



Social Determinants of Health Associated with Self-Reported HIV Testing among Women

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Abstract

Background: There currently is lack of knowledge about HIV testing practices in Iran. The purpose of this pilot study was to evaluate the prevalence of self-reported HIV testing and its associated factors among women.

Methods: This cross-sectional study was conducted in Sanandaj City, located in the west of Iran, in 2012. Data were collected using self-administered questionnaire including demographics characteristics and the main outcome variable was self-reported HIV testing. The univariate and multivariate logistic regression models using STATA software was used for data analysis.

Results: A total of 1200 women were interviewed during the study (Response rate=87.5%). The mean age was 29.67 years (SD: 7.01 years), 49% were aged 28 years or younger, 39.2% were single, 16.9% were pregnant and 60% did not have academic education. The proportion of women that were HIV-tested was, 32.1% (CI 95%: 29.2%, 35.0%). HIV testing was associated with younger age, knowledge of HIV/AIDS, household wealth, pregnancy, academic education, occupation and duration time of occupation, rating of quality of health services and substance use history in her husband.

Conclusion: The self-reported HIV testing rate among our sample women is 32.1%, lower than the HIV testing rate in other studies. Therefore, interventions to expand HIV testing and increase awareness of HIV risk are urgently needed in Iran.

Keywords: HIV testing, Women, Social determinants, Health, Iran

Introduction

By 2014, an estimated 106000 individuals in Iran were living with HIV infection. On the other hand, there are estimated to be approximately 7,000 new cases annually (1). In Iran like other countries (2), a goal of Center for Disease Control (CDC) is to reduce the prevalence of undiagnosed HIV infection. For this purpose, HIV counseling and testing is widely considered an integral component of HIV prevention and treatment strate-

gies (3,4). The cost-effective of HIV testing at least once has been estimated (5).

Social determinants of health are the social and physical factors including: income and income distribution, education, occupation status, food insecurity, housing, social exclusion, social safety net, health services, aboriginal status, gender, race and disability (6) that can influence unhealthy or risky behavior. Social determinants of health can affect the chances of acquiring an infectious dis-

ease such as HIV through behavioral influences and limited preventative and healthcare access. Several epidemiological studies have been conducted to investigate factors associated with self-reported HIV testing. Many studies in the literature have described a range of factors that are associated with HIV testing; such as gender, age, education level, pregnancy, geographical location, marital status, and number of sexual partners (7-12). HIV testing is common among women, 30% in the UK (13), 31.7% in Britain (14), and 67% in an urban African American community (10). The demographics of HIV infection have changed (15); heterosexual transmission of HIV is the leading cause of HIV infection in women and HIV testing is one of the effective ways to prevention of spread of HIV infection (14). Although CDC offer anonymous counseling and testing for some sexually transmitted infections (STIs), including HIV. There currently is a lack of knowledge about HIV testing practices in Iran.

The purpose of this pilot study was to evaluate the prevalence of self-reported HIV testing and its associated factors among women.

Materials & Methods

This cross-sectional study was conducted in Sanandaj City, the west of Iran, in 2012. All women aged 18-49 years who came to the health centers during the period of data collection and consented to participate in the study were enrolled. Both written and verbal informed consents were obtained from each participant after the purpose of the study had been explained. Respondents were allowed to decide whether to participate in the study.

Data were collected using an anonymous, self-administered questionnaire based on a literature review and consisted of two sections: 1) demographic characteristics including age, HIV testing, education level, place of HIV testing, marital and pregnancy status, household wealth, occupation and duration time of employment, rating of quality of health services, and substance use history in her husband and 2) knowledge of HIV/AIDS (10

questions). The main outcome variable was self-reported HIV testing as measured by a question: "have you been tested for HIV/AIDS at any time?". Responses to this question included 'yes', 'no', and 'refused to answer'.

Yes/NO questions were considered for assessing participants' knowledge of HIV/AIDS. Then, percentage of correct answers to these questions was obtained for each subject. Finally, average score of knowledge was calculated for all subjects in order to evaluate the relationship between knowledge and self-reported HIV testing. "Adequate knowledge" about HIV/AIDS was represented by a score of 6 out of 10 correctly answered items.

Household wealth status and rating of quality of health services were assessed by self-report. Responses to these questions included 'Bad', 'Reasonable', and 'Good'.

For data analyses, frequencies were calculated for categorical variables. Characteristics of HIV testing and non-HIV testing groups were compared using logistic regression model then adjusted and unadjusted odds ratios (OR) were reported. All statistical analysis was done at 95% significant level (95% CI) using statistical software STATA 11 (StataCorp, College Station, Texas).

Results

A total of 1200 women were interviewed during the study. Of these, 87.5% agreed to participate. The mean age was 29.67 years (SD: 7.01 years), 49% were aged 28 years or younger, 39.2% were single, 16.9% were pregnant and 60% did not have academic education. Overall, 32.1% (CI 95%: 29.2%, 35.0%) of the study population reported testing for HIV and most of these (90.8%) reported that it has not done in native city. 3.2% of individuals not reported response to HIV testing question. The proportion of demographic characteristics among women is presented in Table 1. The results of the univariate and multivariate analyses of HIV testing are summarized in Table 2. In univariate analysis, HIV testing was associated with younger age, knowledge of HIV/AIDS, household wealth, academic education, occupation and duration time of occupation, rating of

quality of health services and substance use history in her husband. However, there were no statistically significant relation between marital and pregnancy status with HIV testing.

