Abstract

Background: Regular methamphetamine (MA) use is a new health problem among Iranian female methadone patients. However, there are few studies of this vulnerable population.

Aims: The current study aimed to investigate the baseline characteristics of a group of these women. Participants included 120 women with regular MA use in four methadone treatment services in Tehran.

Methods: The Opiate Treatment Index, the Timeline Followback, the Severity of Dependence Scale, the Contemplation Ladder and the General Health Questionnaire-28 were completed by all women in a baseline interview.

Results: The mean age of the participants was 38.82 (SD = 8.95) years. Participants reported high severity of MA dependence and drug-related problems. However, no specific MA treatment was received by women. Poor psychological well-being, social dysfunction, and poor readiness to change were reported by the participants. However, heroin and benzodiazepine use, high risk sexual behaviours and criminality were low among the participants.

Conclusions: The current study indicated that participants experienced regular MA use and a number of health and social problems while in methadone treatment. However, no specific MA treatment was delivered. Effective psychosocial treatments need to be provided to treat MA-associated harms among this population.
Keywords: Dependence, methamphetamine, treatment, women.

Introduction

Methamphetamine (MA) refers to an amphetamine-type stimulant (1). Globally, regular MA use is a health concern with an increasing impact on men and women (1). Research findings from the Global Burden of Disease Study indicated that more people were found dependent on opioids and amphetamines than other illicit drugs (2). The characteristics of male and female MA patients have been found different in a number of studies (3). Female MA patients are less likely than men to be employed and married (4,5), and also report greater severity of MA dependence than their male counterparts (3,5). Female MA patients are more likely than men to report MA-related withdrawal and lifetime MA-related health problems (5), and also report more clinically relevant psychological problems such as depression and anxiety (6). However, women are more likely than men to benefit from MA treatment (7). Furthermore, women are more likely than men to remain in MA treatment (8).

Studies of female MA patients have been often conducted in western countries (3–8). To date, there are few studies of Iranian women with a MA problem. Recent studies indicate that the high prevalence of regular MA use remains a health problem among Iranian female methadone patients (9,10). MA first appeared in 2005 when illegally imported from Southeast Asia (9), and recently, MA has been largely manufactured in the Iranian context (9–11). The increased MA availability and stimulant effects are the reasons for the prevalence of a MA problem among female methadone patients (9,10). The other reason is related to self-treatment due to depression (10). A study was conducted on 82 female methadone patients in Tehran and reported all participants had a MA problem. Self-treatment for depression was reported as the
main reason associated with the prevalence of a MA problem (10).

MA treatment is based on psychosocial interventions such as cognitive-behavioural therapy and the Matrix Model (a 16-week outpatient psychosocial treatment) (12). However, there is no widely available psychosocial treatment for methamphetamine patients in the Iranian context (12). To date, the Matrix Model has been delivered at a few methadone treatment centres (12). A recent study indicated that the Matrix Model remained long, unaffordable and needed intensive staff training (13). Furthermore, the treatment coverage remains inadequate for Iranian methadone patients (13).

The current study is part of the first research of evaluating the efficacy of brief cognitive-behavioural therapy (BCBT) for regular MA use among Iranian female methadone patients. In the main study, participants received either treatment (group one) or drug information (group two). The current study is the first research that reports on the baseline characteristics of these two groups.

**Methods**

**Treatment settings and design**

The study sites were four large methadone treatment services in Tehran. Three centres were women-only. The study was approved by the Human Research Ethics Committees of the University of New South Wales (HC 13310) in Australia, the Iranian National Centre for Addiction Studies (25491) and the Tehran University of Medical Sciences (92-04-49-25491).

**Enrolment and participants**

Female MA patients were individually approached and invited by the site managers to attend an information session about the study. All of them were referred to a psychologist for a screening interview to determine eligibility. Participant Information Statement was explained to each patient by the psychologist.

