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Impact of Cognitive Behavior Coping Skills on Relapse Prevention in Individuals with Methamphetamine Use Disorder

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ABSTRACT

Methamphetamine use has spread throughout the world, needing a thorough assessment of the efficacy of different therapeutic approaches. The effectiveness of cognitive behavior coping skills in preventing relapses in methamphetamine addicts was assessed in this study. People with methamphetamine dependence at addiction treatment and rehabilitation facilities in Pakistan participated in a randomized controlled trial. The study hypotheses were evaluated using four questionnaires. A total of 60 participants were split into two groups: 30 in the experimental group and 30 in the control group. Relapse rates were significantly lower in the treatment group. In order to help people manage methamphetamine cravings as a chronic stressor that threatens recovery from substance use disorder, these findings highlight the significance of cognitive-behavioral coping skills in promoting positive emotions. which could be crucial in assisting people in controlling methamphetamine cravings, a persistent stressor that jeopardizes substance use disorder recovery. Significant changes were found to originate within subjects, according to the results of the Repeated Measure ANOVA, which was conducted using SPSS 26. The results indicate significant group differences on the variables of aggression, methamphetamine craving, coping skills, and stimulant relapse risk. The results of this study demonstrated that cognitive behavior coping skills interventions can lower aggression and craving levels as well as the likelihood of relapse in people with methamphetamine use disorder. Cognitive behavior interventions are also recommended as a treatment for improving personnel factors like self-efficacy and quality of life coping. According to the study's findings, providing cognitive behavior coping skills to an experimental group in an inpatient setting was both feasible and successful when compared to standard inpatient treatment. Cognitive behavior coping skills (CBCS) were found to be effective in preventing relapses in methamphetamine-dependent individuals. This study will further our understanding of CBCS as an evidence-based intervention for substance use disorders.

Introduction

According to Barr et al. (2006), methamphetamine is a stimulant drug that is extremely addictive. Regular methamphetamine use is associated with a number of neurological, cardiovascular, pulmonary, and dental disorders (Shetty et al., 2010), as well as a number of physical, mental, and cognitive problems (Javadian, Shabani, & Shariat 2016; Thanos et al., 2017). Furthermore, frequent methamphetamine use is linked to psychotic and depressive disorders (Zhuang and Chen 2018). Meth, also referred to as methamphetamine, has a lengthy history and is widely used all over the world (Ibrahim et al., 2021). It first gained notoriety as a sports drug in the 1960s and has since grown to be one of the most widely misused drugs worldwide. It is frequently produced in clandestine labs using various synthetics and methods, which makes it widely accessible and reasonably priced (Zhang & Wu, 2020).

Methamphetamine's accessibility has contributed to its widespread use and the associated negative effects on social, economic, and health outcomes (Liu et al., 2020). Furthermore, the production and distribution of methamphetamine have been linked to criminal organizations and drug trafficking groups, exacerbating the problems surrounding its use. Given the serious negative effects and the unrestricted use of methamphetamine, policymakers and medical professionals must immediately concentrate on efforts to prevent its production, distribution, and use in addition to providing effective treatment and support to individuals struggling with methamphetamine dependence or habit.

The neurocognitive test further supported the idea that social enslavement was linked to brain structures related to self-guideline traits by recalling a review that demonstrated the general weakness for inhibitory control among large cell phone users (Zhang and Wu, 2021). The findings of neurocognitive tests suggest a link between social habits, such as excessive cell phone use, and self-guideline traits. This implies that individuals who struggle with self-control may be less able to create habit-forming behaviors, such as excessive cell phone use. According to some theories, obsessive drug use stems from confusion between the orbitofrontal cortex-dorsomedial striatal "go" circuit and the dorsolateral front facing striatal "stop" circuit (Salmeron et al., 2019). Numerous studies have examined these circuits for indications of significant and beneficial alterations. The majority of methamphetamine-related psychoses are transient, lasting only a few hours to days, though they can occasionally recur during drug-free periods and last longer than six months (Grant et al., 2012).

Cognitive-behavioral therapy, which is used to treat a variety of emotional and psychological issues, is the source of cognitive-behavioral coping skills. By changing unhelpful thoughts and behaviors, cognitive behavioral therapy (CBT), a well-researched and proven therapeutic approach, helps people deal with stress, anxiety, and depression. These abilities provide a methodical way to improve mental health and develop resilience by highlighting the relationship between ideas, feelings, and behaviors (Monti et al., 2002).

