

Willingness to Receive Treatment for Hepatitis C among Injecting Drug Users on Methadone Program: Implications for Education and Treatment

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Original Article

Abstract

Background: Hepatitis C virus (HCV) is common among people who inject drugs (PWID) on methadone program in Iran (Persia). However, a few PWID on methadone program report willingness to receive HCV treatment. This study aimed to assess the factors which were associated with willingness to receive HCV treatment in a group of PWID on methadone program in Iran.

Methods: We surveyed 187 PWID at seven drops in centers in Tehran, Iran. Details of demographic characteristics, drug use, injection, HCV, and drug treatment history were collected using a 25-item questionnaire. Participants were serologically tested for the current status of HCV.

Findings: The study found that 28.3% of the participants were HCV seropositive. In total, 49.1% of the participants reported unwillingness to receive HCV treatment. Awareness of current HCV status [odds ratio (OR) = 3.43; 95% confidence interval (CI): 1.33-7.26; $P < 0.050$]; adequate knowledge of HCV treatment centers in the community (OR = 3.9; 95% CI: 1.24-5.38; $P < 0.050$); participation in an educational program on HCV (OR = 2.9; 95% CI: 2.33-8.56; $P < 0.001$) and recent participation in the meetings of self-help groups (OR = 4.6; 95% CI: 3.43-9.33; $P < 0.001$) were significantly associated with current willingness to receive HCV treatment.

Conclusion: The study results indicate that awareness of HCV status and the provision of adequate HCV education via different information centers can be associated with an increased willingness for HCV treatment among PWID on methadone program. Conducting more research is suggested to assess the efficacy of educational programs and self-help groups in facilitating HCV treatment among PWID on methadone program.

Keywords: Hepatitis C virus; Drug injection; Iran; Persian Gulf; Harm reduction

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Introduction

Drug injection is a health concern with serious harms in Iran (Persia).¹⁻³ There are 200000-300000 people who inject drugs (PWID) in Iran who mainly inject Afghan opiates.¹⁻³ This is because of Afghanistan, which produces and smuggles inexpensive opiates to Iran.¹ As a serious harm, hepatitis C virus (HCV) is the most common

blood-borne viral infection among PWID. The prevalence of HCV infection has been estimated to be 20-90% among PWID in Iran.⁴⁻⁶ However, a few PWID accept to receive HCV treatment.⁷⁻⁹ The reasons associated with this problem have not been well-studied.¹⁰

In recent years, some studies have been conducted on HCV among PWID in Iran. A survey of 202 PWID at a methadone treatment

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clinic in Tehran, Iran, found that 52% of the respondents were HCV seropositive. Most participants had no HCV education. HCV prevalence was found to be associated with long years of drug injection (> 10 years) and incarceration.¹¹ A survey of 226 PWID in three main cities of Iran found that HCV prevalence was 38.6%. Injection drug use was associated with common HCV prevalence.¹² A survey of 899 PWID at methadone treatment centers in Tehran found that the prevalence of HCV was 34.5%. HCV awareness and education were primarily poor among PWID. The prevalence of HCV was associated with unsafe drug injection for more than once a day and lifetime sharing needles and syringes.¹³

PWID with HCV problem in Iran receive standard methadone maintenance treatment (MMT) on a large scale.¹ However, methadone clinics do not encourage simultaneous HCV treatment among PWID on methadone program.^{13,14} Indeed, methadone clinics in Iran cannot provide an infrastructure to facilitate HCV treatment. HCV has important health implications for PWID especially when they enter methadone treatment and need comprehensive treatment for drug injection and its harms. Little attention has been paid to willingness to receive HCV treatment among PWID on methadone program. The current study aimed to address this gap in literature by assessing the factors associated with willingness to receive HCV treatment among a group of PWID on methadone program.

Methods

The current study was a cross-sectional survey and was conducted at seven geographically diverse methadone treatment centers in Tehran during 2011-2012. The study protocol was approved by the Ethics Committee of Tehran University of Medical Sciences. There were 196 PWID at the centers during conducting the study, but 187 PWID were randomly recruited. Four PWID did not agree with participating in the study and the others did not meet the inclusion criteria. Participants receiving MMT were eligible for enrollment if they were (1) at least 18 years old, (2) regular injection drug users before treatment entry, (3) on methadone program for at least 3 months, and (4) agreed with providing

blood specimens. Those PWID, who injected drugs on methadone program were also recruited. Drug injection was defined as at least injection once a week during the past 12 months before treatment entry or on methadone program. Reporting severe withdrawal, intoxication symptoms, or severe psychiatric problems at the time of recruitment was the exclusion criteria.

