



Predictors of Condom Use Among People Living with HIV in Karaj: A Cross-Sectional Study

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Received 2019 January 17; Revised 2019 January 27; Accepted 2019 February 17.

Abstract

Background: Sexual transmission of HIV/AIDS is a major route for infection and the most effective strategy to control this infection is condom use.

Objectives: This study aimed to assess the predictors of condom use among HIV positive patients.

Methods: This cross sectional study was a descriptive-analytical study. A total of 121 HIV positive individuals, which included 57 women and 64 men were recruited during five months from a Behavioral Diseases Counseling Center in Karaj. Data were collected by questionnaires including demographic characteristics, drug abuse history, sexual history, depression, and social support. Social support and depression were evaluated by MOS questionnaire and Beck II, respectively. Data analysis was done by SPSS version 19.

Results: The mean age of the participants was 36.6 ± 8 years. About 39% of HIV positive patients in this study used a condom during their last sexual encounter; however, consistent use of condom occurred in 28.1% cases in the past three months. Multivariate regression showed that the number of sexual partners' ($\beta = 0.16$), ($P < 0.01$) age ($\beta = -0.23$), ($P < 0.05$) number of children ($\beta = 0.21$), ($P < 0.05$) and social support ($\beta = 0.58$), ($P < 0.001$) were predictors of condom use.

Conclusions: Considering the low rate of condom use among HIV-positive patients, it is essential to provide counseling services and gender sensitive interventions to promote safer sex behavior in this context. As social support is a critical variable to predict condom use, it is suggested to be considered to develop effective prevention programs for people living with HIV.

Keywords: HIV, Social Support, Depression, Condoms

1. Background

Based on the statistics provided by the Department of AIDS Control, Ministry of Health, as of September 23, 2015, a total of 30183 individuals infected with HIV were identified and reported, of which 85% are males and 15% are females (1). In a statistics report in 2013, a total of 27041 individuals with HIV/AIDS were identified, which was comprised of 89.3% males and 10.7% females. The epidemiological report in 2014, has mentioned the following routes of HIV transmission; intravenous drug use (52%), unsafe sex (33.2%), and mother to child transmission (4.3%), while 11.4% of cases reported had unknown cause of transmission, which are considered most likely to be sexually related. It is worth considering that 60% of HIV positive females have been infected through sexual transmission (2, 3). In addition to the increasing number of HIV cases in the country, the pattern of transmission has also changed; from the total cases detected and reported in the first six months of 2015, 34%

and 66% of them were women and men, respectively (1).

Sexual transmission of HIV is on the rise and is dramatically increasing. Considering the fact that the majority of drug addicts are married and are actively involved in sex, the use of condom, as the most effective way to control HIV, must be emphasized (4). Despite the multiple implementation of prevention programs aimed at reducing the spread of HIV/AIDS, the incidence of these infections in many countries is still high. Due to the worldwide access to antiviral drugs, proper treatments, and health care interventions, the life expectancy of HIV positive patients has increased (5). Perceived community stressors related to HIV transmission (6) has an influence on individual's quality of life and healthy behaviors (7). Depression is considered as one of the most common psychological disorders and together, with hopelessness, it could greatly affect the control, care, and treatment of this disease process. Statistics from various countries have reported that 14% - 47% of individuals affected with HIV have depression (8). The im-

fact of depression on health outcomes including adherence to regular antiviral medications and improvement in the quality of life of HIV positive individuals have been assessed and results indicated that HIV positive individuals with depression have exhibited poorer healthy behaviors (9).

The role of social support in many healthful behaviors, including HIV/AIDS, has been of interest to researchers. Social support resources are very diverse; family and friends are considered the primary source of social support (10). Social support is divided into various aspects such as; informational, instrumental, emotional, and also some other various forms of support such as from friends and relatives, spouse or partner, the society, as well as the government (11).

Evidence supports that individuals having a higher perception of social support are likely to have lower levels of mortality caused by stressors (12). Higher perception of social support is associated with higher longevity on patients having a history of heart attacks (13), patients with breast cancer (14), and in patients living with HIV/AIDS (15). In addition, social support plays an important role in improving the quality of life and in decreasing the symptoms of depression in patients with HIV (9). Results of some studies conducted regarding social support provide evidence that social support for preventive behaviors against HIV and or continuity of health care have yield different results (16-20). Social support, as a mediator plays a role in modulating stress (10).

People living with HIV with high levels of support from their families are more compliant in adhering infection prevention control and adhere strictly to condom use during sexual intercourse with their spouse (21). In a study, researchers have assessed the social protective effects of functional social support on the symptoms of anxiety and depression in HIV positive people who are full time employees (6), although not all studies have confirmed this issue (22).

