



# Matrix Model and Cognitive - Behavior Therapy for Methamphetamine Dependence: The Problems to Implementation in Four Cities of Iran

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## Abstract

**Background:** Methamphetamine dependence is a health concern in Iran. The matrix model and cognitive - behavior therapy are the two treatment programs for this problem.

**Objectives:** The current study aimed at exploring the problems associated with delivering these two treatments for methamphetamine dependence among patients dependent on methadone in four cities of Iran (Tehran, Shiraz, Isfahan, and Karaj).

**Methods:** A total of 3000 subjects (2200 males and 800 females) participated in the study from December 2012 to December 2016. Fifteen psychologists participated in the study. Participants were recruited from 179 outpatient psychiatric and psychological centers as well as methadone treatment clinics.

**Results:** Females, compared with males, were more likely to state long duration of treatment (70.8% vs. 48.5%,  $P = 0.01$ ), high costs (57.1% vs. 44.8%,  $P = 0.01$ ), and boredom associated with the treatments (54.3% vs. 42.4%,  $P = 0.01$ ). Males, compared with females, were more likely to state the necessity of professional training of psychologists for treatment delivery (46.4% vs. 29.3%,  $P = 0.01$ ), interference of the treatments with job and life (46.3% vs. 15.7%,  $P = 0.01$ ) and the intensiveness of the treatments (45.4% vs. 15.7%,  $P = 0.01$ ). Interviewing psychologists also stated that long duration of the two treatments led to a high attrition rate (52%) among the patients. All of them (100%) stated that intensive and long - term professional training of psychologists was needed. Almost 60% of the psychologists stated that both treatments were intensive, which led to poor patient engagement.

**Conclusions:** The problems associated with delivering these two treatments should be managed in methadone withdrawal centers in Iran. Lower costs and brief interventions should be provided for such patients.

**Keywords:** Cognitive - behavior Therapy, Drug Dependence, Methamphetamine

## 1. Background

Globally, it is estimated that about 52 million individuals aged 15 - 64 years used amphetamine - type stimulants for nonmedical purposes at least once in the last year (1). Methamphetamine is the second most widely abused illicit drug in the world after cannabis; its abusers nearly outnumber the combination of heroin and cocaine abusers (1). Methamphetamine dependence is an important health problem in the Persian Gulf region including Iran (2).

Currently, there are no medications that show evidence of efficacy in the treatment of methamphetamine dependence (3). Several psychosocial treatments reduce methamphetamine dependence (4). The matrix model is a

16 - week outpatient psychological treatment for methamphetamine dependence (5). This treatment includes 48 sessions and combines cognitive - behavioral therapy (CBT), family therapy, individual therapy, and group therapy as well as weekly urinalysis and homework assignments (5). The other frequently suggested psychosocial treatment is CBT delivered in 12 - 16 weekly sessions (6). CBT teaches more behavioural and cognitive techniques and skills that can lead to stopping methamphetamine dependence (6). Each session of the matrix model and CBT is at least 60 minutes (5, 6).

Methamphetamine dependence leads to health and psychiatric problems, but treatment programs such as the matrix model and the CBT are used to treat metham-

phetamine dependence (7). However, to date, there are few studies on the problems associated with delivering these two treatments in Iran.

## 2. Objectives

The study aimed at exploring the self - reported problems associated with delivering the matrix model and CBT for methamphetamine dependence among patients dependent on methadone in four cities of Iran.

## 3. Materials and Methods

### 3.1. Study Design and Participants

The current descriptive study was conducted on 3000 people (2200 males and 800 females). The inclusion criteria were untreated methamphetamine dependence in methadone treatment for at least three months.

Participants were recruited from 179 outpatient psychiatric and psychological clinics as well as methadone treatment clinics. Participants were recruited from four cities (i.e., Tehran, Shiraz, Isfahan, and Karaj). All subjects were interviewed about the problems associated with receiving the matrix model and the CBT for methamphetamine dependence from December 2012 to December 2016. All participants were on CBT or matrix treatment for at least 16 consecutive weeks. Fifteen treatment providers (clinical psychologists) also participated in the study. Ten well - trained clinical psychologists interviewed males and females. Interviews were conducted in private rooms inside the centers. Diagnosis of methamphetamine dependence was determined using the non - alcohol psychoactive substance use disorders section of the structured clinical interview for the diagnostic and statistical manual (DSM) - IV - research version (SCID - I/NP) (8). Participants were had to be at least 18 years old. Male and female genders were acceptable for the study inclusion. Participants were excluded if they self - reported drug - related withdrawals or intoxication symptoms at the time of enrolment.

### 3.2. Study Questionnaire

A questionnaire was designed to collect baseline demographics and drug dependence characteristics. Part of the questionnaire constituted open - ended questions about the experienced problems associated with delivering the CBT and the matrix model for methamphetamine dependence in methadone treatment centers. The reliability of the questionnaire was determined based on the Cronbach's alpha of 92 on 30 participants in a two - week test - retest.

### 3.3. Ethical Considerations

Consent forms were obtained from the participants. Subjects were informed that participation was confidential and voluntary. The study was conducted according to the Helsinki Declaration. No funding was received to conduct the study. The study was part of a research project approved by Tehran University of Medical Sciences (919543).

### 3.4. Data Analysis

Data were analyzed using independent - samples *t* test and Chi - square test with SPSS version 19.

## 4. Results

Males and females were not statistically different in terms of the mean age ( $t = 0.12$ ,  $P = 0.13$ ), mean educational level ( $t = 0.32$ ,  $P = 0.25$ ), residential status ( $X^2 = 0.25$ ,  $P = 0.24$ ), marital status ( $X^2 = 0.18$ ,  $P = 0.33$ ), and the duration of methamphetamine dependence ( $t = 0.38$ ,  $P = 0.18$ ). However, males were more likely to be employed than females ( $X^2 = 1.13$ ,  $P = 0.01$ ) (Table 1). All participants were poly - substance users (opium, heroin, or methamphetamine).