Participation was voluntary and confidential. Participants were informed that non-participation in the study would not impact on their methadone program or their relationships with MMT teams. After providing informed consent, participants were interviewed on a number of issues. Participants were asked about demographics, drug use, injection, and treatment history over the past 12 months. They were also asked about HCV awareness, HCV education, HCV treatment history, and willingness for HCV treatment. This was done using a 25-item questionnaire. Serum of each participant was screened for anti-HCV antibody by enzyme-linked immunosorbent assays (ELISAs). The ELISA kits used for testing were from ELISA, DRG Co. Germany. All positive specimens were re-tested twice at a registered laboratory in Tehran. Moreover, serum of each participant was screened for human immunodeficiency virus (HIV) and hepatitis B virus (HBV) surface antigen.

Statistical analysis was performed using SPSS software (version 21, SPSS Inc., Chicago, IL, USA). Univariate and multivariable analyses were performed. We used logistic regression for categorical variables. In addition, Wilcoxon rank sum and Chi-Square tests were performed for continuous variables. We assessed the effects of independent variables (living conditions, employment, education, HCV status, awareness of HCV status, duration of participation in MMT, knowledge of HCV treatment centers, lifetime participation in educational programs on HCV, and recent participation in self-help groups) on willingness for HCV treatment by logistic regression. The significance level in all tests (two-sided) was set to 0.050.

Results

Participant characteristics

Overall, 187 male PWID participated in the study.

The mean age of the participants was 35.8 [standard deviation (SD) = 7.9] years (the age range 20-54). 71.6% of the participants (n = 134) reported stable living conditions. 71.1% of the participants (n = 133) were currently married and 62.5% of the participants (n = 117) reported < 8 years of education while the remaining participants reported an education of 8-10 years (Table 1).

The mean age of initial drug injection was 29.3 (SD = 3) years. The duration of lifetime drug injection was 8 (SD = 7.8) years. In total, 37.4% of the participants (n = 70) reported drug injection for at least once a week on the current methadone program. The main type of drug injection on current methadone program was low purity heroin (n = 47, 67.0%) or a combination of low purity heroin and Persian methamphetamine (n = 23, 33.0%). No one

reported injecting prescription opioids or cocaine. Overall, 28.9% of the participants (n = 54) reported sharing syringes over the past 12 months. 28.3% of them (n = 53) were HCV seropositive. 4.3% of them (n = 8) reported being HIV positive and 18.7% of them (n = 35) reported being HBV positive. 74.0% of the participants (n = 139) reported no lifetime HCV treatment while the remaining participants reported receiving lifetime HCV treatment.

HCV serostatus and baseline characteristics

As shown in table 1, participants who were HCV seropositive were more likely to report current unstable living conditions (43.4 vs. 21.8%, $P < 0.050$) but they were less likely to have current unstable jobs than those who were HCV seronegative (22.6 vs. 45.1%, $P < 0.050$) (Table 1).

Table 1. Baseline characteristics and current hepatitis C virus (HCV) serostatus (n = 187)

Characteristics	n = 187	HCV sero-negative (n = 134) [n (%)]	HCV sero-positive (n = 53) [n (%)]	P
Age range (year)				
20-29	38	31 (23.1)	7 (13.2)	0.234
30-39	92	59 (44.0)	33 (62.2)	0.231
40 and above	57	44 (32.8)	13 (24.5)	0.236
Living status				
Stable	134	105 (78.2)	29 (54.7)	0.146
Unstable	53	29 (21.8)	24 (45.3)	0.050*
Employment				
Full-time	29	18 (13.5)	11 (20.7)	0.256
Part-time	24	15 (11.2)	9 (16.9)	0.234
Unstable	72	60 (44.7)	12 (22.6)	0.050*
Jobless	62	41 (30.5)	21 (39.6)	0.241
Education				
< 8 years	117	84 (62.6)	33 (62.2)	0.231
8-10 years	70	50 (37.3)	20 (37.7)	0.233
Marital status				
Married	133	98 (73.1)	35 (66.0)	0.212
Divorced/separated	29	20 (14.9)	9 (16.9)	0.206
Single	25	16 (11.9)	9 (16.9)	0.210
Current drug injection				
Yes	70	50 (37.3)	23 (43.3)	0.236
No	117	89 (63.5)	30 (56.7)	0.261
Current HCV knowledge				
Yes	80	58 (43.2)	22 (41.5)	0.235
No	107	76 (56.7)	31 (58.5)	0.236
Lifetime drug use treatment				
Yes	113	83 (61.9)	30 (56.6)	0.234
No	74	51 (38.1)	23 (43.4)	0.259
Lifetime HCV treatment				
Yes	48	36 (25.9)	12 (22.6)	0.333
No	139	99 (73.8)	39 (73.5)	0.231

