Prevalence and trends of sexually transmitted infections among pregnant women in Mizan Tepi University Teaching Hospital, Southwest Ethiopia: a cross-sectional study

Abiyot Wolie Asres, Mesenbet Muluken Endalew, Serawit Yirdaw Mengistu

Corresponding author: Abiyot Wolie Asres, Department of Epidemiology and Biostatistics, School of Public Health, Wolaita Sodo University, Wolaita Sodo, Ethiopia. abiywol@gmail.com

Received: 21 Jul 2021 - Accepted: 25 May 2022 - Published: 09 Jun 2022

Keywords: Sexually transmitted infections, pregnancy, antenatal care, Ethiopia

Copyright: Abiyot Wolie Asres et al. Pan African Medical Journal (ISSN: 1937-8688). This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article: Abiyot Wolie Asres et al. Prevalence and trends of sexually transmitted infections among pregnant women in Mizan Tepi University Teaching Hospital, Southwest Ethiopia: a cross-sectional study. Pan African Medical Journal. 2022;42(111). 10.11604/pamj.2022.42.111.30871

Available online at: https://www.panafrican-med-journal.com/content/article/42/111/full

Prevalence and trends of sexually transmitted infections among pregnant women in Mizan Tepi University Teaching Hospital, Southwest Ethiopia: a cross-sectional study

Abiyot Wolie Asres, Mesenbet Muluken Endalew, Serawit Yirdaw Mengistu

1Department of Epidemiology and Biostatistics, School of Public Health, Wolaita Sodo University, Wolaita Sodo, Ethiopia, 3Mizan-Aman College of Health Science, Mizan-Aman, Ethiopia, 2Mizan Tepi University Teaching Hospitals, Mizan-Aman, Ethiopia

*Corresponding author
Abiyot Wolie Asres, Department of Epidemiology and Biostatistics, School of Public Health, Wolaita Sodo University, Wolaita Sodo, Ethiopia
Abstract

Introduction: sexually transmitted infections are the most common causes of illness in Africa. They are public health important diseases because of their magnitude, potential complications, and interactions with HIV/AIDS during pregnancy. In our country, especially in our study area, limited studies have been conducted to assess the magnitude and trends of sexually transmitted infections among pregnant women. Therefore, this study aimed to assess the prevalence and trends of sexually transmitted infections (STIs) among pregnant women. Methods: an institution-based cross-sectional study design was conducted in Mizan Tepi University Teaching Hospital in Southwest Ethiopia from August 1-30, 2019. Three hundred women were selected using a simple random sampling method from the women's registry book who visited the hospital for antenatal care (ANC) follow-up in the last five years. The data was collected by using checklists. Finally, the data were entered into Epi Info 7 and analyzed with statistical package for the social sciences (SPSS) version 25.0. Results: the prevalence of sexually transmitted infections was 50 (16.7%). HIV infection was 15 (5%), genital candidiasis 11 (3.7%), T. vaginitis 10 (3.3%), Hepatitis B virus 9 (3.0%), Hepatitis C virus 2 (0.7%), and Chlamydia 3 (1.0%). The trend of sexually transmitted infections over the last five consecutive years was increasing, decreasing, and again increasing. Conclusion: this study showed that the prevalence of sexually transmitted infections in pregnant women was relatively higher than in other similar studies conducted in different study areas. The trend of sexually transmitted infections in the last five years was not constant.

