

# Risky Sexual Behaviors and Condom Use Barriers in Women with Substance Use Disorders, Iran

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## Research article

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# Abstract

**Background** Scant information exists on Iranian women's protective behaviors mainly constant condom use. This seems prevalent among women with drug abuse problems. We aimed to investigate risky sexual behaviors (RSBs) and condom use barriers in Iranian female with substance use disorders (SUDs).

**Methods** In our cross-sectional study, we recruited 300 women who sought treatments for their SUDs from outpatient drug free (ODF) and Methadone Maintenance Therapy (MMT) centers. We selected active centers in Tehran, Iran (N#6). We use three batteries including demographic questionnaire, the Risky Sexual Behavior Questionnaire (RSBQ), and the Condom Barriers Scale (CBS). The statistical software R, analysis of variance post hoc and multivariate analysis of variance (MANOVA) logistic regression tests were used in data analysis

**Findings** we recruited 300 women who sought treatments for their SUDs from outpatient drug free (ODF) and Methadone Maintenance Therapy (MMT) centers. We use three batteries including demographic questionnaire, the Risky Sexual Behavior Questionnaire (RSBQ), and the Condom Barriers Scale (CBS). Analysis of variance post hoc and multivariate analysis of variance (MANOVA) logistic regression tests were used in data analysis

**Conclusion** RSBs was prevalent among our study population. Our results suggest that RSBs and condom use barriers are significantly interwoven. The condom use barriers were highly associated with the types of sexual encounters such as group sex or casual sexual relations than specific mean of sexual performance (i.e anal sex). Gender-specific SRB, STIs/HIV/AIDS prevention program is recommended for women with SUDs.

## Background

The association of risky sexual behavior and drug use has been an area of concern for health professionals. Individuals with substance use disorders (SUDs) are at increased risk for transmission of HIV and other sexually transmitted infections. (1–3). A strong connection has been reported in the world between sex, drug use and the formation of Risky Sexual Behaviors (RSBs) (4–10). Gender-related issues varying by country make this connection much more complex (11). In a risky context (i.e drug use), the alteration in sociosexuality of women resulting in SRBs has been widely studied (12–14). These studies highlight the fact that gender-related dynamics are subject to change in the context of substance use (15).

Being under the influence of substances can alter judgment and inhibitory behaviors, resulting in involvement in risky and impulsive behaviors, particularly RSBs such as reduced or no condom use, increased number of sexual partners, using drugs at the time of sexual encounters, sex with high-risk sexual partners, and also exchanging sex for drugs or money (16–26).

Prior to a decade ago, HIV transmission was most accounted for by sharing syringes. In the past decade, RSBs has been the primary source of HIV transmission. between 2006 through 2016, 5–6% of HIV transmission through sex reached 42% of cases. More than 75% of cases of HIV transmission in women have been through sex (27). Considering the increasing prevalence of sexually transmitted diseases and other high-risk common behaviors, there are serious concerns about HIV transmission through RSB, especially in women (28).

At present, the consistent use of condoms in sexual contacts is one of the most effective, available and cost effective methods for preventing and reducing the risk of transmission of HIV and other sexually transmitted infections (29, 30). Promoting the use of condoms and implementing supportive policies plays a significant role

in the decline of the growing trend of HIV transmission and development of AIDS (31); however, despite the limited literature on sexual behaviors in Iran, especially women in high-risk groups, direct and indirect evidence suggests a low prevalence of using protective behaviors (32–37). In addition, the lack of awareness of protective behaviors among women in high-risk groups suggests a primary reason for a lack of protective behaviors among this group of women (38).

It is questionable that even despite having the knowledge, skills and self-efficacy to utilize protective behaviors, their ability to implement such behaviors in a relationship may be more of a factor. In many cases, despite positive attitudes toward condom use, knowledge of elevated risk, and even intention of the behavior, condoms are not used (39–42). Identifying barriers to consistent condom use in women with substance use disorders (SUD) may help explain underutilization, thus informing and improving gender specific prevention interventions; may be a significant factor associated with drug effects (43). Therefore, the purpose of this study was to better identify the barriers to condom and its relationship with status of high-risk sexual behaviors among Iranian women with substance use disorders (SUD).

