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Prevalence and Risk factors associated with Sexually Transmitted Infections among Women of reproductive age attending reproductive and child health clinics in Dodoma and Dar es Salaam Tanzania

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Abstract
Introduction: Sexually transmitted infections (STIs) continue to cause reproductive morbidity worldwide. Socio-demographics and behaviour influence the likelihood of contracting reproductive tract infections and significantly predict STI acquisition. Determining prevalence and analysing the population's socio-demographic and sexual behaviour can assist in determining its risk profile and prevention strategies. This study aimed to determine the prevalence and risk factors of curable STIs, bacterial vaginosis and vaginal candidiasis among women of reproductive age attending reproductive and maternal health clinics in Dar es Salaam and Dodoma.
Method: This was a cross-sectional study where high vaginal and endocervical swabs from 400 women were collected and tested for the presence of reproductive tract infections using culture, wet mount preparation, and Gram stain. Women were interviewed on sociodemographic factors, sexual behaviours and clinical symptoms using a pretested questionnaire. A chi-square test was conducted to determine the factors associated with curable STIs. Logistic regression was done to determine independent predictors for STIs using SPSS version 23.
Results: Prevalence of *Neisseria gonorrhoea*, *Trichomonas vaginalis*, vaginal candidiasis and bacterial vaginosis was 2.5%,9.8%,13.5%, and 23.3% respectively. High education level was associated with a reduction in the likelihood of having STIs (AOR=0.41, 95%CI: 0.17-0.97). Likewise, consistent condom use was associated with a reduction in the likelihood of having STIs (AOR=0.16, 95% CI: (0.073-0.34). Participants with the recent history of STI were more likely to have STIs (AOR=2.4, 95%CI:1.05-5.27).
Conclusion: High prevalence of *Trichomonas vaginalis,* bacterial vaginosis and vaginal candidiasis in studied women calls for an intervention to prevent infection complications. We recommend health education and screening interventions to all reproductive-age women to reduce transmission of curable STIs and bacterial vaginosis.

Keywords: STIs, prevalence, reproductive age women, Tanzania

Introduction

Sexually transmitted infections (STIs) continue to cause reproductive morbidity worldwide. Approximately 374 million people aged 15 to 49 years were infected with one of the four curable STIs (chlamydia, syphilis, gonorrhoea, and trichomoniasis) worldwide in 2020 (World Health Organisation, 2023). The highest incidence (96 million cases) occurred in African region (World Health Organisation, 2021). Additionally, high prevalence of bacterial vaginosis was reported in Sub-Saharan African women (Torrone *et al*., 2018).

Women are disproportionally infected by STIs and bacterial vaginosis leading to morbidity, and irreversible complications (van Gerwen *et al.,* 2022). *Neisseria gonorrhoea* leads to pelvic inflammatory diseases (PID), ectopic pregnancy, infertility in women and ophthalmia neonatorum in newborns (Unemo *et al.*, 2019; Reekie *et al.,* 2018). Additionally, gonorrhoea, trichomoniasis or bacterial vaginosis infections

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lead to preterm birth, low birth weight, and premature rupture of membrane in pregnant women (Gao *et al.*, 2021;van Gerwen *et al*., 2021; Ravel *et al*., 2021). Furthermore, vaginal candidiasis has been linked to preterm birth (Roberts *et al.,* 2015).

Factors that have been identified to predispose to STIs acquisition includes early marriage, sexual debut at young age, multiple sexual partners, low education level, history of STIs, and inconsistence condom use (Kakaire *et al.*, 2015; Ginindza *et al*., 2017; Birhane *et al.,* 2021; Masatu *et al.*, 2022). However, these factors, cannot be generalised to other groups or settings as they are often particular to the population group for which they have been identified and verified (World Health Organisation, 2021). Understanding the factors associated with curable STIs in women of reproductive age is necessary to design an intervention for prevention.

