

Original Article



Factors Influencing Substance Use Relapse in People Referring to Addiction Recovery Centers in Jiroft, Kerman

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Abstract

Background: Relapse is prevalent following substance abuse treatment. This study aimed to estimate and identify the factors that contribute to substance use relapse among addicts in the southern region of Kerman.

Methods: A total of 390 individuals seeking treatment for addiction in 2021 were selected using a multi-stage sampling method. Data were collected through a researcher-developed questionnaire, which included demographic information and the health action process approach (HAPA) constructs regarding relapse prevention. Descriptive statistics, including frequency distribution tables, means, and standard deviations, were used to summarize the data. The correlation between HAPA constructs was assessed using Pearson's correlation coefficient. The Kruskal-Wallis test and structural equation modeling (SEM) with AMOS 24 software were utilized to analyze the data.

Results: The participants had a mean age of 33.39 years. The results (SEM) showed that there was a positive and significant relationship between action self-efficacy, behavioral intention, action planning, and the frequency of substance use relapse. The constructs of coping self-efficacy, recovery self-efficacy, action planning, and coping planning accounted for 18% of the variance in substance use relapse frequency.

Conclusion: Motivational and voluntary phase constructs have a significant role in substance use relapse. Additionally, HAPA helps identify the factors contributing to relapse.

Keywords: Relapse, Substance use, Health action process approach



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Introduction

Addiction is defined as a chronic and relapsing disorder (1). Iran, similar to many countries, has the largest number of substance users and is struggling with this problem (2). Cultural harms, such as theft, murder, self-immolation, unemployment, child abuse, increasing separations, and academic failure of students, are among the consequences of substance use (3). The high rate of relapsing after quitting a substance is one of the challenges of behavioral science experts, in which the addicted person has a strong desire to experience substance use again after quitting (4). Previous studies have shown that in Iran, 20%-90% of substance users, getting treatment, have a relapse (5). Some factors, such as return to previous places, low family awareness, and connection with addicted friends, can be effective in substance use relapse (6). In previous studies, factors such as weakness in coping skills, low self-efficacy, religious beliefs, and positive attitudes toward drugs have been reported to be effective in substance use relapse (7). In general, substance users suffer from emotional and

communication problems due to a lack of familiarity with life skills, coping skills, communication skills, and timely decision-making and problem-solving (8). Although studies have been performed on substance use relapse, a limited body of research has focused on the elements affecting substance use relapse (9).

Research studies have shown that understanding influencing factors better and focusing on them based on the theoretical framework will be more effective and usable (10). One of the most influential theories for understanding the factors affecting behavior as well as behavior change is the health action process approach (HAPA) (11). HAPA, proposed by Schwartz based on Bandura's social cognitive theory (12), is used in predicting and modifying health behavior (13). Based on the HAPA assumption, behavior is formed and continues in two motivational and voluntary phases (14). HAPA is utilized to evaluate and predict health behavior (15,16). The schematic shape of the model is illustrated in [Figure 1](#).

Identifying factors affecting behavior is a vital and



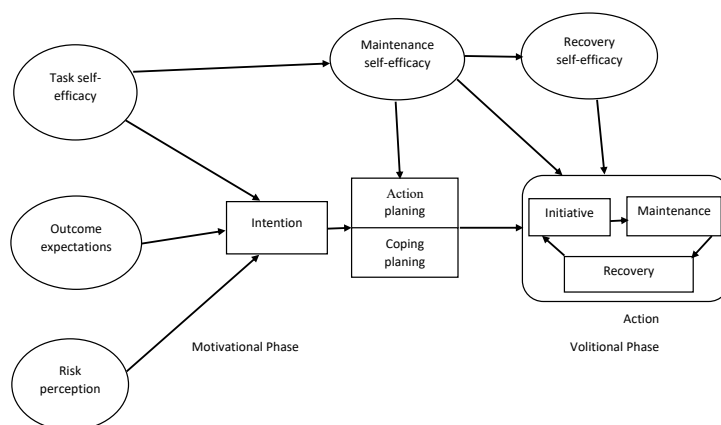


Figure 1. Schematic shape of the Health Action Process Approach. Source: Okati Aliabad et al (17). (CC BY 3.0 DEED license)

essential step before designing and conducting educational interventions (14). Therefore, identifying factors affecting relapse to substance use in those who refer to addiction recovery centers is an important step in evaluating behavior and providing effective counseling in these centers to prevent substance use relapse. Because of high rates of substance use relapse after quitting drugs and a lack of study in this field in Iran and the world, to the best of our knowledge, this study sought to identify the most vital and effective changeable factors of substance use relapse based on HAPA and to use them in educational interventions.

