Therapeutic Effect of Methadone on Improving Symptoms of Depression in Prisoners with a History of Substance Misuse

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Objective: Substance abuse is commonly associated with psychiatric disorders including mood disorders (especially depression), personality disorders and psychosis. The purpose of this study was to investigate the therapeutic effect of methadone on depressive symptoms of imprisoned intravenous substance user.

Methods: This semi-experimental study was conducted on intravenous drug abusers in prison. Demographic characteristics of the prisoners, Beck Depression Inventory (BDI) and a psychiatric interview checklist based on DSM-IV were completed when prisoners started their sentence. After 3 months of Methadone therapy, prisoners were evaluated again. Data were analyzed by using paired T-test.

Results: From 37 prisoners under the study, 35 ones entered the evaluation. Based on clinical interview, 26 (74.3%) were diagnosed with Major Depression Disorder, 2 of which were excluded and referred to standard treatment because of suicidal ideas. Nineteen patients showed improvement after treatment with Methadone. BDI score was 38.6±10.6 and 28.2±11.3 before and after the invention respectively (P<0.0001).

Conclusion: This study shows that methadone could improve depressive symptoms in prisoners who are addicted to illegal substances and therefore is a recommended treatment in prison setting.

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Introduction

Depression is one of the most common psychiatric disorders that can affect people from different classes of the society in different cultures and countries. Each year, all around the world, about 10 to 20 million of people experience a depressive episode. In Iran, the rate of depression is estimated around 4.2% to 37% (1). Depression is more common among substance abusers (2). Thirty seven percent of the general public have used one illegal substance at least once in their life time and approximately two third to three forth of the patients addicted to these substances have a co-morbid psychiatric disorders (3). Weissmann and colleges (1976), in a study on people who were drug abuser, showed that 1/3 of their sample had experienced several episodes of depressive disorder (4). Another research done by Callaly and his colleges in 2001 showed that, the rate of depression, in people with a history of substance misuse was ten times higher than what is seen in the general population (5). It has been mentioned that, the majority of patients treated in methadone clinics show significantly decreased symptoms of depression (6). Hall (1984) showed that, use of methadone reduced the rate of depression in experimental group compared to control group

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(7). Current study was carried out to investigate the beneficial effects of methadone on improving mental health of imprisoned drug abusers in Kashan-Iran.

Materials and Methods

This study is a semi-experimental one, which is conducted on all intravenous (IV) drug abusers in prison who participated in a methadone therapy program in 2005. Authors included those prisoners who were going to stay over 3 month in prison, those who volunteered for methadone therapy and those who were not in a withdrawal stage. Also they excluded those prisoners with a severe weightless caused by depression, those with suicidal thoughts and those who were taking antidepressant drugs. After obtaining an informed consent, demographic questionnaires (containing items on age, profession, education, the type of offence, the period of imprisonment, and marital status), psychiatric interview checklist (based on DSM-IV) and Beck Depression Inventory (BDI) were completed by a psychiatrist and a clinical psychologist.

Beck Depression Inventory (BDI), first introduced by Beck and colleagues in 1961, is a 21 items, self rated inventory with each item rated with a set of four possible answer choices of increasing intensity. When the inventory is scored, a value of 0 to 3 is assigned for each answer and then the total score is compared to a key to determine the depression's severity (8). The reliability and validity of Persian version of BDI has been demonstrated in Iran (9). According to previous studies on reliability of BDI in Iran and to reduce the chance of a false positive result, we considered a score of 0-15 as normal, 16-30 as mild depression, 31-46 as moderate depression and 47-63 as severe depression (10).

Psychiatric interview checklist, based on DSM-IV, includes 149 psychiatric symptoms covering different mental health problems such as mood disorders, anxiety disorders, psychosis, epilepsy, mental retardation, and organic disorders of the brain. The reliability and validity of psychiatric interview checklist has been studied and published in Iran (11). After completing the assessment tools, methadone (60-80 mg daily) was prescribed for the participants for the next 3 months. Above assessment tools were completed again at the end of 3 months and these 2 sets of data were analyzed by using Paired T-test.