Studies conducted in Tanzania have reported different STI prevalence among women in different settings ranging from 0.5%-34.2% for *N. gonorrhoea*, 5% - 32.9% for *Trichomonas vaginalis*, 23.9-26.7% for bacterial vaginosis and 10.4%-14.0% for vaginal candidiasis (Msuya *et al*., 2009; Buhalata *et al.,* 2013; Francis *et al.*, 2014; Hokororo *et al.*, 2015; Majigo *et al.,* 2015;Juliana *et al.*, 2020; Msemwa *et al.*, 2022; Aboud *et al.,* 2023). However, most of these studies addressed STIs prevalence among high-risk women attending STI clinics (Aboud *et al*., 2023; Buhalata *et al.*, 2013), women working in bars, hotels, food vendors and other recreation areas (Francis *et al.*, 2014), asymptomatic women opting for Intrauterine Devices (IUDs) (Masatu *et al.*, 2022) and special categories such as pregnant women, and HIV positive women (Chiduo *et al*., 2012; Hokororo *et al.*, 2015; Juliana *et al*., 2020; Shaffi *et al*., 2021).

There is a paucity on epidemiological data on curable STIs (*N. gonorrhoea* and *T. vaginalis*), bacterial vaginosis and vaginal candidiasis among women of reproductive age attending reproductive and child health clinics in Tanzania. This study aimed to determine the prevalence and risk factors associated with curable STIs (*N. gonorrhoea* and *T. vaginalis),* bacterial vaginosis and vaginal candidiasis among women of reproductive age attending reproductive and child health clinics in Dar es salaam and Dodoma region.

Material and methods

Study design

This was cross-sectional analytical study conducted from May 2022 to November 2022 among women of reproductive age attending reproductive and child health clinics in district hospitals in Dodoma and Dar es salaam, Tanzania.

Study population

The study population composed of women attending reproductive and child health clinic in District hospitals in Dodoma and Dar es salaam**.** Inclusion criteria were: - sexually active women aged 18 to 45 years and willing to provide samples for the diagnosis of genital tract infections. Exclusive criteria were: -women who were on antibiotics for the past two weeks, pregnant women and women on menses.

Sample size

The sample size was estimated using the Cochran formula (Glen, 2020), at 95 % confidence interval, using previous prevalence of STI in reproductive age women of 36.21% (Ramadhani *et al.,* 2017) and a 5 % margin of error. The minimum sample size was 389 women, however, a total of 400 women were enrolled.

Sampling

This was a two-stage sampling where two districts from each region were randomly selected and the district hospitals from the selected districts were used for the study. Eligible women attending reproductive and child health clinics in the district hospitals were consecutively enrolled to the study after signing a written consent form.

Data collection

Women were interviewed individually in a private room using pretested structured questionnaire in Swahili language to collect sociodemographic and sexual behaviour data. Socio demographic data were age, employment status, education level, and marital status. Sexual behaviour data included number of lifetime partners, age at sexual debut, condom use, recent history of STI infection, alcohol and drug use, and new sexual partner in the past three months. Symptoms and signs suggestive of reproductive tract infection such as abnormal vaginal discharge, dysuria, vaginal itch, post coitus bleeding and lower abdominal pain were recorded. High vaginal and endocervical swabs were collected using Dacron swabs for the diagnosis of reproductive tract infections. To ensure confidentiality the Dacron swabs and questionnaires were labelled using numbers instead of names.

Laboratory methods

Endocervical swabs were inoculated onto Modified Thayer Martin Agar (Oxoid, Unipath Limited, Basingstoke, UK) for the isolation of *N. gonorrhoea*. Plates were placed in anaerobic candle jar with 5% CO_2. The plates were incubated at 37°C for 48 hours. Presumptive gonococci colonies were identified based on their morphological appearance, gram stains and biochemical tests. Intracellular diplococci bacteria that were Gram negative and showed catalase and oxidase positive properties were identified as *N. gonorrhoea.*

T. vaginalis was diagnosed by a wet preparation from the vaginal posterior fornix swabs using normal saline and examined microscopically (x40) within an hour after collection of the swab. The presence of motile trichomonads with characteristic jerky movement, undulating membrane and presence of four flagella confirmed presence of *T. vaginalis* (Stoner *et al.,* 2013).

