

## COGNITIVE BEHAVIORAL THERAPY FOR SEVERE METHAMPHETAMINE USE DISORDER WITH COMORBID MAJOR DEPRESSIVE DISORDER: A SINGLE-CASE STUDY

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### Abstract

#### Background

Methamphetamine use disorder is associated with significant psychological, social, and occupational impairment and frequently co-occurs with depressive disorders and suicidal ideation. Individuals with severe methamphetamine dependence often experience recurrent relapse, emotional dysregulation, and impaired functioning despite multiple treatment attempts.

#### Objectives

The present study aimed to examine the clinical presentation, psychological assessment findings, cognitive-behavioral case conceptualization, and therapeutic outcomes of a patient diagnosed with severe methamphetamine use disorder and recurrent major depressive disorder.

#### Methodology

A single-case study design was employed. The participant was a 28-year-old married male referred for psychological assessment and treatment following psychiatric hospitalization. Assessment included clinical interview, Mental Status Examination (MSE), Visual Analog Scale (VAS), Drug Abuse Screening Test (DAST), University of Rhode Island Change Assessment (URICA), Beck Depression Inventory-II (BDI-II), and Beck Suicide Intent Scale (BSIS). A structured Cognitive Behavioral Therapy (CBT) program consisting of 16 sessions was implemented.

#### Results

Assessment findings indicated severe methamphetamine dependence, moderate depressive symptoms, and moderate suicide intent. Post-treatment findings demonstrated reductions in substance-use severity (DAST: 8 to 5), craving intensity (10 to 5), irritability (10 to 4), restlessness (9 to 3), aggression (9 to 3), and concentration difficulties (8 to 2). Improvements were also observed in emotional regulation, insight, and coping skills.

#### Conclusion

CBT interventions focusing on craving management, cognitive restructuring, relapse prevention, motivational enhancement, and behavioral activation

*demonstrated positive outcomes in reducing methamphetamine-related symptoms and depressive symptomatology. The findings support the utility of CBT as an evidence-based intervention for stimulant use disorders with co-occurring depression.*

## INTRODUCTION

Methamphetamine use disorder (MUD) remains a significant global public health concern and is associated with substantial psychological, social, occupational, and medical consequences. Recent reports indicate a continued increase in stimulant use worldwide, with methamphetamine contributing to elevated rates of psychiatric morbidity, interpersonal dysfunction, risky behaviors, and mortality (United Nations Office on Drugs and Crime, 2024). Chronic methamphetamine use has been associated with cognitive impairment, emotional dysregulation, impulsivity, aggression, psychotic symptoms, and increased risk of self-harm and suicide (Arunogiri et al., 2021; Trivedi et al., 2021).

Comorbidity between methamphetamine use disorder and depressive disorders is highly prevalent. Individuals with co-occurring depression often experience more severe cravings, poorer treatment adherence, greater psychosocial impairment, and higher relapse rates than individuals with substance use disorders alone (McKetin et al., 2020). Depressive symptoms may both contribute to and result from methamphetamine use, creating a reciprocal cycle in which emotional distress increases substance use while chronic stimulant exposure worsens mood disturbances and psychological functioning. Emerging evidence suggests that methamphetamine use is frequently associated with dysfunctional beliefs regarding self-worth, confidence, social competence, and sexual performance. Some users report initiating or maintaining methamphetamine use because of perceived improvements in libido, sexual stamina, sexual confidence, and perceived masculinity (Bourne et al., 2021). Such beliefs may become powerful cognitive reinforcers that contribute to continued substance use and relapse even when individuals are aware of the harmful consequences associated with methamphetamine dependence.

Cognitive Behavioral Therapy (CBT) remains one of the most extensively researched psychosocial treatments for stimulant use disorders. CBT addresses maladaptive beliefs, craving-related cognitions, emotional dysregulation, and behavioral patterns that maintain substance use. Contemporary evidence supports CBT as an effective intervention for reducing stimulant use, improving coping skills, and enhancing long-term relapse prevention outcomes (De Crescenzo et al., 2023; Trivedi et al., 2021).

The present case study examines the assessment, cognitive-behavioral conceptualization, treatment process, and therapeutic outcomes of a patient presenting with severe methamphetamine use disorder, recurrent major depressive disorder, and maladaptive sexual-performance beliefs that contributed to the maintenance of substance use.