Introduction

Sexually transmitted infections (STIs) are illnesses that have a significant probability of transmission from an infected person to healthy persons through unprotected sexual behavior, including vaginal intercourse, oral sex, and anal sex [1]. Sexually transmitted infections (STIs), including human immunodeficiency virus and acquired immune deficiency syndrome (HIV/AIDS), are an emerging public health concern, especially in developing countries. Globally, an estimated 1.3 billion people are suffering from STIs. Sexually transmitted infection rates tend to be higher for females than for males [2-4]. They predominantly affect young adults, facilitate transmission and acquisition of the human immunodeficiency virus (HIV) infection, and constitute a great socio-economic burden. Complications resulting from failure to diagnose and treat infections include pelvic inflammatory disease (PID), infertility, ectopic pregnancy, chronic pelvic pain, cervical cancer, and urethral stricture. The impact on fetuses and newborns can be devastating, as manifested by miscarriages, stillbirths, neonatal deaths, mental retardation, neonatal conjunctivitis, and pneumonia [5]. Having problems in the fetal period not only affects the health of the newborn but also has a major impact on adulthood [6]. Sexually transmitted infections are the most important public health diseases because of their magnitude, potential complications, and interaction with HIV/AIDS. The World Health Organization estimates that each year, more than 340 million new curable STIs occur in reproductive-aged men and women. This excludes the estimated 33 million new cases of HIV and the 100 million-plus infections caused by other viral STIs each year [7]. It was estimated that 500 million people were infected with syphilis, gonorrhea, chlamydia, or trichomoniasis. At least an additional 530 million people have genital herpes, and even 290 million women have human papillomavirus. STIs other than HIV resulted in 142,000 deaths in 2013 and were higher than this in the sub-Saharan Africa region [8]. Every year in Africa, approximately one million babies are stillbirth, and one million babies die in their first month of life. Infectious diseases and neonatal complications are responsible for the vast majority of these deaths. Sub-Saharan Africa remains the most affected region, with 25.6 million people living with HIV and approximately 8% carrying hepatitis B. In the absence of interventions, 30-45% of infants born to HIV-positive mothers in developing countries become infected during
pregnancy, delivery, or breastfeeding, and it is estimated that only 54% of people living with HIV know their status [5,7,9,10].

Ethiopia is a country where STIs are highly prevalent [11]. In Ethiopia, as in other African countries, STIs are managed through syndrome case management, but data from public health facilities in Southern Ethiopia indicates that the quality of care for STIs was poor. There were no STI Syndromic management guidelines in all health facilities, and only 12.8% of clinicians had taken training on syndrome management [12]. In Ethiopia, HIV and syphilis were prevalent among pregnant women, indicating that they are significant public health problems. This indicates the need to enhance antenatal screening to reduce and ultimately prevent vertical and horizontal transmission of HIV and syphilis [1]. In Ethiopia, pregnant women are tested only once for HIV and syphilis during ANC visits using a rapid plasma regain (RPR) test, and those women reactive to RPR are treated immediately with one or more doses of intramuscular benzathine penicillin G 2.4 million units [13]. Despite the implementation of national STI prevention, care, and treatment strategies, programs, and guidelines in Ethiopia, the evidence from reviews of the studies conducted in different geographical locations in Ethiopia has shown that (HIV, Hepatitis B virus (HBV), syphilis, and herpes simplex 2 (HSV-2)) remain public health challenges in the country [8]. The high prevalence of STIs in pregnant women and their impact on the unborn child demonstrates the need for screening and treatment programs [14]. Sexually transmitted infections during pregnancy can have serious consequences for the mother and the infant. The study area is well-known for its mining resources, especially gold, so many people migrate from different parts of the country into this area. Most people, on the other hand, are pastoralists or nomadic. Hence, the knowledge, attitude, and practice of this population using STI preventive methods like condoms is very low. As a result, they are highly prone to having unsafe sexual intercourse and getting STIs, including HIV/AIDS. More importantly, the prevalence and trends of STIs in the area have not been well investigated. Therefore, this study aimed to assess the prevalence and trends of STIs among pregnant women who got ANC services at Mizan Tepi University Teaching Hospital.

Methods

Study design: the institution-based cross-sectional study was carried out at Mizan Tepi University Teaching Hospital (MTUTH) in Bench Maji zone, Southwest Ethiopia, from August 1-30, 2019.