Following the identification of high-risk situations for methamphetamine relapse, clients must acquire coping skills. After learning the basics of addressing common high-risk problem areas, clients in this program are encouraged to participate in role-playing, homework practice tasks, and problem-solving activities to help them apply the new skills to their own unique needs. In cognitive behavioral treatment for alcohol abuse, each client must actively participate and take ownership of learning the self-control techniques necessary to prevent future abuse. By actively participating in a training program that teaches new skills and cognitive methods, one can replace

bad habits with healthy ones that are controlled by cognitive processes that require awareness and responsible planning. It is important to give patients the opportunity to Instead of merely talking about or thinking about the substance, they get constructive feedback using pertinent (client-centered) tasks and practice their actual skills through role plays.

Methamphetamine is a white, odorless, bitter crystalline powder that dissolves easily in water or alcohol, according to the US Department of Justice (2016). Methamphetamine was first synthesized from its parent compound, amphetamine, in the early 1900s and used in nasal decongestants and bronchial inhalers (Amber, 2022). Regardless of the method of administration, exposure to amphetamines can cause an amphetamine use disorder to develop within a week (American Psychiatric Association, 2013). Desires may be heightened by amphetamine withdrawal symptoms like hypersomnia, dysphoria, and increased appetite. Stimulants can quickly create feelings of pleasure, confidence, and wellbeing whether they are injected or inhaled (American Psychiatric Association, 2013). It may be useful in treating attention deficit hyperactivity disorder (ADHD) and as a temporary aid in weight loss programs. In addition, the recommended dosages are significantly lower than those that are commonly abused (Kish, 2008).

According to the public health community, methamphetamine is "America's most dangerous drug" and has garnered significant attention. Soldiers used the medication to stimulate and control their appetites during World War II. In 1887, the University of Berlin produced the chemical for the first time (Gonzale et al., 2010). Methamphetamine was included in the 1970 Comprehensive Drug Abuse Prevention and Control Act after being recognized through a campaign. Studies on stimulant addiction and tolerance abound in the literature; to withstand stimulant resistance, higher dosages are required to maintain euphoria for short periods of time (Gonzale et al., 2010). Between 2013 and 2019, the number of methamphetamine-related deaths doubled, from 16,127 to 3,616. Given that synthetic opioids and methamphetamine work together to produce a well-rounded high, The deaths were often caused by opioids (Han et al., 2021). Methamphetamine deaths, which are more prevalent in the West than in the East and are linked to younger populations' shifting paradigms, impact people of all ages (Jones et al., 2020).

Method

The effectiveness of cognitive behavior coping skills in preventing relapses in methamphetamine addicts was assessed in the current study. Methamphetamine dependents in addiction treatment and rehabilitation facilities participated in a randomized controlled trial.

Research Design

This study employed an experimental research design. Participants were split into two groups at random: the intervention group, which received cognitive behavior coping skills, and the control group, which received standard treatment. Four instruments were used to assess both groups before and after the test: the brief cope, the aggression questionnaire, the Penn alcohol craving scale, and the stimulant relapse risk scale.

Sample

The sample consisted of 60 methamphetamine-dependent adults who were enrolled in three private substance abuse treatment facilities in Islamabad, Pakistan, that offered comprehensive indoor treatment and medically supervised detoxification. After completing rigorous inpatient detoxification treatment, participants were enrolled. Two experimental and control groups, each

with thirty subjects, were randomly assigned to the participants. Treatment selection was done at random using an online "Clinical trial randomizer" (www.randomization.com) (Suresh, 201I).

Procedure

Prior to the commencement of the study, participating subjects were made aware of the need for written consent. Cognitive behavior coping skills therapy was administered to participants in the rehabilitation facility. Using randomization, participants were assigned to one of the two groups at the moment when the enlisted individuals gave them their first instructions. Participants were divided into two groups in an unequal manner using a website called www.randomization (Suresh, 2011).

