The Interplay of Cognitive Distortions, Impulsive Sensation Seeking, and Relapse Probability among Clients with Substance Use Disorders

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Abstract
Background: Substance use disorders (SUDs) are characterized by chronic and recurrent patterns of substance abuse, often marked by high rates of relapse despite treatment. A substantial body of research has focused on identifying factors that contribute to relapse, with cognitive distortions emerging as a key predictor. Additionally, impulsive sensation seeking has been implicated in the etiology and maintenance of SUDs. While previous research has examined these constructs independently, their combined influence on relapse remains understudied. This study aims to investigate the predictive effects of cognitive distortions and impulsive sensation seeking on relapse probability among clients with SUDs. By identifying these factors, this research seeks to contribute to the development of more effective relapse prevention interventions. **Aim:** This study investigated the predictive effects of cognitive distortions and Impulsive Sensation Seeking on relapse probability among clients with SUDs. **Subjects and Method**: **Design:** A descriptive correlational analytical design was used. **Subjects:** A convenience sample of 230 clients with SUDs who met the selection criteria. **Tools**: Four tools were used for data collection: socio-demographic and clinical data, the cognitive distortion scale (CDS), impulse sensation seeking (ImpSS), and the AWARE Questionnaire (The Advance Warning of Relapse). **Results:** Results indicated a high prevalence of cognitive distortions, impulsive sensation seeking, and the risk of relapse within the sample. Furthermore, there are significant positive correlations between cognitive distortions and both impulsive sensation seeking and relapse probability. Similarly, impulsive sensation seeking and relapse probability were significantly positively correlated. Collectively, the present study identified cognitive distortions and impulsive sensation seeking as significant predictors of relapse probability. **Conclusion and Recommendation:** The current study offers significant implications for clinical practice and prevention efforts. By identifying cognitive distortions as a primary driver of relapse, clinicians can develop targeted interventions to address these maladaptive thought patterns. Additionally, incorporating strategies to reduce impulsive sensation seeking may further enhance relapse prevention efforts.
Keywords: Cognitive Distortions, Impulsive Sensation Seeking, Relapse Probability, Substance Use Disorders.

Introduction

Over 250 million people take drugs globally, and 0.6% of those individuals have substance use disorders (SUDs) (**UNODC, 2017**). SUDs are widespread and enduring health issues that affect people in both developed and developing nations (**Yang et al., 2017**). The United Nations Office on Drugs and Crime's 2021 World Drug Report revealed that 36 million people suffer from drug use disorders, while 275 million used drugs globally in the previous year (**UNODC, 2021**).

Unfortunately, substance use is a significant issue in Egypt, causing more deaths, illnesses, and disabilities than any other preventable health condition (**Hamdi et al., 2016**). The Fund for Drug Control and Treatment of Addiction reports that 10.4% of Egyptian youth use drugs, a rate over twice the global average (**Egypt Today, 2019**). The data emphasizes the urgent need for comprehensive prevention and treatment strategies to tackle the widespread issue of substance use disorders on national and international levels.

SUDs are characterized by compulsive drug seeking, persistent use despite adverse consequences, and enduring neurobiological alterations (**Levis et al., 2022**). Unlike acute conditions, SUDs are predominantly chronic, often marked by multiple relapses (**Moe et al., 2022**). Relapse is described as going back to harmful substances after receiving treatment (**Sliedrecht et al., 2019**). According to **Swanepoel et al., (2016)**, it describes a client's failure to alter substance use behaviors, decision to resume substance use after a prolonged time of sobriety beyond the detoxification period, or any setback in their attempt to alter or modify any target behavior. After receiving treatment, about 50% of the patients with SUDs relapsed (**Moradinazar et al., 2020**). Other studies have documented that the relapse rates following treatments are high (**Hasin et al., 2013; Hubbard et al., 2001**). Furthermore, research and clinical practices demonstrate that most patients cannot simply stop using drugs for a short period of time and be cured (**Fleury et al., 2016**). Clients typically require long-term or repeated episodes of care to achieve the goal of sustained abstinence and recovery. In this respect, recent studies have shown that substance use after successful treatment and rehabilitation is the biggest problem that requires effective preventive measures, as the rate of entry into treatment and the likelihood of successfully completing treatment is low (**Moradinazar et al., 2020; Sliedrecht et al., 2019**). A large number of researchers worldwide are concentrating their efforts on the study of relapse to identify factors that counteract the rehabilitation goal (**Amat et al., 2020; Afkar et al., 2017; Melemis, 2015**). Cognitive distortion is among these contributing causes, which denotes negative or irrational ways of thinking (**Suganya et al., 2023**).

Cognitive distortions are irrational, inaccurate thinking patterns that can lead to various mental health issues (**Suganya et al., 2023**). Beck's cognitive model posits that these distortions underlie psychopathology, influencing individuals' perceptions of themselves, the world, and the future (**Beck, 1995**). It has been

believed that ingrained negative thought patterns result in unpleasant feelings as well as unwanted or harmful behaviors **(Beck, 1979)**. Cognitive distortions are assumed to have a part in all compulsive behavior patterns, mental health concerns, and addictions **(Suganya et al., 2023)**.

