Sexually transmitted infections based on syndromic approach and risk behavior factors in Ethiopia

Minilik Demissie, Wudinesh Belete, Atsebha G/Egizabher, Desta Kassa, Abebe H/Selassie, Tesfaye Tilahun, Nigussie Gezahegn, Saro Abdela, Frehywot Eshetu, Jelaludin Ahmed, Biniyam Eskinder, Ashenafi Haile and Afework Mebratu

Ethiopian Public Health Institute, P.O.Box 1242, Addis Ababa Ethiopia

*Corresponding author: minewdem@gmail.com

Abstract

Introduction: Sexually transmitted infections constitute a major public health problem worldwide. They are important because of their magnitude, potential complications, and interactions with HIV/AIDS. Due to this fact, the National HIV/AIDS Policy of Ethiopia identified STI prevention and control as one of the strategies to prevent and control HIV/AIDS. In order to fill the critical information gap on STI, Ethiopian Public Health Institute (EPHI) has established a national STI surveillance system in selected sentinel health facilities, since 2011.

Objective: To determine the proportion of respondent with sexually transmitted infections syndroms.

Method: From July 2014 to June 2015, a cross sectional study was carried out in 20 sentinel health facilities to determine the proportion of respondent with Urethral discharge, Vaginal discharge, Lower abdominal pain, Inguinal Bubo, Scrotal swelling, Genital ulcer disease and their HIV status.

Result: Nearly 67% of the participants were in the age group 20-34yrs and 68% of them were females. From 1421 participants, 441 male and 968 female; 1333(93.8%) were diagnosed with one symptom and 88 (6.2%) with two symptoms; vaginal discharge constitutes the highest proportion (52.2%) followed by urethral discharge (25.3%), lower abdominal pain (13.3%), non-vesicular GUD (4.6%) and vesicular GUD (2.7%). The participant’s sexual history for the past three months was assessed and 17.4% of them had sexual contact with a non-regular partner and of them 55.8% have not used condom during the last contact. In addition, HIV status was reported by 1118 (78.7%).

Conclusion: Our findings indicated that, the major symptoms are vaginal and urethral discharge, a considerable proportion of patients had sexual encounter with a non-regular partner in the last three months period and of them more than half have not used condom during the last sexual contact. Moreover, a larger proportion of HIV positive STI patients used to know their status before the study. Therefore, expansion of STI preventive services including health education on the transmission and possible complications of untreated STI is crucial.

Keywords: Sexually transmitted infection, Syndromic management, HIV, Risk factors, Ethiopia

Introduction

Sexually transmitted infections (STIs) constitute a major public health problem worldwide especially in developing countries. An estimated 357 million new cases of curable sexually transmitted infections, mainly due to Treponema pallidum (syphilis), Neisseria gonorrhoea, Chlamydia trachomatis, and Trichomonas vaginalis, occur every year throughout the world in men and women aged 15–49 years. Moreover, the impact of these diseases is magnified by their potential to facilitate the spread of human immunodeficiency virus (HIV) (WHO 2012). Cognizant of these facts, the National HIV/AIDS Policy of Ethiopia identifies STI prevention and control as one of the strategies to prevent and control HIV/AIDS (FDRE 1998). However, nationally there is still considerable underreporting of STI cases. Underreporting has been due to excessively long list of reportable diseases; concerns about confidentiality; provision of treatment by the informal sector; the asymptomatic nature of some STIs and the fact that there is no strong Syndromic Case Management Program in all the regions of the country, even though Ethiopia has adopted the syndromic approach to manage STI cases (FDRE 1998).

