

## Prevalence of HIV infection and related risk factors in Isfahan Drop in Centers

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### ABSTRACT

**Background & Objective:** HIV infection is considered as an emerging health problem worldwide due to its related health, social, economic, cultural, and political consequences. Though low HIV prevalence in general population in Iran but its prevalence is concentrated among intravenous drug abusers (IDUs). The prevalence of HIV has been increasing in Iran because of parallel epidemics of both HIV infection and injection drug use. In this study the prevalence of HIV and its related risk factors in Isfahan Drop in Centers (DICs) was determined.

**Methodology:** In this cross-sectional study IDUs attended the DICs in Isfahan province were enrolled. Studied population was selected by census sampling method. Venous blood samples were obtained and HIVAb measured using enzyme linked Immunosorbant (ELISA) method. Detailed information regarding demographic characteristics and risk factors of HIV were collected using a structured questionnaire.

**Result:** HIVAb was measured in 539 IDUs. HIVAb test was positive in 6(1.1%) of IDUs. Mean age of HIV positive patients was 35.1 +/- 8.5 y. All of them were male. All HIV positive patients were positive for HCVAb and none was positive for HBsAg, HBsAb and HBCAb. The most common risk factors were travelling overseas, tattooing, and history of imprisonment.

**Conclusion:** The prevalence of HIV infection is low in Iran. However, considering its related risk factors and high rate of HIV-HCV coinfection, it seems that establishing more effective HIV educational programs to decrease behavioral risk factors and scale up harm reduction interventions in IDUs to reduce the burden of HIV and HCV is still necessary.

**KEY WORDS:** HIV, Intravenous drug users, Drop-in centers, Prevalence, Risk factors.

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### INTRODUCTION

Injection drug use is recognized as an important risk factor for blood-borne diseases including HIV infection. It is considered as an emerging health problem worldwide due to its related health, social, economic, cultural, and political consequences.<sup>1</sup>

Though it is reported that HIV infection is decreasing in some countries but the global trend of the infection is estimated to be upward in most countries. The prevalence of HIV infection in Iran reported to be below 1% with higher rate of infection (> 5%) among high risk population such as IDUs. According to WHO report and Center for Disease Control the prevalence of HIV infection has an increasing trend in Iran, in a way that the

rate has increased from low to concentrated level of epidemic.<sup>2,4</sup>

Injection drug use is the most common route of transmission way of infection in several regions of the world including Iran.<sup>5</sup> 25000 cumulative cases of HIV infection have been reported by Iran's Ministry of Health. Most of the HIV patients are male (94%) and injecting drugs use is the most common route of HIV transmission (68%) in Iran.<sup>6,7</sup>

Prevalence of HIV infection among IDUs is reported to be 15-23% in different studies in Iran.<sup>8,9</sup> These group of high risk population considered as the main target group for harm reduction programs in order to reduce the rate of transmission and consequently the burden of the disease. Considering that they are hardly available group for interventions, it seems that for more effective preventive interventions, referring IDUs to harm reduction centers and DICs are the most available and appropriate population.<sup>10</sup>

In view of the parallel epidemics of both HIV infection and injection drug use in Iran<sup>11</sup> and the fact that for effective management and prevention of HIV infection and reducing the burden of the disease, determination of both the sero-epidemiology and the distribution of HIV infection risk factors are necessary, so, we studied the prevalence of HIV and its related risk factors in Isfahan Drop in Centers.

## METHODOLOGY

In this cross-sectional study intravenous drug users (IDUs) attending to 7 health and social care Drop-in centers in Isfahan province that had 1581 IDUs members, from November 2008 to February 2009, were enrolled. Studied population was selected by census sampling method.

The protocol of study was designed and approved by the Institutional Review Board of Isfahan Infectious and Tropical Disease Research Center and Medical Ethics Committee of Isfahan University of Medical Sciences. After being informed about the goal and process of the study, written informed consent was obtained from all participants with the assurance that all obtained information would be just for research purposes and would be kept confidential.

The study included an interview and blood testing. The interview was conducted by an expert and trained social worker who had been working with IDUs, by using a structured questionnaire. It comprised of demographic data and risk factors for HIV infection. The demographic and risk factors of HIV infection including gender, age, marital status,

job, education, surgical history, dentistry history, unsafe sex, tattooing, cupping, piercing, prison history, transfusion, travelling overseas and ,sexual behaviors.

