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Evaluation of the suicide risk factors among methadone maintenance treatment of opiate dependent individuals: A six month assessment

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ABSTRACT

Background: Opiate abuse is a universal socio-medical problem and one of the most important risk factors for suicide, especially in accordance with other psychological disorders. This study designed to evaluate four important suicide risk factors in methadone maintenance therapy clinics within six months treatment. Method: In this cross-sectional study, a psychologist performed interviews with 82 patients who attended in methadone maintenance therapy (MMT) center of Hejazi and Ebnesina hospitals' clinics, Mashhad, Iran. Five questionnaires including demographic characteristics, Beck Anxiety Inventory (BAI), Beck Hopelessness Scale (BHS), Beck Scale for Suicide Ideation (BSS), Beck Depression Inventory (BDI) were completed at first visit and after six months treatment. Results: Eighty two individuals (68 male and 14 female) ranged between 20 to 44 years old (31.68 ± 4.93) abused mostly crystal (crystal heroein) (79.3%), opium (15.9%) then Shishe (methamphetamine) (4.9%). All studied characteristics of the patients decreased significantly after six month follow up ($P < 0.01$). As BAI, BHS and BSS and BDI were 33.06 ± 14.47, 6.64 ± 5.47, 3.37 ± 3.14 and 8.45 ± 6.17 respectively, before the study and 17.62 ± 8.5, 2.69 ± 2.65, 1.02 ± 1.17 and 5.81 ± 3.41 after the study period, respectively. Most of studied characteristics of the patients attempted suicide (BDI, BHS and BAI) weren't significantly different between gender before and after the study period ($P > 0.05$), while BHS after MMT period decreased significantly in men ($P = 0.028$). Conclusion: The positive effect of methadone maintenance therapy on reduction of four important risk factors for suicide imply on another benefits of this treatment method and it is useful for reduction of suicide risk, among substance abusers.

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Keywords: Methadone Maintenance Therapy; Substance Abuse; Suicide; Suicide Risk Factors

1. INTRODUCTION

Methadone maintenance treatment (MMT) is probably the most accepted method of treatment in the field of drug abuse therapy [1] and promisingly related to decrease of self-harming [2-4] and suicide attempts [5-7]. Suicide is one of known mortality causes among opiate abusers [8] as attempt to suicide in opiate dependence individuals (ODI) is near 13.5 times more common than general population [9]. Although the majority of ODI do not attempt for suicide [10,11], and some interpersonal variables like belonging, burdensomeness and loneliness are assumed to be risk factors for this issue [12]. So identification of suicide risk factors among this group is necessary.

On the other hand, depression is another concern in patients referred for methadone maintenance treatment (MMT). Previous studies showed the different range of depression in alcoholic patients [13] and in the patients with past history of suicide attempt [14,15]. Depressed individuals, who underwent MMT, express some suicide related behaviors due to psychological dysfunction and usually have less familial support [16].

A high capita of opiate consumption by near 1.1 million severe users are reported in Iran from 1998 centers [17] and authorized MMT clinics for male and female addicts [18]. The aim of this study was to evaluate the effects of six month treatment at MMT clinics on four important suicide risk factors.

2. METHODS

2.1. Participants and Procedure

This cross-sectional study was conducted from August 2010 until one year afterwards, on individuals with opi-

ate dependence referred to MMT clinics in Hejazi and Ibn Sina Hospital, Mashhad University of Medical Sciences. All the participants interviewed by a psychiatrist in two steps; admission time and after six months follow-up period, all the patients completed a questionnaire. All the patients' records were kept confidential and study procedures explained for them. Afterward informed consent form was obtained from all the patients. The patients with age below 18 years old and history of physical disease were excluded from this study. All the study procedure was approved by ethics committee of Mashahd University of Medical Sciences (MUMS), Iran.

2.2. Measurements

The collected information included demographic data, age, psychic and panic history and opiate consumption.

Suicide risk factors evaluated by four questionnaires designed by Aaron Temkin Beck including Beck Depression Inventory (BDI) [19,20], Beck Hopelessness Scale (BHS) [21], Beck Scale for Suicidal Ideation (BSS) and Beck Anxiety Inventory (BAI) [22].