Social support of high-risk groups such as sex workers and their clients create a significant impact on the success of prevention programs and condom use (23). In a meta-analysis study on the effectiveness of the intervention associated with the provision and facilitating easy access to condoms, the authors have suggested that interventions provided by the social system and community structure where the individuals or groups lived have more chances of greater success in the implementation of HIV prevention programs (24). Also, there is a direct correlation between perceived support for homeless young adolescents and condom use (17). Unlike other studies mentioned earlier, no reference has been made regarding the correlation between condom use and social support (22).

Reverse relationships between perceived support from a spouse or partner and condom use were found (25). Social support is a complex issue in the field of HIV/AIDS, despite the high rates of mental disorders in the community, and especially in HIV positive individuals; unfortunately, there is no accurate statistics on depression available in the Alborz province.

2. Objectives

Given the importance of mental health and social support in the control of HIV and positive prevention, this study aimed at investigating the relationships between perceived social support by people living with HIV/AIDS, depression, and use of condom has been implemented. Result of the present study is designed to provide effective interventions in controlling HIV and improve the quality of life of these patients.

3. Methods

This is an analytical cross-sectional study. Sampling was conducted in one of the most active health care and counseling centers for people living with HIV/AIDS in the city of Karaj. In this center, services such as counseling, laboratory examination, distribution of antiviral medication, condoms, etc. are provided for people with HIV/AIDS. The inclusion criteria for this study include; HIV positive and or people living with HIV under the coverage of this center, positive test result as shown on the patient's record, at least 18 years of age, and is having sexual relationships.

The exclusion criteria include patients diagnosed with psychotic disorders and those unwilling to participate in the study. Ethics Committee of Alborz University of Medical Sciences approved this study (Abzums.Rec.1393.58). After obtaining the participants' informed consent, data were collected in a peaceful environment with the use of a questionnaire using non-random sampling. A total of 270 people who are HIV/AIDS positive who referred to this center for a period of five months were included in the study. In the initial assessment, participants who have no sexual activities in the last three months were excluded from the study and finally, a total of 121 sample size composing of 57 females and 64 males were enrolled in this study. A female interviewer was assigned to collect the data from female participants while a male interviewer was assigned to collect the data from male participants. The questionnaire was composed of the following four sections:

3.1. Demographic Information

Demographic information such as age, education, marital status, number of marriages, age at first marriage, lifestyle, number of children, employment status, monthly income, and health insurance were included in the questionnaire.

3.2. History of Substance Abuse

Questions were directed towards substance abuse such as alcohol, drugs, and the type and diversity of substance use.

3.3. History of Sexual Behavior

Questions include a history of sexual behavior and condom use. The outcome variable was the use of condom for every 10 sexual relationships. Content validity of the questionnaire was reviewed and approved by five experts.

3.4. Social Support Scale Questionnaire

Medical outcome survey social support scale (MOS) Sherborne and Stewart (1991), is a perceived social support scale that contains 19 items and 5 subscales. These subscales include a tangible support that measures financial and behavioral support, emotional support that measures positive emotion and sympathy and encouragement to express one's feelings, information that measures guidelines, information given or feedbacks, affectionate that measures how a person expresses his affection, and positive social interaction, which measures how a person engages with others in spending leisure and recreational activities. This is a self-administered survey with a five-point Likert-scale ranging from never (1) to always (5).

The lowest score for this test is 19, while the highest score is 95. In order to obtain scores for every subscale just simply add the scores of each related item, and in order to obtain the overall score, all points must be added together. The subject's high score on this scale indicates a desirable social support. Subscales of the reliability test was determined using the Cronbach's alpha coefficient that ranged from 0.74 to 0.93, respectively as reported by Sherbourne and Stewart, 1991 (26). Psychometric properties assessment showed its validity and reliability in the Iranian population with chronic illness. Cronbach's alpha coefficient was determined as 0.96 (27). In the present study, internal-consistency reliability of scale scores was estimated using Cronbach's alpha coefficient with the reliability of 0.87.