Table 1: Distribution of demographic characteristics among women

Variable	n	%
Age group		
+ 40 yr	95	9.0
18-28 yr	515	49.0
29-39 yr	441	42.0
Educational level		
Non-academic	628	59.7
Academic	423	40.3
Occupation		
Housewife	422	40.1
working	629	59.9
Duration of employment		
0	446	42.4
1-5 yr	460	43.8
+ 5 yr	145	13.8
Marital Status		
Married	639	60.8
Single	412	39.2
Husband substance abuse history		
NO	557	86.2
Yes	64	9.9
No answer	25	3.9
Knowledge of HIV/AIDS		
Inadequate (≤ 5)	418	39.8
Adequate (≥ 6)	455	43.3
No answer	178	16.9
Pregnancy status		
No	460	43.8
Yes	178	16.9
No answer	413	39.3
Quality of health services		
Bad	268	25.5
Reasonable	455	43.3
Good	328	31.2
Household wealth		
Bad	344	32.7
Reasonable	450	42.8
Good	257	24.5
Self-reported HIV testing		
No	680	64.7
Yes	337	32.1
No answer	34	3.2

The results of the univariate and multivariate analyses of HIV testing are summarized in Table 2. In univariate analysis, HIV testing was associated with younger age, knowledge of HIV/AIDS, household wealth, academic education, occupation and duration time of occupation, rating of quality of health services and substance use history in her husband. However, there were no statistically significant relation between marital and pregnancy status with HIV testing.

In the multivariate logistic regression, HIV testing was associated with younger age, knowledge of HIV/AIDS, household wealth, pregnancy, academic education, occupation and duration time of occupation, rating of quality of health services and substance use history in her husband. Surprisingly, after controlling for other variables, the adjusted odds of HIV testing was 1.63 [95%CI: 1.11, 2.40] times higher for pregnant women than non-pregnant women.

In both of univariate and multivariate logistic regression analyses, there was no statistically significant relation between marital status and HIV testing.

Discussion

These findings suggest that there are important relationships between age, knowledge of HIV/AIDS, household wealth, education, pregnancy status, occupation, rating of quality of health services, substance use history in her husband and HIV testing in women.

The main finding of the present study was estimating the prevalence of HIV testing in the women population, and found that overall 32.1% of women have tested for HIV in their lifetime. We found no similar studies in Iranian population but our findings are consistent with results of previous epidemiological studies in other regions which found uptake of voluntary counseling and testing services to be low (9,14,16,17). In fact, this study is the first to assess the factors associated with self-reported HIV testing among Iranian women. In Uganda, majority of the young women wished to have an HIV test compared with older women (18).

Table 2: Results of logistic regression analyses of HIV testing

Variable	Unadjusted		Adjusted*	
	OR[95% CI]	P-value	OR[95% CI]	P-value
Age group				
+ 40 yr	1.00	-	1.00	-
18-28 yr	4.02[2.09, 7.75]	<0.001	2.69[1.16, 6.21]	0.020
29-39 yr	4.11[2.12, 7.96]	<0.001	2.03[0.91, 4.50]	0.082
Educational level				
Non-academic	1.00	-	1.00	-
Academic	2.44[1.87, 3.19]	<0.001	1.60[1.03, 2.47]	0.035
Occupation				
Housewife	1.00	-	1.00	-
working	10.58[7.28, 15.37]	<0.001	4.95[2.60, 9.46]	<0.001
Duration of employment				
0	1.00	-	1.00	-
1-5 yr	12.85[8.75, 18.90]	<0.001	3.31[1.90, 5.77]	<0.001
+ 5 yr	5.50[3.40, 8.92]	<0.001	ND	ND
Marital Status				
Married	1.00	-	1.00	-
Single	1.30[0.99, 1.70]	0.054	0.22[0.02, 2.29]	0.207
Husband substance abuse history				
NO	1.00	-	1.00	-
Yes	2.79[1.64, 4.75]	<0.001	2.07[1.10, 3.91]	0.026
Pregnancy				
No	1.00	-	1.00	-
Yes	1.41[0.97, 2.04]	0.073	1.63[1.11, 2.40]	0.012
No answer	1.43[1.07, 1.91]	0.015	0.41[0.21, 0.79]	0.008
Knowledge of HIV/AIDS				
Inadequate (≤ 5)	1.00	-	1.00	-
Adequate (≥ 6)	1.80[1.35, 2.39]	<0.001	4.06[2.10, 7.85]	<0.001
No answer	1.64[1.14, 2.38]	0.008	ND	ND
Quality of health services				
Bad	1.00	-	1.00	-
Reasonable	1.27[0.90, 1.80]	0.166	1.29[0.87, 1.93]	0.205
Good	1.93[1.35, 2.75]	0.001	2.10[1.39, 3.17]	0.001
Household wealth				
Bad	1.00	-	1.00	-
Reasonable	1.09[0.80, 1.50]	0.565	0.89[0.57, 1.36]	0.583
Good	1.81[1.30, 2.55]	0.001	2.34[1.46, 3.77]	0.001

*Adjusted for all variables shown in the table/ND: No data, OR: Odds ratio, CI: Confidence interval

We found that younger women were more likely to be tested than those in their forties and over. Takahashi et al. conducted a study to evaluate HIV testing practices, and perceptions of HIV risk, among a geographically diverse, population-based sample of sexually active adults. They showed that younger adults made up the largest

proportion of persons at risk for HIV infection who had not had a recent HIV test (19).

