



Research article

Self-reported syndromes of sexually transmitted infections and its associated factors among reproductive (15–49 years) age women in Ethiopia

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ABSTRACT

Background: Sexually Transmitted Infections (STIs) are among the most important causes of maternal and neonatal morbidity and mortality. It remains a significant public health problem and disproportionately affects women posing a large public health burden in low and middle-income countries. However, there is little information on the magnitude of self-reported syndromes of STIs among reproductive-age women in Ethiopia.**Aim:** This study aimed to determine the magnitude of self-reported syndromes of sexual transmitted infections and its associated factors among women of reproductive age in Ethiopia.**Methods:** The study was based on the data from the Ethiopian Demographic Health Survey of 2016. The data on the status of self-reported STIs were extracted from the individual women dataset, and a total of 15,683 reproductive-age women were involved in the study. Since the data has a hierarchical and cluster nature sampling weight was applied for all analysis procedures to account for complex survey design. Rao-scot chi-square test that adjusts for complex sample design was used to examine the association of outcome and independent variables. In, multivariable analysis, the level of statistical significance was declared at P-value ≤ 0.05 .**Findings and conclusions:** The magnitude of self-reported STIs was 3.0 % (95% CI: 2.92–3.08). Among self-reported syndromes of STIs only, 33.3 % (158) seek care for sexually transmitted infections. Age (Adjusted Odds Ratio (AOR) = 2.15; 95%CI:1.4, 3.4), marital status (AOR = 1.72; 95%CI:1.02, 2.90), women attending higher education and above (AOR = 2.67; 95%CI:1.57,4.57), history of termination of pregnancy (AOR = 2.85; 95% CI:2.0,4.08), and risky sexual behavior (AOR = 1.72; 95%CI:1.02,2.90) were found to be associated with self-reported syndrome of sexually transmitted infections. The magnitude of self-reported syndromes of STI and health care seeking behaviors among reproductive-age women was found low. Therefore, the government should enhance the awareness of women for sexually transmitted syndromes, and increase accessibility of STI services. Moreover, qualitative studies should be done to identify the demand, supply, and barriers related to STI among women of reproductive age women in Ethiopia.

1. Introduction

Sexually Transmitted Diseases or Infections (STDs/STIs) remain a significant public health problem, and disproportionately affect women; posing a large public health burden in low and middle-income countries [1, 2]. Worldwide, more than 1 million STI acquired every day, and about 376 million STIs were due to four causes; Chlamydia, gonorrhea, trichomonas, and syphilis [3, 4]. Moreover, cervical cancer remains the second most common cancer among those age groups [5]. One in five

women had genital herpes in united states of America [6]. Women are more vulnerable to sexually transmitted infections due to social, economic, and biological reasons than men [7]. Self-reported syndromes of STI in Sub Saharan Africa among men, 3.8% [8], and in Ethiopia 8.7%–13.1% [9, 10].

Sexually Transmitted Disease affects mother and infants health; leads to long-term disabilities like pelvic inflammatory disease, infertility, ectopic pregnancy, cervical cancer, and congenital infections [11, 12, 13, 14]. In addition, STI causes low birth weight, preterm birth, eye

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infection, blindness, pneumonia, neonatal sepsis, brain damage, lack of coordination in body movement, deafness, stillbirth, and mortality [15]. World Health Organization (WHO) reported that 1 million death among 6 million under-five children were related to preterm birth [1], and an estimated 200,000 fetal/neonatal death were related to syphilis, and more than 280,000 cervical-related death [16].

The consequences of sexually transmitted diseases can be prevented through universal access to sexually and reproductive health services. More specifically, Sustainable Development Goal 3.1 aimed at ending preventable newborns and under-five morbidity and mortality through ending mother to child transmission (MTCT) of syphilis and other STIs [5, 17]. On top of this, WHO and the world health assembly adopted a global health sector strategy on scaling up STIs services [18].

Previous studies showed that women tend to delay seeking care longer than men and the barriers may be related to individual as well as health system factors [19, 20]. Only half in India [21], and 35% in Ghana [22] seek care for the sexually transmitted diseases. Based on different studies; delay in seeking care for sexually transmitted diseases were related to high wealth index, presences of offensive odor, perception of symptoms as normal, feeling shy, lack of female health workers, distance to facility, lack of availability of treatments, having non-ulcerative STDs, age, religion, occupational status, and type of family [21, 22, 23, 24, 25].