Beck depression inventory (BDI-II) revised the Beck depression inventory and self-reported indicators used to measure depressive symptoms in clinical and non-clinical

populations. The second edition of this questionnaire covers all the elements of depression on cognitive theory depression. Beck depression questionnaire 2 was designed to improve the questionnaire after 35 years of experiment and research on BDI-I (28). In a study conducted in Iran, the results of factor analysis validity and reliability of a questionnaire, Beck 2 demonstrated its effectiveness, and Cronbach's alpha coefficient was calculated 0.91 (29). Beck 2 questionnaire is the most widely accepted assessment tool that contains 21 questions and each answer being scored on a scale value of 0 - 3. The questionnaire has a total score of 63. A score of 0 - 13 designates minimal depression, 14 - 19 mild depression, 20 - 28 moderate depression, and a score of 29-63 is considered severe depression (29).

3.5. Data Analysis

After data entry on SPSS software, descriptive and inferential test was used. Frequency of condom use in the last three months calculated for every 10 sexual intercourse was considered as dependent outcome variable. Independent variables such as age, sex, marital status, employment, insurance status, income, and education, number of children, social support, and depression were evaluated for the existence of correlation with condom use. Multiple Stepwise Regression strategy was applied to modeling. Therefore, variables with the most amount of correlation were added to the model one by one.

Finally, for modeling the effects of the two main variables; social support and depression on condom use, the multiple regression analysis was used. Pearson and Spearman correlation coefficient was used to determine the correlations between variables and the *t*-test and chi-Square tests and multiple regressions were used for data analysis. Predictors of condom use (frequency of condom use in the last three months for every 10-sexual intercourse) were also evaluated with multiple regression analysis.

4. Results

Demographic information of participants is shown in Table 1. The average age of participants was 36.6 ± 8 years old and in the age range of 20 to 59 years old. Approximately 50% of the participants have consumed alcohol and use drugs in the past year. Crystal Meth was the most common drug used, followed by opium and methadone, and approximately 24% of the participants use more than one drug. Table 2 presents reproductive and sexual behavior of HIV positive people in this study. A total of 54% of participants used one method of contraception, 82% had no desire for children, while more than 13% were interested in having an offspring. About 61% of participants have not

used a condom in their last sexual intercourse, 21% never used a condom in the last three months of sexual activity, and 38% expressed that they sometimes or rarely used condoms. Consistent condom use in the last three months was expressed by 28.1% of the participants and 34.7% had a partner who was HIV positive.

As shown in Table 3, there is no statistically significant difference between social support and the use of condoms in men and women. However, depression is more prevalent in women than in men ($P < 0.05$). Substance abuse does not affect the use of condom while use of alcohol has been associated with less use of condom. Multivariate regression analysis indicated that the number of sexual partners ($\beta = 0.16$), ($P < 0.01$), age ($\beta = 0.23$), ($P < 0.05$), number of children ($\beta = 0.21$), ($P < 0.05$), and social support ($\beta = 0.58$), ($P < 0.05$), are predictors of greater use of condom. Spearman correlation coefficient showed that condom use and depression have no statistically significant difference. However, there exist a strong correlation between social support and the use of condom ($r = 0.5$), which was statistically significant ($P < 0.01$). Correlations between social support and depression in Pearson correlation coefficient was statistically significant, and there exist a negative correlation ($r = -0.43$), ($P < 0.01$). Spearman's correlation test showed that social support and the number of sexual partners has significant correlations ($r = 0.52$) and ($P < 0.01$). Social support and number of children ($r = 0.23$) ($P < 0.01$) and income ($r = 0.23$), ($P < 0.01$) have significant correlations. Depression and the number of sexual partners ($r = 0.22$), ($P < 0.01$) had a significant correlation. In the final step of our analyses, the variables found to be related to condom use were entered to the multivariate equation (Table 4).

The final model explains 47% of variance in the dependent measure. In the final model, social support was a significant predictor of condom use. Age was also a statistically significant predictor of condom use, such that young HIV-positive individuals reported more condom use ($P < 0.05$).

5. Discussion

The present study was conducted to investigate the use of condoms as a protective sexual behavior and also to assess the correlation between some important variables such as social support and depression and sexual protective behavior of people living with HIV. In this study, only 28.1% of HIV-positive people expressed that in the past three months they have always used condoms in their sexual practices. This statistic is much lower than the result of other studies that was determined 55.7% and 75% (30, 31). Overall, consistent condom usage in HIV-positive or at risk

