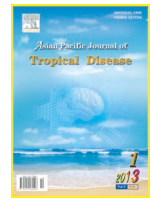




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## Prevalence of HIV infection and the correlates among beggars in Tehran, Iran

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### PEER REVIEW

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#### Comments

This is a great study which includes a good sample size. Regarding there is scarce data about the HIV prevalence among beggars in Middle East, this study would present situation of the area. (Details on Page 78)

### ABSTRACT

**Objective:** to assess the prevalence of HIV infection and the correlates among street beggars in Tehran, Iran. **Methods:** In a survey conducted in Tehran during 2007 to 2008, 4230 men and women beggars were collected by municipality. As a routine approach, we got serologic test for HIV. A questionnaire regarding socio-demographic and injection drug use (IDU) behaviors was designed. **Results:** HIV prevalence was 1% (0.7–1.3) in the study population. HIV infection was associated with older age (adjusted *OR*: 0.38 for >50 years), birthplace (adjusted *OR*: 2.06) and being IDU (adjusted *OR*: 8.26). **Conclusions:** Regarding the HIV prevalence and the correlated, we recommend harm reduction programs such as needle exchange, expanding methadone maintenance therapy and renewing education among this population.

### KEYWORDS

Beggars, HIV Infection, Risk factors

## 1. Introduction

With approximately 4.7 million HIV infected cases in Asia, this infection has thrived on poverty and uneven development[1]. Based on Statistics of Iranian Ministry of Health (MOH), more than 23000 people are living with HIV in Iran. As a matter of fact, the total prevalence of HIV infection is less than 1% in general population but more than 5% among injection drug users (IDU); thereby, Iran has been ranked among countries with concentrated epidemic[2].

Street beggars are mostly homeless people who generally ask for money near public places, busy markets, stations, etc. Although the exact number of street beggars in Iran is unknown, this phenomenon is common in urban areas. According to last counts in 2006, more than 1200 beggars were found in Tehran of whom 500 were IDUs. Demographic reports support the idea that industrialization and rapid urbanization resulted in massive migration of people from rural to urban

areas in Iran. This migrant population has long looked for opportunities in the capital city, engaging in temporary, insecure and odd jobs. Further factors such as homelessness and vagabonding, eventually drifts some migrants into a lifestyle in which high risk behaviors make them vulnerable to contract HIV as well as other sexually transmitted infections (STIs). A considerable proportion of beggars on the streets of Tehran are children, women, disabled and/or the elderly. Officials believe that these individuals are more prone to crime and exploitation and drug abuse which increases the risk of HIV acquisition even amongst children younger than two years of age. The lifestyle in general results in poorer health states and higher mortality rates.

This evidently high prevalence of high risk behaviors (*i.e.* IDU, unprotected sexual contact) among Iranian street beggars highlights the need for further assessments of possible HIV infection. We tried to assess the prevalence of HIV infection and the correlates among street beggars in Tehran, Iran.

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## 2. Materials and methods

### 2.1. Participants

Tehran Municipality under a project –collecting and organizing street beggars– collected all beggars in Tehran from January 2007 to December 2008, then transferred them to special camps for receiving free services. Beggars who asked to receive the services were tested for HIV since mixing HIV infected beggars and non-HIV infected beggars could lead to transmission of HIV infection by high risk behaviors. As a result, HIV positive beggars were separated from other beggars. Also, HIV infected beggars were provided with anti-retroviral therapies according to the clinical indications if they were eligible for initiating the therapy. To estimate the prevalence of HIV infection and associated risk factors, we conducted this survey between men and women beggars who were collected by municipality and kept in special camps in Tehran. Through a routine approach, 4230 people participated and provided a specimen. Socio-demographic data (*i.e.* age, gender, birth place, educational level, marital status, relation with family and friends, *etc*) as well as current situation of drug abuse were obtained via questionnaires.

### 2.2. Ethical considerations

The beggars in Tehran were very poor and needed to receive services such as food and place for sleep free of charge. The participants were aware that their test results would be used for research aims. We described clearly that all data are used anonymously and according to unique code for the research purpose. None of them declined to participate in the project. Most importantly, we did not compel them to participate in the research and they could receive the services without participation in the research and also considering that there were no sensitive questions in the designed questionnaire, verbal consent was taken from all participants. Records were kept separate from other participants and gathering system and data were analyzed anonymously. The Institutional Review Board of municipality reviewed and approved the study protocol.