Materials and Methods

Study Design and Participants

This cross-sectional study was conducted on a total of 390 addicted people from Jiroft, Kerman, Iran, in 2021 using multi-stage cluster sampling. To select the participants, after obtaining the necessary permits for the project, 3 out of 8 addiction recovery centers were randomly selected, and the research data were collected within a period of five months.

The project began on August 4, 2021, during the Corona epidemic. At this time, according to the latest changes in the color map of the country's cities, the southern region of Kerman was in yellow status. Individuals were admitted to addiction treatment centers using standard treatment guidelines and protocols set by the Food and Drug Organization.

The inclusion criteria included informed and voluntary consent and a history of relapse, while the exclusion criteria were incomplete completion of the questionnaire and illiteracy.

Tools and Data Collection Process

After distinguishing the volunteers, the objectives of the research were explained, and after explaining about the essentials, the questionnaires were filled out by the candidates.

The data collection tool included the following sections:

(a) Demographic information, including age, marital status, level of education, and occupation

(b) Questionnaire for measuring HAPA constructs (Table 1)

(c) Substance use relapse scale consisting of 1 item. The frequency of substance use relapse in each person was determined based on this item. The range of responses based on scoring was once (a score of 4), twice (3), three times (2), four times (1), and five and more (0). One of the items on this scale was "How many times have you relapsed after quitting?"

The face validity of the HAPA structure questionnaire was confirmed by obtaining the opinions of 6 substance users referred to a rehabilitation center. The content validity of the questionnaire was also confirmed by calculating content validity indicators (content validity ratio [CVR] and content validity index [CVI]) based on the opinions of 7 experts (4 health education experts and 3 psychologists). To determine CVR, experts were asked to rate each item on a 3-point Likert-type scale, including necessary (3 points), useful but not necessary (2 points), and not necessary (1 point). The results were compared to the Lawshe table. According to this table, the minimum acceptable average score is 0.75. All questions had a CVR above 0.75.

To assess CVI, the item CVI (I-CVI) for each question uses four options, including unfavorable (a score of 1), somewhat favorable (2), favorable (3), and completely favorable (4). The questions obtaining 75% or less of the I-CVI score were removed from the analysis. After making the necessary corrections, the questionnaire was given to the relevant experts again, and I-CVI was found to be above 0.8 in all the questions.

After confirming the face validity and content validity of the questionnaire, Cronbach's alpha and the test-retest coefficient after 2 weeks were used to measure reliability and internal consistency in a pilot sample of 30 people. Reliability and internal consistency scores were reported for all scales, including risk perception ($\alpha=0.76$, ICC=0.78), outcome expectancy ($\alpha=0.78$, ICC=0.95), action self-efficacy (ICC=0.73, $\alpha=0.93$), behavioral intention (ICC=0.87, $\alpha=0.97$), action plan (ICC=0.67, $\alpha=0.97$), coping plan ($\alpha=0.97$, ICC=0.67), coping self-efficacy ($\alpha=0.68$, ICC=0.77), and recovery self-efficacy ($\alpha=0.93$, ICC=0.90).

