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Prevalence and correlates of initiating injection drug use before the age of 18 years in Iran: Results of a national survey

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Abstract

Background: In this study, we sought to determine factors relating to initiating injection drug use before the age of 18 years in Iran.

Methods: In this cross-sectional survey, people who inject drugs (PWID) were recruited using facility-based sampling in 10 cities in Iran in 2014. Adults (≥18 year) who reported injecting drugs at least one time during the last year were included. A structured questionnaire collected behaviors related to injection, sexual risk, and HIV testing. Based on the reported age of first injection, we grouped participants into that initiating injection drug use by before 18 years old versus 18 and after 18 years old.

Results: Of 2,356 participants, 199 (8.5%, 95% CI 7.4–9.6) started injecting before the age of 18 years. Initiating injection drug use before the age of 18 years were more likely to be <30 years old (39.4% vs. 19.7%, p<0.001), report syringe and needle sharing (15.0% vs. 5.4%, p<0.001), have sex with other men (24.3% vs. 15.6%, p<0.001), and have complete knowledge about HIV (92.5% vs. 86.4%, p<0.001).

Conclusion: People who started injection at younger ages had higher risk profiles and should be prioritized for substance use treatment, harm reduction, and HIV prevention programs.

Keywords

Injection before the age of 18; people who inject drugs; Iran

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Authors' contributions

Hamid Sharifi, Ali Akbar Haghdoost, and Ali Mirzazadeh designed the study, provided oversight to the implementation, contributed to the interpretation and writing with input from Willi McFarland. Fatemeh Tavakoli, and Sara Aghaei conducted the primary analysis with guidance from Aryan Esmaeili, Hamid Sharifi, and Ali Mirzazadeh. Fatemeh Tavakoli produced the first draft with editorial review by all authors.

Conflict of interests

Authors declare that they have no conflict of interests.

Introduction

It is estimated that there are 210,000 people who inject drugs (PWID) in Iran (Rezaei et al., 2017), among the highest per capita in the Middle East and developing world. Drug use and the infectious and chronic diseases stemming injection risks have been an important national public health concerns for decades. PWID are at risk of numerous negative health outcomes, including HIV and hepatitis C virus (Noroozi, Nedjat, Golestan, & Majdzadeh, 2012).

Prior studies on PWID suggest that age at first injection is an important risk factor for numerous adverse health outcomes (Buxton et al., 2004; Lankenau et al., 2012). Those who initiate injection at younger ages are more at risk for the acquisition of blood-borne infections compared to those who begin drug injection later in life (Miller, Strathdee, Kerr, Li, & Wood, 2006). Other factors associated with age of first injection include socioeconomic status, history of incarceration, and poly drug use (Bryant & Treloar, 2008; Guichard, Guignard, Lert, & Roy, 2015; Jorjoran Shushtari et al., 2017).

Little is known about injection at younger ages among PWID in developing countries, especially in Iran. Majority of studies on adolescent injection use have been conducted in more economically developed countries and therefore may not represent unique conditions and risks facing younger PWID in developing nations. The aim of the present study is to reduce this gap in the current knowledge and to determine the prevalence and correlates of initiating injection drug use before the age of 18 years among people who inject drugs in Iran.

Methods

PWIDs were recruited from April to November 2014 into a cross-sectional study by facility-based sampling from 10 cities in Iran. PWID were recruited from drop-in centers, shelters, Opium Maintenance Treatment (OMT) centers, voluntary counseling and testing centers, and out-reached spots. People who were 18 years or older and reported drug injection in the past 12 months were interviewed after obtaining verbal informed consent. Data such as demographic and risk behaviors were collected during a face to-face interview using a standardized questionnaire. The questionnaire was included several questions on the demographic and behavior of the participants on drug use, injection, sexual behaviors, the experience of HIV testing and their HIV knowledge HIV. The HIV Knowledge consisted of nine questions and if every person answered to all of them correctly, we assumed its knowledge as completed.

For outcome variable, based on the reported age of first injection, we grouped participants into initiating injection drug use before the age of 18 years (≤18 years old) or otherwise (>18 years old). Through bivariate analysis, we first compared initiating injection drug use (≤18 years old and >18 years old subgroups in relation to sociodemographic characteristics, drug using practices and high-risk behavior. Participants received monetary incentive (about US $2.5) in this survey. Data were analyzed using descriptive statistics and the chi square test for differences in proportions in Stata 14.2. Research Ethics Board based at the Kerman

University of Medical Sciences reviewed and approved the study protocol and procedures (Reference number: K/93/205).