Settings and population: Mizan Tepi University Teaching Hospital is located in the Western Nations Nationalities region. It provides many services for the catchment areas of Bench Maji zone. The services have been provided in the gynecological and obstetrics, outpatient departments, in the medical department, surgical department, adolescent and youth-friendly units, TB/HIV/AIDS clinic, and in the pediatrics department and other emergency and special care service units. The source populations were all pregnant women who came to MTUTH in the last five years. All pregnant women who received ANC services at MTUTH from June 2014 to June 2019 were included in the study. The individual ANC follow-up card of a pregnant woman was the study unit.

Sample size determination: the required sample size was determined by using a single population proportion formula considering the following assumptions: proportion = 26.6% [11], level of significance= 95%, and the margin of error = 5%. Hence, the final sample size was 300.

Sampling procedures: we used an adapted and validated checklist to collect the data. The instruments (checklists) were adapted from the study conducted in Gondar town [14]. A sampling frame (using five-year ANC registration books) was used. All cards of pregnant women who visited the ANC clinic within the period of June 2014 to June 2019 were included in the study. After allocating samples proportionally for the last five years, 300
study subjects (ANC cards) were selected by using a simple random sampling method from each year.

Data quality assurance: data quality has been ensured by using an adapted valid checklist during collection. In addition, trained data collectors, supervisors, and principal investigator have checked the data consistency and completeness every day.

Data analysis: the data were cleaned, edited, checked, and entered into EPI info 7 and analyzed by using SPSS version 25.0. The findings were presented with frequency distributions and percentages by using texts, tables, and figures.

Ethical consideration: ethics approval was obtained from the Institution Review Board of Mizan Tepi University. Before, data collection, permission was received from the card and data room offices. The confidentiality of all information from the individual cards was kept.

Results

Sociodemographic characteristics: a total sample size of 300 medical records (ANC cards) of women who had ANC follow-up were included. Out of these, 120 (40%) pregnant women were in the age range of 25-29 years, and the mean age was 24.91±4.35 SD years. Almost all 296 (98.7%) women were married, and two-thirds of 190 (63.3%) lived in urban areas (Table 1).

General descriptive characteristics: about 70 (23.3%) pregnant women were primigravida, around 124 (41.3%) were in their second pregnancy, and one-third, 106 (35.3%), were multigravida, and 49 (16.3%) had at least one history of abortion. Of the total pregnant women in the study, more than half (58.7%) were reached at their fourth ANC visit, and 23 (7.7%) were at their first visit (Table 2).

Prevalence and trends of STIs: according to this study, the prevalence of STIs was 50 (16.7%). From this, HIV infection was 15 (5.0%), genital candidiasis 11 (3.7%), *T. vaginitis* 10 (3.3%), hepatitis B virus 9 (3.0%), Chlamydia 3 (1.0%) and hepatitis C virus 2 (0.7%) (Figure 1). The findings from the medical record review of the cards of ANC-followed mothers revealed that, overall, 50 (16.7%) study subjects were diagnosed with STIs. In this study, the trend of the prevalence of sexually transmitted infections over the last five years was not constant. The year with the highest prevalence was 2015, and the year after that was also 2016. Since then, the prevalence has decreased. The least prevalence recorded was in 2014. Generally, it has varied in an increasing to decreasing manner. It had primarily increased during the first three years, then declined in the middle of the fourth year, and then increased again in the fifth year (Figure 2).