### 2.3. Measurements

HIV serology was performed using an enzyme-linked immune sorbent assay (Biotest AG, Dreieich, Germany) and positive samples were confirmed by Western blot (Diagnostic, Berlin, and Germany) Positive individuals were asked to fill a questionnaire in regards to socio-demographic information and intravenous drug use.

### 2.4. Statistical analysis

Data were analyzed by STATA (8.0, College Station, TX, USA) and HIV prevalence was estimated as the number of HIV positive patients divided the number of overall results and stratified by socio-demographic information and injection drug use. We performed logistic regression analyses to find associations between the variables and HIV infection. Variables associated with HIV infection in bivariate analysis at the  $P \leq 0.10$  were considered as predictors. Final model included those variables associated with HIV infection independently at the  $P \leq 0.05$  level.

## 3. Results

Socio-demographic information and risk behaviors are presented in Table 1. Among the 4230 subjects, 2802 (66.2%)

were male and 1428 (33.8%) were female. Also, 2541 (60.1%) subjects were illiterate, 1854 (43.8%) were single and 2925 (69.1%) subjects were born in Tehran. Totally, 42 (1%) subjects were HIV positive. HIV infection was associated with gender, age, educational level, birth place, marital status, relation with family, and situation of drug abuse. Older age, adjusted *OR*: 0.38 (0.17–0.88) for more than 50 years, birthplace, adjusted *OR*: 2.06 (1.11–3.83), injection drug use, adjusted *OR*: 8.26 (2.97–22.98), were associated with HIV infection ( $P < 0.05$ ).

**Table 1**

Socio-demographic information, injection drug behavior and HIV infection prevalence among beggars, Tehran, Iran, 2007–2008.

Variable		N1	HIV infection	HIV infection prevalence
		(%)	(N)	% (95% CI)
Gender <sup>a</sup>	Total	4230 (100)	42	1.0 (0.7–1.3)
	Male	2802 (66.2)	34	1.2 (0.8–1.7)
	Female	1428 (33.8)	8	0.6 (0.2–1.1)
Age groups <sup>c</sup>	≤30 years	888 (21.2)	11	1.2 (0.6–2.2)
	30–50 years	1421 (34.0)	24	1.7 (1.1–2.5)
	>50 years	1872 (44.8)	7	0.4 (0.1–0.8)
Birthplace <sup>c</sup>	Tehran	2925 (69.1)	20	0.7 (0.4–1.0)
	Other	1305 (30.9)	22	1.7 (1.0–2.5)
Education level <sup>d</sup>	Illiterate	2541 (60.1)	13	0.5 (0.3–0.9)
	completed high school	1389 (32.8)	24	1.7 (1.1–2.6)
	College or higher	300 (7.1)	5	1.7 (0.5–3.8)
Marital status <sup>b</sup>	Single	1854 (43.8)	12	0.6 (0.3–1.1)
	Married	2376 (56.2)	30	1.3 (0.8–1.8)
Occupation	Unemployed	2330 (55.1)	28	1.2 (0.8–1.7)
	Employed	1900 (44.9)	14	0.7 (0.4–1.2)
Nationality	Iran	4061 (96.0)	42	1.0 (0.7–1.4)
	Other	169 (4.0)	0	0.0 (0.0–2.1) <sup>d</sup>
Parents	Alive	1437 (34.0)	14	1.0 (0.5–1.6)
	Dead	2793 (66.0)	28	1.0 (0.7–1.4)
Life Condition	Alone	1832 (43.3)	20	1.1 (0.7–1.7)
	Along with family or friend	2398 (56.7)	22	0.9 (0.6–1.4)
Relation with family <sup>b</sup>	No	1986 (46.9)	26	1.3 (0.8–1.9)
	Yes	2244 (53.1)	16	0.7 (0.4–1.1)
Family support	No	4045 (95.6)	39	1.0 (0.7–1.3)
	Yes	185 (4.4)	3	1.6 (0.3–4.7)
Relation with friends	No	2585 (61.1)	30	1.2 (0.8–1.6)
	Yes	1645 (38.9)	12	0.7 (0.4–1.3)
Situation of drug abuse <sup>c</sup>	No	2375 (56.1)	5	0.2 (0.07–0.5)
	Injection	658 (15.6)	16	2.4 (1.4–3.9)
	Non-injection	1197 (28.3)	21	1.7 (1.1–2.7)
History of hospitalization	No	4159 (98.3)	41	1.0 (0.7–1.3)
	Yes	71 (1.7)	1	1.4 (0.03–7.6)

<sup>a</sup>Due to missing data, subgroups do not add up to the total; <sup>b</sup> $P=0.05$ ; <sup>c</sup> $P \leq 0.003$ ; <sup>d</sup>One-sided 97.5% CI.