In Ethiopia, any patient who presents with STI case in health facilities is treated by syndromic approach. The main reason for the development of STI syndromic approach is not only lack of skilled health professionals’ rather inadequate access to laboratory for etiological diagnosis; it is only syphilis testing which is being conducted by laboratory investigation. The syndromic approach has its guideline and every health professional takes training on how to manage STI cases (FMOH 2015). Nevertheless, much remains to be done in strengthening the STI prevention and control program in the country. One of the most outstanding problems is lack of information on the status and trends of STIs in the country. Therefore, this study was aimed to estimate the magnitude of the priority reportable STI syndromes and generate additional information on
Materials and Methods

Study Design: Across sectional study was carried out from July 2014 to June 2015 in 20 sentinel health facilities to determine the proportion of respondents with Urethral discharge, Vaginal discharge, Lower abdominal pain, Inguinal Bubo, Scrotal swelling, Genital ulcer disease and their HIV status. The study sites were selected from health centres and hospitals across the country. Any client, who is newly diagnosed and/or treated as a case of STI in the general outpatient department (OPD), in the STI unit, antiretroviral treatment (ART) room, and in the youth friendly service unit was included in the sampling.

The questionnaire was adopted from WHO recommendation for STI studies (WOH 1999). The health professionals (medical doctor/Nurse/Health officer) collected the data and filled the required information on the data collecting form for every consecutive STI patient with new symptom. Data was entered using CSPRO software and the analysis and tabulation of data was made using SPSS version 20. Trainings were given on data collection, handling, and reporting for regional coordinators and site level staffs using standardized-training manuals. Every month, the collected data was submitted to the investigator through the assigned coordinators.

The diagnosis of STIs relied on proper history taking and physical examination. For each syndrome, a clinical flow chart is developed for STI case management. A flow chart (algorithm) is a decision and action tree, which is like a map that guides the health worker to go through a series of decisions and actions (FMOH 2015).

Results

Socio-demographic characteristics of the respondents: A total of 1421 (441 male and 968 female) individuals from 20 health facilities had participated in the study. Around 62.8% of the study participants were in the age group of 20-34 years with a mean age of 26 years and 68.2% were females. Nearly 66.6% of the clients had educational status of 8th grade or less, only a small proportion (7.2%) attended above 12th grade. About 51.3% of the respondents were married and 15.4% of participants were daily laborers (Table 1).

Pattern of reported STI syndromes: A total of 1509 (452 from male and 1057 from female) STI syndromes were identified; majority 1333/1421 (93.8%) of them only had one syndrome while 88/1421 (6.2%) were diagnosed with two syndromes. Regarding the proportion of all syndromes, vaginal discharge consists the highest proportion (52.2%) followed by urethral discharge (25.3%). Analysis of the STI cases with age-disaggregation showed that 42.3% fall under 24-34 years age group (Table 2).

Table 1: Socio-demographic characteristics of study participants, Ethiopia, July 2014- June 2015

| Characteristics | Frequency | Percent (%) |
|-----------------|-----------|-------------|
| **Age**         |           |             |
| < 24            | 512       | 13.9        |
| 25-34           | 572       | 53.7        |
| 35-44           | 193       | 22.7        |
| 45+             | 76        | 6.3         |
| Missing         | 68        | 3.3         |
| **Total**       | 1,421     | 100         |
| **Sex**         |           |             |
| Male            | 441       | 31          |
| Female          | 968       | 68.1        |
| Missing         | 12        | 0.8         |
| **Total**       | 1,421     | 100         |
| **Educational status** |       |             |
| No Formal       | 387       | 27.2        |
| Grade 1-4       | 262       | 18.4        |
| Grade 5-8       | 298       | 21.0        |
| Grade 9-12      | 274       | 19.3        |
| Higher          | 103       | 7.2         |
| Missing         | 97        | 6.8         |
| **Total**       | 1,421     | 100         |
| **Marital status** |       |             |
| Never Married   | 447       | 31.5        |
| Currently Married | 729   | 51.3        |
| Widowed         | 49        | 3.4         |
| Divorced/ Separated | 111      | 7.8         |
| Unknown         | 9         | 0.6         |
| Missing         | 76        | 5.9         |
| **Total**       | 1,421     | 100         |
| **Occupation**  |           |             |
| Sex Worker      | 38        | 3.9         |
| Military        | 27        | 2.8         |
| Vehicle Driver  | 36        | 3.7         |
| Daily Laborer   | 148       | 15.4        |
| Mobile Merchant | 41        | 4.3         |
| Farmer          | 136       | 14.1        |
| Gov't Employee  | 106       | 11          |
| Self Employed   | 97        | 10.1        |
| Other occup.    | 335       | 34.8        |
| Gross Total     | 964       | 100         |

