

Drug Use and High-Risk Sexual Behaviors of Women at a Drop-In Center in Mazandaran Province, Iran, 2014

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Background: Female drug users are more likely to transmit human immunodeficiency virus (HIV) to their sexual partners. Little is known about HIV, sexually transmitted diseases (STDs), cervicitis, and drug abuse among female sex workers in Iran.

Objectives: Therefore, this study was conducted at a drop-in center (DIC) in Iran to investigate the prevalence of HIV associated risk factors, the prevalence of drug use, high-risk sexual behaviors, and the relationship between the associated factors in women.

Patients and Methods: This quantitative cross-sectional study was conducted on 190 female sex workers (SW) in a DIC in Sari, Mazandaran, Northern Iran, in January and February 2014. The study sample was selected through census sampling. In the end, 190 female SWs referring to the DIC participated in our study. There was no limitation in sampling. The self-administered questionnaire was completed via an interview.

Results: The results showed that 39% of the female SWs were less than 30 years old and 64% had elementary school education. In addition, 59% of the participants took some type of illegal drugs and 1.1% of them were reportedly injecting drug users. Moreover, 43% of them had substance dependent husbands, and 39% were reportedly regular condom users. They had 1-10 sexual partners on average per week. The overall prevalence of HIV infection was 4%. A significant relationship was found between the type of drugs used and factors such as having a substance dependent husband, use of condom during the last sexual contact, regular condom use, and the number of sexual acts per week. A significant correlation exists between using psychiatric drugs and factors like regular condom use, education, cervicitis, and the number of sexual conducts per week.

Conclusions: Female sex workers often engage in sex for financial reasons and are at high risk of drug abuse, HIV, and cervicitis. In addition, the rate of cervicitis among females with high-risk sexual behavior is considerable in Mazandaran, Iran. Therefore, the state authorities should provide sex workers with health care services and help them acquire a good job to support their life.

Keywords: Uterine Cervicitis; HIV; Sex Workers; Drug Abuse

1. Background

Drug use puts individuals at greater risk for sexually transmitted diseases (STDs), HIV, and vaginal infections (1-3) (that in turn increases the risk of HIV transmission) (4). Thus, the involved women transmit HIV/AIDS to their sexual partners (5). Drug users, comparing with non-drug users, engage in high risk behaviors (e.g. aggression and shared use of needles/syringes). Several studies have shown that some users try to reduce the rate of high-risk sexual behaviors (6, 7).

Some of HIV-infected injecting drug users regularly use condoms to protect their partners. This conduct is called informed altruism (8). However, some studies have shown that HIV-positive drug users show resistance to reduce high-risk behaviors. This may be due to social

pressure, poverty, unemployment, low educational level, substance dependence, and clients' preferences (9). Little investigation has been conducted on the effect of HIV-positive awareness on the modification of risk behaviors among female HIV-positive drug-users.

Sexually transmitted infections (STI) are among the main causes of mortality in developing countries and are mostly observed in those with multiple sex partners (10). Presumably, 340 million new cases of STI are reported every year among 15-49 years age group (11). Some people are infected for a long period of time without any symptoms, so they are not aware of their disease may spread it (12). The prevalence of STDs increases among females with illegal social behaviors because of their high num-

ber of sexual partners and high rate of risky behavior.

These women are important sources of HIV and STDs transmission to their sexual partners (13). The prevalence of HIV and STDs in high risk groups differs in various areas and female sex workers (SW) around the world (14, 15). HIV has the highest prevalence in subgroups such as SWs who constantly change their sexual partners and engage in unprotected sex (16). Health care services for SWs such as education, condom use, and effective treatment of HIV and STIs, and structured interventions, reduce the risk of HIV and STD transmission (17). The present investigation studied the prevalence of substance use, STDs, change in sexual partners, and multiple sexual partners in SWs. The present study showed the prevalence of drug use or risky sexual behaviors, and the relationship between substance use and multiple sexual partners. It also shows the prevalence of drug use or risky sexual behaviors and the relationship between them in the women who referred to a female-specific DIC in Mazandaran Province, Iran, 2014.