The validity and reliability of the questionnaire was approved by 10 experts and Cronbach's alpha 0.78, respectively. 5ml venous blood sample was obtained from IDUs and serum samples were transferred to the Isfahan infectious diseases research center laboratory and stored at .20..C for analyzing. Participant blood samples were tested for HIVAb using enzyme linked Immunosorbant (ELISA) method by DIAPRO kits (Diagnostic Bio probes s.r.j, Italy). Related risk factors in HIV positive patients was evaluated. Obtained data was analyzed using SPSS ver18 software and  $\chi^2$ , t-test , Odds Ratio and Regression Logistic tests.

## RESULTS

HIVAb was measured in 539 blood samples. Mean age of studied population was 35.3 +/-7.9. They were generally male (94.8%), Iranian (99.8%), urban population (99.4%) with an education level of junior high school or less (66.1%). 47.9% and 43.6% were married unemployed respectively.

According to interview results 3 participants reported positive history of HIV infection. HIVAb test was positive in 6(1.1%) of IDUs. Mean age of HIV positive IDUs were 35.1 +/- 8.5 y. All of them were male, Iranian, urban population. 50.0%(3/3) and 66.7%(4/6) of them were married and unemployed respectively. 83.3%(5/6) of them had an education level of junior high school or less.

Risk factors of HIV infection of IDUs with positive and negative HIVAb test are presented in Table-I. All HIV positive patients were positive for HCVAb and nobody were positive for HBsAg, HBsAb and HBcAb.

## DISCUSSION

In this study the prevalence of HIV infection among IDUs in DICs in Isfahan was evaluated. The results indicated lower rate of HIV infection among this high risk population. The most common risk factors were unsafe drug use.

Many studies worldwide and in Iran have investigated the prevalence of HIV infection among IDUs. Some studies have evaluated the prevalence of HIV infection in different subgroups of IDUs such as those in prison or harm reduction centers such as DICs. Reported rates for the infection had a wide variety in different communities due to differences in social, cultural and geographical situation. The

Table-I: Risk factors of HIV infection of IDUs with positive and negative HIVAb test.

Variables	IDU swith negative HIVAb n=533	IDUs with positive HIVAb n=6	P value
History of traveling	14.1%	50.0%	0.02
History of Tattooing	54.0%	83.3%	0.04
History of Cupping	32.1%	50.0%	NS
History of Ear piercing	19.0%	16.7%	NS
History of surgery	48.3%	83.3%	NS
History of Suture	77%	100%	NS
History of blood Transfusion	12.4%	16.7%	NS
History of hospital injections	55.6%	100%	NS
History of tooth pulling	30.5%	33.3%	NS
History of tooth filling	40.7%	33.3%	NS
History of Gum surgery	2.5%	0.0%	NS
History of Dental work	86.1%	83.3%	NS
History of Endoscopy	8.0%	33.3%	NS
History of alcohol consumption	81.7%	83.3%	NS
History of illegal sex	56.2%	33.3%	NS
History of sharing meedle	33.2%	56.0%	NS
History of imprisonment	63.2%	100%	0.06
Duration of being IDVU (Mean±SD)	11.9±7.7	15.5±11.5	0.05
Frequency of imprisonment (Mean±SD)	5.9±9.3	5.2±5.3	NS

prevalence of HIV among IDUs was reported to be 0-23.2%, 27% and 2.6% in Iran, Indonesia and Pakistan.<sup>12-14</sup>

The lower rate of HIV infection among IDUs in Iran was among those attending treatment and harm reduction centers and higher in those in prison or had a history of imprisonment.<sup>15-17</sup> The prevalence of HIV infection in this subgroup of IDUs had been studied in some studies in Iran.

Zammani et al in Tehran have studied 153 IDUs from a DIC in Tehran. The prevalence of HIV infection was 22.9%(35/153).<sup>17</sup> Mirahmadizadeh and colleagues studied 997 IDUS from fifteen DICs in Tehran. The prevalence of HIV infection was 20.5%(192/997).<sup>18</sup>

In another study in Tehran, Rahimi-Movaghar et al have reported that 14.9%(41/276) of IDUs attending DICs were HIV positive.<sup>19</sup> In a study in Shahr-e-Kord among IDUs attending a voluntary rehabilitation centre, Only one participant (0.8%) was HIV positive.<sup>20</sup> Though the reported prevalence of HIV infection in three studies in Tehran was not similar but comparing with our result, the rate was significantly higher than that reported in this study.

