Original Article

Methamphetamine Use Disorder Untreated among Women in Methadone Treatment in Iran

Zahra Alammehrjerdi,[1,*] Nadine Ezard,[2,3] Philip Clare,[4] and Kate Dolan[1]

[1]Program of International Research and Training, National Drug and Alcohol Research Centre, School of Public Health and Community Medicine, University of New South Wales, Sydney, Australia
[2]Alcohol and Drug Service, St Vincent's Hospital, Sydney, Australia
[3]St Vincent's Clinical School, University of New South Wales, Sydney, Australia
[4]National Drug and Alcohol Research Centre, School of Public Health and Community Medicine, University of New South Wales, Sydney, Australia

[*] *Corresponding author*: Zahra Alammehrjerdi, National Drug and Alcohol Research Centre, School of Public Health and Community Medicine, University of New South Wales, Sydney 2052, Australia. E-mail: z.alammehrjerdi@unsw.edu.au

Abstract

Background: Methamphetamine (MA) use disorder is a new health problem among female methadone patients in Iran. Some characteristics of women are likely to be associated with poor methadone treatment outcomes. However, there are few studies about the characteristics of this group.
Objectives: The current study is the first research that aimed to investigate the demographic, drug use and treatment characteristics of a group of regular MA-using women in methadone treatment.
Methods: Methadone-maintained women who reported at least weekly MA use were recruited from four methadone treatment centres in Tehran. Participants' drug use, severity of MA dependence, psychiatric distress, social functioning, criminality and high risk sexual behaviours were measured among the participants. Urinalysis was done to confirm MA use.
Results: Between 28 July 2014 and 15 May 2015, 120 participants completed an interview. Mean duration of MA use was 5.4 (SD 2.1) years. Only 9.2% of the participants reported prior MA treatment. Psychiatric distress was high among all participants. Overall, 61 participants (50.8%) reported long duration of MA use (i.e. five years or more) while 59 participants (49.2%) reported less than five years of MA use. Severity of MA dependence (P = 0.38), psychiatric distress (P = 0.36), social functioning (P = 0.12) and criminality (P = 0.82) were not significantly associated with duration of MA use. However, participants who reported long duration of MA use were more likely to be engaged in high risk sexual behaviours (P = 0.01) compared with those reporting short duration of MA use.
Conclusions: The study results indicated that participants had multiple health problems. High risk sexual behaviours were considerable among participants with long duration of MA use despite being in methadone treatment. Participants had little or no previous treatment for MA use disorder. Treatment services should be expanded to address MA use disorder and its harms among this group.

Keywords: Iran, Methadone, Methamphetamine, Treatment, Women

1. Background

Opioids are the most commonly used illicit drugs in Iran. However, in recent years, the illegal use of methamphetamine (MA) has become a new health problem (1). A recent study of 7535 people in 31 provinces indicated that after opioids, MA and hashish were the most frequently used illicit drugs (2). Among people who use opioids in Iran, MA use grew in popularity, from an estimated six percent in 2008 to 44% in 2012 (1).

MA use disorder is prevalent among opioid-dependent people in methadone treatment. A study of 150 male and female methadone patients in Tehran indicated that 15%, 24%, and 12% of the respondents were MA users while in treatment in months one, three, and six respectively (3). A study at a methadone clinic in Zahedan indicated that MA use increased among patients from six percent in 2009 to approximately 20% in 2011 (4). A study of 190 opioid-dependent women at a methadone clinic in Mazandaran indicated that 25% of the participants were regular MA users (5).

Studies indicate that women with MA use disorder are more likely to report severity of psychiatric problems, drug problems and major depression than men (6). However, they are more likely to stay in treatment and benefit from MA treatment than men (7).

MA use disorder has no approved pharmacotherapy (8). The treatment of MA use disorder is based on long-term psychosocial interventions such as the matrix model (9). Recently, the Matrix model has been provided for MA-using women at some methadone clinics in Iran (10). However, it is not clear how the Matrix Model has contributed to the treatment of MA use disorder for opioid-dependent women in treatment.

2. Objectives

The characteristics of female methadone patients with co-existing MA use disorder necessitate more research. The current study is the first research that aimed to investigate the demographic, drug use and treatment character-

istics of a group of opioid-dependent women in Iran who reported MA use disorder.

3. Materials and Methods

3.1. Study Sites and Participants Recruitment

The study sites were four large methadone treatment services in Tehran. Three study sites were women-only centres. All centres were under the supervision of the ministry of health (MoH). These centres were selected for the study because they reported high rates of MA use among their female methadone patients to the MoH in the year prior to conducting the study.

To recruit participants, an updated list of MA-using women was provided by the manager of each centre. This was based on monthly urine tests taken at the study sites. There were 200 women at the study sites who reported MA use. Open-Epi software was used to calculate the sample size by a research coordinator. Overall, 120 participants were recruited.