Vaginal smears for bacterial vaginosis diagnosis were obtained by swabbing lateral vaginal wall and were smeared on a sterile glass slide. The slides were Gram stained and observed microscopically under oil immersion (1000x magnification). Three bacteria morphotypes were quantified and scored following Nugent criteria (Nugent *et al*., 1991). These were large Gram-positive rods (lactobacillus morphotypes) Small Gram variable rods (*Gardenerella vaginalis*), curved Gram variable rods (*Mobiluncus* species morphotypes) and gram-negative rods *Bacteroides* species morphotypes). A score of zero to three was interpreted as normal, a score of four to six was identified as intermediate, and a score of seven to ten was interpreted as bacterial vaginosis infection (Nugent *et al*., 1991). Ten percent of the positive and negative slides for *T. vaginalis* and bacterial vaginosis were re-examined by another medical laboratory technician for quality assurance.

Vaginal candidiasis was isolated by culture using Sabouraud dextrose agar (SDA). Plates were incubated for 72 hours at 35°C. Candida was identified as smooth, soft, shiny creamy rapid-growing colonies of yeast (Cheesbrough, 2006). Cells of *Candida* species were identified by picking a small portion of the colonies using wire loop and added to the slide containing a drop of 20% KOH. Microscopically *Candida* species was identified as distinctive or budding yeast cells (Namkinga *et al.,* 2013). Germ-tube tests was performed to confirm *C. albicans* (Namkinga *et al.,* 2013). Infected women were treated according to the national guidelines.

Data analysis

Data analysis was performed using Statistical Package for Social Science (SPSS) version 23. Descriptive analyses were performed for sociodemographic, behavioural factors and symptoms. Categorical variables were denoted as percentages and continuous variables were summarized as means with standard deviations. The prevalence of curable STIs was calculated as proportions of participants with positive test for *T. vaginalis* and *N. gonorrhoea*. Chi square test was performed to determine associations of sociodemographic, sexual behavioural, symptoms, bacterial vaginosis, and vaginal candidiasis infection with curable STIs. Logistic regression model was used to determine independent factors for curable STIs. Variables with p-value less or equal to 0.05 in bivariable analysis were analysed in the multivariable model for independent associations. Adjusted odds ratio and 95% confidence interval were calculated and a p-value <0.05 was considered statistically significant.

Ethical approval

Study protocol was approved by the National Health Research Ethics Committee (NatHREC) Dar es salaam, Tanzania with an approval number of NIMR/ HQ/R.8a/Vol. IX 3720. Permission to conduct study was obtained from the Reginal medical officer, District medical officer and the doctor in charge of the hospital. Written informed consent was obtained from the women before enrolment. Data were stored by the principal investigator in a password protected computer.

Results

Characteristics of the study population

Four hundred women of childbearing age were enrolled in this study. The mean age of the participants was 28±6.8 years. Fifty one percent (51%) of the participants were recruited from Dar es salaam. Majority (43.8%), of women were between 18-25 years, (41.0%) were married, (51.7%) had secondary school education and above, and (66.8%) were employed. The mean age of sexual debut was 17.5 ±1.85 years. Thirty percent of the participants had more than two sexual life partners, while (21.3%) had new partner in the past three months. Twenty five percent of women reported condom use with new partner, 26.5% were alcohol users, and 1.3% were drug users. Twenty eight percent (28%) of the participants reported a recent history of STIs infection (Table 1).

The most reported symptoms were dysuria (28.8%) followed by abnormal vaginal discharge 29.7% and vaginal itch 22.8%. Other reported clinical signs or symptoms were post-coital bleeding 19.8% and lower abdominal pain 10% (Table 1).