Results

2,356 participants were included in the present analyses. Participants were aged 18 to 80 years old, with a mean age of 39 years (Table 1). The average age at first injection was 25.8 years (SD 7.7). The majority of participants were male (97.6%), 30 years of age or older (78.6%), had less than high school education (68.3%), earned $200 or less per month (61.3%), and first injected drugs outside of prison (94.3%). A majority (54.1%) also reported injecting opioids in the last month.

199 (8.5%) participants reported age at first injection <18 years. Persons who injected before the age of 18 years were more likely to be under 30 years old at the time of the survey compared to those with later onset (39.4% vs.19.7%, $p<0.001$), report syringe and needle sharing in the last month (15.0% vs. 5.4%, $p<0.001$), ever have sex with other men (23.6% vs. 16.1%, $p=0.017$). Sexual contact in lifetime was more likely among people who injected at 18 or after 18 years old compared to people who injected before the age of 18 years (87.1% vs. 76.4%, $p<0.001$). Unsafe sex in marriage was more likely among people who injected at 18 or after 18 years old compared to people who injected before the age of 18 years (23.4% vs. 11.8%, $p<0.001$). A borderline higher prevalence of HIV positive cases was noted among injectors before the age of 18 years compared to injectors after the age of 18 (13.1% vs. 9.0%, $p=0.065$).

Discussion

Using a large cohort of nationally sampled PWID in Iran, we found that participants who started injection by before the age of 18 were more likely to have a higher risk profile than those who started injection later. We found that a younger age of first injection was correlated with unsafe injection behaviors such as syringe and needle sharing in the last month. Our findings are consistent with other studies that have reported increased risk-taking behaviors in injectors (Battjes, Leukefeld, & Pickens, 1992; Jorjoran Shushtari et al., 2017; Loxley, Phillips, Carruthers, & Bevan, 1997). In a prior study in Kermanshah, Iran, Shushtari et al. (2017) also found a relationship between a younger age of first injection and greater risk of unsafe injection behaviors, including sharing equipment such as syringes and cookers. Similar associations were also found in the US. Battjes et al. (1992) report younger age of first injection having increased odds of involvement in high risk behaviors, especially risky injection. Similarly, Carneiro et al.'s (1999) study, found PWID who reported an injection initiation at an older age tend to have safer injection practices than that of those who initiated injection(Carneiro, Fuller, Doherty, & Vlahov, 1999).

Additionally, we found that a younger age of first injection was correlated with risky sexual practices, including recent condomless commercial sex and same sex between men. In contrast, a study by Fuller et al. (2005) observed that trading sex for drugs and using condoms during the first year after injection did not significantly differ according to age at initiation(Fuller et al., 2005). However, other studies have reported high risk behaviors in

association with injection before the age of 18 (Doherty, Garfein, Monterroso, Brown, & Vlahov, 2000; Fuller et al., 2002), including Doherty et al.'s (2000), who reported a significant association with HIV when injection drug use was initiated by age less than or equal to 18 years. Our study found a borderline significant association mirroring this result.

The literature varies by time and place on the profile of injection before the 18 years versus injection at ≥ 18 years old. Our finding of younger age associated with earlier age of injection in Iran stands in contrast with Carneiro et al.'s (1999) findings that PWID who initiated injection within the prior six years tended to be 35 years and older.(Carneiro et al., 1999) In Shushtari et al.'s (2017) study, there was no significant relationship between current age and injection before 18 years old (Jorjoran Shushtari et al., 2017). We found that there was no difference between injection before 18 in relation to the sex, education, monthly income, the place of first injection occurred, and which drug was used in the last month. By comparison, Arreola et al.'s (2014) report multiple demographic differences observed between late and typical initiators include being female (Arreola et al., 2014). Fuller et al.'s (2005) study found that low educational levels were more likely to initiate injection drug use during adolescence (Fuller et al., 2005). Further, Abelson et al.'s (2006) study found no difference between injection before 18 years in relation to place where first injection occurred (Abelson et al., 2006). Finally, Lankenau et al. (2012) demonstrated in a study conducted in New York and Los Angeles that methamphetamine use was associated with injection before 18 years old (Lankenau et al., 2012).