Discussion

In the current study, the prevalence of STIs was 50 (16.7%). The prevalence of STIs in the current study was high as compared with studies done in Latin America (4.6%), Asia (11.2%), and the four African countries (7.7%) [15-17]. The variation may be due to the fact that, in the current study, most people were living as pastoralists, had low knowledge of STI prevention methods, and even had no access to getting these methods. Due to the presence of gold, many people migrated to this area, and it has a dense population. Hence, they are more prone to risky sexual practices and acquiring STIs, including HIV/AIDS. In addition to this, the variation may be due to the accuracy of test screening, method differences, or sample size differences. In other study areas, however, they have better access to STIs, including HIV/AIDS prevention methods, and have better knowledge and practice with these methods. Furthermore, the study designs in these previous studies were systematic review and meta-analysis, which may give more pooled prevalence results. The prevalence of the current study was also higher than the study conducted in Nepal, where the overall prevalence of any STIs was 8.6%, 1.5% for *Chlamydia trachomati* (CT), and 7.1% for trichomoniasis infection [18]. In Nepal, the study was in a semi-urban population where more
resources are available, and the people may get better information access regarding STIs as compared with the current study area. However, the prevalence of the current study was comparable with a study conducted in the Gambia where the overall prevalence of STIs was 53.6%. Specifically, HIV was (5.7%), *T. vaginitis* (3.9%), *Neisseria gonorrhoeae* (*N. gonorrhea*) (1.8%) and *Chlamydia trachomatis* (*C. trachomatis*) (0.7%) [19]. In contrast, the prevalence of STIs in this study was lower as compared to a study conducted in Northern Tanzania (54.3%), of which 7% were HIV infections, 0.9% active syphilis, 23.9% bacterial vaginosis, 17.5% *Chlamydia trachomatis*, and 0.5% *Neisseria gonorrhoeae* [9,10].

Differences in laboratory materials' specificity and sensitivity tests, lab technicians' skill, limited sample size, sociodemographic diversity, differences in the study population, population lifestyle, or community health-seeking behavior could all contribute to the inconsistencies. The study populations in a study conducted in Tanzania were pregnant women in third trimester and above, but in the current all pregnant women at any trimester were included. This may affect the result which means after the third trimester most STIs show symptoms but in the early pregnancy they might be asymptomatic. On the other hand, the prevalence of STIs in this study was higher than compared to the studies conducted in Adami Tulu woreda and Ayder Referral hospital of Mekele town, which were (3.3%) and (8.5%), respectively [8, 10]. The discrepancy might be due to the study design and population differences; that is, the study conducted in Adami Tulu woreda was community-based, while the study carried out in Ayder referral hospital, Mekelle, was focused on only pregnant women on antiretroviral therapy (ART) follow-up. Similarly, in the current study area, there is a possibility of being married or having more than one housewife in a culture in which having more than one sexual partner is the main cause of developing STIs. The accessibility, affordability, knowledge, attitude, and practice of using the STI prevention methods are very different when compared with the current study area and that of these two towns. The lifestyle is also different in these areas. The trend of STIs in the current study was intermittent. The finding was in contrast with a study done in Ethiopia, where the trend of STIs declined by > 44% [20]. This may be due to the sample size and the fact that the study area for the current study is limited as compared to that of the previous. Similarly, it might be due to a difference in the study period. The limitation of the current study is that it may not show the exact trends of STIs in the study area due to the small sample size each year and the cross-sectional nature of the study.

**Conclusion**

The prevalence of sexually transmitted infections in the current study was relatively higher than in other similar studies conducted in other study areas. The trend of STIs over the last five years has been intermittent in the MTUTH. This indicates the need to enhance antenatal STI screening services to reduce and ultimately prevent the health of mothers and fetuses. Appropriate strategies should be advised for the prevention and control of sexually transmitted diseases in pregnant women, above all in females of reproductive age. Therefore, it is an alarming issue and the concerned bodies should give or take corrective measures because STIs are major public health problems.

**What is known about this topic**

- Pregnant women are easily infected by sexually transmitted infections;
- Sexually transmitted infections facilitate the progression of HIV/AIDS;
- Most sexually transmitted infections are treatable with antibiotics.

**What this study adds**

- The current prevalence of sexually transmitted infections in the study area is very high;
- Sexually transmitted infections trends over the past three years have been inconsistent;
- It will serve as input for other researchers.
Competing interests

The authors declare no competing interests.

Authors’ contributions

MME, SYM, AWA participated in the design, conception, analysis, and interpretation of the data; AWA and MME prepared and drafted the manuscript. All authors read and agreed to the final manuscript.