1.1. Female-Specific Drop-in Center

This center was founded in Mazandaran Province, Sari, Iran, in 2005 with the authorization of the Ministry of Health and Medical Education. Its goal was to control HIV/AIDS and STDs among female SWs, and other vulnerable and substance dependent women. It enhances the safety and security of vulnerable women and provides support, training, and health services for female injecting drug users and SWs. At present, there are DICs in 15 provinces of Iran. About 190 vulnerable women visit the female-specific DIC in Sari, Iran, for receiving education as well as doctor and midwifery examination every month. This center is supervised by Sari Health Center.

Hepatitis B Virus (HBV) test and rapid HIV test are performed on all women on their first visit and free condoms are provided for them. DIC in Sari conducts advocacy workshops for clients on HIV, condom use, and negotiation skills for condom use in women, sexual health, healthy drug injection, and STDs on a regular basis. A Pap smear test and vaginal examination for the diagnosis of cervicitis are performed at least once a year. Warm meals are distributed once a week in the center. Currently, 19 substance dependents are being treated with methadone while a training-workshop on tailoring is being held to financially support the clients. A number of these cases were referred to support organizations.

2. Objectives

Female drug users are more likely to transmit human immunodeficiency virus (HIV) to their sexual partners. Little is known about problems such as HIV, sexually transmitted diseases (STDs), cervicitis, and drug abuse among female sex workers in Iran. Therefore, this study was conducted to investigate the prevalence of drug use and HIV associated risk factors; high-risk sexual behav-

iors; and the relationship between the associated factors in women at a drop-in center (DIC) in Iran.

3. Materials and Methods

This cross-sectional descriptive study was conducted in Sari, North of Iran, in January and February 2014. All 190 female SWs in the DIC participated in our study. The survey was approved by ethic committee of Mazandaran University of Medical Sciences. The samples were selected through census sampling. In addition, there were no limitations in the sampling. The participants were given detailed information about the objectives and procedures of the study and an informed written consent was obtained from each of them. The self-administered questionnaire was completed via an interview. Their information regarding age, educational level, sexual activity in exchange for money, marital status, occupation, frequency of sex, condom use, number of partners per week, and injection drug use were collected. They also provided information with regard to their spouse's drug use, sex-related behavior, HIV tests, frequency and type of marriage, and paying sex partners. Data analysis was performed using SPSS for Windows (version 15; SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated as frequency distribution tables, mean, and standard deviation. Pearson correlation, Spearman rank correlation coefficient, contingency correlation coefficient, Cohen kappa coefficient, phi coefficient, and Cramer V were used to study correlations.

4. Results

The participants of this study were between 19 and 54 years old; the median age range was 33 years. Among them, 1.1% was below 20 years of age, 38% were 20 - 30 years of age, 33% of them 31 - 40 years, and 33% over 40 years. In addition, 24% of the participants were illiterate. Moreover, 59% of the participants were drug users, among them 16% were addicted to Iranian crack or heroin, 16% to opium and methamphetamine, 25% to methamphetamine, and 13% to methamphetamine and alcohol, and 1.1% were intravenous drug users. The rate of participants with substance dependent husbands was 43%, and 84% had had a recent Pap test and 61% had candidiasis. Number of sexual acts per day was various from 1 to 3, and 62% of them regularly used condoms. The cost of every sexual act ranged from 2 to 10 USD. Their monthly income ranged from 10 to 700 USD and the average was 201 USD. Vaginal exam showed that 44% had cervicitis. Furthermore, 48% consumed psychiatric drugs. Rapid HIV test showed a 4% HIV infection rate in those who referred to behavioral counseling centers (Tables 1 - 3).