Although, scaling up of STI related services by different stakeholder; health care-seeking behavior of women especially in developing countries is still poor. Those factors are different for women of socio-economic, cultural, and geographic differences. Though, self-reporting behavior has great implications for the prevention and control of STIs, little attention is given to self-reporting behavior of STI syndromes. Therefore, the current study was intended to identify the magnitude of self-reported syndromes of STIs and its determinant factors using the national EDHS data.

2. Methods and materials

2.1. Data source, study population, and sampling technique

A community-based cross-sectional study was conducted in Ethiopia from January 18 to June 27, 2016. In Ethiopia there are nine regional states and two administrations. Each region were stratified into urban and rural. Stratified two-stage cluster sampling was performed. Samples of enumeration areas (EAs) were selected independently in each stratum. Firstly, a total of 645 EAs (202 in urban areas and 443 in rural areas) were selected with probability proportional to EA size. The target groups were all reproductive-age women (15–49 years) in the selected enumeration areas [26]. The data were extracted from 15,683 reproductive age (15–49 years) women. An approval letter was obtained from the measure DHS, and the data set was downloaded from the DHS website (<http://www.dhsprogram.com>).

2.2. Variables

The dependent variable was self-reported syndromes of sexually transmitted infections. Each reproductive age women were asked the following questions; 1. Did you have any STI in the past 12 months (Yes, No); 2. Had an abnormal genital discharge in the past 12 months (Yes, No); 3. Had a genital sore or ulcer in the past 12 months (Yes, No); 4. Had an STI or symptoms of an STI in the past 12 months (Yes, No). Those questions were added and dummy coded so that respondents who reported “Yes” to one of the questions were categorized as having STI [27].

2.3. Independent variables

Socio-demographic variable includes; Age, residence, marital status, educational status, Wealth index, ever tested for HIV, Know a place to get HIV test, media exposure.

Comprehensive knowledge was expressed as; 1. Know the two primary prevention methods use of condoms and having just one uninfected faithful partner that reduce the chance of getting HIV; 2. Know that a healthy-looking person can have HIV, and 3. Reject the two most common local misconceptions about HIV/AIDS transmission or prevention (HIV cannot be transmitted by mosquito bites, HIV cannot be transmitted by supernatural means, a person cannot become infected by sharing food with a person who has HIV). Finally, dummy coded as having Comprehensive knowledge if the answer “yes” to the 3 questions, otherwise “No” (27).

Risky sexually behavior -women who had multiple sexually partners, higher-risky sexually partners, condom use with multiple partners, and condom use at last high-risky sex” (27).

2.4. Data processing and analysis

Data were extracted from the 2016 EDHS data set. Data cleaning, recoding and analysis were carried out using SPSS statistical software version 24. Sampling weight was applied for all analysis procedures to account for complex sample survey design and unequal probabilities of selection. Rao-Scott chi-square test that adjusts for complex sample design was used to examine the association of two variables (Exposure with the outcome). Due to the fact that varies from cluster to cluster, the interclass correlation was calculated and found to be 9.2%. Since it is lower than the expected (10%), we use the binary logistic regression model. Binary logistic regression model was used to saw the association between each independent variable with the outcome variable. All variables with p-value ≤ 0.25 in the bi-variable analysis were entered into the final model. Variables with p values ≤ 0.05 in multivariable binary logistic regression model analysis were considered statistically significant. Finally the result was presented using figures, tables, and texts.

2.5. Ethical considerations

Since the data was extracted from EDHS 2016 data, ethical approval was not obtained. Permission was obtained to use the EDHS data from the measure DHS international program.

3. Results

3.1. Socio-demographic characteristics of reproductive -age women

A total of 15,683 reproductive-age women were participated in the study with a mean (\pm SD) age of 28.2 ± 0.12 years. Three fourth, 77.8% (12,207) of women were from rural, and 47.8% were illiterate. Nearly two-third, 63.9% (10,014) of respondents were married. The majority, 43.3% were orthodox Christian in religion, followed by 31.2% Muslim. The majority, 36.4% (5701) of women were from the Oromia region, 23.7% from Amhara region, and less than 1% from Harari, Dire dawa, Benishangul Gumiz and Gambelia regions (Table 1).