Table 1. Demographic Characteristic of the Participants

Variable	Frequency (%)
Gender	
Female	57 (47.1)
Male	64 (52.9)
Age, y	
20 - 29	20 (16.5)
30 - 39	59 (48.8)
40 - 49	35 (28.9)
50 - 59	7 (5.8)
Education	
Illiterate	16 (13.2)
Primary-middle school	24 (19.8)
High school/diploma	60 (49.6)
High education	21 (17.4)
Marital status	
Married	55 (45.5)
Single	18 (14.9)
Widow	30 (24.8)
Divorced	18 (14.9)
Living with	
Alone	19 (15.7)
Family (husband/spouse/children)	57 (47.1)
Parents	15 (12.4)
Friends	4 (3.3)
Homeless	14 (11.6)
Number of children	
None	57 (47.1)
1 - 2	50 (40.3)
3 - 4	14 (11.6)
Income, Toman	
≤ 1 million	97 (80.2)
> 1 million	24 (19.8)
Job	
Employed	56 (43.6)
Unemployed	65 (53.7)
Drug abuse in the past year	
Yes	60 (49.6)
No	61 (50.4)
Alcohol consumption in the past year	
Yes	60 (49.6)
No	61 (50.4)
Kind of drug	
Crystal meth	11 (9.1)
Morphine	3 (2.5)
Opium	8 (6.6)
Methadone	8 (6.6)
Cannabis	2 (1.7)
More than one kind	29 (24)

of HIV reported in many studies is insufficient (20, 32, 33). While sexual transmission is growing in Iran and half of

Table 2. Reproductive and Sexual History of the Participants

Variable	Frequency (%)
Contraception	
Yes	71 (58.7)
No	50 (41.3)
Desire to have children	
Yes	20 (16.5)
No	101 (82.5)
Intent to have children	
Yes	16 (13.2)
No	105 (86.8)
Condom use at last sexual encounter	
Yes	47 (38.8)
No	74 (61.2)
Condom use in the past 3 months	
Always	34 (28.1)
Most the time	16 (13.2)
Sometimes	23 (19)
Seldom	23 (19)
Never	25 (20.7)
HIV-positive partner	
Yes	42 (34.7)
No	29 (24)
Don't know	50 (41.3)

Table 3. Comparison of Condom Use, Social Support and Depression by Gender

Variable	Mean \pm SD		P Value
	Female	Male	
Condom use	3.91 \pm 3.78	3.80 \pm 3.60	0.86
Social support	52.96 \pm 17.62	55.58 \pm 19.68	0.44
Depression	25.18 \pm 13.78	19.59 \pm 8.96	0.03 ^a

^aP < 0.05.

the people living with HIV are sexually active (30) to combat HIV, consistent condom usage should be emphasized as an effective way to reduce HIV.

Important predictors of continuous condom use in this study include; the number of sexual partners, age, number of children, and community support. In a manner that with the increasing number of sexual partners, siblings, and perceived social support, condom use increases and with increasing age condom use will be decreased. This finding was consistent with the findings of other studies, which indicated that continuous use of condoms in an increasing number of partners are directly related, and the

desire to have children was associated with a decrease in condom use (33, 34).

In some studies, younger age was mentioned as a risk factor for non-use of condoms while some studies have observed no difference (33, 35). In this study, perceived social support by HIV positive people have been associated with an increase use of condom. Many studies indicated the positive role of perceived social support in increasing self-efficacy, self-worthy, and increasing use of preventive behaviors associated with HIV/AIDS and other health issues (8, 11, 36, 37). However, the type and source of social support as well as the person's living environment and conditions are important factors in the formation of different behaviors, in a way that women on substance abuse and are financially dependent with their husband may become more emotionally attached and express higher emotional support leading to unsafe sex (38).

Review studies have shown the positive role of social support in all population groups, especially drug users, adolescents, and gays, and with increasing perceived social support, high-risk behaviors in female sex workers and HIV-positive people has decreased (39).

Contrary to the findings of this present study, results of a study showed that perceived social support by the husband/partner has been correlated with increase rates of unprotected sex and infrequent condom use in HIV-positive men and women (40). Perhaps some mediating factors (demographic variables) are effective on protective sex behaviors, therefore, it seems necessary that detailed studies should be designed to evaluate the influence of social support as an important background on other intermediary factors (aside from social support) (40). It is also important to pay attention to design different types of social support with their precise interventions for the reason that in some studies, high risk and vulnerable groups need other support such as financial, emotional, and or information support (41).

In this study, even though the perceived social support in women is less than men, the difference was not significant. Liu and colleagues also found no significant difference in the perceived social support among HIV positive men and women (6). Some studies indicated that at risk women in the society are experiencing low social support (4, 42), however, it seems that comprehensive and uniform findings in the area of gender difference and perceived social support is lacking and the reason might be the use of different questionnaires with different criteria and or backgrounds and needs of different individuals and groups in a society.