Women were recruited if they were at least 18 years of age and reported MA use in treatment. MA use was defined as score of at least 0.14 on the MA items of the Opiate Treatment Index which indicated at least weekly use [11]. Eligible consenting participants were retained in methadone treatment for at least three months, agreed to provide urine specimens for confirmation of MA use, and reported no severe medical and/or psychiatric problems.

The Human Research Ethics Committees of the University of New South Wales (HC 13310), the Iranian National Centre for Addiction Studies (25491) and the Tehran University of Medical Sciences (92-04-49-25491) approved the study.

3.2. Measures

The Persian versions of the following questionnaires were administered. All questionnaires were modified to assess the study aim over the last four weeks.

3.2.1. Timeline Follow Back (TLFB)

The TLFB is a widely-used questionnaire that measures number of days of MA use over the last four weeks. The more number of days of MA use on the TLFB indicate more problems. High reliability and validity of the TLFB have been reported in Iran and other countries [12, 13].

3.2.2. Opiate Treatment Index (OTI)

The OTI is a widely-used questionnaire that consists of a demographic section and five sub-scales. Only Iranian adaptation of the illicit drug use (e.g. MA, opioids, cannabis and benzodiazepines), social functioning, HIV risk behaviours (e.g. sexual behaviours), and criminality were administered. Higher scores on the OTI indicate greater problems. High reliability and validity of the OTI have been reported in Iran and other countries [11, 14].

3.2.3. Severity of Dependence Scale (SDS)

The SDS was administered to assess the severity of MA dependence. The SDS is a widely-used five-item questionnaire and the scores range between 0 and 15. Higher scores indicate more severe drug dependence. A cut-off of ≥ 4 for MA dependence has been reported [15]. High reliability and validity of the SDS have been reported in other countries [15, 16]. Because of no Persian version, the SDS was assessed on 30 women in two weeks and the reliability was found to be high (a = 90).

3.2.4. General Health Questionnaire (GHQ-28)

The GHQ-28 is a widely-used questionnaire that includes four subscales of somatic symptoms, anxiety, social integration, and depression. Each sub-scale includes seven items. The scores of the GHQ-28 are between 0 and 28. The cut-off point of at least 4 out of 28 indicates psychiatric distress [17]. High reliability and validity of the GHQ-28 have been reported in Iran and other countries [17, 18].

3.2.5. Contemplation Ladder (CL)

The CL is a widely-used questionnaire that indicates readiness to change MA use. The scores of the CL are between 0 and 10. The CL stages of change include precontemplation, contemplation, preparation, action and maintenance. While 0 indicates no action to cease MA use, 10 indicates complete action to change [19]. High validity and reliability of the CL have been reported in Iran and other countries [20, 21].

3.3. Study Procedure

The study was conducted at the study sites between 28 July 2014 and 15 May 2015. Interviews were individually conducted in a private room at each centre. Participation was voluntary and confidential. After providing informed consent, one female clinical psychologist interviewed women to collect data. Participants were categorised in terms of duration of MA use. Long duration of MA use was defined as five years or more years of MA use. Short duration of MA use was defined as less than five years of MA use. Urine specimens were taken from all participants by a female nurse to double-check self-reported MA use in the same day. Participants were not informed about the dates of taking the specimens. Urine specimens were analysed using gas chromatography/mass spectrometry in a laboratory in Tehran. Participants received small gifts such as headscarves for study participation following the end of the interviews.

3.4. Statistical Analysis

Data were analysed using SPSS version 22. Descriptive statistics, Analysis of Variance (ANOVA), Independent samples t-test and Chi-Square tests were performed. P < 0.05 was considered significant.

4. Results

4.1. Baseline Characteristics

The mean age of the participants was 38.8 (SD 8.9) years. Most of the participants (83.3%) reported less than 12 years of schooling. Most of the participants were either unemployed (59.2%) or engaged in home duties (31.7%). Overall, 61 participants (50.8%) reported long duration of MA use (i.e. five years or more) while 59 participants (49.2%) reported less than five years of MA use. Duration of MA use was not associated with mean age (P = 0.19), schooling (P = 0.06), residential conditions (P = 0.70), marital status (P = 0.84), employment (P = 0.91) and lifetime imprisonment (P = 0.60). Participant demographic characteristics by duration of MA use disorder have been presented in Table 1.

4.2. Baseline Drug Use and Treatment Characteristics

4.2.1. Lifetime Illicit Drug Use

Participants reported substances of first use were alcohol (40.0%, n = 48), opium (34.2%, n = 41), and cannabis (25.8%, n = 31) before transitioning to heroin and MA use. Only a few participants (0.05%, n = 6) reported lifetime drug injection (i.e. opioids). Participants were in methadone treatment for an average of 25 months (SD 16.4, range 6 - 96 months). All of them were on a stable methadone dose (range 10 - 165 mg/day) over the last three months.