Eligibility criteria included: being a woman, age 18 years or more, any route of MA administration, regular MA use which was confirmed by receiving a score of at least 0.14 on the Opiate Treatment Index (14), a stable methadone dose for at least three months prior to enrolment, willing and able to comply with the study requirements, being able to attend appointments throughout the study and providing urine specimens for detecting MA at the time of enrolment. Exclusion criteria included self-reported severe medical and/or psychiatric problems, drug withdrawal and/or intoxication symptoms at the time of enrolment. Engagement
in CBT for substance problems in the last 12 months was an exclusion criterion.

Overall, 138 female patients were interviewed for eligibility assessment in July 2014. Of them, 18 were excluded due to the lack of meeting all eligibility criteria. Overall, 120 eligible patients were included and referred to a research staff to complete the questionnaires. Those patients who met all inclusion criteria were invited to participate in the study. If they agreed, participant consent form was given to them for signing.

Measures

All of the following questionnaires were modified to assess participant characteristics in the last 28 days.

**Opiate Treatment Index (OTI)**

The OTI is a standardised measure that consists of a demographic section and five sub-scales (14). In this study, only the demographic section, the subscales of drugs, social functioning, high-risk sexual behaviours, and criminality were administered. A score of at least 0.14 on the drug items indicate frequent use. The subscale of social functioning has a score range between 0 and 48. The subscale of high risk sexual behaviours has a score range between 0 and 28. The subscale of criminality has a score range between 0 and 16. Higher scores indicate more problems (14). The reliability and validity of the OTI have been reported in research studies (14,15).

**Timeline Followback (TLFB)**

The TLFB is a calendar-based measure for assessing the number of days of MA use in the past 28 days (16). The more reported number of days indicates more problems (16). The reliability and validity of the TLFB have been reported in research studies (16,17).

**Severity of Dependence Scale (SDS)**

The SDS is a standardised measure for assessing the severity of MA dependence. The SDS is a five-item questionnaire and the scores range between 0 and 15 and the cut-off of at least four indicates MA dependence (18). The reliability and validity of the SDS have been reported in some countries (18). There was no Persian-validated version of the SDS at the time of designing the study. Therefore, the SDS was assessed on 30 women and the reliability was significant (a = 90).

**Contemplation Ladder (CL)**
The CL is a standardised measure for assessing readiness to change. The scores of the CL range between 0 and 10. While a score of 0 indicates no readiness to change, a score of ten indicates high readiness to change (18). The reliability and validity of the CL have been reported in research studies (19,20).

General Health Questionnaire (GHQ-28)

The GHQ-28 is a standardised measure for assessing psychological well-being. The scores range between 0 and 28 (21). Higher scores indicate more problems (21). The reliability and validity of the GHQ-28 have been reported in research studies (21, 22).

Data analyses

All data were examined by groups. Independent samples t-tests and Chi-square tests ($\chi^2$) were used to analyse the data. The SPSS software version 22 was used to conduct data analyses. The statistical significance was set at $P < 0.05$.

Results

Demographic characteristics

The two groups were similar in terms of the mean ages (group one: $M = 39.10$ yrs., $SD = 9.93$, vs. group two: $M= 38.53$ yrs., $SD = 7.92$, $t = 0.34$, $p = 0.730$). More than half of the participants reported living without their families (group one: 53.33%, vs. group two: 51.66%, $\chi^2 = 1.08$, $P = 0.582$). Most of the participants were divorced (group one: 46.67%, vs. group two: 46.67%, $\chi^2 = 8.86$, $P = 0.31$). The mean number of children was similar in the two groups (group one: $M = 1.94$, $SD = 0.65$, vs. group two: $M = 2.07$, $SD = 0.59$, $t = -0.56$, $P = 0.578$). Most of the participants were unemployed (group one: 60.00%, vs. group two: 58.33%, $\chi^2 = 5.41$, $P = 0.067$) and reported elementary schooling (group one: 83.33%, vs. group two: 83.33%, $\chi^2 = 0.26$, $P = 0.875$). Lifetime imprisonment was similar between the two groups (group one: 26.66%, vs. group two: 15.00%, $\chi^2 = 2.47$, $P = 0.177$) (see Table 1).