Cognitive distortions related to substance use disorder have been shown to be related to lack of skill in coping with problems or unpleasant feelings, low tolerance for frustration, sensation-seeking, difficulties tolerating boredom, diminished future time perspective, catastrophizing, blame, punishment, personalization, and all-or-nothing thinking **(Özparlak & Karakaya, 2022; Suganya et al., 2023)**. Therefore, to address substance use disorders, it is crucial to identify and challenge cognitive distortions, replacing them with more realistic and positive thoughts (**Friedman & Hershy, 2023)**.

Unfortunately, it has been suggested that cognitive distortions are associated with impulsive behavior and impulsivity-related psychopathologies (**Suganya et al., 2023)**. Cognitive distortions affect individuals' interpretation of events and decision-making, taking into account the long-term consequences of their behavior. In relation to impulsivity, some cognitive distortions might impact the delay of gratification, such as short-term thinking or confusing needs and wants, while others might impact impulsive decision-making. Several cognitive distortions have been identified as contributing to people's impulsive behaviors, such as negative evaluations of themselves, the world, and the future; the tendency to overgeneralize, personalize,

and catastrophize; and selective negative interpretation of stressful events and the illusion of control, which have been common among SUDs`s patients (**Moustafa, 2020)**.

Impulsivity, characterized by a predisposition towards rapid, unplanned actions without considering potential negative consequences (Moeller et al., 2001), is a well-established risk factor for substance use disorders (SUDs) (**Kozak et al., 2019; Wit, 2009; Verdejo-García et al., 2008)**. This construct is multifaceted, encompassing both trait-like and state-dependent components, and is influenced by genetic and environmental factors (e.g., age, gender) (**Moeller et al., 2001**). Chronic substance use has been shown to further exacerbate impulsivity by impairing inhibitory control and cognitive function. Consequently, impairments in inhibitory and impulsive control are widely regarded as both antecedent vulnerabilities contributing to the development and maintenance of SUDs, as well as harmful consequences arising from persistent impairments (**Kozak et al., 2019)**.

A closely related construct, impulsive sensation seeking (ISS), encompasses aspects of impulsivity, is defined by little to no reflection, forethought, or consideration of the consequences, and is often prematurely elicited (**Evenden, 1999)**. Sensation seeking is the inclination and readiness to look for, and take risks for, unusual and intense feelings and experiences (**Zuckerman, 2009)**. Sensation-seeking as a personality trait is the search for novel, distinctive, complex, and intense sensations and experiences and

the tendency for behavior that jeopardizes physical health as well as social, legal, and financial circumstances to achieve the satisfaction of such experiences (**Zuckerman, 1994**).

Both impulsivity and sensation seeking are associated with increased risk for substance use and related problems (**Rosenbloom, 2003; Whiteside & Lynam, 2001**). While these constructs have been implicated in the onset and progression of addictive behaviors, their specific contribution to relapse remains unclear. Existing evidence suggests that impulsivity may represent an underlying vulnerability to SUDs, or it may be a consequence of chronic substance use (**Jentsch et al., 2015; Koob & Volkow, 2016; Noël et al., 2013; Reyes-Huerta et al., 2018; Sliedrecht et al., 2019; Uhl et al., 2019; Wit, 2009**).

Substance misuse poses a significant global health and socioeconomic burden. High relapse rates following treatment underscore the need for effective prevention and intervention strategies (**Andersson et al., 2019; Rong et al., 2016; Sliedrecht et al., 2022**). While research has identified several predictors of substance use disorders (**Gocet Tekin et al., 2023**), the interplay between cognitive distortions and impulsivity in predicting relapse remains understudied. This study aims to address this gap by investigating the predictive effects of cognitive distortions and impulsive sensation seeking on relapse probability among individuals with substance use disorders. By elucidating these factors, this research seeks to inform the development of targeted prevention and treatment programs.

The study aims to:

-Assess the levels of cognitive distortions, impulsive sensation seeking, and relapse probability among clients with SUDs.

- Investigate the relationship between cognitive distortions, impulsive sensation seeking, and relapse probability among clients with substance use disorders.

- Investigate the predictive effects of cognitive distortions and impulsive sensation seeking on relapse probability among clients with substance use disorders.

Research questions:

-Is there a relationship between cognitive distortions, impulsive sensation seeking, and relapse probability among clients with substance use disorders?

-What are predictive effects of cognitive distortions and impulsive sensation seeking on relapse probability among clients with substance use disorders?

Subjects and Method

Research design:

A descriptive correlational research design was utilized in this study.

Setting:

This study was conducted in the outpatient clinic of El-Maamora Hospital for Psychiatric Medicine in Alexandria, which is affiliated with the Ministry of Health and Population. The outpatient clinic operates twice weekly for male substance users (Mondays and Tuesdays) from 9:00 am to 12:00 pm, and once weekly for female substance users (Sundays) during the same hours. The outpatient clinic offers assessment, diagnosis, dispensing prescribed medication, and if required, referral to the hospitals inpatient department. Additionally, the hospital

provides a hotline service for male clients with substance use disorders daily from 1:00 to 3:00 pm, and for female clients only on Sundays.