We acknowledge limitations of our study. The method of our sampling and recruitment was facility-based and may not represent the experiences of persons not seen at facilities. Our study was also conducted in 10 cities in Iran, which limits the generalizability of the findings to the rest of the country. Nonetheless, these cities cover a large part of the country's overall population and the population of PWID in Iran. Finally, our findings relied on face-to-face interviews which are subject to social desirability biases.

Despite limitations, our data provide evidence that people who started injection at younger ages had higher risk profile and should be prioritized for prevention and harm reduction programs.

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Table 1.

Participant demographic characteristics and risk behaviors by age at first drug injection, Iran, 2014.

Age at First Injection	<18 years old N (%)	≥18 years old N (%)	Total	P-value
Total N	199 (8.5)	2,157 (91.5)	2,356	
Sex				
Male	193 (97.0)	2,106 (97.6)	2,299	0.568
Female	6 (3.0)	51 (2.4)	57	
Current age (years)				
<30	78 (39.4)	424 (19.7)	502	<0.001
≥30	120 (60.6)	1732 (80.3)	1,852	
Education				
Less than high school	133 (66.8)	1,476 (68.5)	1,609	0.630
High school or more	66 (33.2)	679 (31.5)	745	
Monthly income (US $)				
≤200	112 (56.3)	1,334 (61.8)	1,446	0.123
>200	87 (43.7)	823 (38.2)	910	
First injection drug use setting				
Inside prison	7 (3.5)	112 (5.2)	119	0.301
Out of prison	191 (96.5)	2,033 (94.8)	2,224	
Drug of choice (drug most used in the last month)				
Opioids	92 (65.7)	1,184 (73.7)	1,276	0.098
Stimulants	46 (32.9)	412 (25.6)	458	
Other	2 (1.4)	11 (0.7)	13	
Syringe / needle sharing in last month				
No	79 (85.0)	901 (94.6)	980	<0.001
Yes	14 (15.0)	51 (5.4)	65	
Shared preparation devices (e.g., spoons or other containers) in last month				
No	51 (55.4)	516 (54.3)	567	0.829
Yes	41 (44.6)	435 (45.7)	476	
Sexual contact in lifetime				
No	47 (23.6)	279 (12.9)	326	<0.001
Yes	152 (76.4)	1,877 (87.1)	2029	
Unsafe sex during marriage in last year (among married)				
No	172 (88.2)	1,612 (76.6)	1784	<0.001
Yes	23 (11.8)	493 (23.4)	516	
Unsafe extramarital sex in last year (non-commercialized sex)				
No	145 (74.0)	1,523 (71.3)	1668	0.427
Yes	51 (26.0)	613 (28.7)	664	
Unsafe extramarital sex in last year (commercial sex)				
No	160 (80.4)	1,754 (82.2)	1,914	0.538

Age at First Injection	<18 years old N (%)	≥18 years old N (%)	Total	P-value
Yes	39 (19.6)	381 (17.8)	420	
Male-male sexual contact in lifetime (among men)				
No	113 (76.4)	1,545 (83.9)	1,658	<0.017
Yes	35 (23.6)	296 (16.1)	331	
Unsafe male-male sex, last time (among men having male-male sex)				
No	29 (87.8)	239 (86.6)	268	0.837
Yes	4 (12.12)	37 (13.41)	41	
Methadone maintenance treatment in last year				
No	102 (59.6)	1,146 (58.3)	1,248	0.730
Yes	69 (40.4)	820 (41.7)	889	
Free condom access in last year				
No	124 (64.9)	1,365 (64.1)	1,489	0.811
Yes	67 (35.1)	766 (35.9)	833	
Free syringe and needle access in last year				
No	84 (44.0)	900 (42.6)	984	0.707
Yes	107 (56.0)	1,214 (57.4)	1,321	
HIV Status				
Negative	166 (86.9)	1,896 (91.0)	2,062	0.065
Positive	25 (13.1)	188 (9.0)	213	
Complete HIV knowledge				
No	180 (90.4)	1,876 (87.0)	2,056	0.159
Yes	19 (9.6)	281 (13.0)	300	