Sexually Transmitted Infection and Related High-Risk Behaviors among female sex workers in Iran: results of the national rapid assessment & response (RAR), 2017

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Abstract

Background: Sexually transmitted infections are one of the most important public health problems and have serious consequences for female sex worker. The aim of this study was to investigate the prevalence of STIs among sex workers and to identify high-risk behaviors affecting STIs.

Methods: In this cross-sectional study, 898 women sex workers were studied in 21 provinces of Iran from October 2016 to March 2017. The required information was collected through self-report and completing a questionnaire. Simple and multiple logistic regression was used with 95% significance level. To identify risk factors for sexually transmitted diseases.

Results: The prevalence of STIs was 41.8%. Multiple logistic regression results showed that the odds of getting STIs in FSW over the age of 35 was 5.6 times higher than FSWs 18-24 years (AOR = 5.65, 95% CI: 1.035, 30.90), and the odds of getting STIs in FSWs with imprisonment was 3 times higher in FSW without imprisonment (AOR = 3.00, 95% CI: 1.04, 8.62), Also odds of getting STIs in FSWs who used injectable drugs was 17.2 times higher in FSW who did not take injectable drugs (AOR = 17.21, 95% CI: 2.54, 116.59). But self-perceived risk of HIV was borderline (AOR = 3.81, 95% CI: 0.97, 14.93),

Conclusion: The findings of this study can provide evidence for designing and implementing for risk reduction interventions for FSWs.

Introduction

Sexually transmitted diseases are conditions in which the pathogen is transmitted from person to person during unprotected sex. Symptoms of these diseases usually include: abnormal discharge or sores on the genitals and lower abdominal pain. These diseases have very serious psychological and clinical complications and a high share of disease burden. They are also transmitted from mother to baby during pregnancy(1). Also sexual and reproductive health are deeply affected by sexually transmitted infections (STIs).

Despite the decrease in the prevalence of HIV among sex workers in Iran, the prevalence of other STIs is high. the prevalence of other STIs in 2015 was 0.4% for syphilis, 1.3% for gonorrhea, 6.0% for chlamydia, 11.9% for trichomoniasis and 41.8% for human papillomavirus.(2). Today STIs have become one of the major public health problems. According to the report of the World Health Organization in 2019 ,more than one million STIs occur every day in worldwide(3). Sex workers have a higher risk of getting STIs than other people and act as a bridge for the transmission of STIs to other members of society duo to having multiple sexual partners and not using condoms regularly. The mobility of sex workers to find new clients creates a complex social network between them, their clients and the client of their sexual partners, which plays an important role in sustaining the transmission of STIs(4).

In Iran, such as many other countries, being sex worker is considered a crime and is accompanied by punishment. However, harm reduction centers have been established for FSW in Iran, These centers offer

their services to the following groups FSW who consume injectable and non-injectable substances FSW who wives have STIs, AIDS or a history of imprisonment, education about prevention of HIV / STI, HIV test, free distribution of condoms reproductive health care, STI screening, treatment services, and life skills for FSWs that can help to control the STI/HIV epidemics. But, female Sex workers do not go to these centers to receive services, due to stigma. of this behavior, AIDS and other STIs in society(4, 5). Due to the serious complications of STIs for women sex workers, appropriate intervention programs should be designed to prevent the incidence and complications of these diseases. Therefore, the aim of this study was to investigate the prevalence of STIs among sex workers and to identify high-risk behaviors affecting STIs.

Methods

In this cross – sectional study, we investigate STIs prevalence in FSWs in Iran from October 2016 until March 2017 in 19 capital city of 19 provinces. Data were obtained from the national Rapid Assessment & Response (RAR) survey. Details of methodology and sampling strategies of the survey are described elsewhere(6). Briefly, The criteria for entering the study included the following: ; age over 18 years, having sex for money drugs, or goods at least once during the previous year; having a history of practicing sex work for at least one years; Residents of the relevant city; and giving informed consented for participation (verbal consent). For choice the participant's we used venue-day-time, or VDT. In the venue-based application, spaces or locations are venues that the target population are present there; times refer to specific days and time periods when the target population congregates in each space. We successfully recruited 898 samples from 414 VDTs in 19 capitals. The questionnaire used for this study included questions about demographic characteristics, history of sex work, and related risks of sex and drug. This questionnaire was based on previous questionnaires developed by Regional Knowledge Hub, WHO Collaborating Centre for HIV Surveillance, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran (7). Some additional questions were also included (6).