## Methods

A cross-sectional study was conducted in 2016–2017, received ethics approval from both the State Welfare Organization and Tehran University of Medical Sciences (TUMS). Study sites were public health centers and non-governmental organizations (NGOs) in the province of Tehran. The research sites, outpatient drug free (ODF) and methadone maintenance treatment program (MMTP) centers were selected from 1800 active addiction treatment centers. Criteria for the selection of centers included: a) having registered clients with maximum diversity in terms of social, economic and geographical conditions, b) having at least 500 active SUDs cases, and adequate staffing consisting of medical physicians, psychologists, nurses and social workers. Six centers from the north, south, west and east of Tehran were selected and presented for study participation to the research committee of welfare organization. Optimum sample size was determined at 300 based on power calculations. Inclusion criteria for the participants were as follows: a) women over 15 years, b) sexually active (oral, anal or vaginal) with any sexual partner (man / woman) in the last six months, c) a history of SUDs, and currently in treatment (with or without pharmacotherapy), and d) able to complete the consent form and questionnaires. Interested participants who signed an informed consent were placed on a waiting list for screening. The screening was performed daily by a nurse or a psychologist at the center. Three questionnaires were used to collect data: 1) a demographic questionnaire including age, marital status, and education, 2) the Risky Sexual Behavior Questionnaire (RSBQ) derived from Family Health International Questionnaire and based on UNAIDS indexes. This questionnaire assesses the frequency of unprotected sexual activity in the last six months, and consists of six parts: group sex activities, relationship with sex worker (woman or man), sex with money exchange, casual sex, oral sex and anal sex with men. This questionnaire was validated for the Iranian population with risky behaviors by Moayedi-Nia et al. (44); 3) the Condom Barriers Scale (CBS) used by Calsyn et al (45). This questionnaire identifies specific barriers for condom use and has subscales including partner-related barriers (8 items), sexual experience barriers (7 items), access/availability barriers (8 items), and motivational barriers (6 items), with all responses rated on a 5-point Likert scale from strongly agree to strongly disagree. Lower scores indicate more frequent endorsement of barriers to using condoms. The English version of the questionnaire was prepared using Lawshe and translation-back-translation methods for reliability and validity. To ensure the validity and reliability, the questionnaire was given to 10 experts, and based on their views; Content Validity Index (CVI) and Content Validity Ratio (CVR) indexes were equal to 0.89 and 0.94, respectively. In addition, in assessing the internal consistency of the

subscales, Cronbach's alpha coefficient was 0.87. The MANOVA test was used to analyze the data regarding the association between response variables (condom use barriers). Furthermore, ANOVA post hoc and logistic regression tests were used to assess the achieved significant relationship in MANOVA test. All analyses were performed using the statistical software R, and the level of significance was set at 0.05. Also, wherever necessary, Mean  $\pm$  SD was used to summarize the information.

## Results

The mean age of the participants (N=300) was  $33.59 \pm 7.84$ , 23% (N=69) were single, 22% (N=66) were married and 32% (N=96) were divorced. Most (35.7%) had a primary and high school degree (See Table 1).

**TABLE 1.** Distribution of sexual risk behavior and the subjects' demographic characteristics (N=300)

Risky Behavior	N (%)	Variable	
60(87)	(23)69	Single (Never Married)	<b>Marital Status</b>
46 (69.7)	(22)66	Married(permanent marriage)	
37 (88.1)	(14)42	Married(temporary marriage)	
(90.6)87	(32)96	Divorced	
23(85.2)	27(9)	Widowed	
19 (95)	20)6.7 (	Illiterate(no formal education)	<b>Educational Status</b>
57 (87.7)	65)21.7(	Elementary	
100 (93.5)	107)35.7 (	Secondary School	
(69)58	84)28 (	Diploma	
(79.2)19	24)8 (	Associate degree and bachelor degree	

Generally, 84.3 (N=253) had a history of at least one episode of risky sexual behavior in the past 12 months; 87% single, 69.7% married, and 90.6% divorced. Our results show that only 22% of the participants 'always' use condom in their sexual encounters (Table 1).