Males were more likely to report the necessity of professional training of psychologists for treatment delivery (46.4% vs. 29.3%,  $P = 0.01$ ), interference of the treatments with job and life schedules (46.3% vs. 15.7%,  $P = 0.01$ ), and the intensiveness of the treatments (i.e., 16 weeks of the matrix model with 48 sessions, and 12 - 16 weekly sessions of CBT) (45.4% vs. 15.7%,  $P = 0.01$ ). Interviewing psychologists also stated that long duration of the two treatments led to a high attrition rate (52%) among the patients. All of them (100%) also emphasized intensive and long - term professional training of psychologists. Almost 60% of the interviewing psychologists reported that both treatments were intensive, which led to poor engagement of patient in the treatment procedures (Table 2).

Females were more likely to report long duration of treatment (70.8% vs. 48.5%,  $P = 0.01$ ), high cost (57.1% vs. 44.8%,  $P = 0.01$ ), and boredom associated with the treatments (54.3% vs. 42.4%,  $P = 0.01$ ).

## 5. Discussion

To date, the current study was the first research that investigated the self - reported problems associated with delivering the matrix model and CBT in Iran. The study findings indicated that most participants had problems with long duration of delivering the CBT and matrix model. Among females, it was accompanied by reporting the feeling of boredom (tiredness); being on methamphetamine treatment for weeks was likely to lead to such a feeling

**Table 1.** Baseline Characteristics of the Study Participants

Characteristics	Male (N = 2200)	Female (N = 800)	t/X <sup>2</sup>	P Value
Mean age, year	33 (SD = 7.9)	32 (SD = 9.8)	t = 0.12	0.13
Mean educational level, year	8 (SD = 7.6)	7 (SD = 6.7)	t = 0.32	0.25
<b>Residential status</b>			X <sup>2</sup> = 0.25	0.24
Stable	1435 (65.2%)	530 (66.2%)		
Unstable	765 (34.7%)	270 (33.7%)		
<b>Marital status</b>			X <sup>2</sup> = 0.18	0.33
Married	1335 (60.4%)	470 (58.7%)		
Unmarried	865 (39.3%)	330 (41.3%)		
<b>Job</b>			X <sup>2</sup> = 1.13	0.01*
Employed	1157 (52.5%)	230 (28.7%)		
Unemployed	1043 (47.4%)	570 (71.2%)		
Duration of methamphetamine dependence, year	8 (SD = 8.4)	7 (SD = 8.4)	t = 0.38	0.18
Poly - substance use (opiates and methamphetamine) <sup>a</sup>	2200 (100.0%)	800 (100.0%)	X <sup>2</sup> = 0.02	0.06

<sup>a</sup>During the sampling.

**Table 2.** The Problems Associated with Delivering CBT and Matrix Model

Self - report	Male (N = 2200)	Female (N = 800)	X <sup>2</sup>	P Value
Long duration of treatment	1067 (48.5%)	567 (70.8%)	1.63	0.01 <sup>†</sup>
High cost	987 (44.8%)	457 (57.1%)	1.43	0.01 <sup>†</sup>
Boredom	934 (42.4%)	435 (54.3%)	1.56	0.01 <sup>†</sup>
Professional training	1022 (46.4%)	235 (29.3%)	1.27	0.01 <sup>†</sup>
Interference with job and life schedules	10.21 (46.3%)	126 (15.7%)	1.65	0.01 <sup>†</sup>
Intensive treatments	1000 (45.4%)	126 (15.7%)	1.87	0.01 <sup>†</sup>

among females. Females in the current study were not psychologically ready for long - term methamphetamine treatments. The study findings also indicated that males were concerned about the necessity of providing professional staff training. This may indicate that training the psychologists to deliver the CBT and the matrix model should be considered more in Iran. The study also indicated that the two treatment methods overlapped with daily life. Furthermore, the CBT and the matrix model were intensive. They were likely to act as barriers to successful delivery of CBT and matrix model. Furthermore, high participant attrition due to long duration, the difficulty in providing professional psychologist training, and lack of adequate patient engagement in the treatments due to the intensiveness of the treatments were the major barriers to implementation. These are important research findings with important implications for treatment. A review indicated that although the CBT and matrix model are the best treatment options for methamphetamine depen-

dence, the above mentioned problems hampered treatment entry and retention (5).

Methadone treatment centers should consider these problems in the effective provision of CBT and matrix model. Brief, psychological treatments are more cost effective and less intensive than long - term CBT and matrix model (9, 10). Furthermore, they can lead to high client engagement and lack of boredom among the patients (5). Such interventions should be considered to treat methamphetamine dependence in methadone treatment centers in Iran. It is suggested to conduct randomized controlled trials on the role of brief psychological treatments to reduce the problems associated with delivering the CBT and the matrix model in methadone centers.

### 5.1. Conclusion

The CBT and matrix model are the most suggested treatment programs for methamphetamine dependence

(4). However, the problems associated with these two treatment programs may necessitate the delivery of other interventions in Iran. Brief interventional programs should be provided for patients with methadone or methamphetamine dependence. Further studies are suggested in Iran, which is the most populous Persian Gulf country.

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### Footnotes

**Authors' Contribution:** Sara Rad: Study design, Sara Rad, Mohammad Effatpanah, and Alireza Mahjoub: Data collection, Sara Rad and Alireza Mahjoub: Statistical analysis, Mohammad Effatpanah: Drafting the manuscript, Sara Rad: revision the paper of critically intellectual contents. All the authors read and approved the final version of the manuscript.

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