Prevalence of curable STIs and other genital tract infections

Overall prevalence of curable STIs was 12.0% (48/400) (which included *N. gonorrhoea* and *T. vaginalis*). Additionally, 35.8% (143/400) of the women had non STIs specifically vaginal candidiasis and bacterial vaginosis. The prevalence of *N. gonorrhoeae* among the participants was 2.5% (95% CI: 1.8-2.7) while prevalence of *T. vaginalis* was 9.8% (95% CI: 8.9-10.7). Among the women, 13.5% (95% CI: 12.2-14.8) had vaginal candidiasis and 22.3% (95% CI: 20.2-24.4) had bacterial vaginosis. Furthermore, 14 % (56/400) of the examined women had mixed infections (Data not shown)

Sociodemographic factors associated with curable STIs.

The prevalence curable STIs was higher in women residing in Dar es salaam compared to prevalence in women residing in Dodoma, however, the difference was not statistically significant. Similarly, there was no statistically significant difference in prevalence of curable STIs between age groups. Women with no education and primary school education had significantly higher prevalence of curable STI compared to women who had secondary and post-secondary school education (p=0.001). Women who were employed had higher prevalence of curable STIs compared to non-employed women, however, the difference was not significant. Regarding marital status, married women had lower prevalence of curable STIs compared to cohabiting and single women. The difference was statistically significant p=0.013 (Table 1).

Sexual behaviour factors associated with curable STIs.

Women who reported to have their sexual debut at age below 18 years had significantly higher prevalence of curable STI compared to women who had sexual debut at the age of 18 years and above (p=0.001). Moreover, women who reported having more than two sexual life partners had significantly higher prevalence of curable STI compared to women who reported to have one lifetime partners (p=0.008). Similarly, women who had new sexual partner in the last three months had significantly higher prevalence of curable STI compared to women who did not have new partners in the previous three months (p=0.001). Additionally, women who reported condom use with new partner had low prevalence of curable STI compared to non-users and this difference was statistically significant (p=0.001). Alcohol users had higher prevalence of curable STIs compared to non-users. The difference was statistically significant p=0.02.

However, there was no statistically significant difference in curable STIs between women who use drugs against non-users (Table 1).

Symptoms associated with curable STIs.

Women with vagina discharge, dysuria and vagina itch symptoms had higher prevalence of curable STI compared to women without these symptoms; the difference was statistically significant (p=0.001). Moreover, there was statistically significant difference in prevalence of curable STI between women who reported lower abdominal pain and women who did not have lower abdominal pain (p=0.004). However, the difference in prevalence between women who reported post coitus bleeding and those who did not have post coitus bleeding was not statistically significant. Furthermore, the prevalence of vaginal candidiasis and bacterial vaginosis was significantly higher in women who were positive for curable STI compared to women who were negative (p=0.001) (Table1).

Predictors of STIs

Independent predictors that were associated with curable STIs in multivariable analysis included education level, condom use, and a recent history of STI. Increasing education level was associated with a reduction in the likelihood of having STIs (AOR=0.41, 95%CI: 0.17-0.97). Similarly, condom use was associated with reduction in the likelihood of having STIs infection (AOR=0.16, 95% CI: (0.073-0.34). However, women who had STIs infection in the past were two times more likely to have STIs infection compared to women with no history of STIs (AOR=2.4, 95%CI:1.05-5.27) (Table 1).

Table 1: Sociodemographic, sexual behavioural factors, and symptoms of women with curable sexually transmitted infections attending reproductive and child health clinics in Dodoma and Dar es salaam.

