, this group pursues an way to withstand the negative consequences of stressful and challenging situations, and substance abuse is the most accessible and common outlet to them (Wills et al., 2001).

In contrast, an effective coping strategy involves justified and reasonable evaluation of the problem and a deliberate attempt to change or eliminate the source of stress. The adoption of this type of behavior contributes to a reduction in psychological, behavioral, and emotional difficulties and an amelioration in substance use rate (Shafiei et al., 2016).

Another finding of the present study is that the total methamphetamine relapse risk score and its subscales are higher among the people adopting ineffective stress-coping strategies than those adopting effective ones. Consistent with this finding, Halim and Sabri (2013) examine the relationship between coping-stress strategies and relapse rates. The findings indicate that neurotic defense mechanisms and ineffective coping strategies are often used by substance abusers with a history of relapse (Molaei Yasavoli & Abdi, 2015). This finding illustrates that people susceptible to substance use recourse to ineffective stress-coping strategies when encountering stressful and challenging life situations, and this contributes to the intensification of lack of control over life and inclination to non-adaptive behaviors, such as substance use disorder and its relapse (McNulty Eitle & Eitle, 2014; Sinha, 2008).

The current research also reveals that the relapse rate in women is higher than men. Brown et al. (2015) report, in their research, that women have higher odds of relapse if social support is not sufficient. In explaining this finding, it can be stated that female substance users in Iran receive little attention from health-care providers, researchers, and the general public. Works on therapeutic issues and strategies in Iran often focus on men, although the same issue may affect the female relapse rate in the country. Further, emotional factors are a determining factor for substance abuse among women. Women may become more vulnerable to

Table 5. Results of predicting recurrence rate based on the type of stress-coping style in the subjects with methamphetamine use disorders.

Dependent variable	Model	Independent variable	Model summary R (Adjusted R Square)	ANOVA F (Sig)	Coefficients				Collinearity diagnostics		
					Beta	T (Sig)	Partial correlations	Tolerance (VIF)	Dimension	Eigen value	Condition index
TRQ	1	(Constant)	0.463 (0.210)	47.28 (<0.0001)	–	40.52 (<0.0001)	–	–	1	1.54	1.000
		stress-coping strategies			−0.463	−6.88 (<0.0001)	−0.463	1.0(1.0)	2	0.460	1.829

y_i = Constant − 0.463 (**stress-coping strategies**)

substance abuse due to social pressures and emotional problems (Brown et al., 2015; Greenfield et al., 2010).

Further finding in this research is that abuse withdrawal history is effective on relapse rates. One of the issues that have complicated the addiction is the history of past relapses as many substance abusers repeat the use after they leave or are released from prison or rehabilitation centers. It seems that the recollection and memories of substance abuse provoke the users to repeat inappropriate habitual substance use (Binswanger et al., 2012).

Conclusion

Overall, it can be concluded that due to the consequences of methamphetamine use, such as changes in lifestyle, negligence in individual health, and occurrence of family problems, it is of necessity to study the substance use phenomenon and the factors affecting its relapse. The present study findings highlight the significance of stress-coping strategies among methamphetamine users, besides the association between such strategies and relapse rates.

Given the importance of the relationship between factors, including recurrence, positive and negative emotions, and stress-coping styles, affecting treatment results and strongly predicting failure and success in treatment, it is necessary to use non-pharmacological interventions, such as maintenance drug therapy to reduce recurrence and increase the maintenance of the patients during the period of drug abstinence in therapeutic programs. According to these findings, therapists who are communicating with these subjects should pay attention to their coping styles to reduce the recurrence rate and improve their coping styles by holding individual and group therapy sessions, as well as the medical and psychological treatments. Also, in training classes, therapists should explain the subjects under treatment that effective stress management can help them better control their risky behaviors, such as drug abuse. On the other hand, therapists can use specialized therapies, such as dialectical therapy, to influence the management of stress and excitement in these people, and they can reduce the recurrence rate in the subjects with methamphetamine use disorders with this treatment.

Similar to other research, the present study suffers from some limitations and disadvantages, including lack of complete control over disturbing variables, such as personal, social, and economic characteristics in the area of methamphetamine use disorder. Furthermore, limitations include the lack of an objective measure of methamphetamine use, as well as the study of the impact of coping strategies during treatment. Future research is suggested to conduct longitudinal surveys on different substance user groups and take advantage of other research tools, such as interviews.

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