* $P < 0.050$

HCV: Hepatitis C virus

Table 2. Factors associated with current willingness for hepatitis C virus (HCV) treatment (n=187)

Characteristics	n	Willing	Not willing	Univariable model			Multivariable model		
				OR	95% CI	P	OR	95% CI	P
Living conditions [n (%)]	187								
Stable		66 (49.9)	68 (50.1)	2.30	0.99-3.30	0.221	2.40	0.98-3.60	0.222
Unstable		28 (54.0)	25 (46.0)						
Employment [n (%)]	187								
Yes		79 (63.5)	46 (36.7)	0.36	0.12-0.79	0.159	0.23	0.21-0.27	0.372
No		29 (47.3)	33 (52.6)						
Education [n (%)]	185								
> 8 years		57 (49.3)	58 (50.7)	0.96	0.43-1.87	0.189	0.99	0.23-0.27	0.441
< 8-10 years		38 (54.3)	32 (45.7)	0.44	0.21-0.94				
HCV status [n (%)]	181								
+		25 (48.0)	26 (52.0)	2.20	0.94-5.20	0.137	2.30	2.10-2.45	0.140
-		62 (46.8)	68 (53.2)						
Awareness of HCV status [n (%)]	186								
Yes		21 (69.0)	9 (31.0)	3.43	1.33-7.26	0.050*			
No		76 (46)	80 (54.0)						
Duration of participation in MMT [n (%)]	185								
< 12 months		35 (40.0)	52 (60.0)	0.99	0.98-1.95	0.391	0.12	0.23-0.24	0.121
> 12 months		58 (59.2)	40 (40.8)						
Knowledge of HCV treatment centers in the community [n (%)]	185								
Yes		61 (63.2)	33 (36.8)	3.90	1.24-5.38	0.050*	3.90	1.23-5.49	0.050*
No		43 (47.3)	48 (52.7)						
Participation in an educational program on HCV [n (%)]	187								
Yes		63 (63.2)	34 (36.8)	2.90	2.33-8.56	0.001*	3.10	2.43-8.99	<0.001*
No		46 (57.3)	44 (42.7)						
Recent participation in self-help groups [n (%)]	184								
Yes		61 (71.3)	39 (28.7)	4.60	3.34-9.33	0.001*	4.90	3.64-9.99	<0.001*
No		42 (53.6)	42 (46.4)						

*P < 0.050

OR: Odds ratio; CI: Confidence interval; MMT: Methadone maintenance treatment; HCV: Hepatitis C virus

Correlates of willingness to be treated for HCV

In total, 49.1% of the participants (n = 92) reported unwillingness to receive HCV treatment. Awareness of current HCV status [odds ratio (OR) = 3.43; 95% confidence interval (CI): 1.33-7.26; P < 0.050]; adequate knowledge of HCV treatment centers in the community (OR = 3.9; 95% CI: 1.24-5.38; P < 0.050); participation in an educational program on HCV (OR = 2.9; 95% CI: 2.33-8.56; P < 0.001) and recent participation in the meetings of self-help groups (OR = 4.6; 95% CI: 3.43-9.33; P < 0.001) were significantly associated with current willingness to receive

HCV treatment (Table 2).