Dependent variable: The main outcome of interest, recent STDs reported by participant, was defined as having had one or two of STIs symptoms in the previous year. The WHO has introduced two syndromic and etiological approaches to identify case STIs (24). In the syndromic approach, STIs are identified by trained health personnel, including physicians and midwives, based on clinical signs, while in the etiological approach, the diagnosis is based on laboratory results. In Iran, due to limited resources, diagnosis of the disease based on laboratory results is limited and the syndromic approach is mostly used (8, 9).

We investigate different socio-demographic and risky behaviors variable among FSWs: age (18–24, 25–34, and ≥ 35), educational level (Never attended school, Primary school, Guidance school, High school), marital status (Single, Married, Divorced, patron age and Widow), living status (With family or spouse, Social welfare center, Alone, Homeless or shelter), age at first marriage (≤ 18 , > 18), length of sex work(≤ 5 , > 5), HIV Serostatus (negative, positive), age at first sex(≤ 18 , > 18), age at sex work debut(≤ 18 , > 18), FC Condom use(No, Yes), consistent condom use(paying partner), consistent condom use(non-paying

partner), ever worked in brothels(No, Yes), having group sex (No, Yes), sexual violence (No, Yes), self-perceived risk of HIV(no, yes), ever tested for HIV(no, yes), ever consumed alcohol(no, yes), ever used drugs(no, yes), ever injected drugs(no, yes), ever having abortion(No, Yes), having the history of prison (No, Yes) and drug use & sex concurrent ever(No, Yes).

Simple and multiple logistic regression models were conducted to identify the factors affecting STIs prevalence in FSWs. Crude and adjusted odds ratios (AORs), as well as 95% confidence intervals (CI), were reported. Variables with a P-value < 0.2 in the simple analysis were entered into the multiple regression model. Stata version 12 (Stata Corp.) was used for all analyzes, and significance statistically level was considered less than 0.05

Results

The prevalence of STIs was 41.8% (95%CI 38.5–45.1). STIs prevalence for different socio-demographic and risky behaviors variable among FSW are presented in Table 1. Higher prevalence of STIs was reported among FSWs who were 25–34 years old vs. 18–24 years and over 35 years (46.5%vs; 41.9%.36.5%; p-value = 0.023), had patronage (sigheh) (54.8%; vs. 40.3, 49.7, 38.4, 32.1; p-value = 0.006), were older at first sex debut(51.3%vs. 43.2; p-value = 0.043), FSWs who used female condom (63.6% vs. 41.2%; p-value = 0.000), had paying partner consistent condom use(51.1 vs. 40.2; p-value = 0.004), had not paying partner consistent condom use(59.1 vs. 42.4%; p-value = 0.001). Prevalence of STIs was also higher among FSWs that had ever worked in brothels (50.6% vs. 29.7; p-value < 0.001), had group sex (50.4% vs. 38.9%; P-value < 0.001), had self-perceived risk of HIV (44.3% vs. 29.0%; p-value = 0.001), ever tested for HIV (46.6% vs. 36.3%; p-value = 0.003). Lastly, FSWs who had ever consumed alcohol (46.6% vs. 35.8% p-value = 0.001), ever used drug (44.3% vs. 37.9%; p-value = 0.05) and had concurrent drug use and sex (48.5% vs. 39.4%; p-value < 0.001). (Table 1)

Table 1
STIs prevalence for different socio-demographic and risky behaviors
variable among female sex workers in Iran, 2017

Variable	%Women with syndromic infection				P-value
	N	prevalence	(95%CI)		
Overall	898	41.8	38.5	45.1	
Age(years)					
18–24	117	41.9	32.8	51.4	0.02
25–34	374	46.5	41.4	51.7	
> 35	364	36.5	31.6	41.7	
Educational level					
Never attended school	62	43.5	31.0	56.7	0.99
Primary school	221	41.6	35.1	48.4	
Guidance school	241	42.3	36.0	48.8	
High school	356	42.7	37.5	48.0	
Ever married					
No	204	43.6	36.7	50.7	0.64
Yes	679	41.8	38.1	45.6	
Marital status					
Single	233	40.3	34.0	46.9	0.006
Married	149	49.7	41.4	58.0	
Divorced	354	38.4	33.3	43.7	
Patronage (sigheh)	84	54.8	43.5	65.7	
Widow	78	32.1	21.9	43.6	
Age at first marriage(years)					
<=18	449	43.2	38.6	47.9	0.29
> 18	206	38.8	32.1	45.9	
Length of sex work(years)					
<=5	164	41.5	33.8	49.4	0.24
> 5	534	46.6	42.3	51.0	