As shown in Table 2 below, the majority of (41.8%) women reporting that they were with STIs were found within the age group of greater than or equal to 35 years. About 348 (73.4%) women reporting sexually transmitted infections were rural residents and 379 (80.1%) women with STIs were married (Table 2).

3.2. Magnitude of self-reported syndromes of sexually transmitted infection, and health care seeking behavior

In the current study, Self-reported syndromes prevalence of Sexually Transmitted Infection was, 3% (95%CI: 2.92–3.08). Among self-reported STIs, 33.3 % (158) seek care/advice for sexually transmitted infections. Majority, 51.9% reported that they had Genital discharge followed by, 41.8% Genital sore (Figure 1).

3.3. Factors associated with self-reported syndrome of sexually transmitted infections

The binary logistic regression model was used to identify predictors of self-reported syndrome of sexually transmitted infection. In Bi-variable analysis; age, marital status, ever had termination of pregnancy, comprehensive knowledge of HIV, ever been tested for HIV, and risky sexually behavior were significantly associated with self-reported syndrome of STIs. While in multivariable analysis; age, marital status, ever had a termination of pregnancy, and risky sexually behavior were independently associated with self-reported sexually transmitted infections among reproductive age women in Ethiopia.

The odds of self-reported syndrome of STI was two times more likely among women of reproductive age greater than or equal to 35 years than women with the age group of 15–24 years (AOR = 2.15; 95% CI:1.4, 3.4). Similarly, married women were 1.7 times more likely to report syndromes of STI as compared to unmarried women (AOR = 1.72; 95% CI: 1.02, 2.90). Regarding educational status, those women of an educational level higher and above were about 2.7 times more likely to report STIs than illiterate women (AOR = 2.67; 95% CI:1.57,4.57). Moreover, the odds of reporting syndromes of STIs was 2.85 times more likely among women

who had a history of termination of pregnancy than the counterparts (AOR = 2.85; 95% CI:2.0,4.08). The same is true for those women who had risky sexually behaviors (AOR = 1.72; 95% CI: 1.02, 2.90) (Table 3).

4. Discussion

Sexually transmitted infections have a tremendous impact on maternal and neonatal morbidity. Nowadays, the incidence of sexually transmitted infections is increasing. The study revealed that the magnitude of self-reported syndrome of sexually transmitted disease among reproductive-age women in Ethiopia was 3%. This is lower than the finding from Swaziland 19.4% [28], Nepal 39.9% [29], Uganda 18.8% [30], India 9.7% [31], Uganda 26% [32], and Ethiopia 35.6% [33]. This variation might be due to differences in awareness or knowledge towards sexually transmitted diseases, differences in measuring the outcome (self-reporting versus diagnosis or screening for STIs). The other possible reason for this variation might be due to differences in access to health care services, socio-economic, and demographic characteristics as well as differences in sample size. Moreover, the previous study in Ethiopia was conducted among sex workers which increases the vulnerability to risky sexually practice.

Table 1. Socio-demographic characteristics of reproductive age women (n = 15,683).

Characteristics	Frequency (No.)	Percentage (%)
Maternal age		
15–24 years	6143	39.2%
25–34 years	5302	33.8%
≥35 years	4238	27%
Residence		
Urban	3476	22.2%
Rural	12207	77.8%
Educational status		
No education	7498	47.8
Primary education	5490	35.0
2 nd yr education	1817	11.6
Higher and above	877	5.6
Religion		
Orthodox Christian	6786	43.3%
Muslim	4892	31.2%
Protestant	3674	23.4%
Others (catholic, tradition)	330	2.1%
Marital status		
Unmarried	5669	36.1%
Married	10014	63.9%
Wealth index		
Poorest	2633	16.8%
Poorer	2809	17.9%
Middle	2978	19.0%
Richer	3100	19.8%
Richest	4163	26.5%
Region		
Amhara	3714	23.7%
Oromia	5701	36.4%
SNNPR	3288	21.0%
Tigray	1129	7.2%
Addis Ababa	930	5.9%
Afar	128	0.8%
Somalia region	459	2.9%
Benishangul Gomez	160	1.0%
Gambella	44	0.3%
Dire dawa	90	0.6%
Harari	39	0.2%

Table 2. Characteristics of reproductive age women by self-reported behaviors of sexual transmitted infections in Ethiopia.