Subjects:

Participants: sample size calculation and sampling technique

The researchers used a convenience sample of 230 clients with SUDs to conduct the present study. According to hospital records, patients with SUDs who are attending the outpatient clinic over the last three months was 564 (El Maamoura official statistics, 2023). The Epi info program was used to estimate the sample size using the following parameters: population size equal 564, expected frequency equal 50%. acceptable error 5% and confidence coefficient 95%. The program revealed a minimal sample size to be 229 patients. The sample size comprised 230 outpatients with substance use disorders recruited in this stud. Accordingly, the study was conducted on participants who met inclusion criteria including:

- Male Substance users to minimize the confounding factors due to sex differences.
- No comorbidity with other cognitive or psychiatric disorders.

I- Tools:

Data was collected by using four tools:

Tool I: Socio-demographic and Clinical data

This tool was developed by the researcher based on the review of the relevant literature which consists of **Socio-demographic profile** such as client's age, residence, marital status, employment status, level of education, and living conditions. Also, **Clinical data** such as the reason for using the substance, previous abstinence trials, attending out-of-hospital rehabilitation meetings, number of relapses, family member using the substance, and availability of support for abstinence.

Tool II: Cognitive distortion scale (CDS)

Cognitive distortions scale (CDS), developed by Briere (2000), consist of 40 questions that represent non-functional cognitive thoughts and are categorized into 5 sub-dimensions. The scale`s sub dimensions include Self-Criticism (SC), Self-Blame (SB), helplessness (HLP), hopelessness (HoP), and Preoccupation with Danger (PWD). Self-Criticism (SC) is a low self-esteem and self-devaluation where individuals tend to criticize or devalue themselves, leading to feeling of dissatisfaction and low self-perception. The Self-Blame (SB) dimension is the extent to which the respondent holds themselves responsible for unfavorable, uncontrollable events in their lives, including those that are beyond their control. The sub-dimension of helplessness (HLP) emphasizes perception of being unable to control significant facets of one's life with a sense of ineffectiveness to change the course and outcome of events, while Hopelessness sub-dimension involves pessimistic and negative evaluations about the future, and Preoccupation With Danger (PWD) measure the likelihood to see the world, particularly the social realm, as a dangerous so that one will face negative experiences and potential harm from others. The scale has eight items in each dimension; each item was rated on a 5-point grading system, ranging from 1 (never) to 5 (very often). So, the range score for each

subdimension will be 8-40. While the total score for cognitive distortion ranges from 40 to 200, scores <135 indicate low cognitive distortion, scores ≥135 reflect high cognitive distortion. This scale's reliability has been thoroughly evaluated by Cronbach's alpha coefficient of 0.94.

Tool III: Impulsive Sensation Seeking (ImpSS)

Impulsive Sensation Seeking (ImpSS) scale is a 40-item self-report questionnaire measuring individual differences in optimal stimulation and arousal. It comprises four subscales, each with 10 items, assessing four dimensions related to impulsivity and sensation seeking: Thrill and adventure seeking (TAS), Experience seeking (ES), Disinhibition (DIS), and Boredom susceptibility (BS). TAS scale items reflect a desire to engage in hazardous and innovative physical activities. The ES scale items indicate a desire for unique and spontaneous experiences through travel, music, art, and non-conformity with others who wish to do the same. The DIS scale items indicate the necessity for uninhibited social activities, while the BS scale items express distaste for routine, predictability, and repetition (Zuckerman, 1994). Participants typically rate their level of agreement or disagreement with each statement using a Likert-type scale that ranges from "strongly disagree" (1) to "strongly agree" (5). The total score of Impulsive Sensation Seeking scale ranges from 40 to 200, with higher scores indicating a greater inclination toward impulsive sensation-seeking behavior. Scores <147 indicate a low level of Impulsive Sensation Seeking tendencies;

scores ≥147 signify a high level of Impulsive Sensation Seeking tendencies. In the current study ImpSS scale demonstrated high reliability, as indicated by Cronbach's alpha coefficient of 0.95.

Tool IV: AWARE Questionnaire (The Advance Warning of Relapse)

AWARE Questionnaire was designed by **(Gorski & Miller, (1982)** to assess probability of relapse for alcohol use or drug dependence. The version revised by **(Miller & Harris (2000)** used in this study. It consists of 28 items rated on a 7-point Likert scale from 1 (never) to 7 (always), with 5 items (8, 14, 20, 24, and 26) are being reversed. The total score range is 28-196. The higher the score, the more warning signs of relapse are being reported by the client. The reliability of the questionnaire was measured by its developers using Cronbach's alpha coefficient (a = 0.92) and a test-retest reliability (r=0.80) and its validity was reported as 0.80 (Kelly et al., 2011). The current study revealed that AWARE Questionnaire showed good internal consistency explained the Cronbach's alpha coefficient value of 0.91.