Discussion

HCV is the main cause of chronic liver disease worldwide. PWID are less likely to receive HCV treatment than other patient groups.¹⁵ To the best of our knowledge, the current study is one of the few studies in Western Asia especially the Persian Gulf region that has determined the factors associated with willingness to receive HCV treatment among a group of PWID on methadone program. The prevalence of HCV among PWID in this study was high. Similar studies in Iran have

highlighted high prevalence of HCV among PWID.^{3,7,13} The prevalence of HCV among PWID in this study has important health implications and should be considered for pharmacological treatment on methadone program.

The current study confirms the importance of certain demographics associated with positive HCV status. PWID, who were HCV seropositive, were less likely to have stable living conditions compared with PWID who were HCV seronegative. A study of 904 PWID (i.e., 861 men and 38 women) in the Persian community found that 34.5% of them were HCV seropositive. More than a third of the respondents were homeless or reported unstable living conditions.⁹ Unstable living conditions among some of PWID were likely to result in emotional distress, poor financial status and as a result, ignoring safe injection. Some participants in this study were likely to share injection with other PWID who provided accommodation and became gradually HCV positive. Nonetheless, more research is needed to assess the nature of this association.

PWID, who were HCV seropositive, were less unemployed than those PWID who were HCV seronegative. This is in contrast with a study of 289 PWID in the US which found that being unemployed was associated with active drug injection and positive HCV status.¹⁶ Optimal treatment of PWID with HCV problem may partly need attention to the problem of living conditions in relation with methadone treatment. Financial supports may contribute to reducing the burden of HCV and as a result, lowering the rate of HCV problem among PWID on methadone program.

HCV awareness was associated with willingness for HCV treatment on methadone program. A study of 320 methadone-maintained PWID in the US found that HCV knowledge and awareness were strongly associated with high motivations for entry into HCV treatment.¹⁷ HCV awareness was likely to contribute to an increased knowledge among some of the participants about the necessity of HCV treatment. This study finding suggests that HCV awareness may increase willingness for HCV treatment among PWID on methadone program. The provision of a HCV educational program is needed to increase PWID' motivations for HCV treatment. An additional research is needed to find new methods to increase the participation of PWID in HCV educational

programs in methadone treatment.

The study found that knowledge of available HCV treatment centers in the community was associated with willingness for HCV treatment in methadone treatment. This study finding also highlights the roles of education and knowledge on HCV treatment and the necessity of increasing HCV knowledge and treatment. A survey in the US found that among 320 PWID on methadone program, prior participation in HCV-related educational activities was linked to a high level of HCV knowledge. Those with higher HCV knowledge were more receptive to HCV treatment.¹⁷ Although knowledge about HCV treatment centers alone may not be sufficient to change attitudes toward the necessity of HCV treatment, it may be a prerequisite to experience behavioral changes.

Participation in a HCV educational program was associated with current willingness for HCV treatment on methadone program. A recent study in the US found that PWID who previously participated in an HCV-related educational activity knew more about the necessity of HCV treatment and reported more willingness for HCV treatment.¹⁷ HCV educational programs were likely to emphasize the necessity of HCV treatment and increased motivations for HCV treatment among some of the participants. This issue deserves further research.

Participation in the meetings of self-help groups was also associated with an increased willingness for HCV treatment. We found no similar study. Nonetheless, a cohort study of 400 men and women living with HIV/HCV and alcohol problems found that 56% of them reported participating in one or more recent Narcotic Anonymous Meetings.¹⁸ HCV-related educational activities of self-help groups in Iran were likely to contribute to increasing HCV knowledge and an increased willingness for HCV treatment among some PWID. This study finding provides implications for more research about the efficacy of self-help groups in increasing willingness for HCV treatment among PWID on methadone program.

This study has several limitations and positive aspects. It relied on patient self-report of drug use. However, HCV status was confirmed by serology. We only recruited male participants. This issue may limit the generalizability of the study findings to

women. Recruiting female participants is suggested for conducting future studies. Our questionnaire lacked information on some medical conditions such as alcohol use that might influence PWID's willingness to receive treatment for HCV. These issues should be considered for future studies.

Conclusion

The study highlights the need for increasing willingness among PWID on methadone program to receive HCV treatment. It has been shown that even simple educational programs can lead to

significant improvements in HCV knowledge¹⁹ and as a result, HCV treatment entry. Nonetheless, more studies are needed to find new ways to increase willingness for HCV treatment among PWID on methadone program.

Conflict of Interests

The authors have no conflict of interest.

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