4.2.2. Recent Use of MA and Other Illicit Drugs

All participants reported MA smoking over the last four weeks; recent MA use was confirmed by urinalysis. The mean age of the first MA use was 25.5 (SD 8.7) years. Mean duration of MA use was 5.4 (SD 2.1) years. A minority of participants (9.2%, n = 11) reported prior MA treatment (i.e. therapeutic community programme). Number of days of MA use on the TLFB ranged between 10 and 22 over the last four weeks. Participants had a mean score of 1.0 (SD 0.6, range 0.14 - 2.5) on the MA items of the OTI which was consistent with at least weekly MA use. Participants also reported heroin smoking (25.8%, n = 31) and benzodiazepine use (16.6%, n = 20). A mean score of 0.10 (SD 0.2, range 0 - 1) was found on the heroin items of the OTI. A mean score of 0.08 (SD 0.2, range 0 - 2) was found on the benzodiazepine items of the OTI. These scores indicated no benzodiazepine and heroin dependence among participants on methadone programme.

4.2.3. Readiness to Change, Severity of Dependence and Psychiatric Distress

The CL scores indicated that only a few participants (10.0%, n = 12) were in preparation stage for change. No participants reported being in either action stage or maintenance stage (See Table 2). Furthermore, the mean score of the severity of MA dependence was 10.1 (SD 2.2) which was higher than the cut-off point of 4. No participant received a mean score of less than six on the SDS indicating high severity of MA dependence (See Table 2). The mean score of psychiatric distress was 16.4 (SD 1.5) which was higher than the cut-off point of 4. The mean scores of anxiety (4.9, SD 1.5) and major depression (4.8, SD 1.5) were higher than the cut-off point of 4 while the mean scores of somatic symptoms [3.8 (SD 1.5)] and social dysfunction [2.8 (SD 1.5)] were lower than the cut-off point of 4 (See Table 2).

4.2.4. Social Functioning, HIV Risk Behaviours and Criminality

Participants were compared in terms of duration of MA use. With the exception of criminality, participants with short duration of MA use received more favourable scores than participants with long duration of MA use. The OTI scores of social functioning subscale are between 0 and 48 (11). The mean score of social functioning in this study was 22.2 (SD 5.2, range 3 - 35) which indicated social dysfunction. However, duration of MA use was not significantly associated with the mean score of social functioning (F_{1-18} = 2.3, P = 0.12) (See Table 3).

The OTI scores of HIV risk behaviours are between 0 and 30 for drug injection and between 0 and 28 for high sexual behaviours (11). In this study, no participant reported drug injection over the last four weeks. Therefore, the assessment of HIV risk behaviours was limited to sexual behaviours. The mean score of high risk sexual behaviours was 5.8 (SD 3.8, range 0 - 15) Participants who reported long duration of MA use were more likely to be engaged in high risk sexual behaviours (F_{1-18} = 6.1, P = 0.01) compared with those reporting short duration of MA use (See Table 3).

Overall, 49 participants reported no engagement in any criminal activity over the last four weeks. The OTI scores of criminality range between 0 and 16 (11). The mean score of criminality in this study was 1.2 (SD 1.3, range 0 - 6) which indicated a low rate of criminality. In this study, duration of MA use was not associated with the mean score of criminality (F_{1-18} = 0.05, P = 0.82) (See Table 3).

5. Discussion

The current study provided the first profile of female methadone patients with MA use disorder in Iran. Participants were regular MA users with multiple problems

Table 1. Participant Demographic Characteristics (n = 120)

Characteristics	Percent/Mean	t or $X^2_{(df)}$	P Value
Mean age (range: 20 - 70 years)	38.8 (SD 8.9)	$1.3_{(118)}$	0.19
Schooling		$5.5_{(1-2)}$	0.06
< 12 years	100 (83.3%)		
12 years	15 (12.5%)		
13 - 16 years	5 (4.2%)		
Housing		$0.14_{(1-1)}$	0.70
Without family	63 (52.5%)		
With family	57 (47.5%)		
Marriage		$0.83_{(1-3)}$	0.84
Divorced	56 (46.7%)		
Married	31 (25.8%)		
Single	19 (15.8%)		
Separated	14 (11.7%)		
Employment		$0.18_{(1-2)}$	0.91
Jobless	71 (59.2%)		
Housewife	38 (31.7%)		
In a paid employment	11 (9.1%)		
Lifetime imprisonment	25 (20.8%)	$0.14_{(1-1)}$	0.60

Table 2. Participants' Health and MA Dependence Characteristics (n = 120)