The Beck Depression Inventory (BDI) is a self-administrative questionnaire consisted of 21 multiple-choice questions that measure the severity of depression. The Beck Hopelessness Scale (BHS) is a 20-items self-administrative questionnaire measure three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations. The Beck Scale for Suicidal Ideation (BSS) is 19-self-administrative multiple-choice questionnaire that measures the severity of depression and hopelessness related to suicide. The Beck Anxiety Inventory (BAI) is a 21-questions and self-administrative questionnaire that is used for measuring the severity of an individual's anxiety.

2.3. Statistical Analysis

Numerical data are expressed as mean ± SD or as proportions of the sample size. Independent sample T-test was used to compare suicide risk factors (BDI, BHS, BSS and BAI) before and after MMT. Group comparesons involving categorical data were made using chi-square. ANOVA or Kruskal-Wallis tests were used to compare suicide risk factors between gender, occupation group, married status and history of panic disorder. P-value less than 0.05 considered significant.

3. RESULTS

3.1. Descriptive Assay

Eighty two individuals (68 male and 14 female) ranged between 20 to 44 years old (31.68 ± 4.93) allocated for methadone maintenance treatment for opiate dependence were enrolled in the present study. Among participants 59 (72%), 13 (15.9%) and 10 (12.2%) were married, divorced and single, respectively. About literacy level, most of the individuals were at primary school (92.7%) or semi-illiterate (4.9%) positive history of familial disorders (14.6%), suicide history (41.5%) and familial suicide history (4.9%) were reported among the individuals. Types of drug consumption included: inhaled (43.9%) and combination of inhalation and oral (3.7%). The most common opiate ingredient was crystal (79.3%), opium (15.9%) and Shishe (methamphetamine) (4.9%) respectively.

3.2. Suicide Risk Factors Assay

Comparison of suicide risk factors is presented in **Figure 1**. All above-mentioned characteristics decreased significantly after six months follow up ($P < 0.01$). As Beck anxiety inventory (BAI) scale from 33.06 ± 14.47 before the study decreased to 17.62 ± 8.5 wads. The mean of Beck hopelessness scale (BHS) was 6.64 ± 5.47 while it was decreased to 2.69 ± 2.65 after the study. In addition Beck scale for suicidal ideation (BSS) and Beck depression inventory (BDI) decreased significantly after six-months MMT period ($P < 0.01$). The relation of suicide risk factors and some demographic characteristics, before and after MMT is presented in **Table 1**. Most of studied suicide characteristics (BDI, BHS and BAI) weren't significantly different between gender before and after the study period ($P > 0.05$) while BHS after MMT period decreased significantly in men ($P = 0.028$). Relation between the suicide risk factors (mean ± SD) and some demographic characteristics is presented in **Table 2**. There wasn't difference about all studied suicide risk criterion among employed and non-employed participants.

In addition the difference about BDI, BHS and BAI among employed patients and non-employed ones after study period comparing before the study wasn't significant ($P > 0.05$). While BHS after methadone therapy period significantly decreased in employed and non-em-

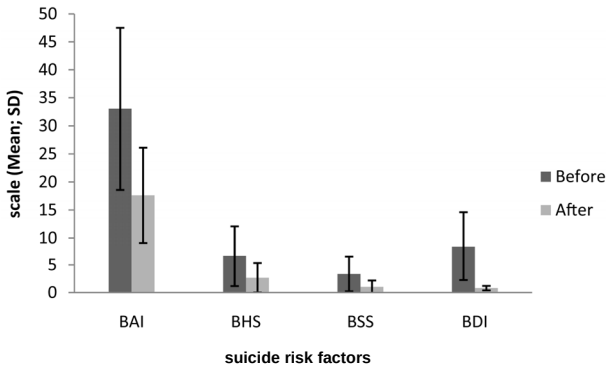

Figure 1. Evaluation of the suicide risk factors before and after the study period (Data present as mean ± SD).

Table 1. Relation of suicide risk factors (mean ± SD) and some demographic characteristics, before and after MMT.