Acknowledgments

We would like to thank Mizan Tepi University Teaching Hospital card and registration room officers and Mizan Tepi University Teaching Hospital Obstetrics and Gynecology ward staff for their assistance and support in carried out this research.

Tables and figures

Table 1: frequency distribution of sociodemographic characteristics of women attended ANC

Table 2: frequency distribution of women who attended ANC services in Southwest Ethiopia

Figure 1: types of sexually transmitted infections (STIs) among pregnant women who received antenatal care service in Southwest Ethiopia

Figure 2: trend of sexually transmitted infections (STIs) over the last five years among pregnant women who attended antenatal care

References

1. Centers for Disease Control and Prevention. Sexually transmitted disease surveillance. 2017.
2. World Health Organization. Global incidence and prevalence of selected curable sexually transmitted infections. 2008. Google Scholar
3. Weinstock H, Berman S, Cates W Jr. Sexually transmitted diseases among American youth: incidence and prevalence estimates. Perspect Sex Reprod Health. Jan-Feb 2004;36(1): 6-10. PubMed | Google Scholar
4. Badawi MM, SalahEldin MA, Idris AB, Hasabo EA, Osman ZH, Osman WM. Knowledge gaps of STIs in Africa; systematic review. PLoS One. 2019 Sep 12;14(9): e0213224. PubMed | Google Scholar
5. Bosu WK. Syndromic management of sexually transmitted diseases: is it rational or scientific?. Trop Med Int Health. 1999 Feb;4(2): 114-9. PubMed | Google Scholar
6. McDermott J, Steketee R, Wirima J. Perinatal mortality in rural Malawi. Bull World Health Organ. 1996;74(2): 165-71. PubMed | Google Scholar
7. World Health Organization. Global prevalence and incidence of selected curable sexually transmitted diseases, overview and estimates. 2001. Google Scholar
8. Kahsay AG, Daba F, Kelbore AG, Getachew S. Prevalence and associated factors of sexually transmitted infections based on the syndromic approach among HIV patients in ART clinic; Ayder Referral Hospital, Northern Ethiopia. Clin Med Res. 2015 Aug 3;4(5): 132-8. Google Scholar
9. Moges B, Yismaw G, Kassu A, Megabiaw B, Alemu S, Amare B et al. Sexually transmitted infections based on the syndromic approach in Gondar town, northwest Ethiopia: a retrospective study. BMC Public Health. 2013 Feb 16;13: 143. PubMed | Google Scholar
10. Kassa D, Gebremichael G, Tilahun T, Ayalkebet A, Abrha Y, Mesfin G et al. Prevalence of sexually transmitted infections (HIV, hepatitis B virus, herpes simplex virus type 2, and syphilis) in pregnant women in Ethiopia: trends over 10 years (2005-2014). Int J Infect Dis. 2019 Feb;79: 50-57. PubMed | Google Scholar
11. Teasdale CA, Abrams EJ, Chiasson MA, Justman J, Blanchard K, Jones HE. Incidence of sexually transmitted infections during pregnancy. PLoS One. 2018 May 24;13(5): e0197696. PubMed | Google Scholar
12. The World Bank. Sexually transmitted infections developing countries: current concepts strategies improving stiprevention treatment control. 2014.

13. Taha TE, Gray R. Genital tract infections and perinatal transmission of HIV. Ann N Y Acad Sci. 2000 Nov;918: 84-98. PubMed | Google Scholar

14. World Health Organization. Baseline report on global sexually transmitted infection surveillance. 2012. Google Scholar

15. Adachi K, Klausner JD, Bristow CC, Xu J, Ank B, Morgado MG et al. Chlamydia and gonorrhea in HIV-infected pregnant women and infant HIV transmission. Sex Transm Dis. 2015 Oct;42(10): 554-65. PubMed | Google Scholar

16. Tang W, Mao J, Li KT, Walker JS, Chou R, Fu R et al. Pregnancy and fertility-related adverse outcomes associated with Chlamydia trachomatis infection: a global systematic review and meta-analysis. Sex Transm Infect. 2020 Aug;96(5): 322-329. PubMed | Google Scholar