Variables	N=400	Positive for Curable STIs	Bivariate analysis	P- value	Multivariate analysis	P-value
		N (%)	COR 95%CI		AOR 95%CI	
Residence						
Dodoma	196	18(9.2)	1			
Dar es salaam	204	24(11.7)	0.95(0.52-1.74)	0.088		
Age group (Years)						
18-25	175	15(8.6)	1			
26-35	160	23(14.4)	1.79 (0.89-3.57)	0.09		
36-45	55	10(15.4)	1.94(0.82-4.57)	0.13		
Education level						
Primary level and below	193	37(19.2)	1			
Secondary level and above	207	11(5.3)	0.24(0.12-0.48)	0.001	0.41(0.17-0.97)	0.042
Employment status						
Non-employed	133	12(9.0)	1			
Employed	267	36(13.5)	1.57(0.8-3.1)	0.253		
Marital status						
Single divorced widowed	158	22(13.9)	1			
Married	164	9(5.5)	0.34(0.16-0.81)	0.013		
Cohabiting	78	17(21.8)	1.72(0.84-3.47)	0.128		
Age at sexual debut						
Less than18 years	168	36(21.4)	1			
18 years and above	232	12(5.2)	0.25(0.10-0.39)	0.001		
Lifetime partners						
One	109	8(7.3)	1			
Two	170	16(9.4)	1.31(0.54-3.17)	0.548	-	
More than two	121	24(19.8	3.12(1.34 -7.29)	0.008		
New partner past three months						
No	237	9(3.8)	1			
Yes	163	39(23.9)	7.96(3.7-16.9)	0.001		
Condom use with new sexual partner						
No	298	31(30.4))	1			
Yes	102	17(5.7)	0.12(0.073-0.026)	0.001	0.16(0.07-0.34)	0.001

Alcohol use						
No	254	23(9.1)	1			
Yes	146	25(17.1)	2.1(1.13-3.81)	0.017	-	
Drug/substance abuse						
No	395	46(11.6)	1			
Yes	5	2(40.0)	5.0(0.82-31.07)	0.053	-	
History of STIs						
No	290	23(7.9)	1			
Yes	110	25(22.7)	3.4(1.84-6.33)	0.001	2.4(1.05-5.27)	0.038
Vaginal discharge						
No	281	19(6.8)	1			
Yes	119	29(24.4)	4.44(2.39-8.31)	0.001	-	
Lower abdominal pain						
No	360	37(10.3)	1			
Yes	40	11(27.5)	3.3(1.53-7.17)	0.004	-	
Post-coital bleeding						
No	321	38 (11.8)	1			
Yes	79	10 (12.7)	1.08(0.51-2.27)	0.084	-	
Dysuria						
No	286	23(8.0)	1			
Yes	114	25(21.9)	3.2(1.74-5.94)	0.001	-	
Vaginal itch						
No	309	23(7.4)	1			
Yes	91	25 (27.5)	4.71(2.52-8.81).	0.001		
Vaginal candidiasis						
Negative	346	32(21.4)	1			
Positive	54	16(29.2)	4.13(2.1-8.2)	0.001	-	
Bacterial vaginosis						
Negative	311	25(8.0)	1			
Positive	89	23(25.8)	3.98(2.13-7.46)	0.001		

COR - Crude Odds ratio, AOR - Adjusted Odds ratio, CI - Confidence Interval
*Curable STIs denote infection with any of the following sexually transmitted pathogens; *Trichomonas vaginalis* or *Neisseria gonorrhoea*

Discussion

The study focused on assessing the prevalence of curable STIs (*T. vaginalis* and *N. gonorrhoea),* bacterial vaginosis, and vaginal candidiasis infection among women of childbearing age attending reproductive and child health clinics in Dodoma and Dar es salaam region. The results revealed a high prevalence of genital tract infection, with bacterial vaginosis having the highest prevalence at 22.3% followed by vaginal candidiasis13.5% and *T. vaginalis* 9.8%; the lowest prevalence was *N. gonorrhoea* 2.5%.

The prevalence of *T. vaginalis* in the current study was 9.8 % which was consistence with previous reported prevalence of 8.7% and 8.0 %among women in Mwanza and in Dar es salaam (Buhalata *et al.*, 2013; Majigo *et al.*, 2015). However, it was lower than the prevalence of 19.0% reported in women working in bars and other recreation areas near large mines in Northwest Tanzania (Francis *et al*., 2014) and prevalence reported among women presented with vaginal infection in Dar es salaam 13.3% (Majigo *et al.,* 2021). Additionally, the prevalence of *T. vaginalis* in our study was in line with the rates reported in other countries, such as Swaziland 8.4% (Ginindza *et al.,* 2017), South Africa 10% (Abbai & Ramjee 2013) and India 8.5% (Madhivanan *et al*., 2009). In contrast *T. vaginalis* prevalence in this study was higher than prevalence reported in Ethiopia 2.1% (Mulu et al. 2015), but lower than the prevalence reported in Brazil 16% (von Glehn *et al*., 2017) and New Papua Guinea 22.4% (Vallely *et al.,* 2016). These variations in prevalence could be attributed to different diagnostic tests used and socio-behaviour factors of the population studied.