Variables		BAI			BHS			BSS			BDI		
		Before	After	P	Before	After	P	Before	After	P	Before	After	P
Gender	Male	32.27 ± 13.9	17.01 ± 8.7	0.28	6.98 ± 5.07	2.95 ± 2.5	0.33	3.41 ± 2.9	1.05 ± 1.2	0.83	8.1 ± 6.3	6.05 ± 3.6	0.3
	Female	36.85 ± 16.8	20.57 ± 7.2	0.15	5 ± 7.04	1.28 ± 2.7	0.02	3.21 ± 4.1	0.85 ± 0.8	0.56	10 ± 4.9	4.7 ± 1.9	0.07
Job	Positive	33.54 ± 13.3	17.18 ± 8.8	0.76	7.35 ± 5.4	3.16 ± 2.6	0.59	3.96 ± 3.3	1.13 ± 0.7	0.14	8.38 ± 6.5	6.08 ± 3.7	0.88
	Negative	31.82 ± 17.3	18.73 ± 7.9	0.46	4.82 ± 5.1	1.47 ± 2.1	0.009	2.56 ± 2.5	1.23 ± 0.9	0.17	8.6 ± 5.3	5.21 ± 2.3	0.3
Panic history	Negative	32.53 ± 14.3	17.20 ± 8.6	0.01	6.64 ± 5.6	2.66 ± 2.7	0.19	3.25 ± 3.3	0.96 ± 1.2	0.41	7.98 ± 5.9	5.74 ± 3.2	0.26
	Positive	53.66 ± 8.7	23 ± 11.7	0.26	2.33 ± 4. 0	1.33 ± 2.3	0.41	1.66 ± 1.1	0.33 ± 0.5	0.38	12 ± 8	5 ± 1	0.69
Married	Married	32.15 ± 15.0	17.57 ± 8.6	0.17	5.74 ± 5.05	2.40 ± 2.3	0.32	2.72 ± 2.5	0.76 ± 0.9	0.04	7.49 ± 5.1	5.57 ± 2.9	0.28
	Single	39.20 ± 14.7	19.20 ± 10.4	0.59	7.50 ± 6.1	2.90 ± 3.7	0.69	4.6 ± 3.8	1.60 ± 1.6	0.14	11 ± 9.5	7.40 ± 5.9	0.36
	Divorce	32.46 ± 10.9	16.61 ± 7.1		10.07 ± 5.6	3.84 ± 2.9		5.38 ± 4.1	1.76 ± 1.2		10.86 ± 6	5.84 ± 2.9	
Kind of abuse	Cristal	32.96 ± 14.6	17.67 ± 9.3	0.43	6.78 ± 5.31	2.66 ± 2.4	0.62	3.41 ± 3.1	0.96 ± 1.0	0.55	8.16 ± 5.8	5.76 ± 3.4	0.001
	شیشه	39 ± 21.2	18 ± 5.9	0.94	9.50 ± 9.8	5.50 ± 5.8	0.40	5.25 ± 5.5	2.50 ± 2.8	0.36	19.50 ± 9	8.75 ± 5.8	0.1
	Opium	31.69 ± 12	17.23 ± 5.0		5.07 ± 4.5	2 ± 2.23		2.61 ± 2.3	0.86 ± 0.8		6.4 ± 2.8	5.30 ± 2.2	

BAI, Beck Anxiety Inventory; BHS. Beck Hopelessness Scale; BSS. Beck Scale for Suicide Ideation; BDI. Beck Depression Inventory. The P-value column include two numbers, the first is related to before MMT and the second related to after MMT.

Table 2. Relation between suicide risk factors (mean ± SD) and some demographic characteristics.