Table 1. The Method of Measuring HAPA Constructs

Scale	Items' Number	Possible Responses	Possible Score	Sample Item	Psychometric Properties
Risk perception	5	0 (Completely false) to 3 (Completely true)	0-15	If I use drugs again after recovery, it will be very difficult for me to quit.	$\alpha=0.76$ ICC=0.79
Task self-efficacy	6	0 (Completely false) to 3 (Completely true)	0-18	I can fight with tempting thoughts to prevent substance use relapse.	$\alpha=0.78$ ICC=0.95
Outcome expectancy	5	0 (Completely false) to 3 (Completely true)	0-15	If I can overcome substance use relapse, I will feel strong.	$\alpha=0.93$ ICC=0.73
Behavioral intention	6	0 (Completely false) to 3 (Completely true)	0-18	I am going to avoid hanging out with my old friends to prevent relapse.	$\alpha=0.97$ ICC=0.87
Action planning	4	0 (Completely false) to 3 (Completely true)	0-12	I currently have a plan to have healthy fun for myself when I am tempted to use drugs.	ICC=0.67 $\alpha=0.97$
Coping planning	5	0 (Completely false) to 3 (Completely true)	0-15	I have a detailed plan for the difficult situation of tempting thoughts of substance use relapse.	ICC=0.67 $\alpha=0.97$
Coping self-efficacy	3	0 (Completely false) to 3 (Completely true)	0-9	I am able to continue preventive measures in substance use relapse, even if it is a mental concern to me.	ICC=0.77 $\alpha=0.68$,
Recovery self-efficacy	3	0 (Completely false) to 3 (Completely true)	0-9	Even if I fail in the program of preventive measures to prevent substance use relapse, I will be able to renovate doing them again.	ICC=0.90 $\alpha=0.93$,

Note. HAPA: Health action process approach; ICC: Intraclass correlation.

Ethical Considerations

To comply with research ethics, first, the purpose of the study was explained to the selected people, and their consent was obtained before entering the study. Additionally, the research team kept participant information confidential.

Statistical Analysis

Descriptive statistical indicators, such as frequency distribution tables, mean values, and standard deviations, were used to schematically describe the data. Quantitative study variables were checked for normality by the Kolmogorov-Smirnov test ($P>0.05$).

Person correlation coefficients were employed to determine correlations between HAPA constructs. Structural equation modeling (SEM) was utilized to identify the most important factors associated with substance abuse relapse using AMOS 24 software. The goodness of fit of the model was measured using the root mean square error of approximation (RMSEA), normed fit index (NFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and minimum difference function by degrees of freedom. (CMIN/DF). Acceptable RMSEA, CFI, NFI, TLI, and optimal CMIN/DF levels are considered to be less than 0.08, greater than 0.9, greater than 0.9, greater than 0.9, and less than 3, respectively.

Results

Of the 390 selected people, 77.4% (302 people) were in the age group of 20-40 years, 68.7% (268 people) were single, 54.4% (145 people) had a diploma, and 42.8% (167 people) were farmers (Table 2). The means and standard deviations of the HAPA constructs are provided in Table 2. The mean score of the constructs was apparently higher in the motivational phase compared to the voluntary phase (Table 3). The mean frequency of substance use relapse was 2.31, which ranged from 4 to 0. There was a significant relationship between action self-efficacy ($P=0.01$, $r=0.26$), behavioral intention ($P=0.01$, $r=0.24$), action planning

Table 2. Demographic Information of Selected People (N=390)

Variable	Frequency	Percent	
Age	Under 20	4	1.02
	20-40	302	77.43
	40-60	84	21.55
Marital status	Single	268	68.72
	Married	122	31.28
Education level	Elementary	9	2.30
	Junior high school	60	15.38
	Diploma	212	54.35
	Associate degree	98	25.12
	Bachelor's degree and higher	11	2.85
Occupation	Unemployed	63	16.15
	Self-employed	158	40.51
	Farmer	167	42.82
	Employee	2	.52

Table 3. Means and Standard Deviations of the HAPA Constructs in Relation to Substance Use Relapse

Construct	Means	Standard Deviations
Risk perception	14.44	1.52
Outcome expectations	14.31	1.86
Action self-efficacy	12.64	2.95
Behavioral intention	12.45	2.87
Action planning	6.85	3.34
Coping planning	6.77	3.13
Coping self-efficacy	3.38	1.70
Recovery self-efficacy	2.69	1.90

Note. HAPA: Health action process approach.