Table 2: Frequency of STI syndromes and HIV status by sex and Age Group, Ethiopia, July 2014- June 2015

| STI | M+F | Male (N) | Female (N) | <24 24-34  >34 Total M | <24 24-34  >34 Total F |
|-----|-----|---------|------------|------------------------|------------------------|
| UD  | 365 | 137 163 | 65 365     |                        |                        |
| GUDV| 38  | 7 6 3 16 | 6 12 4 22  |                        |                        |
The total number of STI syndrome might decrease in number due to missing age data.

**UD**: Urethral discharge;  **VD**: Vaginal discharge;

**GUD**: Genital ulcer disease  **ING**: Inguinal Bubu;

**LAP**: Lower abdominal pain  **SS**: Scrotal swelling

**GUDV**: Genital ulcer disease vesicular

**Risk behavioral factors of STI patients:** About 62.3% of the respondents claim to have only one sexual partner while 14.3% reported two or more sexual partners and 17.4% of the participants had sexual encounter with non-regular partner in the last three months period. Nearly 55.8%, who had sexual contact with a non-regular partner had not used condom during the last sexual contact (Table 3).

| Risk behaviors                          | Total N (%) | Male N (%) | Female N (%) |
|----------------------------------------|-------------|------------|--------------|
| **No of sexual partners in the past three month** |             |            |              |
| 0                                      | 299 (23.4)  | 82 (27.4)  | 217 (72.6)   |
| 1                                      | 795 (62.3)  | 222 (27.9) | 573 (72.1)   |
| > 1                                    | 182 (14.3)  | 97 (53.3)  | 85 (46.7)    |
| **Total**                              | 1,276       | 401        | 875          |
| **Sex with non-regular partners in the past three month** |             |            |              |
| Yes                                    | 239 (17.4)  | 143 (59.6) | 96 (40.2)    |
| No                                     | 1,131 (82.6)| 282 (24.9)| 849 (75.1)   |
| **Total**                              | 1,370       | 425        | 945          |
| **Condom use during last sex with non-regular partner** |             |            |              |
| Not Used                               | 130 (55.8)  | 78 (60)    | 52 (40)      |
| Used                                   | 103 (44.2)  | 60 (58.3)  | 43 (41.7)    |
| **Total**                              | 233         | 138        | 95           |

**HIV prevalence among STI patients:** The HIV status of 1118 study participants was documented and of them 181 (16.2%) were found to be HIV positive (8.4% among males and 19.7% among females). Among 107 HIV positive study participants, who’s previous HIV status was documented, 88 (82.2%) knew that they were HIV positive and 19 (17.8%) were newly identified positives during the study (Figure 1).

**STI patients with pregnancy status:** Out of 946 female participants whose pregnancy status was checked, 64 (6.8%) were at some stage of pregnancy (Table 3). The pregnancy status was reported by the clients and supported with physical examination and laboratory diagnosis.