Variables		BAI	P-value	BHS	P-value	BSS	P-value	BDI	P-value
Gender	Male	15.25 ± 12.4	0.78	4 ± 3.60	0.84	2.35 ± 1.9	0.99	2.07 ± 3.7	0.02
	Female	16.28 ± 14.1		3.71 ± 4.9		2.35 ± 3.14		5.21 ± 4.4	
Job	Positive	16.35 ± 12.2	0.29	4.18 ± 3.8	0.37	2.55 ± 2.3	0.18	2.30 ± 3.7	0.27
	Negative	13.08 ± 13.8		3.34 ± 3.8		1.82 ± 1.8		2.39 ± 4.5	
Panic history	Negative	15.3 ± 12.7	0.02	3.98 ± 4.0	0.07	2.30 ± 2.3	0.07	2.24 ± 3.6	0.04
	Positive	30.66 ± 5.5		1 ± 1.73		1.33 ± 0.5		7 ± 8.54	
Married	Married	14.57 ± 13.0	0.45	3.33 ± 3.6	0.39	1.96 ± 1.7	0.03	1.91 ± 3.4	0.02
	Single	15.84 ± 12.7		6.23 ± 3.9		3.61 ± 3.3		5 ± 4.56	
	Divorce	20 ± 10.5		4.60 ± 3.5		3 ± 2.5		3 ± 5.3	
Kind of abuse	Cristal	15.29 ± 12.5	0.65	4.12 ± 3.8	0.67	2.44 ± 2.3	0.58	2.40 ± 3.6	0.00
	شیشه	21 ± 18.1		3.07 ± 3.8		2.75 ± 2.6		1.15 ± 0.6	
	Opium	14.46 ± 12.5		3.95 ± 3.8		1.76 ± 1.8		2.60 ± 0.4	

ployed individuals (P = 0.009).

However, BHS and BSS were lower in the patients with positive panic history while BDI and BAI were lower in these patients before and after the study. But there wasn't any difference before and after the study period between individuals with or without panic history for all studied suicide risk factors (BDI, BHS, BSS, BAI and BHS).

There was no difference about studied suicide risk factors including BAI and BHS except BSS and BDI among different marital status. Meanwhile, BSS was significantly lower in the married participants before the study (P < 0.05) and it was measured lower within all studied suicide risk criterion including BDI, BHS, BAI and BHS. But we found no significant difference between marital status and all studied suicide risks. Participants who abuse opium had higher suicide risk factors than patients who abused crystal (crystal heroin) and

Shishe (methamphetamine).

There weren't any difference about most of studied suicide criterion like BHS, BSS and BAI, before and after study period among the patients who abused different opiate kinds ($P > 0.05$). BDI after the study period decreased significantly comparing initial records ($P < 0.001$).

4. DISCUSSION

Our study findings presented new data on four suicide risk factors including BDI, BHS, BAI and BHS. On the other hand, this study attempted to presented new aspects of methadone therapy for opiate dependent patients. Although previous studies mentioned the other risk factors including relation of patients and employment condition, methadone dosage and society attribute [23]. In our study MMT program had no significant difference among different age range. This could be mentioned that entrance to therapy had no age range and receiving methadone therapy caused reduction in suicide risk factors. We found that depression (BDI index) rate due to MMT was reported significantly more in women comparing men. However, there wasn't any significant relation about BHS, BAI and BHS and gender. In literature review, Peles *et al.* [24] found some major risk factors for MMT individuals including: female gender, taking any psychotropic medication and methadone doses higher than120 mg/day. While Britton PC and Conner KR [25] during evaluation of prospective data on SA during several months following treatment for substance use disorders, found that male sex, older age, and minority race or ethnicity were associated with lower likelihood of SA. These variations might be related to different cultures, social issues and methadone consumed doses.

Chen *et al.* [5] investigated recent (one-month) and lifetime prevalence of suicide attempts (SA), and factors associated with one-month suicide attempts among heroin-abuse users seeking treatment for MMT in Taiwan. Recent SA were associated with severity of heroin dependence, needle sharing, higher literacy level, deeper levels of depression, and higher number of stressful life experiences. It is suggested that MMT individuals should routinely be screened prior to starting it for previous suicidal trials and especially for recent ones. Conner *et al.* [12] explored the role of interpersonal variables in suicide attempts and unintentional overdose. Their results demonstrated a relevance of a sense of belonging to vulnerability to suicidal behavior and lend the further support for finding correlation of suicide attempts and unintentional overdose. Like our study, Maxwell *et al.* [26] found lower rate of suicide attempts among individuals who underwent MMT.

We recorded greater suicide risk factors (BDI, BHS, BSS, BAI and BHS) for divorced individuals comparing married and single ones. According to this difference, the authors recommend further studies on role of familial support on success of MMT.

We concluded that according to positive effects of MMT program on reduction of four important suicide risk factors, another benefit of this treatment method that make it useful in well-being of drug-abusers is potential role of it in reduction of suicide rate.

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