Variables	Sexual transmitted infection		Total No. (%)
	Yes No. (%)	No No. (%)	
Age			
15–24 years	97 (20.4)	6046 (39.8)	6143 (39.2)
25–34 years	179 (37.8)	5122 (33.7)	5302 (33.8)
≥35 years	198 (41.8)	4041 (26.5)	4238 (27.0)
Residence			
Urban	126 (26.6)	3350 (22.0)	3476 (22.2)
Rural	348 (73.4)	11859 (78.0)	12207 (77.8)
Marital status			
Unmarried	94 (19.9)	5574 (36.7)	5669 (36.1)
Married	379 (80.1)	9635 (63.3)	10,014 (63.9)
Educational status			
No education	235 (49.6)	7263 (47.8)	7498 (47.8)
Primary education	150 (31.7)	5340 (35.1)	5490 (35.0)
2 nd ry education	35 (7.4)	1782 (11.7)	1817 (11.6)
Higher and above	53 (11.3)	824 (5.4)	877 (5.6)
Media exposure			
Yes	231 (48.8)	6658 (43.8)	6889 (43.9)
No	243 (51.2)	8551 (56.2)	8794 (56.1)
Ever been tested for HIV test			
Yes	259 (54.6)	6671 (43.9)	6930 (44.2)
No	215 (45.4)	8538 (56.1)	8753 (55.8)
Know a place to get HIV test			
Yes	366 (84.7)	10510 (74.2)	10876 (74.5)
No	66 (15.3)	3657 (25.8)	8753 (55.8)
Comprehensive Knowledge of HIV			
Knowledgeable	232 (53.7)	6508 (45.9)	6740 (46.2)
Not knowledgeable	200 (46.3)	7659 (54.1)	7859 (53.8)
Ever termination of pregnancy			
Yes	107 (22.6)	1128 (7.4)	1236 (7.9)
No	367 (2.9)	14081 (92.6)	14447 (92.1)
Risky sexual behavior			
Yes	38 (8.0)	695 (4.6)	733 (4.7)
No	436 (92)	14514 (95.4)	14950 (95.3)
Ever heard of STI			
Yes	434 (91.6)	14232 (93.6)	14,666 (93.5)
No	40 (8.4)	977 (6.4)	1017 (6.5)

Self-reporting syndromes of STIs was influenced by different factors such as; age, marital status, educational status, ever had termination of pregnancy, and risky sexual behaviors are associated with self-reported STIs. This is similar to the findings in Swaziland, Nepal, Uganda, India, and Petersburg Estonia [24, 28, 29, 30, 31, 34].

The odds of self-reported syndromes of STIs among reproductive age women having educational level of higher education and above were higher than women of a lower Education level. This is consistent with studies in Estonia, and Finland [34]. This might be due to the fact educated women are more likely to report their reproductive health status than uneducated women.

Similarly, self-reported syndromes of STIs for women of 35 years and above was higher than those below 35 years old. This might be related to that age group may have better educational achievement, and better knowledge of STIs. Younger age groups are less likely to get access to quality reproductive health care services. Married women have higher odds of self-reported syndromes of STIs than unmarried women. This might be married women have improved experiences in sharing sexual, and reproductive health issues. The other reason could be married women were more likely to discuss sexual and HIV-related issues. Sexually transmitted infections are one of the main cause for a

termination of pregnancy. As such women having history of termination of pregnancy have higher odds of self-reported STIs than their counterparts. This is supported by the study in Ethiopia [35]. This might be due

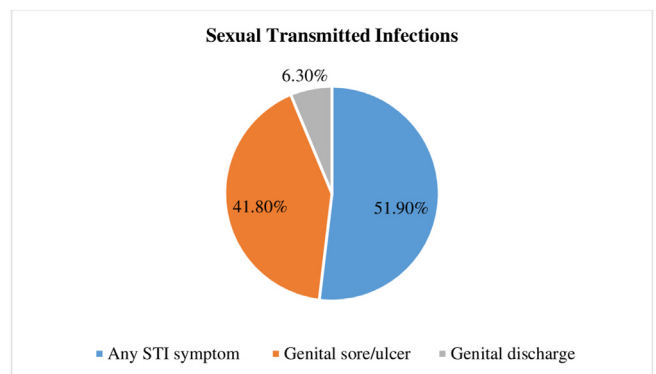


Figure 1. Percentage of self -reported STIs among women of reproductive age women.