Table 4 demonstrates a significant relationship between being a SW and the type of drugs used. A significant relationship was observed between the type of drugs used and factors such as having a substance dependent husband, sexual intercourse methods, use of condom during

the last sexual contact, consistent condom use, and number of sexual acts performed per week. A significant correlation was also observed between the use of psychiatric drugs and regular condom use, education, cervicitis, and the number of sexual acts per week. Furthermore, there was a significant relationship between the type of sexual act, and regular condom use as well as condom use in the last sexual contact.

The relationship between substance dependency and variables like educational level, psychiatric drugs, number of sexual acts and per week sexual partners was significant. A significant relationship was also observed between the type of drug used and factors such as being a SW, having a substance dependent husband, and the number of sex partners. Moreover, a significant correlation exists between regular condom use and educational level, cervicitis, as well as the number of sexual contacts

per week. Finally, regular use of condom had a significant relationship with addiction, type of drugs, type of psychiatric medications, and the sex methods used.

A significant relationship was observed among educational level and cervicitis, age, money taken per sexual act, duration of working as a SW, use of psychiatric drugs, and addiction. Moreover, cervicitis had a significant relationship with number of sexual acts and sexual partners per week. The relationship between age and money taken for each sexual act was also significant. In addition, there was a significant relationship between the number of sexual contacts per week and the use of psychiatric drugs. There was also a significant relationship between the number of sexual partners and having a substance dependent husband. A significant relationship was also observed between addiction and the number of sexual acts per day and number of sexual partners.

Table 1. Sociodemographic Characteristics and Sexual Behavior Reported by Clients ^a

Variable	Age, y		Number of Children	Number of Sex Contacts Per Day	Number of Sex Contacts Per Week	Money Taken Per Sexual Act	Number of Sex Partners Per Week	Duration of Sexual Work, y
	Sex worker	Others						
Mean	33.4	40.9	2	1.3	4.6	11.8	3.5	8.3
Median	33.0	40.0	2.0	1.0	4.0	10.0	3.0	6.0
Mode	26.0	29.0	0.00	1.0	2.0	10.0	2.0	3.0
Standard deviation	09.1	09.3	0.00	0.51	3.2	5.9	2.1	6.4
Minimum	19.0	27.0	0.00	1.0	1.0	5.0	1.0	1.0
Maximum	54.0	56.0	7.0	3.0	15.0	30.0	10.0	30.0
Valid data	155	29	184	58	146	146	142	136

^a Sample size is equal to 184.

Table 2. Sociodemographic Characteristics of the Clients

Variable	Overall Number	No. (%)	No. (%)	
			Sex Worker	Non-Sex Worker
Sex worker	184	154 (84.70)		
Marital status	184			
Single		25 (13.59)	24 (15.48)	1 (3.45)
Married		94 (51.9)	76 (49.03)	62.1 (62.07)
Divorced		42 (22.83)	39 (25.16)	3 (10.34)
Widow		16 (8.70)	9 (5.81)	7 (29.14)
Concubine		7 (3.80)	7 (4.52)	0 (0)
Personal home	183	73 (39.89)	59 (38.3)	14 (48.3)
Protected by support organizations	183	47 (25.68)		
Welfare office		8 (4.37)	6 (3.9)	2 (7.1)
Imam Khomeini Relief Foundation		39 (21.31)	29 (18.71)	10 (35.71)
Educational status	183			
Illiterate		43 (23.50)	35 (22.9)	8 (27.6)
Primary and guidance school education		74 (40.44)	59 (38.6)	15 (51.7)
High school education and diploma		62 (33.88)	56 (36.6)	6 (20.7)
High educational level		3 (2)	2 (1.5)	0 (0)
Job	184	37 (20.1)	29 (18.7)	8 (27.6)

