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

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ARTICLE INFO

Keywords:
Sexually transmitted infections
Reproductive age women
EDHS
Ethiopia

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:1.37,4.57), 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
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, presence 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. First, 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 (±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   | 5450           | 35.0           |
| 2nd 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              | 2578           | 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%           |
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

| 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) |
|                               | 2nd yr 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) |

Figure 1. Percentage of self-reported STIs among women of reproductive age women.
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, Demek Mesfin Belay: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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.
Acknowledgements

The authors acknowledged the measure DHS international program for providing the data set.

References

[1] A. Wynn, C.C. Bristow, A.D. Cristillo, S.M. Murphy, N. van den Broek, C. Muzny, et al., Sexually transmitted infections in pregnancy and reproductive health: proceedings of the STAR sexually transmitted infection clinical trial group programmatic meeting, Sex. Transm. Dis. 47 (1) (2020) 5–11.

[2] T.G. Ginzindza, C.D. Stefan, J.M. Tsoka-Gwegweni, X. Dlaminini, P.E. Jolly, E. Weiderpass, et al., Prevalence and risky factors associated with sexually transmitted infections (STIs) among women of reproductive age in Swaziland, Infect. Agents Cancer 12 (1) (2017) 29.

[3] L. Newman, J. Rowley, S. Vander Hoorn, N.S. Wijesooriya, M. Unemo, N. Low, et al., Global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012 based on systematic review and global reporting, PLoS One 10 (12) (2015), e0143504.

[4] WHO. Sexually Transmitted Infections, 2021. https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis).

[5] M. Bonet, M. Cuttini, A. Piedvache, E.M. Boyle, P.-H. Jarreau, L. Koll, et al., Changes in management policies for extremely preterm births and neonatal outcomes from 2003 to 2012: two population-based studies in ten European regions, BJOG An Int J. Obstet. Gynaecol. (2017).

[6] M. Kurek Eken, A. Tüten, E. Derin, M. Arfat, C. Nwokoro, A. Karatepe, Major determinants of survival and length of stay in the neonatal intensive care unit of newborns from women with premature preterm rupture of membranes, J. Matern. Fetal Neonatal Med. 30 (16) (2017) 1972–1975.

[7] C. Jensen, F. Ebbesen, J. Petersen, A. Sellerup, C. Bach, T. Henriksen, Hypothermia at neonatal intensive care unit admission was not associated with respiratory disease or death in very preterm infants, Acta Paediatr. (2017).

[8] A.-A. Seidu, B.O. Ahinkorah, L.K. Dadzie, J.K. Tetteh, E. Agbaglo, J. Okyere, et al., A country-wide cross-sectional study of self-reported sexually transmitted infections among sexually active men in sub-Saharan Africa, BMC Publ. Health 20 (1) (2020) 1–11.

[9] M. Getachew, D. Haile, C. Churko, A.A. Gabe, Magnitude of self-reported syndromes of sexually transmitted infections and its associated factors among young incarcerated persons (18–29 Years) in correctional facilities of Gamo Gofa Zone, Southern Ethiopia, Risk Manag. Healthc. Pol. 14 (2021) 21.

[10] H.G. Gebrekidan, M.A. Gebreselassie, H.G. Yebyo, D.N. Nigussi, B.M. Birhane et al. Heliyon 7 (2021) e07524

[11] J.G. Wen, L. Mirea, J. Yang, K.L. Bassil, S.K. Lee, P.S. Shah, Prediction of neonatal outcomes in extremely preterm neonates, Pediatrics 132 (4) (2013) e876–e885.

[12] Organization WH, Report on Global Sexually Transmitted Infection Surveillance, 2018.

[13] B. Bako, A. Idris, M. Garba, S. Pius, H. Obetta, Determinants of neonatal survival following preterm delivery at the University of Maiduguri Teaching Hospital, Maiduguri, Nigeria, Trop. J. Obstet. Gynaecol. 34 (1) (2017) 39.

[14] M.F. Chersich, S. Delayn-Morelwe, G. Martin, H. Rees, Advancing STI Priorities in the SDG Era: Priorities for Action, Springer, 2018.

[15] H.T. Thu, A. Ziersch, G. Hart, Healthcare-seeking behaviours for sexually transmitted infections among women attending the National Institute of Dermatology and Venerology in Vietnam, Sex. Transm. Infect. 83 (5) (2007) 406–410.