**Discussion**

The study has shown that 67% of the participants were in the age group 20-34 years and 68% of them were females. Regarding the syndromes, vaginal discharge constitutes the highest proportion (52.2%) followed by urethral discharge (25.3%). In addition, 181 (16.2%) of
reported STIs represents only the “tip of the iceberg”, because most infections typically more than half of any specific diagnosis regardless of bacterial or viral etiology, are entirely asymptomatic or unrecognized, this is especially true for women (Adler 1996; Bolan et al. 1991). This showed that the actual situation in the study area could even be worse as only symptomatic cases came to the clinic. There could also be unreported symptomatic cases due to stigma and discrimination, fear of potential conflict with sexual partner especially in the married group, self-prescription of medicines from pharmacies, preference to traditional healers, and because of the general poor health seeking behaviour of the community (Beyene et al. 2013). In 2015, WHO reported a global estimate of 357 million new cases especially by four curable STIs (syphilis, gonorrhoea, Chlamydia and trichomoniasis) in adults aged 15 - 49 years (WHO fact sheet 2015). In addition, younger age group (15-24yeras), even though they represent only 25% of sexually active population, they consists almost 50% of the new acquired STIs (Da Ros and Schmitt 2008). This study also showed that young people in the age group of 20-34years are the most affected with a larger proportion of females. The result is in agreement with the report by Klouman et al. in Tanzania and Getu Kassa et al. in Southern nation, nationality and people region (SNNPR) (Kassa and Anteneh 2013). Men and women have different susceptibility to STI due to biological vulnerability; one of the reasons for the difference is the contact period with pathogens after sexual exposure, it is more extended among women than men are. That is, if the male partner has an STI, the infected semen remains in the vagina following intercourse; in contrast, if the female partner is infected, the male’s exposure to the pathogens is limited to the duration of coitus (Koray et al. 1995). The cervix may also be more susceptible to infection than the male’s urethra. Furthermore, STIs are asymptomatic in women than in men (Koray et al. 1995). The most frequent STI syndromes reported for women were vaginal discharge and urethral discharge for men; this is consistent with the study done by (Kassa and Anteneh 2013), in SNNPR and Beyene et al in Gondor town, they reported 55.7% and 38.38% vaginal discharge and 25.8% and 13.58% urethral discharge, respectively. The Proportion of study participants with vesicular and non-vesicular ulcer disease were 7.4%, which is almost similar with the study done in SNNPR (6%) (Kassa and Anteneh 2013). Genital ulcer diseases serve as a proxy for important curable bacterial STIs, such as syphilis and chancroid, as well as for incurable viral STIs such as herpes simplex virus (WHO 2003; WHO 2012; WHO 2015). Where most genital ulcer cases are due to curable bacterial STI, strengthening management of STIs should lead to a decline in rates of genital ulcer cases. The proportion of study participants with urethral discharge was 25%. It indicates the need for careful assessment of STI control efforts in the country and also shows the strength of STI control programs, in countries without strong STI laboratory capacity (WHO 2012). Different behavioral risk factors have been frequently associated with sexually transmitted infections (WHO 2003). This study also showed that 17.4% of patients had sexual contact with a non-regular partner in the last three months period and around 55.8% of them have not used condom during the last sexual contact with a non-regular partners. In addition, 14.3% of the patients had two or more sexual partners in the last three months, which calls for a need to strengthen our effort in health education activities. Health care providers and community health workers should focus on behavioral change intervention such as safer sexual practices and condom use (Philippe and Duncan 2001). Out of female study participants, 6.8% were at some stages of pregnancy, effort should be made to prevent and treat STIs during pregnancy, as untreated sexually transmitted infections are associated with congenital and prenatal infections in neonates, particularly in areas where rates of infection remain high. WHO reported that in pregnant women with untreated early syphilis, 25% of pregnancies result in stillbirth, 14% in neonatal death, and an overall prenatal mortality of about 40%. Up to 35% of pregnancies among women with untreated gonococcal infection result in spontaneous abortions and premature deliveries, and up to 10% in prenatal deaths (WHO Global strategy 2006–2015). This emphasizes the need for effective interventions involving community health workers on house-to-house health education program and strengthening STI case identification at antenatal care units. HIV prevalence among study participants was 16.2% (8.4% among males and 19.7% among females). Most HIV positive participants know their status before the study. Therefore, health care providers need to work more on awareness creation towards safer sexual practice including condom use for HIV positive individuals to decrease exposure to STIs. The potential for HIV transmission is increased by the presence of STIs, and ulcerative STIs by breaking off the body’s most important defense (skin/mucosal membranes) (Susan 2005). In this study, clients with genital ulcer syndrome had the highest HIV prevalence (32.4%). A cohort study done in Zimbabwe and Nigeria showed the role of genital ulcerative conditions in male to female transmission of HIV; men who reported a
history of genital ulcer disease were more likely to have HIV RR 1.94: (1.62-15.13) (Aderemi and Taiwo 2005; Latif et al. 1989).