## Literature Review

### *Methamphetamine Use Disorder*

Methamphetamine is a highly addictive psychostimulant that produces its reinforcing effects through increased release of dopamine, serotonin, and norepinephrine. Repeated exposure leads to neuroadaptive changes associated with compulsive drug seeking, tolerance, withdrawal symptoms, and impaired executive functioning (Arunogiri et al., 2021). Contemporary research demonstrates that chronic methamphetamine use is associated with emotional dysregulation, impulsivity, aggression, cognitive deficits, social dysfunction, and increased suicidal behavior (McKetin et al., 2020; Trivedi et al., 2021).

### *Depression and Methamphetamine Use*

Depressive symptoms are among the most commonly reported psychiatric difficulties among individuals with methamphetamine use disorder. Research has demonstrated that depression is associated with increased craving intensity, greater psychological distress, poorer treatment engagement, and heightened risk of relapse

(McKetin et al., 2020). Furthermore, depressive symptoms often persist during periods of abstinence, suggesting the need for integrated treatment approaches that simultaneously address both substance use and mood-related difficulties (Arunogiri et al., 2021).

#### ***Sexual Beliefs and Methamphetamine Use***

A growing body of literature indicates that methamphetamine use is frequently linked to sexual motives and dysfunctional sexual beliefs. Users commonly report beliefs that methamphetamine enhances sexual desire, prolongs sexual activity, improves sexual performance, increases confidence, and reduces sexual inhibitions (Bourne et al., 2021; Hibbert et al., 2022). Over time, these perceived benefits may develop into rigid cognitive schemas such as “I cannot perform sexually without methamphetamine” or “My sexual worth depends on using drugs.” These beliefs can contribute to psychological dependence by strengthening positive expectancies associated with substance use.

Research suggests that sexual-performance expectancies are associated with increased frequency of methamphetamine use, greater difficulty maintaining abstinence, and elevated relapse risk (Hibbert et al., 2022). Consequently, treatment approaches that target maladaptive sexual beliefs through cognitive restructuring and behavioral experiments may be particularly beneficial for individuals whose substance use is maintained by sexual-performance concerns.

#### ***Cognitive Behavioral Therapy for Substance Use Disorders***

CBT conceptualizes substance use as a learned pattern maintained by dysfunctional beliefs, maladaptive coping strategies, and reinforcement processes. Individuals often develop substance-related beliefs that exaggerate the benefits of drug use while minimizing its negative consequences. CBT interventions aim to identify, evaluate, and modify these cognitions while strengthening adaptive coping skills and relapse prevention strategies (De Crescenzo et al., 2023).

Recent evidence supports the effectiveness of CBT in reducing stimulant use, improving emotional regulation, increasing self-efficacy, and decreasing

relapse vulnerability among individuals with methamphetamine use disorder (Trivedi et al., 2021). CBT may be particularly effective when cognitive restructuring is used to challenge drug-related expectancies, including beliefs concerning confidence, emotional relief, and sexual performance.

## **Materials and Methods**

### ***Research Design***

A single-case study design was employed to evaluate the effectiveness of CBT in treating severe methamphetamine use disorder with comorbid recurrent major depressive disorder.

### ***Participant***

The participant was S.R., a 28-year-old married male with two children who presented to psychiatric outpatient services following recent discharge from inpatient psychiatric treatment. S.R. reports first experimenting with methamphetamine (MA) in mid-adolescence, during a vulnerable developmental stage marked by identity exploration, unstable peer affiliations, and limited insight into long-term consequences. His initial exposure occurred in social and sexualized settings, primarily with older peers. He describes early motivations that were performance-driven wanting to enhance sexual stamina, confidence, and desirability during casual encounters with non-regular partners. He also experienced a subjective increase in energy, alertness, and sexual desire, which at the time he interpreted as positive reinforcement. Over a prolonged period, the dose escalated further: from 0.1 g at initiation to 0.5 g within the first year, eventually reaching 0.75–1.0 g or more per session during later dependence, sometimes in binge episodes lasting many hours. He has experienced escalating hopelessness, pervasive feelings of failure, and intensifying suicidal ideation. He describes a sense of “collapse” after leaving the structured environment of inpatient care, coupled with overwhelming cravings and loss of behavioral control. His current emotional state suggests high risk, impaired judgment, and diminished capacity to maintain safety without structured intervention.

to maintain safety without structured intervention.