17. Semwogerere M, Dear N, Tunnage J, Reed D, Kibuuka H, Kiweewa F et al. Factors associated with sexually transmitted infections among care-seeking adults in the African Cohort Study. BMC Public Health. 2021 Apr 16;21(1): 738. PubMed | Google Scholar

18. Dev R, Adhikari SP, Dongol A, Madhup SK, Pradhan P, Shakya S et al. Prevalence assessment of sexually transmitted infections among pregnant women visiting an antenatal care center of Nepal: pilot of the World Health Organization’s standard protocol for conducting STI prevalence surveys among pregnant women. PLoS One. 2021 Apr 23;16(4): e0250361. PubMed

19. Isara, A, Aru-Kumba B. Prevalence of sexually transmitted infections among pregnant women attending antenatal clinics in West Coast Region of the Gambia. Afr Health Sci. 2021 Jun;21(2): 585-592. PubMed | Google Scholar

20. Yosef T. Sexually transmitted infection associated syndromes among pregnant women attending antenatal care clinics in southwest Ethiopia. Heliyon. 2021 Jul 14;7(7): e07576.. PubMed | Google Scholar

| Table 1: frequency distribution of sociodemographic characteristics of women attended ANC |
|-----------------------------------------------|-----------------|-----------------|
| Variable                                      | Categories      | Frequency       | Percentage    |
| Age                                           | 15-19           | 32              | 10.7          |
|                                               | 20-24           | 98              | 32.7          |
|                                               | 25-29           | 120             | 40.0          |
|                                               | 30-34           | 39              | 13.0          |
|                                               | 35-39           | 11              | 3.7           |
|                                               | Total           | 300             | 100.0         |
| Marital status                                | Single          | 2               | 0.7           |
|                                               | Married         | 296             | 98.7          |
|                                               | Divorced        | 2               | 0.7           |
|                                               | Total           | 300             | 100.0         |
| Place of residence                            | Urban           | 190             | 63.3          |
|                                               | Rural           | 110             | 36.7          |
|                                               | Total           | 300             | 100.0         |
| Variables                                | Categories        | Frequency | Percentage |
|------------------------------------------|-------------------|-----------|------------|
| Number of gravida                        | Gravida one       | 70        | 23.3       |
|                                         | Gravida two       | 124       | 41.3       |
|                                         | Gravida three     | 53        | 17.7       |
|                                         | Gravida four      | 29        | 9.7        |
|                                         | Gravida five      | 11        | 3.7        |
|                                         | Gravida six       | 13        | 4.3        |
|                                         | Total             | 300       | 100.0      |
| Number of parity (n=211)                 | Para 1            | 114       | 54.0       |
|                                         | Para 2            | 55        | 26.0       |
|                                         | Para 3            | 18        | 8.5        |
|                                         | Para 4            | 15        | 7.1        |
|                                         | Para 5 and above  | 9         | 4.3        |
|                                         | Total             | 211       | 100.0      |
| History of abortion                      | Yes               | 49        | 16.3       |
|                                         | No                | 251       | 83.7       |
|                                         | Total             | 300       | 100.0      |
| Type of abortion for yes only (n=49)     | Spontaneous       | 49        | 100.0      |
|                                         | Total             | 49        | 100.0      |
| Number of ANC visits                     | 1<sup>st</sup> visit | 23        | 7.7        |
|                                         | 2<sup>nd</sup> visit | 25        | 8.3        |
|                                         | 3<sup>rd</sup> visit | 76        | 25.3       |
|                                         | 4<sup>th</sup> visit | 176       | 58.7       |
|                                         | Total             | 300       | 100.0      |
Figure 1: types of sexually transmitted infections (STIs) among pregnant women who received antenatal care service in Southwest Ethiopia

Figure 2: trend of sexually transmitted infections (STIs) over the last five years among pregnant women who attended antenatal care