Conclusions and Recommendations

This study indicated that a considerable proportion of patients had sexual contact with non-regular partner in the last three months period and more than half of them have not used condom during the last sexual contact. Moreover, a larger proportion of HIV positive STI patients used to know their status before the study. Therefore, expansion of STI preventive services including activities on appropriate health care seeking behavior, information education and communication should also be strengthened.

Limitation: This study was conducted in twenty selected health facilities across the country, which does not assume neither regional nor national representativeness; therefore, care should be taken not to generalize these study findings to respective regional or national program performance.

Competing interests: The authors declare that they have no competing interests.

Acknowledgments

The author would like to acknowledge Centers for Disease Control and Prevention (CDC) for technical and financially support during the study. We also want to express our gratitude for study participants, data collectors and supervisors.

References

Aderemi OK & Taiwo OL (2005). Prevalence of STI/HIV co-infections among special treatment clinic attendees in Ibadan, Nigeria; The Journal of the Royal Society for the Promotion of Health, 125(4): 186-190.

Adler MW (1996). Sexually transmitted diseases control in developing countries: Genitourin. Med, 72 (2): 83-88.

Beyene M, Gizachew Y, Afework K, Berihun M, Shitaye A, Bemnet A, et al. (2013). Sexually transmitted infections based on the syndromic approach in Gondar town, northwest Ethiopia: a retrospective study; BMC Public Health, 13:143.

Bolan G, Ehrhardt A & Wassheit JN. Gender Perspectives and STDs. Holmes KK (1991).

Sexually Transmitted Diseases: McGraw-Hill, 3rd.

Da Ros CT & Schmitt CS. Global epidemiology of sexually transmitted diseases. Asian JA (2008). Sexually transmitted diseases, 10(1): 110–114.

Federal Democratic Republic of Ethiopia Ministry of Health (1998). Policy on HIV/AIDS, pp 28.

Federal Democratic Republic of Ethiopia Ministry of Health (2015). National guidelines for the management of sexually transmitted infections using syndromic approach. http://apps.who.int/medicinedocs/en/m/abstract/Js 22268en/

Kassa G & Anteneh T (2013). Prevalence and Determinants of HIV among Symptomatic STI

transmitted infections based on the syndromic approach in Gondar town, northwest Ethiopia: a retrospective study; BMC Public Health, 13:143.

Klouman E, Masenga EJ, Klepp KI, Sam NE, Nkya W & Nkya C (1997). HIV and reproductive tract infections in a total village population in rural Kilimanjaro, Tanzania, women at increased risk. Acquir Immune DeficSyndr Hum Retrovirol, 14:163-168.

Koray T, Lisa AC & John OGB (1995). Gender, Race, Class and Self-Reported Sexually Transmitted Disease Incidence. Family Planning Perspectives, 27:196–202.

Latif AS, Katzenstien DA & Bassett MT (1989). Genital Ulcers and transmission of HIV among couples in Zimbabwe. AIDS, 3(8): 519-23.

Philippe M & McCormick D (2001). Interventions against sexually transmitted infections (STI) to prevent HIV infection. London School of Hygiene and Tropical Medicine, London, UK. British Medical Bulletin, 58(1): 129-153.
Susan B (2005). Ulcerating STDs and HIV: A Cause for Concern. *The prn notebook*, 10(2). 1-5.

WHO (2003). Guidelines for the management of sexually transmitted infections.

WHO (2006). Global strategy for the prevention and control of sexually transmitted infections, 2006-2015.

WHO (2012). Baseline report on global sexually transmitted infection surveillance, PP 17-23.

WHO (2015). Factsheet updated December 2015 Sexually transmitted infections, 110.

WHO (1999). Guidelines for sexually Transmitted infections surveillance, Geneva (WHO/CDS/CSR/EDC/99.3).

WHO (2012). *Global prevalence and incidence of curable STIs*. Geneva.