On the CBS, the lowest and highest CBS subscale scores were the Sexual Experience ( $2.47 \pm 0.86$ ) and Access/Availability subscales ( $3.52 \pm 0.7$ ), respectively. In addition, the mean score for Partner Barriers and Motivational Barriers subscales was ( $2.85 \pm 0.79$ ) and ( $3.19 \pm 0.71$ ), respectively.

The MANOVA test was used to examine differences in mean score for each of the CBS subscales related to the level of education, marital status, and age. In this analysis, the four

CBS subscales were considered as dependent variables, and the variables of education, marital status, and age were entered as independent variables to test for significant relationships. Significant results were obtained based on the type II sum of squares.

The results of MANOVA analysis show that there was a statistically significant difference between the condom use barriers based on Education ( $p < 0.001$ ) and marital status ( $p < 0.001$ ). Further analysis was conducted using the ANOVA post hoc test to determine the effect of participant level of education, marital status and age separately for each of the CBS subscales evaluated (See Table 2).

We found a statistically significant difference between the mean scores of Motivational Barriers ( $p = 0.001$ ) and Partner Barriers ( $p = 0.009$ ) at different levels of education, such that the Partner Barriers subscales scores were generally higher in people with higher education. In addition, at the levels of marital status, there was a statistically significant difference between the mean scores on the Motivational Barriers subscales ( $p = 0.004$ ) Such that motivational barriers scores were generally lower in single women. (See Table 2).

**TABLE 2.** The post hoc test (univariate ANOVA) to investigate which construct/s were influenced by education and marital status.

Partner Barriers	Sexual Experience	Access/Availability	Motivational Barriers	variable
Mean ± SD				<b>Education</b>
2.93±0.81	2.81±0.67	3.73±0.7	3.2±0.61	Illiterate
2.95±0.47	2.91±0.62	3.45±0.56	3.1±0.69	elementary
2.98±0.76	2.74±0.77	3.55±0.72	3.1±0.7	secondary school
3.28±0.74	2.81±0.92	3.5±0.76	3.2±0.81	diploma
3.14±0.59	2.6±0.99	3.42±0.72	3.38±0.53	associate degree and bachelor degree
<b>3.43(0.009)</b>	<b>0.89(0.46)</b>	<b>0.67(&lt; 0.6)</b>	<b>7.78(0.001)</b>	<b>F-value (P-value)</b>
Mean ± SD				<b>Marital Status</b>
2.94±0.71	2.54±0.8	3.41±0.83	2.87±0.73	Single
3.05±0.89	2.91±0.86	3.40±0.6	3.06±0.81	married(permanent)
3.22±0.65	3.08±0.73	3.69±0.68	3.49±0.65	married(temporary)
3.11±0.53	2.67±0.7	3.66±0.59	3.31±0.54	divorced
2.99±0.73	3.1±0.84	3.28±0.8	3.40±0.7	widowed
<b>0.83(0.43)</b>	<b>0.54(0.58)</b>	<b>1.01(0.36)</b>	<b>5.5(0.004)</b>	<b>F-value (P-value)</b>

We also examined the relationship between the CBS subscales and risky sexual behaviors. For this purpose, a significance test was conducted at the macro level using MANOVA (See Table 3). Then, appropriate post hoc tests were used for significant cases (Table 4).

Logistic regression analysis was used due to two-state (Yes/No) risky sexual behavior components. The results of the test for risky sexual behaviors in general and CBS subscales are given in Table 3. Partner Barrier subscale scores had a significant negative ( $p = 0.003$ ) relationship with risky sexual behavior such that a 1 point increase in condom use, reduced the chance for risky sexual behavior by 60 percent. In addition, Effect on Sexual Experience subscale scores had a significant negative ( $p = 0.03$ ) relationship with risky sexual behavior such that a 1 point increase in condom use, reduced the chance for risky sexual behavior by 46 percent. There were no other statistically significant relationships between risky sexual behavior and other CBS subscales (Table 3).