## 4. Discussion

The prevalence of HIV infection among street beggars in our study was 1%. Also, HIV infection was associated with older age, birthplace and being IDU. According to our findings, age group of infected patients was between 30–50 years. Similar to other studies, the median age of IDUs in our sample was 34 years and 7% had educational levels higher than completed high school. In addition, most of infected cases were married, not born in Tehran, and they were predominantly immigrants from other cities.

Injection drug use has shown an increasing trend in Iran and is estimated to be around 170000 to 230000 people until the end 2007. It has been speculated that IDU beggars are more likely to evidence needle-sharing in compare to general population. Marginally housed and poor IDUs use shooting galleries and perform sex work twice as often as firmly housed IDUs[3]. Previous studies among Iranian IDU population have speculated that street and marginally housed IDUs tend to share needles and more than 50% of street IDUs possess a positive history of sharing

needles, despite the fact that needles can be purchased from pharmacies without any constraints and at a low cost. The low prevalence of HIV infection among IDUs, in our study, could be in part explained by their greater tendency of using non-shared needles, providing debatable evidence that sharing needles is not routinely practiced among our IDUs and this could be to some extent due to the effectively implemented needle exchange programs throughout the nation.

Among a great majority of beggars, in addition to adverse childhood experiences and sexual assault, violence, poor social and emotional support as well as other traumatic histories, extreme poverty and homelessness further alleviate unstable sexual relationships among these groups<sup>[4]</sup>. In a study of Indian homeless people in which majority of them were migrants from rural places, weaker family ties, lack of social inhibitions in a new place and peer pressure further promoted sexual mixing of migrants<sup>[5]</sup>. Homeless men were considered a potential bridge for HIV transmission from commercial sex workers to the general population.

It has been evident that a considerable proportion of beggars in Iran have a positive history for incarceration<sup>[5,6]</sup>. In addition, homeless and marginally housed youth are at higher risk for multiple problem behaviors and developmental issues, including incarceration, unemployment, school drop outs and mental health problems<sup>[7]</sup>. Impoverished and disenfranchised women, particularly those who are homeless are vulnerable to HIV in part because of their greater engagement in high risk sexual behaviors and substance use<sup>[8]</sup>. Among homeless men and women, food insecurity is an indirect risk factor for both HIV transmission and worse HIV clinical outcomes. In a study of homeless and marginally housed individuals living with HIV/AIDS in San Francisco, over half of them had experienced food insecurity, almost five times that of the US general population<sup>[9]</sup>. However, we were not able to examine the extent of unprotected sexual contact, positive history of incarceration and food insecurity among HIV infected patients of our sample, future studies are needed to thoroughly assess the socio-economic and sexual behaviors associations of HIV infection among Iranian street beggars.

An important limitation of our study would be ignoring the status of other STIs among this population, which might be associated with HIV infection. Another limitation was gathering data regarding sexual behaviors among the beggars that could have correlate with HIV infection. Despite of the limitations, we showed that age, birthplace and injection drug abuse were associated with the HIV acquisition among street beggars of Tehran. The HIV prevalence found in our survey lends strong support for implementing additional prevention programs such as needle exchange program, expanding methadone maintenance therapy and renewing education among this population. Further policies such as promotion of rural lifestyle in order to prevent immigration to large cities, methadone maintenance therapy (MMT) and harm reduction programs should also be considered in a durable manner.

### Conflict of interest statement

We declare that we have no conflict of interest.

### Comments

#### Background

The background is good and brief which poses causes for doing the research on the title of article and also necessity of the study in the country.

#### Research frontiers

Regarding the beggars are vulnerable groups with low socioeconomic level, evaluation of this group is very substantial issue especially for HIV infection. In addition, since HIV incidence is developing among Middle East countries, assessing the HIV prevalence and the correlates among the countries such as Iran is very important.

#### Related reports

Compatible with many studies, getting HIV infection in this study was associated with IDU. In spite of my expectation, HIV prevalence among beggars is low due to harm reduction programs especially distribution of clean needles among key population.

#### Innovations & breakthroughs

There are studies regarding the issue in the world. But in this study the sample size is very high and also finding a study (with the sample size) is rare. In addition, this study is novel in Iran.

#### Applications

This study shows that harm reduction programs are doing great in Iran; however, expanding the programs should be done among the groups in the country.

#### Peer review

This is a great study which includes a good sample size. Regarding there is scarce data about the HIV prevalence among beggars in Middle East, this study would present situation of the area.

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