Table 3. Sexual Behaviors of the Clients ^{a,b}

Variable	Total Number	No. (%)	No. (%)	
			Sex Worker	Non-Sex Worker
Sexual intercourse methods	146			
Vaginal		78 (54.79)	80 (54.8)	
Vaginal and anal		33 (22.60)	35 (23.9)	
Vaginal, anal and oral		26 (19.18)	26 (17.8)	
Oral		5 (3.42)	5 (3.4)	
STD	117			
Gonorrhea		1 (0.5)	1 (1)	
Candidiasis		113 (61.4)	99 (96.1)	
Other STD		3 (1.6)	3 (2.9)	
HIV testing	183	182 (99.45)	153 (99.4)	29 (100)
Cervicitis	174	77 (44.25)	68 (46.3)	9 (33.3)
Information about HIV and HBV	181	181 (100)	153 (98.7)	
Pap smear test	184	154 (83.70)	130 (83.87)	24 (82.76)
Regular condom use	149	93 (62.42)	93 (62.4)	
Condom use in the last sexual contact	149	117 (78.52)	117 (78.5)	

^a Abbreviations: STD, Sexually transmitted diseases; HIV, Human immunodeficiency virus; HBV, Hepatitis B virus.

^b Sample size is equal to 184.

Table 4. Correlation Coefficients of Variables ^a

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sex worker	1																
Substance dependency	0.724 ^b	1															
Substance dependent husband	0.209 ^b	0.126 ^b	1														
Type of drug	0.027 ^c	0.000 ^c	0.000 ^c	1													
Psychiatric drug use	0.864 ^b	0.001 ^b	0.783 ^b	0.835	1												
The sex methods used	0.972 ^c	0.089 ^c	0.056 ^c	0.015 ^c	0.229 ^c	1											
Regular use of condom	0.436 ^b	0.001 ^b	0.654 ^b	0.020 ^c	0.014 ^b	0.006 ^c	1										
Condom use in last anal sex	0.600 ^b	0.032 ^b	0.564 ^b	0.008 ^c	0.997 ^b	0.009 ^c	0.000 ^b	1									
Education status	0.336 ^d	0.001 ^d	0.127 ^d	0.051 ^d	0.011 ^d	0.672 ^d	0.327 ^d	0.243 ^d	1								
Cervicitis	0.395 ^b	0.052 ^b	0.810 ^b	0.370 ^c	0.000 ^b	0.256 ^c	0.163 ^b	0.273	0.002 ^d	1							
Protected by support organizations	0.025 ^b	0.003 ^b	0.243 ^b	0.002 ^c	0.669 ^b	0.083 ^c	0.022 ^b	0.016	0.0536 ^d	0.127 ^b	1						
Age									0.000 ^f			1					
Sexual contacts per day		0.024 ^e	0.233 ^e			0.072 ^e	0.457 ^e	0.981 ^e	0.790 ^f	0.763	0.191	0.777 ^g	1				
Sexual contacts per week		0.073 ^e	0.111 ^e	0.042 ^e	0.021 ^e	0.685 ^e	0.031 ^e	0.229 ^e	0.619 ^f	0.032	0.087	0.765 ^g	0.000 ^g	1			
Money taken per sexual act				0.098 ^e		0.579 ^e		0.609 ^e	0.000 ^f		0.884	0.000 ^g	0.431 ^g		1		
Sex partners per week		0.032 ^e	0.022 ^e	0.833 ^e	0.103 ^e	0.096 ^e	0.683 ^e	0.267 ^e	0.552 ^f	0.003		0.701 ^g	0.003 ^g	0.003 ^g	0.018 ^g	1	
Duration of sexual work		0.098 ^e	0.287 ^e	0.964 ^e	0.304 ^e	0.349 ^e	0.685 ^e	0.016 ^e	0.000 ^f	0.331	0.851	0.000 ^g	0.279 ^g	0.103 ^g	0.000 ^g	0.033 ^g	1

^a Sample size is equal to 184.

^b Phi correlation coefficient.

^c Cramer V correlation coefficient.

^d Contingency correlation coefficient.