The lower prevalence of HIV infection in current study may be due to efficacy of harm reduction intervention in this group of patients, ten years after initiation of this programs in Iran. However, it seems that larger studies are needed for evaluating both the efficacy of mentioned intervention in this subgroups of IDUs and the prevalence of HIV infection in larger sample size.

Another explanation is the selected population. of Razani et al. study was in Tehran homeless, female, young IDUs and users of a more potent form of heroin who were identified as having increased risks for HIV.<sup>21</sup>

Harm reduction programs were introduced in 2002 in Iran and expanded in 2005, but regional studies have indicated its low efficacy in 2007.<sup>22</sup> According to the results of a systematic review by Rahimi-Movaghar during a decade from 1998 to 2007, the prevalence of HIV infection has been increased over time and it had the potential to increase significantly among IDUs in Iran. They concluded that harm reduction interventions should be qualified in a way to improve their coverage and availability to reduce the potential increase of HIV infection in this high risk group of population.<sup>23</sup>

On the other hand, in a recent study, Malekinejad and colleagues have reported that HIV harm reduction strategies have been effective over the past five years.<sup>24</sup> Thus, this report could confirm our explanation regarding effectiveness of harm reduction programs.

In this study the most common risk factors for HIV infection were travelling overseas, tattooing and history of imprisonment. Our result regarding history of imprisonment was similar to that reported by Zamani et al. They indicated that history of shared injection in prison was the most common risk factor in IDUs referred to drug treatment centers in Tehran.<sup>8</sup>

The results regarding needle sharing among HIV positive patients in our study was unsatisfactory

due to small sample size, but considering that unsafe drug use in prison is common so it could explain the relation between imprisonment and HIV infection.

Though traveling is considered as another risk factor for HIV infection but considering the low sample size and incomplete information about their travels that was accompanied with un safe sex travel specially sexual behaviors, so this risk factor should be studied in larger sample size of HIV positive IDUs of our community. Regarding HIV co infections, all HIV positive patients were positive for HCVAb and nobody were positive for HBsAg, HBsAb and HBcAb.

Though the route of transmission in HBV and HIV is similar, but evidence suggests that the correlation between HBV and HIV infection mainly depends on the characteristics of studied population and mode of transmission. There are controversies regarding HBV and HIV coinfections.<sup>25</sup> Some studies have reported an average rate of 10% HBV and HIV coinfection<sup>26</sup>, whereas others showed no significant relationship between them. In Iran most of the HBV infected patients were HIV negative.<sup>27,28</sup>

The HCV and HIV coinfection is most common as reported by several studies. Worldwide co-infection has been reported to be 8-50%.<sup>29</sup> In a recent study in Iran it was reported as 86%.<sup>19</sup> In our study the rate was 100%.

The limitations of this study include cross sectional design of the study, data collection was based on self reported questionnaire through interview, unsatisfactory results regarding sexual activity due to religious beliefs of participants.

In Summary the findings of current study has indicated that high risk behaviors related to unsafe IV drug use has more important role in currently HIV infected patients in IDCs than those related to unsafe sex behaviors. This finding was similar to other parts of Iran and other countries of the Middle East.<sup>25</sup>

These results have indicated our priorities in our educational and interventional strategies, in a way that they should mainly focused on safe IV drug use especially considering the transition to injecting methods amongst opioid users in Iran.<sup>24</sup> However the importance of safer sexual behaviors should not be ignored either, especially in younger age groups regarding the fact that the pattern of transmission in Iran will change from that of unsafe injection to unsafe sexual contact.<sup>30</sup>

The prevalence of HIV infection was low, but considering its related risk factors and high rate

of HIV-HCV co infection, it seems that initiation of more effective HIV educational programs to decrease behavioral risk factors and scale up harm reduction interventions in IDUs to reduce the burden of HIV and HCV in Iran is still necessary.

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