Results

From 37, 35 ones entered the evaluation. Out of 35 IV drug abusers, 17 (48.5%) were going to be in prison for less than one year, 12 (34.2 %) were going to spend time in prison between 1 to 2 years and 6 (17.1%) for more than 2 years. Twenty three (65.7%) were under 30 years old (Table 1).

Table 1. Distribution of age and duration of time spent in prison

Age Period of imprisonment	20-25 n(%)	26-30 n(%)	31-35 n(%)	More than 35 n(%)	Total n(%)
Less than 1 year	5 (29.4)	6 (35.2)	5 (29.4)	1 (5.9)	17 (48.6)
1 to 2 years	1 (8.3)	7 (58.3)	3 (25)	1 (8.3)	12 (34.3)
More than 2 years	1 (16.7)	3 (50)	1 (16.7)	1 (16.6)	6 (17.14)
Total	7 (20)	16 (45.7)	9 (25.7)	3 (8.57)	35 (100)

The most frequent offences committed were stealing, disorderly conduct in public places, drug smuggling, and financial problems.

One prisoner (2.85%) was illiterate, 20 (57.1%) had primary school education, 7 had (20%) secondary school qualification, 6 (17.1%) had finished high school, and just one (2.85%) had higher education. Sixteen prisoners (45.71%) had a job before being sentenced to serve time in prison.

Two prisoners were excluded because of suicidal ideas, and this survey was continued with 33 prisoners. It should be mentioned that none of these 33 patients received any antidepressant drugs during the survey. Thirty five prisoners (100%), based on BDI, had depression, out of which 2 persons were excluded from study due to suicidal thoughts. Following treatment with methadone, 29 individuals (87.8%) had improvement in their depressive symptoms. Four prisoners (12%) did not show any improvement. Mean BDI score (± Standard deviation) was 38.6 (± 10.6) before the intervention and 28.2 (±11.3) after the intervention respectively ($p \leq 0.0001$).

Based on psychiatric interview, 26 individuals (74.2%) had depression, out of which 19 persons recovered fully following treatment with Methadone. In this group, 15 people reported a better sleep quality, 14 people said that, they had an improvement in their energy level, and 13 prisoners reported an improvement in their concentration (Table 2).

Table 2. Effect of methadone therapy on depressive symptoms

Depressive Symptoms	Symptoms Getting Better n (%)	Symptoms Getting Worse n (%)	No change in Symptoms n (%)
Sleep quality	15 (79)	4 (21)	0 (0)
Energy	14 (73.6)	3 (15.8)	2 (10.6)
Concentration	13 (68.5)	4 (21)	2 (10.5)
Mood	14 (73.6)	4 (21)	1 (5.4)
Appetite	4 (21)	4 (21)	11 (58)
Irritability	6 (31.5)	8 (42.2)	5 (26.3)
Anxiety	4 (21)	15 (42.8)	0 (0)
Sexual desire	4 (21)	9 (47.4)	6 (26.6)
Tendency to	7 (36.8)	5 (26.4)	7 (36.8)
Constipation	3 (15.8)	4 (21)	12 (63.2)
Weight	5 (26.3)	5 (26.3)	9 (47.4)
Aggression	6 (31.5)	8 (42.1)	5 (26.3)

Discussion

Our study reveals an association between unemployment and use of illegal substances. It also shows that, high percentage of drug abusers have history of drug smuggling and companionship with criminals and anti-socials. These associations have been explored before in other studies (3, 12-15).

Very similar to our findings, Schreiber (2007) and his colleagues, in a study on 63 IV drug abusers in a period of 16 years in a medical center in Tel Aviv, showed that continuous treatment with methadone was effective in reducing the symptoms of depression. They also reported that, methadone therapy helped patients reduce their misuse of benzodiazepine (16).

The outcome of our study is also in line with Hall's study (7), which revealed an improvement in anxiety symptoms following methadone therapy.

Insomnia can lead to impaired concentration, low mood, daytime tiredness, and reduced libido (17). In our study, use of methadone improved the quality of sleep, mood, aggression and tiredness in prisoners.

In conclusion, in spite of not having a large sample size, our study revealed that using methadone alone (not as an adjunct to an antidepressant) could improve depressive and anxiety symptoms in prisoners with a history of drug abuse.

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