^e Cohen kappa coefficient.

^f Spearman correlation coefficient.

^g Pearson correlation coefficient

5. Discussion

Routine monitoring shows that among female SWs who contacted health services, 86% had visited the project STD clinics at least once, while about 75% benefited from clinical services every month. In a study performed on female SWs to diagnose cervical infections, the social, geographic, behavioral, clinical, and biological factors had a relationship with steady partners, symptoms of cervical infections, trained and experienced technicians, and laboratory tests such as the Pap smear (17). In the present study, gonorrhea was observed in 0.5% and cervicitis in 44% of females with illegal sexual behaviors. Moreover, there is a significant correlation between regular condom use and factors such as educational level, cervicitis, and the number of sexual contacts per week. A significant relationship was also observed between condom use in their last sexual contact and the duration of sex work. Educated young women are less vulnerable to intimate partner violence -a risk factor for HIV infection- compared to uneducated women, and could leave more easily violent relationships. Furthermore, they have a wide knowledge of contraceptive methods, and thus, can avoid many of the risk factors for HIV infection. Education can help reduce violence against women, promote gender equitable attitudes among men, and reduce STDs and cervicitis. This education includes promoting condom use and reduction in individuals' number of sexual partners.

In one study in Iran, the prevalence of HIV infection was 4.7%; the most prevalent sexually transmitted infection was herpes simplex type 2 (9.7%), followed by chlamydia (9%), and gonorrhea (1.43%). Moreover, 69.9% of female SWs reported a history of drug abuse, of them 16.4% had a history of injecting drug use. In addition, 79.8% of the participants stated that their incentive to have sex in the previous month was financial. During this period, 24.4% of participants had unprotected sex and 30.1% of them sometimes used a condom, 4.7% almost every time, and 40.6% for all instances of vaginal intercourse (18). Another study showed that 19% of female SWs reported at least one occasion of unprotected sex with an injecting drug user in the past one month (19). Fahimfar et al. (20) showed that most of the studied 442 SWs (36.2%) were 25 - 34 years old, and 14.3% of them illiterate and 31% unemployed. The most prevalent risk factors were risky sexual behavior (27.1%) and non-injecting drug use (23.2%). In the present study, the age of the participants ranged from 19 to 54 years, and 1.1% of substance dependents were injecting drug users. In the study by Sajadi et al. (21) the prevalence of HIV infection (95% CI) was 4.5% (2.4 to 8.3), overall, 4.8% (2.2 to 9.8) among those who had reported a history of drug use and 11.2% (5.4 to 21.5) a history of injection drug use. Another study in Iran reported that the prevalence of condom use in the last sexual act with paying clients and non-paying partners were 57.1% and 36.3%, respectively (22). In this study, the rate of regular condom use was 39%. In another study in Iran, the estimate of un-

protected sex in the last sexual act was 35.8%, constant injection of drugs 37.6%, sexually transmitted disease symptoms 82.1%, and not testing for HIV in the last year 64.0% (23). All participants of the current study had been tested for HIV and 4% of them were HIV positive. In one study, bivariate analyses showed significant positive association between Iranian heroin crack use and number of partners regardless of type of sexual activity. Those who used Iranian crack had more partners for all sexual activities queried, compared to those who did not. Cocaine, whether in powder or crack form, was positively associated with prostitution for both genders. A study showed that 90% of SWs use Iranian crack (24). In one study, the prevalence of HIV was 1.1%, and chlamydia and gonorrhea 6.4%. Moreover, the risk factors associated with infection were age and paying for sex (23). In our study, there was a significant relationship between age and receiving money for each sexual act.

In a study in Tunisia in 2010, *Trichomonas* infection was found in 72.9% of female SWs (25). In Madagascar, 7% of female SWs had trichomoniasis (26). In New Guinea, there was a 19% rate of trichomonas infections in female SWs (27). Syphilis was not observed in this study. It has been established that the presence of STDs increases the risk of HIV transmission. Hence, the results in SWs are different worldwide (28). In Papua New Guinea, Madagascar, and Mongolia, HIV infection was not observed in female SWs (26, 27, 29).