[16] H.A. Voeten, H.B. O’HARA, J. Kuzma, J.M. Otidu, J.M. Ndinya-Achola, J.J. Bwyco, et al., Gender differences in health-care seeking behavior for sexually transmitted diseases: a population-based study in Nairobi, Kenya, Sex. Transm. Dis. 31 (5) (2004) 265–272.

[17] P.P. Shingade, Y. Kazi, L. Madhavi, Treatment seeking behavior for sexually transmitted infections/reproductive tract infections among married women in urban slums of Mumbai, India. Sex. Transm. Dis. 47 (2) (2020) 57–70.

[18] R.M. Adanu, A.G. Hill, J.D. Selfhii, R. Darko, J.K. Anartii, R.B. Duda, Sexually transmitted infections and health seeking behaviour among Ghanaian women in Accra, Afr. J. Reprod. Health 12 (3) (2008).

[19] S. Jayapalan, Determinants of delay in the health care seeking behaviour of STD patients, Clin. Epidemiol. Glob. Health 3 (2015) S69–S74.

[20] R. Puthuchira Ravi, R. Abhimulam Kulaahkaran, Care seeking behaviour and barriers to accessing services for sexually health problems among women in rural areas of Taminaluad state in India, J. Sex. Trans. Dis. 2014 (2014).

[21] G. Mani, K. Annadurai, R. Damaekaran, Healthcare seeking behaviour for symptoms of reproductive tract infections among rural married women in Tamil Nadu-a community based study, Online J. Health Allied Sci. 12 (3) (2013), ICF Ca, Ethiopia Demographic and Health Survey .Addis Ababa, Ethiopia, and Rockville, CSA and ICF, Maryland, USA, 2019.

[22] T.N. Croft, M. Aileen, J. Marshall, Courtney K. Allen, et al., Guide to DHS Statistics, ICF, Rockville, Maryland, USA, 2018.

[23] T.G. Ginzindza, C.D. Stefan, J.M. Tsoka-Gwegweni, X. Dlaminini, P.E. Jolly, E. Weiderpass, et al., Prevalence and risky factors associated with sexually transmitted infections (STIs) among women of reproductive age in Swaziland, Infect. Agents Cancer 12 (1) (2017) 1–12.

[24] P. Kafie, S.S. Bhattachar, Prevalence and factors associated with reproductive tract infections in gongola village, Rupandehi district, Nepal, Adv. Publ. Health 2016 (2016).

[25] F. Nawagi, A. Mpimbaa, J. Mukiua, P. Serwadda, S. Kyalema, D. Kizza, Knowledge and practices related to sexually transmitted infections among women of reproductive age living in Katanga slum, Kampala, Uganda, Afr. Health Sci. 16 (1) (2016) 116–122.

[26] N. Chaudhary, R. Kalyan, M. Singh, J. Agarwal, S. Qureshi, Prevalence of reproductive tract infections in women attending a tertiary care center in Northern India with special focus on associated risky factors, Indian J. Sex. Transm. Dis. 40 (4) (2019) 113.

[27] V. Masanja, S.T. Wasufu, T. Seokamatte, J.B. Irunu, R.K. Mugame, G. Van Hal, Trends and correlates of sexually transmitted infections among sexually active Ugandan female youths: evidence from three demographic and health surveys, 2006–2016, BMC Infect. Dis. 21 (1) (2021) 1–13.

[28] S. Hailiemariam, A. Nigusse, A. Kebede, Prevalence of self-reported symptoms of sexually transmitted infection among establishment-based female sex workers in Ethiopia, Can. J. Infect Dis. Med. Microbiol. (2020) 2020.

[29] E. Regushevskaya, T. Dubkiyati, M. Laangere, M. Nikula, O. Kuznetsova, H. Karro, et al., The determinants of sexually transmitted infections among reproductive age women in St. Petersburg, Estonia and Finland, Int. J. Publ. Health 55 (6) (2010) 581–589.

[30] M.H. Zenebe, Z. Mekonnen, E. Loha, E. Padakko, Prevalence, risky factors and association with delivery outcome of curable sexually transmitted infections among pregnant women in Southern Ethiopia, PLoS One 16 (3) (2021), e0248958.

[31] M. Shukla, M. Agarwal, J.V. Singh, A.K. Tripathi, A.K. Srivastava, V.K. Singh, High-risk sexually behavior among people living with HIV/AIDS attending tertiary care hospitals in districts of Northern India, Indian J. Sex. Transm. Dis. 37 (1) (2016) 46,