Prevalence of bacterial vaginosis in this study was high at 23.3%, which is similar with the reported rates in Mwanza 25.6% (Buhalata *et al*., 2013) and Dar es salaam 26.7% (Shaffi *et al.,* 2021). However, it was lower than prevalence of 41.2% reported in women with vaginal discharge in clinics in Dar es salaam (Majigo, *et al.*, 2015). Similar studies from Brazil and Ethiopia have reported higher prevalence rates at 30.1% and 48.6% respectively (Marconi *et al.*, 2015:Bitew *et al.*, 2017). The difference in prevalence could be attributed to hygiene practices and socio behavioural factors among populations studied. The high prevalence of bacterial vaginosis is concerning as it signifies a disruption of the vaginal normal flora, leading to the domination of pathogenic organisms. Vagina douching and other intravaginal practices have been associated with increased prevalence of bacterial vaginosis (Majigo *et al.,* 2021). Bacterial vaginosis infection should be treated promptly to prevent sequalae associated with the infection such as risk of acquiring STIs, endometriosis, and pelvic inflammatory disease, all of which may lead to infertility (Ravel *et al*., 2021).

Regarding vaginal candidiasis, prevalence in the current study (13.5%) was comparable to the prevalence reported in Mwanza (14.0%) (Buhalata *et al*., 2013), but, lower than the prevalence of 19.4% and 44.3% reported in Dar es salaam (Majigo *et al.*, 2015; Majigo *et al.*, 2021). Likewise, it was consistence with prevalence reported in Rwanda 10.6% (Ndorycyimpaye *et al*. 2020), but lower than prevalence reported in Iran 32.7% (Rasti *et al.* 2014), United Arab Emirates 31.6% (Salvi, 2019) and in Vietnam 51.3% (Anh *et al.* 2021). The distribution of vaginal candidiasis varies among countries and population studied, this could be influenced by specie responsible for vaginal candidiasis and predisposing factors such as contraceptive use, spermicide and condom use, antibiotic use, personal hygiene, clothing, and sexual habits (Gonçalves *et al*., 2016).

The prevalence of *N. gonorrhoea* in the current study was consistence with prevalence of 3.5% reported in women presented with discharge in Dar es salaam (Majigo *et al*., 2015) and prevalence of 4.0% reported in Northwest of Tanzania (Francis *et al.*, 2014). However, it was lower than the prevalence of *N. gonorrhoea* reported previously 8.4% by Buhalata *et al.* (2013). Nevertheless, the prevalence in this study was in line with pooled prevalence of *N. gonorrhoea* in women of reproductive age reported in Sub Saharan Africa

(Kassa *et al.,* 2020). The difference in prevalence could be attributed to different populations studied and the diagnostic methods that were used.

Risk factors for Curable STIs

In our study, we investigated risk factors associated with curable sexually transmitted infections (STIs) among women. One significant finding was that women with secondary and higher education levels had a reduced likelihood of having curable STIs infection (AOR = 0.41, 95%CI: 0.17-0.97). This finding aligns with similar studies conducted in Swaziland, South Africa and Uganda, which also showed that higher education was associated with lower risk of having STIs (Abbai *et al*., 2013; Kakaire *et al*., 2015; Ginindza *et al.*, 2017). Women with high education level are likely to practice safe sex compared to less educated women (Tenkorang, 2012), possibly due to better access to sexual health information and improved negotiation skills with sexual partners. On the other hand, less educated women may face limited options and turn to high-risk behaviours like exchanging sex for cash and other resources from a sexual partner (Ranganathan *et al.,* 2017).