In Kinshasa, Congo, HIV prevalence in female SWs was 12.4% (30). The results of this study suggest that multiple marriages are related to HIV and cervicitis. Multiple marriages, due to having more sex partners, can be the cause of this phenomenon. According to the AIDS progress report of the Ministry of Health and Medical Education, only 29.3% of injecting drug users and 7.9% of SWs in Iran had sufficient information about HIV (31). Although many of our study participants had some information about HIV, its spread, protection, and associated risk factors, their information was not enough and precise.

In Iranian traditional sexual norms, a woman has no role in her sex practice, which reduces her confidence in negotiating skills in condom use. Almost all participants believed that the majority of men refused to use a condom, and have a negative attitude towards it. Consequently, they do not use condoms regularly. Thus, it is a man's responsibility to protect the health of a woman, and refrain from having unprotected sex (32). Health education is necessary for men in Iran. It was demonstrated that there is a relationship between long-term adverse consequences of HIV, poverty, and drug abuse (33). In the present study, the role of poverty in the prevalence of HIV, drug use, and work for sex is obvious because their monthly income is 10 to 700 USD and the average is 201 USD.

Economic needs of female SWs have deprived them of the right to choose and the ability to use condoms, espe-

cially when they earn more money for not using condoms. Other studies on the effects of power, poverty, and related communication skills showed that female SWs used condoms less than others (34). In this study, regular condom use had a significant correlation with educational level, cervicitis, and the number of sexual contacts per week. Substance abuse increases the rate of sex with multiple sexual partners (35). In our study, a significant relationship was observed between substance dependency and factors such as educational level, psychiatric drugs consumption, the number of sexual partners and sexual acts per week. Alcohol and drug abuse, and extramarital sex are forbidden in Islam; this may reduce addiction and the spread of HIV (36). In Iran, 90% of female SWs have at least one type of personality disorder (37). Therefore, this factor should be considered in future studies. In this study, 45% of participants had a history of psychiatric drug use.

Hence, due to the subjective perception of a safe relationship in a temporary marriage, condom use should be suggested by either spouse. We should mention that fixed-term, temporary, and pleasure marriage are different names for the Arabic word of "Mut'a", which is a contract between a man and woman, much in the same way the long term/permanent/conventional marriage is. The main difference is that the temporary marriage lasts only for a specified period of time, and man and woman will become stranger to each other after the expiration date (38). Therefore, educational programs, aimed at a realistic understanding of susceptibility to risk of HIV, must be considered a strategic health priority (38). In the present study, the number of sexual partners reported by the participants was 1-10 per week, which is a high risk situation.

In general, to meet their specific needs for the injecting drug users, they should be given assistance and health services like training programs, access to protective supplies such as condoms, disposable syringes, free and regular HIV testing and STD diagnosis, and medicines to treat HIV and other diseases. Furthermore, treatment services such as obstetrics, prenatal care, social services, and mental health services by trained social care staff are also needed to treat injection drug users. In addition, it is of great importance to assure female SWs that they can have a decent living condition in Iran and other countries. This study did not investigate all factors associated with high risk sexual behaviors; therefore, it is recommended that more comprehensive studies be conducted for them and other SWs.

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Authors' Contributions

Fatemeh Taghizadeh supervised all aspects of the study,

including data analysis, and drafted the manuscript and revised it. Hassan Taghizadeh and Nasrin Shirdel supervised all field activities of the study and collected the clinical data. Mohammad Fathi provided information for the manuscript. Parisa Reihani and Seyede Mohaddese Rezaee conducted the statistical analyses and aided in the interpretation of analyses. All authors contributed to the final version of the manuscript and approved the final manuscript.

Declaration of Interest

None declared.

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