($P=0.01$, $r=0.29$), coping planning ($P=0.01$, $r=0.28$), coping self-efficacy ($P=0.01$, $r=0.36$), and recovery self-efficacy ($P=0.01$, $r=0.25$) with the frequency of substance use relapse (Table 4). Regression coefficients obtained from SEM showed the effect of action self-efficacy on

behavioral intention (Beta=0.89), behavioral intention on action planning (Beta=0.45), action planning on relapse frequency (Beta=0.29), coping planning on relapse frequency (Beta=0.28), recovery self-efficacy on relapse frequency (Beta=0.36), and finally coping self-efficacy on relapse frequency (Beta=0.39). The model goodness of fit indices (RMSEA=0.08, CFI=0.90, NFI=0.90, CMIN/DF=1.55, TLI=0.97) were calculated, all of which were acceptable (Table 5, Figure 2).

Discussion

The current investigation aimed to identify predictors of substance abuse relapse among addicts in Kerman South using the HAPA. The findings confirmed several relationships and hypotheses of HAPA, which is consistent with the results of previous studies (18,19).

The study findings showed that task self-efficacy predicted 81% of the variance in substance use relapse, while action planning, coping planning, maintenance self-efficacy, and recovery self-efficacy could predict 18% of the variance in substance use relapse. Strong correlation coefficients were observed between substance use relapse

and action self-efficacy, behavioral intentions, action plans, coping plans, coping self-efficacy, and recovery self-efficacy. Similar findings were reported by Rouhani et al, demonstrating significant correlations between behavioral intentions and action self-efficacy, planning, and recovery self-efficacy during physical activity (20).

SEM analysis revealed direct and significant relationships between action self-efficacy, behavioral intentions, action plans, coping plans, coping self-efficacy, recovery self-efficacy, and substance use relapse. The results of previous studies on various health behaviors are in line with those of other studies (19, 21).

The significant path coefficient and the positive relationship between action self-efficacy and behavioral intention was one of the important results of this research. In this study, action self-efficacy predicted 81% of behavioral intention changes in preventing substance use relapse. These results are consistent with those of research conducted on other health behaviors (18). In fact, belief in the potency to do something can expedite the intention to do a behavior. Furthermore, people with action self-efficacy focus more on failure and tend to postpone

Table 4. Pearson Correlation Coefficients Between the HAPA Constructs Related to Addiction Relapse

Variable	Risk Perception	Outcome Expectations	Action Self-efficacy	Behavioral Intention	Action Planning	Coping Planning	Coping Self-efficacy	Recovery Self-efficacy	Substance Use Relapse
Risk perception	1								
Outcome expectation	0.80**	1							
Action self-efficacy	0.05	0.03	1						
Behavioral intention	0.01	0.08	0.89**	1					
Action planning	0.13	0.13	0.47**	0.43**	1				
Coping planning	0.16**	0.20**	0.44**	0.37**	0.62**	1			
Coping self-efficacy	0.10*	0.14	0.27**	0.14**	0.48**	0.66**	1		
Recovery self-efficacy	0.13**	0.16**	0.32**	0.23**	0.39**	0.49**	0.70**	1	
Substance use relapse	0.06	0.07	0.26**	0.24**	0.35**	0.23**	0.42**	0.35**	1

Note. HAPA: Health action process approach. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