Variable	%Women with syndromic infection				P-value
	N	prevalence	(95%CI)		
HIV Serostatus					
Negative	417	44.8	40.0	49.8	0.13
Positive	48	56.3	41.2	70.5	
Age at first sex(years)					
<=18	575	44.3	40.2	48.5	0.37
> 18	244	41.0	34.8	47.4	
Age at sex work debut(years)					
<=18	224	51.3	44.6	58.1	0.04
> 18	502	43.2	38.8	47.7	
FC condom use(ever)					
No	359	41.2	36.1	46.5	0.000
Yes	77	63.6	51.9	74.3	
Consistent condom use (Paying partners)					
No	364	51.1	45.8	56.3	0.004
Yes	331	40.2	34.9	45.7	
Consistent condom use(non-paying partner)					
No	286	59.1	53.1	64.8	0.001
Yes	170	42.4	34.8	50.2	
Ever worked in brothels					
No	316	29.7	24.8	35.1	< 0.001
Yes	539	50.6	46.3	54.9	
Group sex(ever)					
No	581	38.9	34.9	43.0	< 0.001
Yes	278	50.4	44.3	56.4	
Sexual violence(ever)					
No	464	40.1	35.6	44.7	0.43
Yes	374	42.8	37.7	48.0	

Variable	%Women with syndromic infection				P-value
	N	prevalence	(95%CI)		
Self-perceived risk of HIV					
No	162	29.0	22.2	36.7	0.001
Yes	411	44.3	39.4	49.2	
Ever tested for HIV					
No	361	36.3	31.3	41.5	0.003
Yes	498	46.6	42.1	51.1	
Ever consumed alcohol					
No	400	35.8	31.0	40.7	0.001
Yes	498	46.6	42.1	51.1	
Ever used drugs					
No	356	37.9	32.9	43.2	0.05
Yes	542	44.3	40.0	48.6	
Ever injected drugs					
No	820	41.5	38.1	44.9	0.56
Yes	78	44.9	33.6	56.6	
Ever Abortion					
No	506	40.5	36.2	44.9	0.193
Yes	349	45.0	39.7	50.4	
Prison Ever					
No	640	39.8	36.0	43.8	0.06
Yes	258	46.5	40.3	52.8	
Drug use & Sex concurrent Ever					
No	663	39.4	35.6	43.2	< 0.001
Yes	235	48.5	42.0	55.1	

The results of the simple and multivariable logistic regression analyses are presented in Table 2. Multiple logistic regression results showed that the odds of getting STIs in FSW over the age of 35 was 5.6 times higher than FSWs 18–24 years (AOR = 5.65, 95% CI: 1.035, 30.90), and the odds of getting STIs in FSWs

with imprisonment was 3 times higher in FSW without (AOR = 3.00, 95% CI: 1.04, 8.62), Also odds of getting STIs in FSWs who used injectable drugs was 17.2 times higher in FSW who did not take injectable drugs (AOR = 17.21, 95% CI: 2.54, 116.59). But self-perceived risk of HIV was borderline (AOR = 3.81, 95% CI: 0.97, 14.93). (Table 2)

Table 2
Demographic characteristics, personal and sexual partners' related predictors of syndromic STI among participants of the study