**Assessment Measures**

**Informal Assessment.** Assessment done on informal level included:

- Clinical Interview
- Mental Status Examination (MSE)
- Visual Analog Scale (VAS)
- Functional Analysis (5 Ws)
- High-Risk and Low-Risk Situations

Assessment

- Baseline Drug Use Analysis
- Sexual Confidence Thought Record

**Formal Assessment.** Assessment done on formal level included:

- Drug Abuse Screening Test (DAST) (Skinner, 1982)
- University of Rhode Island Change Assessment (URICA) (McConaughy et al., 1983)

- Beck Depression Inventory-II (BDI-II)
- Beck Suicide Intent Scale (BSIS)

**Intervention.** The participant received sixteen sessions of CBT focusing on:

- Psychoeducation
- Motivational Interviewing
- Cognitive Restructuring
- Craving Management
- Behavioral Activation
- Sleep Hygiene
- Assertiveness Training
- Anger Management
- Cognitive Restructuring for Sexual Performance Beliefs
- Behavioral Experiment (for Sexual Performance Beliefs)
- Relapse Prevention
- Therapy Blueprint Development

**Results**

**Table 1**

*Table Showing Baseline Psychological Assessment*

Measure	Score	Interpretation
DAST	8	Substantial Severity
BDI-II	29	Moderate Depression
BSIS	26	Medium Suicide Intent

**Table 2**

*Table Showing Subjective Symptom Ratings (Pre-treatment)*

Symptom	Rating (0-10)
Craving	10
Irritability	10
Restlessness	9
Aggression	9
Concentration Problems	8
Sexual Performance Belief ("I need methamphetamine to perform sexually")	10

**Table 3**

*Table Showing Pre- and Post-Treatment Comparison*

Variable	Pre	Post
DAST	8	5

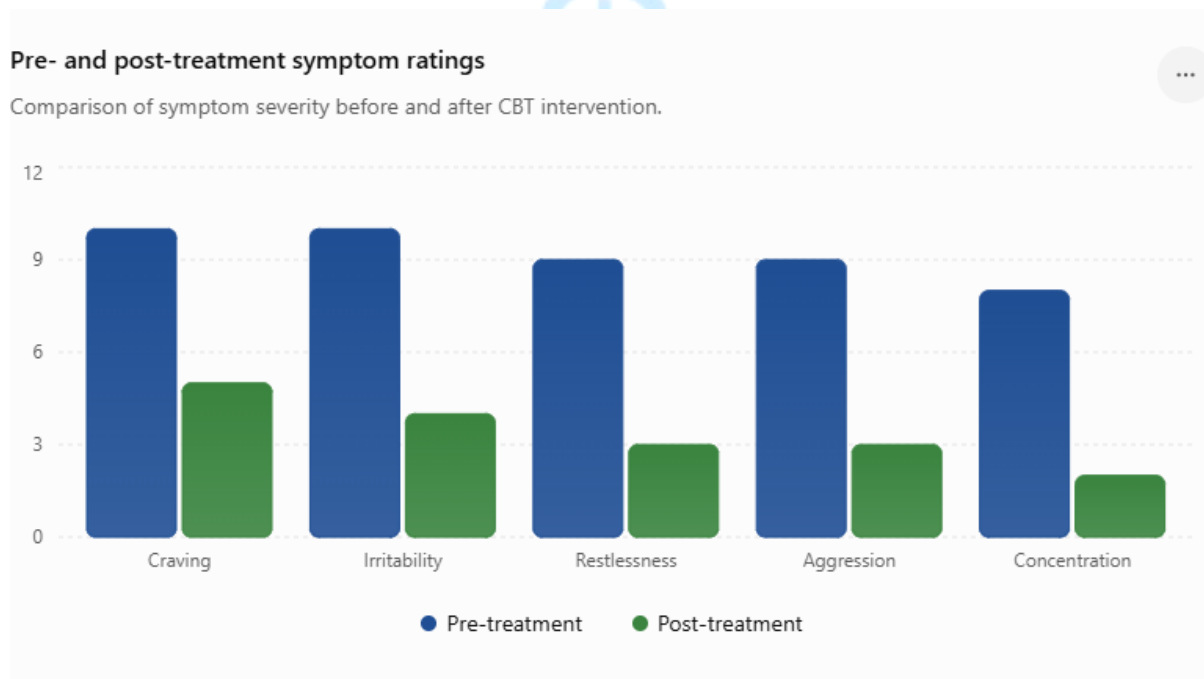
Variable	Pre	Post
Craving	10	5
Irritability	10	4
Restlessness	9	3
Aggression	9	3
Concentration Problems	8	2
Sexual Performance Belief ("I need methamphetamine to perform sexually")	10	3