Baseline assessment: In order to survey their current status across various variables, members underwent an underlying assessment at the start of the review. To gather data on relapse risk, hostility, craving, and adaptability, this detailed process involves completing a series of normalized surveys and scales. The baseline assessment provided a point of comparison for any member advancements during the review.

After-treatment Evaluation: Members were resurveyed at the conclusion of the 12-week treatment to assess any advancements that may have resulted from the intervention. By comparing members' responses to comparable tests conducted during the gauge stage, this evaluation aimed to determine the effectiveness of the mental social adapting abilities treatment. It helped determine the immediate impact of the intercession on members' behaviors, desires, and survival techniques.

Follow-up Evaluation: Members were reevaluated during a second stage that lasted an additional 12 weeks after the 12-week treatment period. This phase was crucial in determining whether the developments following the mediation were sustained in the long term. By polling participants at this point, researchers could examine the long-term effects of the treatment and whether improvements in relapse risk, hostility, or adaptability were maintained or reversed.

Every step was designed to provide valuable insights into the members' progress and assess the effectiveness of the mediation at different stages of the review.

Each stage was intended to give important experiences into the members' advancement and survey the mediation's adequacy at various phases of the review.

Statistical Analysis

Analysis of Statistics The reliability of the scales and other psychometric characteristics were determined using Cronbach's alpha reliability. To determine how the intervention group and control group differed in terms of relapse risk, craving, aggression, and coping mechanisms, an independent t-test was employed. The difference between the intervention group and control group at baseline, post-intervention, and follow-up was assessed using a repeated measure Anova.

Results

This outlines of the results chapter of this study presents the descriptive statistics of the variables in the study.

Table 1: Psychometrics Properties of SRRS, AGGR, PACS and COPE (N = 60)

Variables	No of items		*M(SD)*	Ranges		*Skew*	Kur
				Potential	Actual		
1. SRRS	35	.89	73.28(18.88)	0 – 140	38,114	0.43	-0.71
2. AGGR	29	.86	53.35(19.28)	0 – 116	19,87	-0.05	-1.31
3. PACS	7	.80	12.64(7.44)	0 – 42	0,25	-0.88	-1.15
4. COPE	28	.81	48.25(12.46)	0 – 84	23,71	0.05	-0.87

Note: SRRS=Stimulant relapse risk; AGGR=Aggression ; PACS=Penn Alcohol craving ; COPE=Brief cope ; Skew= Skewness; Kur= Kurtosis.

Table 2: Frequencies and percentage of participants along with demographics (n=60)

Demographics	***F***	**%**
Marital Status	60	
Single	25	41.67
Married	35	58.33
Education		
Middle	18	30
Matric	31	51.27
FA/F.Sc	9	15
Masters	2	3.33
Socio Economic Status		
High	9	15
Middle	41	68.33
Low	10	16.67
Employment status		
Employed	18	30
Unemployed	42	70

Table 3: Means, Standard Deviations and t-values on baseline scores (pre-test) SRRS, AGGR, PACS and COPE between Control and Experimental Groups (N=72)

Variables	Control (*n* = 36)		Experimental (*n* = 36)				95% *CI*		Cohen's
	M	*SD*	*M*	*SD*	*t(70)*	*p*	*LL*	*UL*	D
SRRS	70.49	19.50	76.51	18.02	-1.35	.17	-14.80	2.75	
AGGR	52.15	19.06	54.49	19.70	-0.51	.61	-11.47	6.75	
PACS	12.49	7.47	12.69	7.52	-0.63	.95	-3.63	3.41	
COPE	47.88	12.07	48.47	12.99	-0.18	.85	-6.45	5.34	

Table 4: Means, Standard Deviations and t-values on the scores after intervention (Posttest) SRRS, AGGR, PACS and COPE between Control and Experimental Groups (N=60)

Variables	Control (*n* = 30)		Experimental (*n* = 30)				95% *CI*		Cohen's D
	M	*SD*	*M*	*SD*	*t(58)*	*p*	*LL*	*UL*	
SRRS	70.11	16.18	58.13	9.41	3.50	001	5.12	18.80	
AGGR	38.72	7.89	34.27	2.52	2.99	.004	15.50	7.55	
PACS	1.75	1.94	0.57	0.73	3.17	.002	0.44	1.95	
COPE	45.00	5.12	48.80	5.25	-2.81	.007	-6.50	-1.09	