HIV/AIDS knowledge had important role in predicting of getting an HIV test among females (20). We indicated that there was statistically significant relation between knowledge of HIV/AIDS and HIV testing even after adjusting for other variables ($P=0.001$). These findings suggest that the

lack of knowledge about HIV/AIDS is one of the largest barriers to obtaining an HIV test in women. Haghdoost et al. (21) assessed the level of knowledge and attitude toward HIV/AIDS in Iranian population by a systematic review and meta-analysis. This study has shown low knowledge of HIV status in Iranian population.

Based on univariate logistic regression model, there was no statistically significant relation between HIV testing and pregnancy status, after controlling for other variables, we found that pregnant women had increased odds of self reported HIV testing compared to non-pregnant. The results of the previous similar studies confirmed our findings. Kabiru et al. (22) examined the characteristics of young males and females at the time of first reported HIV test in Kenya. They have also shown that HIV testing among females is highly associated with pregnancy status. In an investigation (10), pregnant females had increased odds of self reported HIV testing after controlling for STI testing and age (Adjusted OR=4.2). In addition, in Britain, the pregnancy was the main reason for an HIV test in women (14).

Marital status is an important determinant of HIV testing (23). Because an HIV-positive result can lead to divorce or separation (24) and never married women are at greater risk of HIV infection (25). This study found no association between marital status and HIV testing. This is inconsistent with findings of other studies. For example, Agha (8) reported that women who are never married are less likely to be tested for HIV than married women after adjusting for income, education and other variables. Similarly, the divorced/separated/widowed have a higher proportion of individuals who had ever been tested (64%) compared to those who had never married (38%) (23).

Having academic education was found to be associated with higher odds of having had HIV test. This corroborated those of previous studies which found that individuals with higher education levels tend to use more health care services as compared to those with low or no formal education (26). The results of the previous similar studies confirmed our findings (8,23,27). For example, HIV

voluntary counseling and testing use increase with increasing levels of education (28).

This study also found that one of the most important predictor of HIV testing is women's perceptions of quality of health services. Poor accessibility of health facilities is the main barrier to use of HIV testing and counseling services (29). In another study (30), reporting ever having tested for HIV at a health facility was correlated with several factors such as; older age and increased number of schooling years to the survey. The main reasons for not accessing services during this study were distance to testing centre, lack of confidentiality in health facilities, and fear of diagnosis. Many people especially young people visit health care facilities for various health services. Consequently, focus of improvement in service quality could be better.

There was a relatively strong association between household wealth and HIV test (OR=2.34, 95% CI: 1.46, 3.77). On the other hand, even after adjusting for other variables, household wealth remained a powerful predictor of getting an HIV test. Our findings suggest that the lack of financial resources at the household level is one of the largest barriers to obtaining an HIV test. A nationally representative survey in Mozambique has shown the same result (8). While another study conducted in Nairobi indicated that there were no significant differences in proportions of individuals who had ever been tested by wealth status index (23). In our study, employment status, duration time of working and substance use history in her husband were detected as the strongest factors associated with HIV testing ($P < 0.001$ for all comparisons). We found no similar studies for comparison but one. Sandfort et al. (31) conducted a similar study in 2008 to investigate the characteristics of South African men who had sex with men (MSM) and had been tested for HIV. They showed that MSM who had never been tested are more likely to be unemployed.

Our study had several limitations including: Information about HIV testing status was based on self-reported responses. Accordingly, self-report may be a cause of potential responder bias (information bias) and underestimate HIV testing status. In a cross sectional study, causality inference should be limited.

Non-responders may differ significantly from study participants. A substantial number of HIV tests (90.2%) were reported to have taken place outside the HIV counseling and testing clinic and HIV status (positive/negative) was not collected in our survey as well. Consequently, the low proportion of HIV testing among Iranian women stimulates research and programmatic efforts to understand and address what barriers to HIV testing exist. The data presented in our study do not seem to represent the whole population, so cannot be used for estimation of the real number of HIV testing.

Conclusions

The self-reported HIV testing rate among our sample women was 32.1%, lower than the HIV testing rate in other studies. Therefore, interventions to expand HIV testing and increase awareness of HIV risk are urgently needed in Iran. Key determinants of HIV testing such as age, knowledge of HIV/AIDS, household wealth, education level, pregnancy status, occupation, and rating of quality of health services need to be considered in efforts aimed at increasing participation in HIV testing.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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