**Subjective Symptom Changes**

Figure 1 illustrates changes in subjective symptom ratings from pre-treatment to post-treatment. The participant reported a reduction in craving intensity from 10 to 5, representing a 50% decrease in drug cravings. Irritability decreased from 10 to 4, while restlessness reduced from 9 to 3. Similarly, aggression scores decreased from 9 to 3, and concentration difficulties declined from 8 to 2.

A substantial reduction was also observed in the client's maladaptive sexual-performance belief that

methamphetamine was necessary for satisfactory sexual functioning and confidence, with ratings decreasing from 10 to 3 following cognitive restructuring and behavioral interventions. These findings indicate substantial improvement across emotional, behavioral, cognitive, and belief-related domains following CBT intervention. Overall, the observed reductions in symptom severity and dysfunctional sexual beliefs suggest enhanced emotional regulation, improved coping abilities, greater sexual self-efficacy, and decreased vulnerability to relapse.



**Figure 1 Symptom Reduction Following CBT**

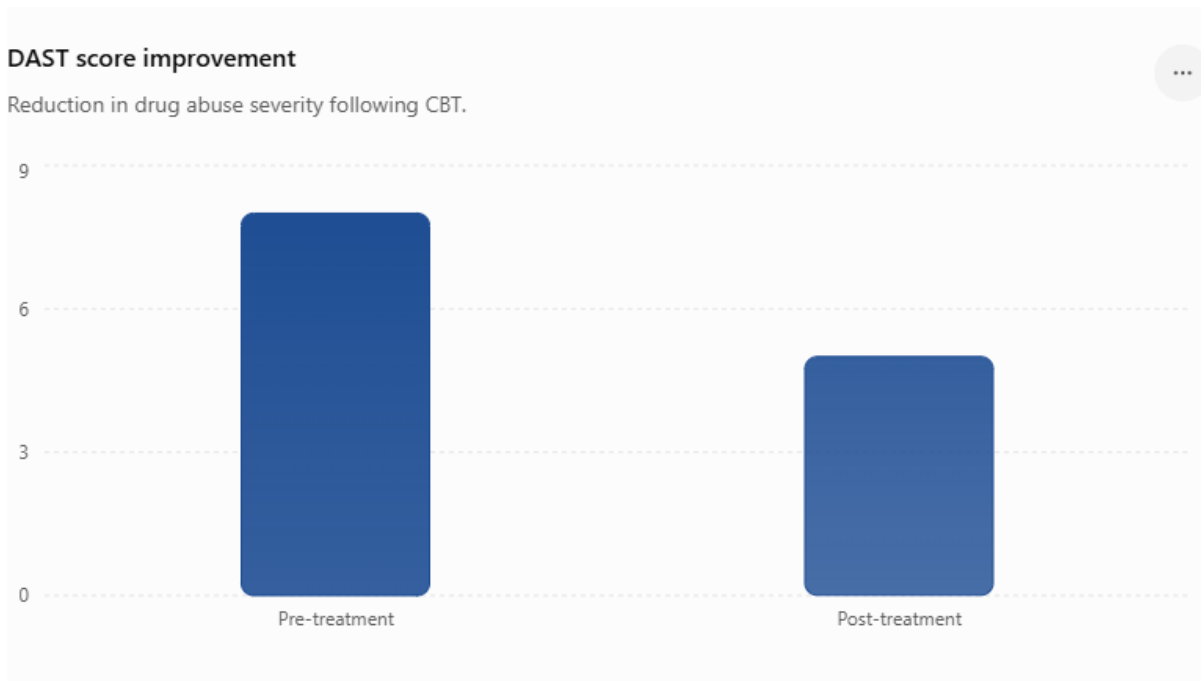
*Note.* Ratings were obtained using a 0–10 Visual Analog Scale, with higher scores indicating greater symptom severity. Post-treatment scores

demonstrate clinically significant reductions in craving, irritability, restlessness, aggression, and concentration difficulties following CBT.