Note: LL= lower limit, UL= upper limit, CL= Confidence Interval, *SRRS=Stimulant relapse risk; AGGR =Aggression ; PACS=Penn Alcohol craving ; COPE= Brief cope*

Table 5: Means, Standard Deviations and t-values on the score of follow up test SRRS, AGGR, PACS and COPE between Control and Experimental Groups (N=60)

Variables	Control (*n* = 30)		Experimental (*n* = 30)				95% *CI*		Cohen's D
	M	*SD*	*M*	*SD*	*t(58)*	*p*	*LL*	*UL*	
SRRS	66.47	17.84	58.25	10.67	3.50	001	5.12	18.80	
AGGR	41.59	15.59	39.83	8.59	2.99	.004	15.50	7.55	
PACS	3.25	7.25	1.82	2.61	3.17	.002	0.44	1.95	
COPE	47.78	8.78	52.97	8.82	-2.81	.007	-6.50	-1.09	

Note: LL= lower limit, UL= upper limit, CL= Confidence Interval, *SRRS=Stimulant relapse risk;, AGGR =Aggression ; PACS=Penn Alcohol craving ; COPE= Brief cope*

Table 6: Mean Standard Deviation and Repeated Measures Analysis of Variance on the score of SRRS, AGGR, PACS and COPE for baseline, post and follow up test

	Baseline		Post Test		Follow up			
Variable	M	SD	M	SD	M	SD	F(2,59)	η^2
SRRS	73.31	19.54	64.13	14.45	62.37	15.15	6.70***	.11
AGGR	53.10	19.61	36.43	6.24	40.68	12.51	22.53***	.28
PACS	12.61	7.11	1.159	1.57	2.53	5.45	80.71***	.58
COPE	44.59	12.14	49.59	5.48	49.80	9.05	2.30***	.04

Note. *M* = Mean, *SD* = Standard Deviation, *SRRS=Stimulant relapse risk, AGGR=Aggression, PACS=Penn alcohol craving, COPE=Brief cope.* ***p<.001

Discussion

The purpose of this study was to evaluate the effectiveness of a cognitive-behavioral coping skills program in preventing relapses in methamphetamine-dependent individuals. This randomized control trial came to several important findings:

Reduce methamphetamine craving: Based on estimates from the Substance Use Issue Evaluation, members of the treatment group demonstrated a significant reduction in methamphetamine craving when compared to the treatment as regular group. This suggests that methamphetamine use in this population was actually reduced by the mental social adapting abilities program. Improvement of Coping Skills: Higher scores on the concise adapt demonstrated improvements in survival strategies in the mediation group. This indicates that participants developed more practical

coping mechanisms to manage stressors and triggers associated with their methamphetamine use act of mental conduct adapting abilities act as the foundation of the treatment procedure.

Improved Relapse Prevention: According to the follow-up data, the intervention group experienced fewer relapses and a lower prevalence of addiction-related symptoms. These results demonstrate the program's capacity to promote long-term abstinence and lower relapse rates.

Enhanced Relapse Prevention: The intervention group reported fewer instances of relapse and lower levels of addiction-related symptoms, as measured by the follow-up data . These findings highlight the program's potential in supporting sustained abstinence and reducing relapse rates.

Limitations

The study's sample may not accurately reflect the general population of methamphetamine-dependent people because it was drawn from particular treatment facilities in Islamabad, Pakistan. Individual variations in motivation and psychological resilience can have a substantial impact on treatment outcomes, so future studies should strive to include a more diverse sample to validate the program's efficacy across various populations (Fisher et al., 2021).

Response bias may be present when substance use and coping mechanisms are evaluated using self-reported measures. It's possible for participants to overstate or underreport their coping mechanisms and substance use. Objective measures, such as biological assays for substance use, could complement self-reported data in future studies to provide a more accurate assessment.

Conclusion

This study provides evidence that cognitive behavior coping skills can significantly reduce the likelihood of relapse in methamphetamine addicts. Additionally, the positive outcomes highlight the potential to integrate these projects into standard treatment protocols to aid in relapse prevention. Despite the limitations of the review, the findings provide valuable insights into effective approaches for monitoring methamphetamine dependence and provide a foundation for further research in this area.

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