The percentage of relapse probability was expected as the following:

AWAR SCORE	Probability of relapse the next 2 months
28- 55	11%
56-69	21%
70-83	24%
84-97	25%
98-111	28%
112-125	37%
126-168	43%
169-196	53%

Ethical consideration

The faculty of nursing authorities at Damanhour University in Egypt granted an official permission to execute this study. Permission to carry the study was obtained from the director El-Maamora Hospital for Psychiatric Medicine. Oral and written consent was obtained from each participant after explain the objective of the study. In addition, they were informed they were free to leave the study anytime they wished. As well, anonymity was respected and recognized. Throughout the study's execution, data confidentiality was maintained.

Data collection phase

The study instruments' applicability, clarity, and practicality were evaluated through a pilot study. It was carried on 25 clients with substance use disorders; these clients were excluded from the actual study subjects. No modifications were made based on the pilot findings. The Alpha Cronbach's test, which was used to evaluate the internal consistency of the study instruments, revealed that the instruments had good reliability. Tools 2, 3 and 4 were translated into Arabic language then presented to a jury made up of five experts in the Psychiatric. The researchers interviewed each participant individually in the private room at the out-patient unit to maintain their privacy. Actual study was conducted throughout the period from the beginning of April 2023 to the end of June 2023).

Statistical Analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 23.0. Pearson coefficient was used to correlate between normally distributed quantitative variables. Regression to detect the most independent/ affecting factor for affecting AWARE. Significance of the obtained results was judged at the 5% level.

Results

Table (1): Presents a breakdown of the sociodemographic characteristics of the study participants. It can be noticed that nearly half (44.8%) fell within the 30–40-year-old age range, with a mean age of 32.55±7.84 years. As regard the marital status data, close to half of the participants (46.5%) were single. The level of education amongst the subjects varied, with 21.7% having a basic level of education, 32.2% possessing a secondary level education, and only 10.4% holding a university degree. As for occupation status, 63.5% reported having free work, while (20.4%) were not working. Looking at the income, the majority (83.9%) reported that their monthly income was insufficient to meet their needs. Regarding the living situation, only (13.9) of the subject lived alone, while a more substantial proportion (43.9%) still resided with their parents and siblings. With respect to residence, the table demonstrates that the largest percentage of the studied subject (73.9%) were from urban areas.

Table (2): Reveals the clinical characteristics of the studied subjects. Around half (43.9) reported the reason of using substance was to forget painful memories, followed by 33%, 20% reported the reason of substance use as result of pressure from friends, and curiosity respectively. Large number of the studied subject (88.3%) reported having previous abstinence trails. Regarding the relapse

number, 28% of the subject relapsed more than 10 times. Unfortunately, more than three quarters (77%) of the subjects not attend outpatient rehabilitation program. A substantial proportion (33.5%) of participants reported having a family member who used substances. Notably, over half (53.2%) of these family members were identified as brothers. In relation to availability of support for abstinence, 77.0% of the subject reported receiving support to abstinence**.**

 Table (3): Illustrate the mean scores and stander deviation of the study participants on cognitive distortion, Impulsive Sensation Seeking (ImpSS), and AWARE Questionnaire (The Advance Warning of Relapse). It can be noticed that the mean score of the total cognitive distortion, were (134.19±27.90).   Among the specific distortion's subscales measured, self-criticism emerged as the highest scoring dimension with a mean of (28.26±6.54), followed by preoccupation with danger (PWD) with a mean of (27.63±6.67). Concerning Impulsive Sensation Seeking (ImpSS), the overall mean score for ImpSS was (147.95±24.90). Among the Impulsive Sensation Seeking (ImpSS) subscales, boredom susceptibility (BS) yielded the highest mean score of (39.07±7.39), followed by the disinhibition (DIS) subscale with a mean of (38.04±8.06). The table also represent that the mean score of AWARE Questionnaire was (129.89±26.77), which reflect high level of relapse probability among the studied subjects.

Table (4): Revealed the distribution of scores level of cognitive distortions,

impulsive sensation seeking (ImpSS), and relapse risk (AWARE Questionnaire) among the studied participants with substance use disorders. The table demonstrates that more than two third (67.8%) of the studied subjects have high level of cognitive distortion. Additionally, a high prevalence of impulsive sensation seeking (87.0%) within the study sample. The table also suggests a significant risk of relapse, with nearly half (47.8%) of participants exhibiting a 43% probability of relapse based on the AWARE scores. A smaller portion (18.5%) showed a 37% probability of relapse.