***DAST Score Changes***

As shown in Figure 2, the participant demonstrated a reduction in Drug Abuse Screening Test (DAST) scores following Cognitive Behavioral Therapy (CBT). The pre-treatment DAST score was 8, indicating substantial severity of drug-related problems, whereas the post-

treatment score decreased to 5, reflecting a moderate level of severity. This reduction suggests meaningful improvement in substance-use-related difficulties and indicates the effectiveness of CBT interventions in reducing problematic methamphetamine use.



**Figure 2 DAST Score Improvement**

*Note.* DAST = Drug Abuse Screening Test. Lower scores indicate reduced severity of drug-related problems following Cognitive Behavioral Therapy intervention.

***Combined Treatment Outcome***

Overall, post-treatment assessment findings demonstrated clinically significant improvement in both substance-use severity and associated psychological symptoms. Reductions in craving, irritability, aggression, restlessness, and concentration difficulties were accompanied by a decrease in DAST scores, suggesting that the participant benefited from the CBT-based intervention. These improvements support the effectiveness of cognitive restructuring, craving management, behavioral activation, and relapse prevention techniques in addressing

methamphetamine dependence and its associated psychological difficulties.

**Discussion**

The present case demonstrates the effectiveness of Cognitive Behavioral Therapy in addressing severe methamphetamine use disorder accompanied by recurrent major depressive disorder. Consistent with contemporary literature, the client presented with severe cravings, emotional dysregulation, depressive symptoms, suicidal ideation, and significant psychosocial impairment, all of which are commonly observed among individuals with methamphetamine dependence (Arunogiri et al., 2021; McKetin et al., 2020).

A notable feature of this case was the presence of maladaptive beliefs regarding sexual performance and masculinity. The client believed that methamphetamine was necessary for adequate

sexual functioning, confidence, and relationship satisfaction. Such beliefs are consistent with research indicating that many methamphetamine users perceive the drug as enhancing sexual performance, sexual endurance, and self-confidence, thereby reinforcing continued use and increasing relapse vulnerability (Bourne et al., 2021; Hibbert et al., 2022). Within the cognitive-behavioral framework, these beliefs functioned as powerful maintaining factors that strengthened cravings and substance-seeking behavior.

CBT interventions specifically targeted these dysfunctional sexual-performance beliefs through cognitive restructuring and behavioral experiments. By examining evidence for and against these assumptions and encouraging non-drug-related intimacy experiences, the client gradually developed more balanced beliefs regarding sexuality and self-worth. This change appeared to reduce both performance anxiety and drug-related expectancies, thereby weakening an important motivational factor underlying substance use.

Following treatment, substantial improvements were observed across emotional, behavioral, and cognitive domains. Craving intensity decreased by 50%, while irritability, aggression, restlessness, and concentration difficulties demonstrated marked reductions. Drug abuse severity also decreased from the substantial to the moderate range. These findings are consistent with recent evidence supporting CBT as an effective intervention for stimulant use disorders and relapse prevention (De Crescenzo et al., 2023; Trivedi et al., 2021).

The improvements observed in this case further suggest that addressing disorder-specific maintaining beliefs, including sexual-performance expectancies, may enhance treatment outcomes for individuals with methamphetamine use disorder. Although significant gains were achieved, residual vulnerability to relapse remained evident. Continued monitoring, booster CBT sessions, and long-term relapse prevention planning are therefore recommended to consolidate treatment gains and maintain abstinence.

### Conclusion

This case study highlights the utility of Cognitive Behavioral Therapy in treating severe methamphetamine use disorder with co-occurring major depressive disorder. Comprehensive CBT interventions targeting addictive beliefs, craving management, emotional regulation, and relapse prevention resulted in significant improvements in psychological functioning and reductions in substance-use severity. The findings support the integration of CBT within multidisciplinary treatment approaches for stimulant use disorders and underscore the importance of addressing co-occurring depression and suicide risk during treatment.

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