Variable	N	Crude OR			Adjusted OR			P-value
		OR	(95%CI)		OR	(95%CI)		
Overall	898	-	-	-	-	-	-	-
Age(years)								
18–24	117	-	-	-	-	-	-	-
25–34	374	1.29	0.79	2.11	3.61	0.69	18.74	0.12
> 35	364	1.08	0.66	1.79	5.65	1.03	30.90	0.04
Marital status								
single	233	-	-	-	-	-	-	-
married	149	2.18	1.32	3.60	.74	0.12	4.31	0.74
divorced	354	1.20	0.80	1.80	.42	0.08	2.11	0.29
Patronage (sigheh)	84	2.31	1.28	4.17	.46	0.07	2.93	0.41
widow	78	.82	0.44	1.51	.28	0.02	3.69	0.33
Living status								
With family or spouse	492	-	-	-	-	-	-	-
Social welfare center	35	1.08	0.44	2.64	.46	0.06	3.35	0.44
Alone	108	.96	0.59	1.55	1.34	0.28	6.29	0.70
Homeless or shelter	175	1.22	0.79	1.89	.34	0.09	1.28	0.11
Work in brothels (Ever)								
No	316	-	-	-	-	-	-	-
Yes	539	2.07	1.46	2.94	.54	0.19	1.55	0.25
The report of imprisonment								
No	640	-	-	-	-	-	-	-
Yes	258	1.57	1.10	2.23	3.00	1.04	8.62	0.04
Consistent condom use paying partner								
No	364	-	-	-	-	-	-	-
Yes	331	.56	0.39	0.80	1.12	0.29	4.36	0.86

Variable	N	Crude OR			Adjusted OR			P-value
		OR	(95%CI)		OR	(95%CI)		
Consistent condom use nonpaying partner								
No	286	-	-	-	-	-	-	-
Yes	170	.37	0.23	0.59	.66	0.17	2.52	0.55
Self-perceived risk of HIV								
No risk	164	-	-	-	-	-	-	-
At risk	534	2.25	1.40	3.62	3.81	0.97	14.93	0.05
HIV Serostatus								
Negative	417	-	-	-	-	-	-	-
Positive	48	1.42	0.68	2.95	2.33	0.31	17.62	0.40
Alcohol consumption								
No	400	-	-	-	-	-	-	-
Yes	498	1.45	1.05	2.006	.85	0.31	2.27	0.74
Drug use								
No	356	-	-	-	-	-	-	-
Yes	542	1.60	1.16	2.21	.19	0.06	0.56	0.003
Drug inject								
No	820	-	-	-	-	-	-	-
Yes	78	1.34	0.78	2.31	17.21	2.54	116.59	0.004

Discussion

The aim of this study was to investigate the prevalence of STIs and related high-risk behaviors among FSWs in 21 provinces in Iran. FSWs are a vulnerable group of women to STIs. These women often have low economic and social status and therefore act to have sex with different people in exchange for money, and are at high risk for STIs due to having multiple sexual relationships with different people.

According to the results of our study, the prevalence of STIs was 41.8% among FSWs. This rate was 85% in a similar study conducted in Isfahan, in 2017 and has been reported very differently in other studies, Including: 9.5% in the Netherlands, 20.6% in Ethiopia, 22.6% in China, 36.4% in Mexico, 64% in Indonesia, 71.6% in Brazil(1, 4, 10–14). These differences can be due to various factors such as the sample size,

area under investigation, access to medical facilities, the STIs registration system of counties and finally the cultural and religious context of that area. Due to the complications caused by STIs and their high disease burden which has increased from 26.4 per 100,000 people in 1990 to 107.3 per 100,000 people in 2010 in Iran, this high prevalence in our study is an alarm for health policymakers to develop appropriate and effective strategies to prevent and treat these diseases in this valuable group of women(1, 15).

The results of our study showed that the chance of contracting a STIs in FSWs over 35 years was 5.6 times higher than women 18 To 24 years old, which is similar to the results of studies conducted in Kenya and the Netherlands(10). Other studies have shown that younger women have a higher risk of contracting STIs(16–18). We must keep in mind that religious and cultural issues in different societies can effect on this issue. For example, in Iran, having sex outside of marriage has a high social stigma, issues, also girls do not have the right to have any sexual intercourse before a formal marriage with the permission of the father, which causes young FSWs to remain more secretive than older women.