ABLE 3. Odds ratios (OR) for sexual risk behavior with barriers to condom use subscales as predictors

P- value	CI 95%	OR	Structures
0.003	0.22-0.73	0.4	Partner Barriers
0.03	0.31-0.94	0.54	Effect on Sexual Experience
0.1	0.88-3.76	1.82	Access/Availability
0.08	0.91-3.55	1.8	Motivational Barriers

Results of the logistic regression post hoc analysis for relationships between Partner Barrier, Effect on Sexual Experience subscale and types of sexual risk behaviors are provided in Table 4.

**Table4:** Partner barriers, Effect on Sexual Experience subscale and sexual risk behavior based on types of sexual behaviors

Casual Sexual Relationships	Group Sexual Relationships	Oral Sex	Anal Sex	Sex with Money Exchange	Relationship with Sex worker (Woman or Man)	SRB
0.52	0.39	0.5	0.78	0.38	0.45	<b>AOR</b>
0.34-0.8	0.24-0.63	0.31-0.8	0.5-1.19	0.24-0.59	0.27-0.76	<b>CI (95%)</b>
0.003	<0.001	0.004	0.25	<0.001	0.003	<b>P-value</b>
1.16	0.66	0.55	0.48	0.68	0.93	<b>AOR</b>
0.8-1.7	0.43-1.01	0.36-0.85	0.32-0.72	0.46-1.01	0.59-1.44	<b>CI (95%)</b>
0.42	0.06	0.008	<0.001	0.05	0.75	<b>P-value</b>

As shown in Table 4, the Partner Barriers subscale had a significant adverse association with any types of sexual behaviors but anal sex. Thus, by increasing one point (1 unit) of this subscale probability of risky sexual behavior was decreased as: group sex 61%, contact with sex worker 55%, sex for money exchanges 62%, casual sex 48%, and oral sex 50%.

The Effect of sexual experience subscale was significantly associated with sex with money, shelter or goods exchange, oral sex with men, anal sex, . By increasing one point (1 unit) of this subscale probability of risky sexual behavior was decreased by 32% for sex for money, shelter or goods exchange, , 45% for oral sex with men , and 52% for anal sex .

## Discussion

The study was conducted to identify barriers to condom use in Iranian women with SUD and its association with high-risk sexual behaviors. The results of this study showed that the majority of participants in this study (84.3%) had a history of a high-risk behavior that was more prevalent than earlier studies conducted with both male and female SUDs in Iran (46–49, 32). This suggests that there may be an increase in the prevalence of high-risk sexual behaviors in women with SUD and, ultimately, the increased likelihood of the spread of sexually transmitted infections, especially HIV/AIDS. In explaining this finding, women's sexual behaviors can be significantly influenced by drug use (4, 8). However, about one fifth (20.4 %) of non-SUDs house wives as well as women's barber (36%) reported sexual risk behaviors in Bagheri and Faramarzi's cross sectional study (50). Non-SUDs are different from SUDs population in committing SRB. Individuals with SUD have been reported to have a reduced perception of vulnerability to disease risk (51). The use of drugs and alcohol affects judgment that can endanger individuals with regard to making decisions about sexual risk behavior. (52, 53). Similar to others, Iranian studies have also shown that drug use is associated with unhealthy sexual behaviors such as having multiple sexual partners, and engaging in sexual relations in exchange for drugs, (54–56); In the current study, lack of condom use was associated with certain risky sexual behaviors in women with SUD. More likely, the meaning of sexual behaviors is different for a SUD woman than men in the Iranian contexts. For instance, our previous study with men revealed that men's sexual experiences have less impact in their risky behaviors (32). Socio economic status of female SUDs are more affected than men such as exchanging sex for money or shelter similar to our findings (57, 58).