Drug and treatment characteristics

The two groups were similar in terms of the mean ages of the first MA use (group one: $M = 31.78$ yrs., $SD = 10.04$, vs. group two: $M= 31.23$ yrs., $SD = 7.54$, $t = 0.33$, $p = 0.735$), duration of MA dependence (group one: $M = 5.30$ yrs., $SD = 1.90$, vs. group two: $M = 5.50$ yrs., $SD = 1.50$, $t = -63$, $P = 0.525$), severity of MA dependence (group one: $M = 9.88$, $SD = 2.19$, vs. group two: $M = 9.85$, $SD = 2.52$, $t = 0.77$, $P = 0.939$), high frequency of MA use (group one: $M = 1.28$, $SD = 0.46$, vs. group two: $M = 1.20$, $SD = 0.43$, $t = 1.01$, $P = 0.312$), and the number of days of MA use (group one: $M = 18.93$, $SD = 1.41$, vs. group two: $M = 19.13$, $SD = 1.61$, $t = 0.77$, $P = 0.46$).
First substances of use in the two groups included alcohol (group one: 38.33%, vs. group two: 41.67%), opium (group one: 35.00%, vs. group two: 33.33%) and cannabis (group one: 26.67%, vs. group two: 25.00%) with no significant between-group differences, $\chi^2 = 0.14, P = 0.932$.

Lifetime use of illicit drugs in the two groups included opium residues (group one: 50.00%, vs. group two: 51.66%), prescription opioids (group one: 26.67%, vs. group two: 23.34%), ecstasy (group one: 20.00%, vs. group two: 21.67%) and cocaine (group one: 3.33%, vs. group two: 3.33%) with no significant between-group differences, $\chi^2 = 0.19, P = 0.979$.

Overall, 31 participants reported heroin smoking. Overall, 20 participants reported benzodiazepine use. No other illicit drug was reported in the last 28 days. The mean scores of the two groups were lower than the cut-off point of 0.14 which indicated infrequent use of heroin (group one: $M = 0.12, SD = 0.26$, vs. group two: $M = 0.08, SD = 0.18$, $t = 0.82, P = 0.411$) and benzodiazepine (group one: $M = 0.05, SD = 0.19$, vs. group two: $M = 0.11, SD = 0.34$, $t = 1.09, P = 0.275$) in methadone treatment.

Each participant was on a stable methadone dose in the last three months. The two groups were similar in terms of the duration of methadone treatment (group one: $M = 2.27$ yrs., $SD = 1.60$, vs. group two: $M = 1.99$ yrs., $SD = 1.12$, $t = 1.11, P = 0.266$), received methadone dose (group one: $M = 63.75$ mg., $SD = 28.13$, vs. group two: $M = 61.17$ mg., $SD = 24.93$, $t = 1.17, P = 0.061$), duration of methadone dose (group one: $M = 6.50$ months, $SD = 3.27$, vs. group two: $M = 5.52$ months, $SD = 2.66$, $t = 1.80, P = 0.074$) and lifetime MA treatment (group one: 8.33%, vs. group two: 10.00%, $\chi^2 = 0.10, P = 0.752$) (see Table 2).

**Health-related characteristics**

The two groups reported poor psychological well-being (group one: $M = 16.72, SD = 4.09$, vs. group two: $M = 16.28, SD = 3.73$, $t = 0.60, P = 0.546$), poor social functioning (group one: $M = 24.68, SD = 5.69$, vs. group two: $M = 23.47, SD = 4.65$, $t = 1.28, P = 0.203$), and poor readiness to change (group one: $M = 4.40, SD = 1.19$, vs. group two: $M = 4.08, SD = 0.86$, $t = 1.65, P = 0.100$). However, high risk sexual behaviours (group one: $M = 5.37, SD = 4.33$, vs. group two: $M = 6.30, SD = 3.17$, $t = 1.34, P = 0.181$), and criminality (group one: $M = 1.23, SD = 1.59$, vs. group two: $M = 1.28, SD = 1.18$, $t = 0.19, P = 0.846$) were found low among the participants (see Table 3).