Table (5): Presents the correlation matrix between cognitive distortions, impulsive sensation seeking (ImpSS), and relapse risk (AWARE Questionnaire) among the studied participants with substance use disorders. The table revealed that statically significant positive correlation was found between cognitive distortion and Impulsive Sensation Seeking (r= 0.520, p <0.001*), and subsequently between their subscales, suggests that individuals with higher levels of cognitive distortions also tend to score higher on impulsive sensation seeking. It can also be noticed that there is statically significant positive correlation between cognitive distortion and AWARE Questionnaire (The Advance Warning of Relapse) with (r= 0.668*, p <0.001*), indicates that individuals with more pronounced cognitive distortions are more likely to exhibit a higher risk of relapse according to the AWARE Questionnaire. Another strong positive correlation between Impulsive Sensation Seeking, and AWARE

Questionnaire (The Advance Warning of Relapse) (r= 0.668*, p <0.001*).

Table (6): Presents the results of a regression analysis exploring factors that predict relapse risk as measured by the AWARE Questionnaire among participants with substance use disorders. Globally, the regression analysis revealed that both cognitive distortions and impulsive sensation seeking significantly predicted relapse probability (AWARE scores). In the regression analysis the cognitive

distortions positively predicted relapse probability (B = 0.502, Beta = 0.523, p < 0.001*), suggesting a stronger relative association with relapse risk compared to Impulsive Sensation Seeking (ImpSS) (B = 0.300, Beta = 0.279, p < 0.001*). The model accounted for a substantial proportion (50.4%) of the variance in relapse probability (AWARE) (R^2= 0.504, Adjusted R^2= 0.499), and the overall model was highly significant (F= 115.178*, p<0.001*).

Table (1): Distribution of the studied sample according to their sociodemographic data (n=230)

Demographic data	Age	No	%
Age	18<30	83	36.1
	30-<40	103	44.8
	40-<50	36	15.6
	50+	8	3.5
		32.55±7.84 Mean± SD	
Marital status	Single	107	46.5
	Married	88	38.3
	Divorced	35	15.2
Level of education	Illiterate	34	14.8
	Read and write	33	14.4
	Basic education	50	21.7
	Secondary school	74	32.2
	University	24	10.4
	Postgraduate	15	6.5
Occupation	Private work	25	10.9
	Free work	146	63.5
	Not working	47	20.4
	Student	8	3.5
Monthly income	Enough	37	16.1
	Not enough	193	83.9
Live condition	Alone	32	13.9
	Wife/husband	72	31.3
	Parents/siblings	101	43.9
	Others	25	10.8
	Alone	32	13.9
Residence	Rural	60	26.1
	Urban	170	73.9

Table (2): Distribution of the studied subjects according to their clinical data (n = 230)

Clinical data	No	%
Reason of using substance		
Increase self confidence	19	8.3
Pressure from friends	76	33.0
Impotence	27	11.7
Make relationships	36	15.7
Forget painful memories	101	43.9
Feeling of loneliness	43	18.7
Curiosity	46	20.0
Increased ability to work	44	19.1
Courtesy	18	7.8
Previous abstinence trials		
Yes	203	88.3
No	27	11.7
Number of relapses		
0-3	97	42.2
4-7	39	17.0
7-10	29	12.6
>10	65	28.2
Attending outpatient rehabilitation program		
Yes	53	23.0
No	177	77.0
Presence of family member using substance		
Yes	77	33.5
No	153	66.5
If yes: relative (n = 77)		
Wife	8	10.3
Brother	41	53.2
Else	28	36.4
Availability of support for abstinence		
Yes	177	77.0
No	53	23.0

Table (3): Mean scores and stander deviation of the subject`s cognitive distortion, Impulsive Sensation Seeking (ImpSS), and AWARE Questionnaire (The Advance Warning of Relapse) (n=230)

Variables	Total score		Mean percent score	
Cognitive distortion scale (CDS), Impulsive Sensation Seeking (ImpSS), and AWARE Questionnaire	**MIN-MAX.**	**Mean± SD**	**MIN-MAX.**	**Mean± SD**
Cognitive distortion scale (CDS)	**55.0-191.0**	**134.19±27.90**	**9.4-94.4**	**58.9±17.4**
Self-Criticism (SC)	10.0-40.0	28.26±6.54	6.3-100.0	63.3±20.4
Self-Blame (SB)	11.0-39.0	27.32±5.97	9.4-96.9	60.4±18.6
Helplessness (HLP)	10.0-40.0	24.20±6.66	6.3–100.0	50.6±20.8
Hopelessness (HoP)	8.0-40.0	26.79±6.70	0.0-100.0	58.7±20.9
Preoccupation With Danger (PWD)	10.0-40.0	27.63±6.67	6.3-100.0	61.4±20.8
Impulsive Sensation Seeking (ImpSS)	**72.0-191.0**	**147.95±24.90**	**20.0-94.4**	**20.0-94.4**
Thrill and adventure seeking (TAS)	10.0–50.0	33.92±9.19	0.0-100.0	59.8±23.0
Experience seeking (ES)	12.0-50.0	36.93±7.27	5.0-100.0	67.4±18.2
Disinhibition (DIS)	16.0-50.0	38.04±8.06	15.0-100.0	70.1±20.1
Boredom susceptibility (BS)	14.0-50.0	39.07±7.39	10.0-100.0	72.7±18.5
AWARE (The Advance Warning of Relapse)	63.0-190.0	129.89±26.77	20.8-96.4	(60.6±15.9)