There was no significant difference between men and women in terms of condom use and it was low in both groups. In line with this result a study showed similar rates

Table 4. Predictors of Condom Use Among HIV-Positive People

	Complete Model		Final Model	
	β	P Value	β	P Value
Age	0.21	< 0.05	-0.23	< 0.05
Gender	0.11	0.54		
Income	0.09	0.29		
Alcohol consumption	0.17	0.08		
Number of children	0.19	0.05	0.21	< 0.05
Number of partners	0.17	< 0.01	0.16	< 0.01
Social support	0.31	< 0.01	0.58	<0.001
Depression	0.16	0.16		
R-squared		0.35	0.47	

between men and women in regard to condom use (43). Results of another study showed that the use of condoms in HIV-positive women was lesser to an extent in comparison to HIV-positive men (31). Despite the rapid proliferation of HIV in Iran and the majority of new cases has obtained the disease through sexual transmission in the context of marriage, our present study indicated that people living with HIV, despite the fact that their spouse has not been infected with the disease, refrain from using a condom. With regards to condom use and its gender comparison, the disposal and authority of the male gender in the use of condom plays an important role and in the majority of cases, women lack the power to negotiate men on condom usage (20).

Therefore, effective interventions for control and positive preventions should be gender sensitive and women's real-life context should be taken into consideration (44-47). Creating communication skills regarding condom and bargaining power of women to negotiate men in using a condom can be considered an appropriate intervention program (47).

The result of our present study indicated that women living with HIV are more prone to depression than their male counterpart. Numerous studies show that a higher number of women with HIV have depression in comparison to the male gender with HIV (48, 49). Besides, female sex workers with depression had a lower rate of consistent condom usage in comparison to female sex workers without depression (35). Considering that depression is a risk factor to use a condom less, depressed women should receive special attention and gender based (50). In our study, there was no significant statistical correlation between social support and depression whereas, Liu et al., indicated that perceived social support and depression in HIV positive individuals with full time jobs revealed significantly

negative associations (6). Perhaps the reason for the different result could be accounted to two different research communities. Participants in the present study come from the lower socio-economic level and more than 50% of the participants are unemployed and nearly 80% had an income of less than 1 million Toman (about 300 US dollars). In this study no correlation was observed between age of participants, and depression and perceived social support. Liu and colleagues, in their study on people living with HIV, has concluded that age is not a decisive factor in changing the rates of depression and perceived social support (6).

Detection of depression in HIV-positive people is of great importance in adherence to condom use and other healthy behaviors. Therefore, people living with HIV should be periodically evaluated for depression and when necessary, counseling and necessary treatment instituted. Depressed HIV-positive individuals are more likely to give up having sexual activity in comparison to non-depressed HIV positive and if ever sex occurs, there is a greater possibility of risky behavior and the fewer adherences to condom use (49).

One of the inclusion criteria in this study was having at least one sexual intercourse in the last three months, this may be the reason that some HIV positive people with depression were not able to participate in this study and in such situation, depression and the intermittent use of condom has been largely missed. Our study showed that participants, who consumed alcohol, had less condoms use. Some believe that alcohol consumption and not using a condom in HIV positive people are associated with sexually transmitted infections (20, 51, 52). However, some findings show the opposite (53), although this correlation can vary in different situations, it is often the women that are confronted with resistance from their spouse about using a condom if alcohol was consumed (54, 55). Therefore,

in counseling for HIV positive people, lifestyle changes should be designed and implemented and for those consumers of alcohol, special attention should be paid on risk perception of HIV to their sexual partner.

5.1. Conclusions

In this study, considering the sexual risk behaviors of HIV-positive people and the low levels of condom use, counseling and gender-based interventions is greatly recommended in order to improve these behaviors. Social support, as an important predictor of condom use, has been widely accepted, therefore, in designing effective positive prevention, interventions should be noticed.

Acknowledgments

The authors would like to thank the individuals who willingly participated and shared their time in order to make this study possible. This study was granted and approved by Alborz University of Medical Sciences (project No. 2510472).

Footnotes

Authors' Contribution: Study concept and design: Razieh Lotfi, Delara Salehifar and Ali Ghaednia. Analysis and interpretation of data: Razieh Lotfi and Delara Salehifar. Drafting of the manuscript: Delara Salehifar. Critical revision of the manuscript for important intellectual content: Razieh Lotfi and Ali Ghaednia. Statistical analysis: Razieh Lotfi.

Conflict of Interests: The authors declare that they have no competing interests.

Ethical Approval: (Abzums.Rec.1393.58)

Funding/Support: Alborz University of Medical Sciences funded this project.

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