Interestingly, employment was not found to be a significant predictor for curable STIs in our study. However, the type of employment was not explored, which could have explained the substantial risk of STIs among employed women. Earlier studies have revealed that women working in bars and recreational facilities are at high risk of STIs infection (Francis *et al.*, 2014).

Another crucial finding was that condom use was associated with the reduced likelihood of having curable STIs infection. Consistence use of condoms with new partner has been shown to be protective against STIs in various studies(Gita & Brodie, 2013). However, it is important to note that some studies have reported a contrast to our study that, use of condoms was inversely related to STIs (Ginindza *et al*., 2017). Plausible explanation for this discrepancy could be that women who acknowledge not to use condoms with new partners had one faithful partner or they were cured prior to data collection. Nevertheless, promoting condom use remains a crucial strategy for STI prevention.

Women with recent history of STI infection were found to be two times more likely to have STI infection compared to women with no history of STI infection. This align with findings from a study in South Africa where repeated STI diagnosis increased women's susceptibility to HIV infection (Wand & Ramjee, 2015). Having a recent history of STI infection such as gonorrhoea and chlamydia has also been identified as a risk factor for STI infection (Hosenfeld *et al*., 2009). Repeated STI infection can be attributed to factors such as unsafe sex practices, incomplete treatment, untreated partner or continue to engage in risk sexual behaviour after STIs treatment (Bautista *et al*., 2017). Therefore, partner notification, health education and retesting after treatment is important to prevent reinfection.

Although alcohol and drug use has been linked to risky sexual behaviours such as unprotected sex (forgetting or refusing to use protection) and multiple partners which lead to acquisition of STIs (Ghebremichael *et al*., 2009). In the current study however, alcohol and drug use were not independently associated with curable STI infection. This could be explained by the fact that alcohol use is not equally spread across various demographic groups in the population. Despite recent demographic studies showing that the gender difference in alcohol consumption is decreasing (Strandberg *et al*., 2019), women tend to consume less alcohol compared to men and younger individuals may engage in riskier behaviour compared to old people (White, 2020).The prevalence of drug use in this study was minimal, with only five participants in the interviews reporting a drugs history. Nevertheless, sexual education intervention emphasizing the danger of alcohol use, drug abuse and multiple sexual partners are still necessary to promote safer sexual practices.

Limitation of the study

Despite the limitations of our study, we have been able to shed light on the population at risk of acquiring sexually transmitted infections (STIs) and the associated risk factors among women of reproductive age in Dar es Salaam and Dodoma. However, it is essential to acknowledge potential sources of bias in our findings. First, because sexual activity is a sensitive topic, it is probable that during interviews, social desirability bias could have influenced the interview responses, resulting in underreporting of certain behaviours. Secondly, sociodemographic and behaviour factors were self-reported, participants had to recall past events, therefore, they could have introduced recall bias. Additionally, lack of resources prevented us from using molecular tests for our investigation.

Despite the limitations, our study holds significant value. It has provided valuable insights into the population group who are at risk of acquiring STIs particularly women of reproductive age in Dar es salaam and Dodoma. This information contributes to the STIs epidemiological surveillance data for women of childbearing age in Tanzania. By understanding these risk factors, we can develop targeted interventions to prevent STI acquisition.

Conclusion

In conclusion, our study reported high prevalence of curable STIs, bacterial vaginosis and vaginal candidiasis and identified several risk factors for curable STIs among women. Education level, condom use, and history of STI infection were significant predictors of STI risk. Although alcohol and drug use were not independently associated with STIs in our study, addressing substance abuse and promoting sexual health education remain important aspects of STI prevention strategies. Understanding and addressing these risk factors can help in the development of effective and targeted interventions to reduce the burden of curable STIs in the population.

Based on our findings, we recommend reproductive and child health clinics introduce health education program to create awareness of risk factors that predisposes to the acquisition of STIs and implement aetiologic screening for curable STIs and bacterial vaginosis in women of reproductive age to prevent sequalae associated with STI and bacterial vaginosis infections.

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