Table (4): Distribution of the participants according to their level of cognitive distortion, Impulsive Sensation Seeking (ImpSS), and AWARE Questionnaire (The Advance Warning of Relapse) (n=230)

	Level			No	%
Cognitive distortion scale (CDS)	**Low**			74	32.2
	High			156	67.8
Impulsive Sensation Seeking	**Low**			30	13.0
	High			200	87.0
	AWAR SCORE		**Probability of relapse in the next 2 months**	**No**	**%**
Tool IV: AWARE Questionnaire (The Advance Warning of Relapse)	**28- 55**		11%	0	0.0
	56-69		21%	4	1.7
	70-83		24%	4	1.7
	84-97		25%	22	9.6
	98-111		28%	32	13.9
	112-125		37%	43	18.7
	126-168		43%	110	47.8
	169-196		53%	15	6.6

Table 5: The correlation matrix between the Cognitive Distortion, Impulsive Sensation Seeking, and AWARE Questionnaire (The Advance Warning of Relapse) (n =230)

		SC	SB	HLP	HoP	PWD	CDS	TAS	ES	DIS	BS	ImpSS
self-Criticism (SC)	r											
	P											
Self-Blame (SB)	r	0.572*										
	P	<0.001*										
Helplessness (HLP)	r	0.633*	0.681*									
	P	<0.001*	<0.001*									
Hopelessness (HoP)	r	0.581*	0.695*	0.777*								
	P	<0.001*	<0.001*	<0.001*								
Preoccupation With Danger (PWD)	r	0.571*	0.665*	0.721*	0.788*							
	P	<0.001*	<0.001*	<0.001*	<0.001*							
CDS	r	0.784*	0.836*	0.891*	0.898*	0.876*						
	P	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*						
TAS	r	0.334*	0.451*	0.465*	0.472*	0.416*	0.498*					
	P	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*					
ES	r	0.192*	0.408*	0.341*	0.391*	0.324*	0.385*	0.571*				
	P	0.003*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*				
DIS	r	0.204*	0.364*	0.390*	0.458*	0.241*	0.386*	0.512*	0.333*			
	P	0.002*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*			
BS	r	0.137*	0.413*	0.301*	0.286*	0.302*	0.333*	0.573*	0.422*	0.410*		
	P	0.037*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*		
ImpSS	r	0.286*	0.526*	0.487*	0.521*	0.416*	0.520*	0.872*	0.736*	0.731*	0.764*	
	P	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	
AWARE	r	0.476*	0.612*	0.628*	0.565*	0.588*	0.668*	0.453*	0.374*	0.450*	0.437*	0.551*
	P	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*

Table (6): Linear Regression Analysis Showing factors affect AWARE Questionnaire (The Advance Warning of Relapse)

Variable	B	Beta	T	P	95% CI	
					LL	UL
Tool II: Cognitive distortion scale (CDS)	0.502	0.523	9.554*	<0.001*	0.398	0.605
Tool III: Impulsive Sensation Seeking (ImpSS)	0.300	0.279	5.105*	<0.001*	0.185	0.416
R^2=0.504, adjusted R^2=0.499, F= 115.178*, p<0.001*						

F, p: f and p values for the model

R^2: Coefficient of determination

B: Unstandardized Coefficients

Beta: Standardized Coefficients

t: t-test of significance

LL: Lower limit   UL: Upper Limit

*: Statistically significant at $p \leq 0.05$

Discussion

Substance use disorder and its relapse after successful detoxication and rehabilitation is one of the most important aspects of addiction worldwide (**Castaldelli-Maia & Bhugra, 2022; Suwanchatchai et al., 2024**). Relapses are common among those in recovery from a variety of substance use disorders, and they are now recognized as an almost necessary component of the recovery process (**Melemis, 2015**). Given the high rate of relapse associated with substance use disorders and their high prevalence, it is imperative to determine the factors that influence relapse prevention treatments (**Sohrabpour et al., 2024**). In this regard, the purpose of this study was to explore cognitive distortions and impulsive sensation seeking fuel relapse probability in clients with substance use disorders.

The current study's descriptive statistics revealed that participants had a high mean score for cognitive distortion. This indicates that the study participant has cognitive misconceptions about how rehabilitation and abstinence can lead to substance use. Substance abuse is also an attempt to deal with events or situations that cause negative emotions. Recovery from drug use may be more difficult if cognitive distortions exist. Thoughts are not real; they are beliefs. Given the considerable role that cognitive distortion plays in the establishment of serious medical disorders such as substance abuse, psychologists and psychiatrists are increasingly focusing on this area of interest (**Moss-Morris & Petrie, 1997**). More specifically, the result revealed that the most common type of cognitive distortion is self-criticism. According to **Irons and Lad, (2017)**, self-criticism plays a part in the diagnostic process for several types of adolescent psychiatric disorder, and self-criticism cause irritation, feelings of inadequacy, and inadequate self-criticism. This is consistent with prior research, which found that self-criticism is one of the psychological elements that contribute to adolescents' addiction (**Pinto-Gouveia & Matos, 2011; Randles & Tracy 2013**).