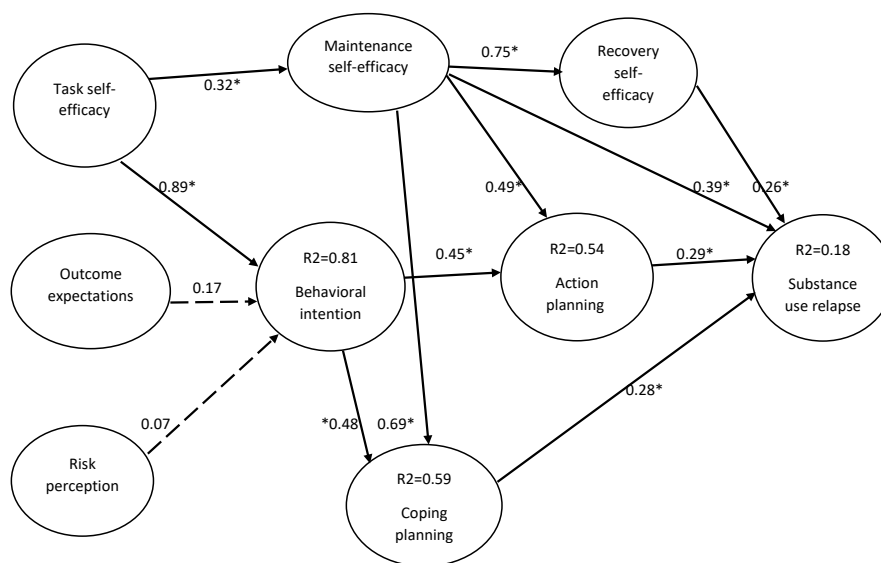


Figure 2. Path Coefficients Resulting From SEM Between the HAPA Constructs and Substance Use Relapse. Note. HAPA: Health action process approach; SEM: Structural equation modeling

Table 5. Measurement Model-fit Index Results

Indices	The Acceptable Level	Results
RMSEA	<0.08	0.08
NFI	>0.9	0.9
CFA	>0.9	0.9
TLI	>0.9	0.97
CMIN/DF	<3	1.55

Note. RMSEA: Root mean square error of approximation; NFI: Normed fit index; CFI: Comparative fit index; TLI: Tucker-Lewis index; CMIN/DF: Minimum difference function by degrees of freedom.

behavior. In this study, people who had more action self-efficacy probably had more intentions to prevent relapse.

In the present study, outcome expectations did not predict behavioral intention. Previous studies have shown that by clarifying the outcome of health behaviors, an individual can have a stronger intention to perform those behaviors (21). The distinction between the results of this study and those of other studies could be due to the fact that outcome expectations in this behavior alone do not have enough weight to affect people's intention to prevent relapse.

The relationship between risk perception and behavioral intention was not significant. These results conform to the findings of some previous studies (18,22). However, some studies have shown that perceived risk is an important factor in accepting a variety of behaviors (19,23). The results of this study contradict those of other studies. Probably, risk perception in this behavior is not an important factor in influencing people's intention to prevent relapse.

In this study, the path coefficient was positive and significant between the planning construct (action and coping) and substance use relapse. Planning with self-regulation can predict behavior. (24). People face obstacles to preventing substance use relapse. Therefore, it is highly important to have a plan to remove the obstacles.

In the current study, the volitional phase constructs predicted 18% of the changes in the frequency of substance use relapse.

Of the reasons for this fact are the high level of recovery and coping self-efficacy and affecting behavior through the construct of planning (15,24,25). In this study, those who had planned to prevent relapse probably used recovery and coping self-efficacy to prevent relapse.

The usefulness of HAPA in explaining the factors affecting relapse can be recommended in the design of interventions in order to prevent substance use relapse.

In addition to drug therapy, cognitive-behavioral therapy is performed for people in addiction treatment camps. Cognitive-behavioral therapy is one of the most accepted forms of psychological therapy today. Identifying factors contributing to relapse can be useful in the cognitive and behavioral treatment of people who are referred to addiction treatment camps.

In this study, all the participants in the research were men, and the relationship between substance use

relapse and gender was not investigated. It is suggested that psychological variables affecting relapse should be compared between women and men, and the effect of gender on drug relapse should be investigated in future studies.

Our study had some weaknesses. First, this was a descriptive and analytical study. Therefore, it is suggested that longitudinal studies be conducted to analyze and survey the cause and effect relationships of the constructs. Second, the self-report method was used for data collection, which is related to predisposition despite the accuracy of the data.

Conclusion

HAPA can help identify the factors contributing to relapse. In the present study, the significant importance of some motivational and voluntary phase constructs, compared to other constructs, can be used to provide effective counseling in preventing substance use relapse.

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Authors' Contribution

Conceptualization: Reza Pournarani.

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Formal analysis: Akbar Mehralizadeh.

Funding acquisition: Reza Faryabi.

Investigation: Reza Pournarani.

Methodology: Reza Faryabi.

Project administration: Reza Pournarani.

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Software: Akbar Mehralizadeh.

Supervision: Reza Faryabi.

Validation: Reza Faryabi.

Visualization: Reza Pournarani.

Writing—original draft: Nooshin Yashany.

Writing—review & editing: Nooshin Yashany.

Competing Interests

The authors declare that there is no conflict of interests.

Ethical Approval

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