Table 3. Factors associated with self-reported syndromes of sexual transmitted infections among reproductive age women in Ethiopia (n = 15685).

Variables	Self-reported Sexual Transmitted Infections (Yes, No)		P-value
	Crude Odd Ratio (COR)	Adjusted Odd Ratio (AOR)	
Age			0.002
15–24 years	1	1	
25–34 years	2.19 (1.5,3.19)	1.5 (0.94,2.39)	
≥35 years	3.05 (2.18,4.27)	2.15 (1.36,3.4)*	
Marital status			0.044
Married	2.32 (1.68,3.21)	1.72 (1.02,2.90)*	
Unmarried	1	1	
Educational status			<0.001
No education	1	1	
Primary education	0.86 (0.35,1.16)	1.39 (0.99,1.97)	
2 nd ry education Higher and above	0.61 (0.35,1.06)	1.08 (0.58,2.02)	
	2.01 (1.21,3.35)	2.67 (1.57,4.57)*	
Ever had termination of pregnancy			0.002
Yes	3.64 (2.61,5.09)	2.85 (2.0,4.08)*	
No	1	1	
Comprehensive knowledge of HIV			
Knowledgeable	1.37 (1.01,1.84)	1.27 (0.94,1.72)	
Not knowledgeable	1	1	
Ever been tested HIV			
Yes	1.54 (1.14,2.08)	1.25 (0.89,1.76)	
No	1	1	
Risky sexual behaviors			0.044
Yes	1.82 (1.06,3.11)	1.72 (1.02,2.90)*	
No	1	1	

*Significant at p-value ≤ 0.05 .

to those women who had history of termination of pregnancy would have better access to reproductive health care service, sexual, and better understanding of symptoms of STIs. Moreover, becoming pregnant increase screening test for STI, increase health care seeking for antenatal, and postnatal care visit.

In the current study, women having history of risky sexual behaviors had higher odds of self-reporting syndromes of STIs than women with no history of risky sexual behavior. This is similar with findings in Northern India, and Uganda [30, 31]. This is clear that women with risky sexual behaviors are at a greater risk of acquiring STIs, and voluntary self-report of their STIs. In addition, having risky sexually behavior increase the probability of being infected, having perceived stigma, and non-supporting from others [36]. The study poses its strength and limitations. As strength, the study used nationally representative community-based data and covers a large geographical area with large sample size which has a higher precision of generalizability. As a limitation; the result was based on a self-report which might be influenced by the recall bias, and knowledge of the women on STIs. Additionally, there might be social desirability bias as the issues of sexually transmitted diseases are sensitive.

4.1. Conclusions

In the current study, the magnitude of self-reported syndromes of sexually transmitted infections among reproductive age women was found low. Age, marital status, educational status, ever had termination of pregnancy and risky sexually behaviors are found to be associated with self-reported STIs among the study populations. There is a need for policy makers to respond for reducing the burden of sexually transmitted infections. Enhancing the awareness of women for sexually transmitted diseases, and increasing accessibility of STIs services are important in Ethiopia. Further research with a qualitative approach is recommended to identify both the demand and supply related to STIs. Special attention

should be given to reproductive-age women in early screening of STI, and creating awareness on STI syndromes could be one of the main strategies to increase self-seeking behaviors of STIs.

Declarations

Author contribution statement

Binyam Minuye Birhane: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Amare Simegn, Wubet Alebachew, Ermias Sisay, Biruk Demissie, Zemen Mengesha Yalew, Hunegnaw Alemaw, Demeke Mesfin Belay: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

Data included in article/supplementary material/referenced in article.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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