In terms of impulsive sensation seeking, the high prevalence of impulsive sensation seeking in the study population suggests that it was a significant predictor of binge drinking and drug-related outcomes. The association between ISS and substance use disorder is well-established, emphasizing the trait's role in the complex etiology of addiction (**Horvath & Zuckerman, 1993; González-Gallo & Rueda-Fernández, 2019**). Specifically, ISS has been linked to risky behaviors and reinforces addictive patterns. Several researchers reported that people with higher sensation-seeking levels used substances more frequently (Hamdan et al., 2018; de Wit, 2008). Moreover, gender differences in ISS, with males typically demonstrating higher scores (**Blanchard et al., 2009; Shin et al., 2012**), may partially account for observed gender disparities in substance use.

Boredom susceptibility, a core component of ISS, emerged as a particularly salient factor in the present study. Consistent with previous research, boredom was identified as a potential gateway to substance use (**Weybright et al., 2015**). Characterized by a lack of interest and stimulation, boredom may drive individuals to seek novel and stimulating experiences, including substance use, as a means of escape. This maladaptive coping strategy can escalate into addiction as the temporary relief provided by drugs reinforces the behavior. as the initial pleasurable effects of drugs provide a temporary escape from the monotony of daily

life (**Zuckerman, 2007**), this justification is applicable in this study especially since the majority reported that the most common reason for drug use is a desire to forget difficult emotions. When people are bored, they do not pursue their interests or passions. They can't seem to discover themselves. Boredom keeps individuals stuck, alienated from themselves, their goals, and their inner joy.

With regard to disinhibition, it has traditionally been conceptualized as a relatively stable psychological construct linked to various maladaptive behaviors, including substance use disorders (**Jones et al., 2013**). Characterized by impaired impulse control, this construct manifests in substance abuse as persistent difficulties in reducing or controlling substance consumption (**Verdejo-Garcia et al., 2008**). Indeed, the bidirectional relationship between disinhibition and substance use disorders has been well-established in the literature (**Prisciandaro et al., 2012**). In the current participant, this construct may be evidenced by limited educational attainment and persistent singlehood, coupled with low adherence to work responsibilities.

The current study participants exhibited a substantial risk of relapse, aligning with established literature indicating high relapse rates following substance use disorder treatment (**Moore & Budney, 2003; Xie et al., 2005**). This finding is underscored by the observation that over a quarter of participants reported multiple relapses despite prior abstinence attempts. The prevalence of relapse is further emphasized by **Connors et al., (1996)**, in the treatment of substance dependency; the percentage of cases that experienced at least one relapse in a year of therapy can reach 90% (**Connors et al., 1996**). These findings were similar to **Kabisa**

et al., (2020), who discovered that individuals may enter a treatment institution more than once after a relapse. Furthermore, even following a patient's successful detoxification and rehabilitation from SUD, the high rate of substance use recurrence remains a substantial issue. Some studies have indicated that following treatment and rehabilitation, more than half of SUD patients relapse (**Kabisa et al., 2021; Mousali et al., 2021; Nagy et al., 2022**). Demographic factors may also influence relapse probability. The relatively young age of the sample (mean age 32.55) was associated with increased relapse risk, consistent with previous research (**Sharma et al., 2012; Umoh et al., 2021**), who found that patients who were younger had a higher probability of relapse than older patients. . Also, this prevalence of relapse could be attributed to their Additionally, single marital status was linked to higher relapse rates, potentially due to reduced familial and emotional support (**Afkar et al., 2017; Haghighi et al., 2018; Mousali et al., 2021**).

The strongest association between cognitive distortion and impulsive sensation seeking shows that substance abusers with higher degrees of cognitive distortion are also more likely to seek impulsive sensations. Cognitive distortions, characterized by irrational thought patterns, can exacerbate impulsive sensation seeking behaviors in clients with substance use disorder (SUD). These distortions may lead individuals to underestimate risks and overestimate rewards associated with substance use, fostering impulsivity (**Devos et al., 2020**). Impulsivity, particularly sensation seeking, is linked to a decreased capacity for self-regulation, resulting in higher engagement in risky behaviors, including substance use (**Grant et al., 2016**). This is consistent with research suggesting that impulsivity and cognitive distortions share

neural substrates and is linked to dopamine availability in striatal regions (**Mallorquí-Bagué et al., 2019; Mitchell et al., 2014; Pettorruso et al., 2018; Van Holst et al., 2018**). Thus, the interplay between cognitive distortions and impulsivity may create a cycle that perpetuates SUD, emphasizing the need for targeted interventions addressing both cognitive and behavioral aspects (**Devos et al., 2020**).