**Discussion**
The results of the study indicated that most participants were less than 40 years, divorced and unemployed and did not live with their families. Furthermore, they reported a low level of formal schooling. Although the participants were in methadone treatment for months, they were dependent on MA and reported lifetime and recent polydrug use. However, polydrug use in methadone treatment was found infrequent among the participants. An earlier study indicated that most Iranian female methadone patients were divorced and unemployed and reported a low level of schooling (23). A study of 782 Thai MA patients indicated that women reported greater lifetime episodes of MA-associated harms than men (5). MA and other drug-related problems among these women need effective psychosocial treatments. A study in Australia indicated that BCBT was approved as an effective intervention for treating an amphetamine problem and polydrug use (24). The provision of similar treatments is suggested.

Participants reported poor psychological well-being and social dysfunction which were likely to negatively impact on their methadone treatment outcomes. A recent study was conducted on 245 MA patients (103 men and 25 women). The results indicated that women reported more psychiatric problems than men (25). Poor psychological well-being and social dysfunction can lead to depression and anxiety which are associated with self-treatment with MA by women (9,10). Effective interventions need to be delivered to increase treatment relationships with mental health and psychiatric services.

Participants reported poor readiness to change and receiving no substantial MA treatment. A study in the United States of America indicated that motivational interviewing was a beneficial strategy to encourage treatment entry among women with substance problems (26). A recent study indicated that motivational interviewing increased treatment entry and retention among Iranian MA patients (27). Motivational interviewing needs to be provided for these women to increase readiness to change as part of MA treatment. Since the Matrix Model remains long and unaffordable for a large proportion of patients (13), short-term and affordable psychosocial interventions need to be provided to treat MA patients.

High-risk sexual behaviours were found low among the participants in the study. This is likely to be related to the positive effects of methadone treatment on the participants. Further studies are suggested to assess the relationship between retention in methadone treatment and reduced high risk sexual behaviours among female MA patients. Psychosocial treatments can reduce high risk sexual behaviours among MA patients (28). Similar studies are suggested in the Iranian context.

Criminality was found low among the participants in the current study. This is in contrast with a study which indicated that regular MA use was associated with criminality among some
participants (29). A study of 887 people who injected drugs indicated that regular MA use was a significant correlate of past month violent crime (29). The low rate of criminality in the current study is likely to be related to the positive effects of methadone treatment. A recent study indicated that methadone treatment reduced criminality among Iranian female methadone patients (23). Further studies are suggested to assess the relationship between the provision of methadone treatment and reduced criminality among female MA patients.

The current study reported on a vulnerable population that has been insufficiently studied in the Middle East region. However, the study was limited to female MA patients in methadone treatment. Therefore, the findings may not be generalizable to other groups of MA patients in the community or men in methadone treatment services. Additional studies are suggested on the impact of depression on self-treatment with MA.

**Conclusion**

MA patients in methadone treatment need effective psychosocial treatments. Simultaneously, the delivered psychosocial treatments need to improve the social and health contexts of the patients such as psychological well-being, readiness to change, social function, and reduce criminality and high risk behaviours. This issue needs to be accompanied with treating polydrug use and other medical and psychiatric comorbidities related to long years of continued drug use. Self-treatment for depression may be a reason for continued MA use which needs to be treated with delivering effective psychosocial interventions in methadone treatment. MA treatment needs to be integrated with the overall opiate treatment for Iranian female methadone patients.

Funding: The current study was supported (HC 13310) by the NDARC, UNSW Australia.

Conflicts of interest: None declared.

**References**


21. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. Psychol...