The partner barriers subscale of the CBS had a significant and negative relationship with all other types of high-risk sexual activities except anal sex. There were no marital status differences in partner barriers suggesting that type of partner relationship was not a factor. Others have found that condom is used less frequently with primary partners. Two main study with Iranian female SUDs experiencing intimate partner violence showed that women with permanent marriage reported less or lack of condom use during their penetrative sex(59–61)

Intervention efforts geared toward addressing the partner barrier to condom use could positively affect other high risk behaviors. The gender-specific interventions can be efficient if they overcome power dominance in sexual relationships or lack of assertive communication of sex partners (62). In an HIV risk reduction intervention study Campbell et al., reported reductions in barriers to condom use, especially partner barriers, was associated with the reduction of unprotected sex occasions in both men and women (56). Merghati Khoei et al., explored the relationship between high-risk sexual behaviors and barriers to condom use in Iranian men with drug abuse disorders, a significant relationship was found between the partner barriers subscale and high-risk sexual behavior (32). Anecdotally, in Iranian contexts sex partners are not interested in using condom at the time of penetrative sexual encounters, due to: fear of breaking down the partnership, lack of trust in the sex partner, deceiving the partner, losing interest in sex, getting angry, humiliating and insulting a sex partner.

Gender cultural norms assigned to women in terms of sexual, social and economic power may impact whether a woman feels she can make a condom use decision or even have a conversation about condom use. This is one example of the increased vulnerability women face in terms of their risk for HIV/ STD transmission and other health related concerns. (64–68). In the Campbell et al., HIV risk reduction study, the reduction of sexual experience condom barrier in women was associated with the reduction of unprotected sex occasions with men (63). In the recent study conducted by Merghati Khoei et al., there was no relationship found between the sexual experience condom barrier and high-risk sexual activities in men with SUD (32). In the current study, women reported negative perceptions toward sexual experience with condom. Several verbal reports include: “it doesn’t feel good or natural”, “not fitting well”, “changing orgasm”, “interrupting the mood”, and “interfering with feeling close to the partner”. Others (68–73), have found similar reasons women in this study do not tend to negotiate safe sex, condom use with their sexual partners.

## Conclusion

We conclude that risky sexual behaviors (RSBs) and condom use barriers in Iranian female with SUDs are significantly interwoven. Sexual risk behaviors were found prevalent in our study population. The condom use barriers were highly related to the relational factors such as sex working type of encounters, group sex or casual form of sexual relations than specific mean of sex (i.e anal sex). Our findings suggest gender-specific SRB, STIs/HIV/AIDS prevention program planning for Iranian women with SUDs.

## Abbreviations

*RSBs*: Risky Sexual Behaviors; *SUDs*: Substance Use Disorders; *ODF*: Outpatient Drug Free *MMT*: Methadone Maintenance Therapy; *RSBQ*: Risky Sexual Behavior Questionnaire; *CBS*: Condom Barriers Scale; *MANOVA*: Multivariate Analysis of Variance; *STIs*: Sexually Transmitted Infections; *HIV*: Human Immunodeficiency Virus; *AIDS*: Acquired Immunodeficiency Syndrome; *TUMS*: Tehran University of Medical Sciences; *NGOs*: Non-Governmental Organizations; *MMTP*: Methadone Maintenance Treatment Program; *UNAIDS*: United Nations Programme on HIV/AIDS;

## Declarations

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### *Authors' contributions*

EMKh: supervisor, concept and study design, critical revision and editing; MM: concept and study design; ZR: conception and design, data collection, writing and revision of the manuscript; NAA: designed the study, analyzed and interpreted the results; ABandFS: participated in the study design and data collection; ThK and JEK have made substantial contributions to the conception and study design, critical revision and editing of the manuscript. All authors reviewed and approved this manuscript.

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#### *Availability of data and materials*

The data will be available by requesting corresponding author

#### *Ethics approval and consent to participate*

This study was approved and funded by the Iranian Research Center for HIV/AIDS, (Ethic Approval Code: 92–01–55–19799). This project was also approved by the Post Graduate Steering Committee of School of Public Health at Tehran University of Medical Sciences due to Zahed Rezaei contribution in this research. All participants read and agreed to the written informed consent form for their participation in the present study; the form was presented in the virtual platform before the survey

#### *Consent for publication*

Not applicable

#### *Competing interests*

The authors declare that they have no conflicts of interest.

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