In contrast, some studies have discovered no substantial link between cognitive distortions and impulsive sensation seeking among substance users. Individuals with high levels of impulsivity and sensation-seeking do not necessarily exhibit cognitive distortions. This could be explained by a general inclination to seek various, fresh, and complicated feelings and experiences; thus, sensation seeking is mostly related to the search for novelty using the senses as opposed to the cognition. Sensation seeking is not necessarily linked to unsocialized activities (**Franques et al., 2003; Mobini et al., 2006**).

A statistically significant positive correlation was found between cognitive distortions and relapse probability. This finding aligns with previous research suggesting that addictive thinking patterns serve as precursors to substance use and relapse (**Evren et al., 2011**). Moreover, cognitive distortions emerged as stronger predictors of relapse risk compared to impulsive sensation seeking. **Uhl, (2007)** demonstrated a direct association between elevated cognitive distortions and increased relapse rates in substance abuse treatment. **(Marlatt and Gordon, (1985)** proposed that cognitive distortions, such as all-or-nothing thinking, can promote the progression from a lapse to a full-blown relapse. A study by **(Yurica, (2002)** found that cognitive-behavioral therapy targeting cognitive distortions was effective in reducing

relapse rates, further highlighting the importance of distorted thinking patterns in the relapse process.

Cognitive distortions have been implicated in the development and maintenance of negative emotional states and maladaptive behaviors, including those associated with depression and substance use disorders (**Beck et al., 1979; Uhl, 2007**). This cognitive framework can create a self-perpetuating cycle of negative self-appraisal and hopelessness, thereby increasing vulnerability to relapse (**Marlatt & Gordon, 1985; Rosenfield, 2004**). Cognitive-behavioral interventions targeting these distortions have demonstrated efficacy in reducing relapse rates (**Schluter et al., 2019**), underscoring the importance of addressing cognitive factors in substance abuse treatment.

Another strong positive correlation exists between impulsive sensation seeking and the probability of relapse. This finding aligns with existing literature highlighting the detrimental impact of elevated impulsive sensation seeking, particularly boredom and disinhibition, on individuals with substance use disorders. Research consistently demonstrates that heightened sensation seeking is associated with increased risk-taking behaviors, including substance use and relapse (**Molero Jurado et al., 2020**). Boredom, as a specific facet of impulsivity, can serve as a potent trigger for substance use as individuals seek external stimuli to alleviate aversive internal states. Concurrently, disinhibition contributes to impaired social functioning, isolation, and instability, thereby exacerbating the risk of relapse (**Verdejo-García et al., 2008**). These factors collectively hinder personal and social stability, perpetuating a cycle of substance misuse.

Moreover, the finding revealed that impulsive sensation seeking significantly predicts relapse probability among clients with substance use disorders. This, in line with previous research, indicates that higher impulsivity is associated with earlier substance use and increased relapse rates (**Verdejo-García et al., 2008**). A study by (**Bilieux et al., (2020)** found that impulsive decision-making, particularly in delay discounting tasks, correlates with short-term relapse in substance-dependent individuals. Additionally, (**Molero Jurado et al., (2020)** highlighted that sensation-seeking behaviors contribute to risk-taking and substance use, reinforcing the likelihood of relapse when impulsivity is present. These findings underscore the critical role of impulsive sensation seeking in relapse dynamics.

Relapse is a multifaceted phenomenon influenced by the interplay of various factors (**Gonzales et al., 2012**). A comprehensive understanding of the impact of cognitive distortions and impulsive sensation seeking is crucial for the development of effective relapse prevention interventions. Psychiatric mental health nurses are pivotal in mitigating relapse risk by equipping patients and their families with coping strategies that target relapse-associated factors, fostering a sense of personal agency, and promoting a sustained commitment to abstinence.

Conclusion

The present study revealed significant positive correlations between cognitive distortions, impulsive sensation seeking, and relapse probability among individuals with substance use disorders (SUDs). Also, findings revealed that both cognitive distortions and impulsive sensation seeking significantly predicted relapse probability.

Recommendations

I- Recommendations geared toward psychiatric health care providers:

-Nursing staff and health caregivers need to understand and be aware of the complex interplay between cognitive distortions, impulsive sensation seeking, and relapse

-Assuming a pivotal role in promoting sustained recovery and preventing relapse by incorporating interventions that address these factors.

-Addressing distorted thought patterns through cognitive-behavioral therapies may be crucial in enhancing treatment outcomes and reducing relapse rates.

-Targeting impulsive sensation seeking through interventions that promote self-control, delay gratification, and alternative coping mechanisms.

II- Recommendations for future research:

-Future empirical studies are needed to investigate the efficacy of integrated treatment approaches that combine cognitive-behavioral therapy with specific interventions addressing impulsive sensation seeking within the therapeutic setting.

-Prospective longitudinal studies are necessary to understand the temporal relationship between these factors and relapse.

Limitations

The present study is subject to certain limitations. The cross-sectional design precludes the establishment of causal relationships between cognitive distortions, impulsive sensation seeking, and relapse. Additionally, the generalizability of the findings is limited to the specific population studied; further research with diverse samples is required.

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