The results of the present study showed that women with a history of imprisonment were more likely to develop STIs, which was consistent with the results of another study that was conducted in Iran(19). This can be due to the presence of high-risk behaviors in this group of women. These women usually tend to have unprotected sex and do not have enough knowledge about the complications and how to transmit these diseases(19). Various studies have shown that condom use is low in FSWs and their sexual partners. A study that was conducted by Almerew Antenel et al. reported that not using a condom increases the risk of STIs by 4 times(1). In another study that was conducted in Iran, not using a condom increased the chances of contracting STIs 5 times and 1.6 times in another study(4, 11). The prevalence of condom use by FSWs in various studies has been reported from 4.4–88%. Therefore, raising the awareness and knowledge of these women about the importance of using condoms to prevent of STIs is very important. Also, based on the results of our study, it was shown that women who used injecting drugs had a higher risk of developing STIs, which also indicates that having high-risk behaviors is linked as a chain that increases the risk of STIs.

There are several limitations in our study. Participants were a venue-based sample but did not include FSWs who worked on the streets or who recruited clients by telephone. It is also difficult to know whether the women who participated in the study were representative of sex workers in these districts. Therefore, the generalization of our findings to all sex workers in Iran could potentially be limited by selection bias. Also, Individuals self-reported the presence of symptoms with Questions regarding STI symptoms were included in the face-to-face questionnaire; that may lead to social desirability bias. Further, respondents were asked about occurrence of symptoms over the 12 months prior to the study; while many STIs in women are asymptomatic. Therefore, both recall bias and potentially asymptomatic STI, could lead to an underreporting of STI symptoms and underestimation STIs prevalence. Our findings suggest that relying on self-reported STI symptoms may be a poor indicator of infection among FSWs in Iran. Thus, Iran to meet the care and treatment needs of sex workers, should consider using creative methods including conducting risk assessment, STI symptom screening and physical examinations at research study sites.

Conclusion

According to the results of our study, the prevalence of STIs is high among FSWs, which due to the high complications and high burden of these diseases, it is necessary to develop preventive and therapeutic strategies. To formulate these strategies, we need to have accurate information and statistics on the number of STI patients. Although there is a syndromic and etiological registration system in Iran to record STI cases, but access to laboratory results is usually low due to the lack of sufficient and free laboratory equipment, and the etiological registration system is not very efficient. Also, in the syndromic registration system, we may have under or over estimates because people's information is recorded based on their clinical signs, and the reporting sensitivity of the Iranian registration system is estimated at 25.6%(20, 21). We must keep in mind that, despite the existence of VCT and DIC centers for FSWs, but these women rarely visit these centers due to the social stigma in the community and also the negative attitude of individuals and health workers towards these women. For this reason, their disease is not diagnosed and they transmit the disease to their other sexual partners during multiple sexual contacts. Therefore, increase harm reduction centers, and women's access to these centers, reduce existing social stigma, increase screening tests for vulnerable groups and also establish an effective registration system is very effective.

Abbreviations

RAR: Results of the National Rapid Assessment & Response; STIs: Sexually Transmitted Infections; HIV: Human Immunodeficiency Viruses; AIDS: Acquired Immunodeficiency Syndrome; FSWs: Female Sex Workers; VDT: Venue-Day-Time; DIC: Drop in center; VCT: Voluntary Counselling and Testing; CI: Confidence intervals; AOR: Adjusted Odds Ratios;

Declarations

Ethics Approval and Consent to Participate

This study was conducted following the principle of the Declaration of Helsinki. This study protocol and procedures were reviewed and approved by the Research Ethics Committee (IR.UWR.REC.1394.392) and the Research Review Board at the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (USWRS), which approved all the procedures of the study including verbal informed consent. All participants were informed regarding the aim and objectives of the study, the voluntary nature of their participation, incentives, and anonymity of all collected data, and verbal informed consent was obtained from all of the participants prior to participation.

Consent for Publication

Not applicable

Availability of Data and Material

The datasets generated and/or analyzed during the current study are not publicly available due to the sensitivity of the issue of female sex workers in the Iranian cultural context and the lack of authorization by the Funder, but only in cases requested by the editor or reviewer, the data will be available via contact with the first author, Dr.Payam Roshanfekr with the respect of confidentiality.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions:

PR, SN, and MV conceived the manuscript topic, designed the study. KH.S, DA, and LM acquired the data, performed the data analysis, and drafted the manuscript. LM and DA participated in data analysis. MV and NS provided expert advice regarding the study analyses, assisted with drafting the manuscript, and provided critically important intellectual content during manuscript revisions. All authors read and approved the final manuscript and take public responsibility for their contributions to the manuscript.

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