Characteristics	Mean/Percent
Readiness to change (CL)	
Pre-completion stage	32 (25.0%)
Contemplation stage	76 (63.3%)
Preparation stage	12 (10.0%)
Severity of dependence scale (SDS)	10.1 (SD 2.2)
< Score 6	6 (0.05%)
Score range: 7 - 10	55 (45.8%)
Score range: 11 - 15	49 (40.8%)
Psychiatric distress (GHQ-28)	16.4 (SD 1.5)
Somatic symptoms	3.8 (SD 1.5)
Anxiety	4.9 (SD 1.5)
Social dysfunction	2.8 (SD 1.5)
Major depression	4.8 (SD 1.5)

such as divorce, unemployment and poly use of other illicit drugs. This is consistent with some studies which indicate that drug-using women in methadone treatment frequently report divorce, low socio-economic status and unemployment (4, 5, 22, 23). Consistent with other studies (22, 23), most participants had initiated drug use with alcohol, opium and cannabis before transitioning to heroin and MA use. Some demographic and drug use characteristics are likely to be associated with reducing positive treatment outcomes with methadone and increasing MA use among women in treatment. Therefore, these findings may have important implications for consideration in among women in methadone treatment services.

Participants were regular MA users, yet they reported poor readiness to change MA use and little or no contact with MA treatment centres. Lack of reporting MA treatment can be related to stigma and inadequate treatment services in the community (24). Poor readiness to change MA use and untreated MA use disorder among women in methadone treatment can result in poor treatment outcomes (5, 24). Therefore, MA treatment services should be specifically provided for this group.

Participants suffered from psychiatric distress and social dysfunction which were likely to negatively impact on their methadone treatment outcomes. Psychiatric comorbidity and social dysfunction can lead to depression and anxiety which are associated with self-treatment with MA use among women (25). A multidisciplinary approach may be needed for the treatment of these problems. Psy-

Table 3. Participants' MA-Related Risks and Problems by Duration of MA Use (n = 120)

Characteristics	Short Duration (n = 59)[a]	Long Duration (n = 61)[b]	F$_{1-18}$	P Value
Severity of MA dependence	10.2 (SD 2.0)	9.3 (SD 2.3)	0.76	0.38
Psychiatric distress	16.8 (SD 3.4)	16.1 (SD 4.3)	0.82	0.36
Social functioning	23.0 (SD 6.2)	21. 5 (SD 3.8)	2.3	0.12
High risk sexual behaviours	6.6 (SD 4.0)	5.0 (SD 3.8)	6.1	0.01*
Criminality	1.2 (SD 1.3)	1.2 (SD 1.4)	0.05	0.82

[a] < 5 years of MA use.
[b] 5 years or > five years of MA use.

chiatric medications, social support and mental health services should be incorporated into methadone treatment for these women. A study in the US indicates that psychiatric co-morbidity can be reduced among drug-dependent women if they receive mental health services (26). Furthermore, promoting mental health and increasing social functioning can result in better drug treatment outcomes among women (25, 26).

The study indicated that high risk sexual behaviours were high among participants with long years of MA use. MA use disorder is significantly associated with engaging in high risk sexual behaviours (27). A study of 65 women at five drug treatment centres in Tehran indicated that 55% of them were poly users of MA and opioid. Regular MA use among the women was significantly associated with engagement in high risk sexual behaviours (28). High risk sexual relationships with multiple partners are likely to lead to sexually-transmitted infections and blood-borne viral infections among this group. Therefore, integrating specific high risk sexual reduction programmes into methadone treatment is suggested for these women.

The study findings indicated that only a few study participants reported criminality in the last four weeks. This is consistent with two studies which indicated low rates of criminal activities among women in methadone treatment in Iran (22, 23). The low rate of criminality among the study participants was likely to be related to the effectiveness of methadone treatment. A study indicated that methadone treatment reduced criminality among female methadone clients in Iran (23). Conducting more studies is suggested.

The study reported on a group that is understudied. However, the study was limited to a group of female methadone patients in Tehran. Therefore, the study findings may not be generalisable to other groups of illicit drug users in the community and male methadone patients.

5.1. Conclusions

This study is important because it is the first research that demonstrates that female methadone clients with MA use disorder in Iran suffer multiple health problems. Given high levels of co-morbidities such as depression and a high rate of engagement in high risk sexual behaviours, methadone treatment alone may not be effective for these women. Therefore, existing methadone treatment services in Iran should address MA use disorder as well as associated harms among this group.

Footnotes

Authors' Contributions: The study was designed by Zahra Alammehrjerdi, Nadine Ezard and Kate Dolan; Zahra Alammehrjerdi supervised data collection, designed the research dataset and conducted data analysis; Philip Clare contributed to providing technical advice on data analysis; Zahra Alammehrjerdi drafted the manuscript. All authors contributed to approving the final draft of the paper.

Declaration of Interest: None declared.

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