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RESEARCH ARTICLE

Knowledge, Attitudes, and Beliefs of Childbearing Women at a District Hospital in South Africa Regarding Sexually Transmitted Infections

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Abstract:

Background:

Sexually Transmitted Infections (STIs) are a public health concern worldwide. Awareness campaigns have been conducted worldwide, educating communities on their manifestations, prevention, and steps to be taken once infected.

Objective:

This study aimed to determine childbearing women's knowledge, attitudes, and beliefs about STIs.

Methods:

A cross-sectional study was conducted at a district hospital near Pretoria in South Africa. The population comprised 190 childbearing women registered at the family planning clinic of the hospital. The sample size of 130 participants was computed at a confidence level of 95% with an error margin of 5%. Participants were selected using a table of random numbers, and data collection by means of a researcher-administered questionnaire. The SPSS software (version 22) was used for data analysis. Statistical significance was set at $p < 0.05$.

Results:

Of the 130 participants, 123(94.6%) knew that STIs can be acquired through sex, and 41(31.5%) did not know that STIs can be asymptomatic. The most known STI was HIV by 117(90%) participants, the most known transmission route was sexual intercourse by 126 (96.9%) participants, and the most known symptom was penile/vaginal discharge by 108(83%) participants. Seventy-four (57.3%) regarded STIs as not dangerous, based on their belief that STIs are curable. There was generally a poor association between knowledge on STIs and alcohol consumption ($p > 0.05$).

Conclusion:

The childbearing age women knew most aspects of STIs, but had gaps of knowledge. They believed that STIs are curable, which influenced their attitudes towards STIs. Health care professionals are challenged to educate patients on STIs on an ongoing basis.

Keywords: Childbearing age, Sexually transmitted infections, District hospital, Beliefs, Attitudes, Risk factors, Alcohol consumption.

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1. INTRODUCTION

Sexually Transmitted Infections (STIs) are of public health concern in most developing countries, especially in sub-Saharan Africa, and are defined as a type of infection transmitted from person to person during sexual contact [1]. In 2018, The Centre for Disease Control and Prevention (CDC) reported a sturdy increase of about 100 000 cases of STIs over a period of five years (2014-2018) [2]. In developing countries, they rank among the top five diseases, for which adult patients seek care [3]. They have a major negative impact on sexual and reproductive health globally and are responsible for 17% of economic losses caused by health problems in developing countries [4 - 6].

STIs are a major cause of infertility contributing to pelvic inflammation, spontaneous abortion, ectopic pregnancy and are associated with cervical cancer [7, 8]. When compared to men, women are more susceptible to Human Immunodeficiency Virus (HIV) infection in any given heterosexual encounter. This is due to biological factors, such as the greater area of

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mucus membrane exposed during sex in women than in men, the greater quantity of fluids transferred from men to women, and the micro-tears that occur in vaginal tissue from sexual penetration [9]. Risk factors have been documented to include unprotected vaginal, anal, and oral sex, skin-to-skin contact with infected areas, sex with strangers, commercial sex workers, multiple sex partners, injection drug users, and sharing needles for body piercing and tattoos [9]. The presence of one STI facilitates transmission of HIV by a factor of 2-5 times [10].

STIs remain untreated either because women are usually asymptomatic for some of the STIs or have symptoms unrecognised and not acted upon [11, 12]. Those who recognise symptoms, get treatment immediately because they regard the treatment as effective [8]. Adequate knowledge about STIs is essential for sexual risk reduction in a community, which was demonstrated by a study conducted in Malaysia, where knowledge about STIs was found to be low even in communities where there was a high prevalence of STIs [11]. This suggested that knowledge about STI transmission might influence sexual behaviour. However, in the same study, knowledge alone was not found to ensure responsible behaviour [11]. STIs are not perceived as serious, because they are viewed as easily curable [10]. Due to lack of education, a vast majority of people think they do not have any control over contracting these infections and they blame it solely on fate [13]. Inner-city women in the United States displayed poor knowledge of HIV/AIDS and did not perceive themselves to be at risk of contracting the HIV virus [14]. This perception was found to be based on the false sense of security that having a single sexual partner guarantees safety. They did not regard their sexual partners' past or current sexual behaviour as placing them at risk [14].

In a study conducted in India, the majority of the women had the perception that condom use was the sole responsibility of men [15]. The women expressed fear to ask their male partners to use condoms during sexual intercourse, reporting that their partners would lose respect for them for possible infidelity. Indeed, in another study, condom use was associated with promiscuity and infidelity and reduced the quality of sexual intercourse [9]. A study conducted in Tanzania reported that women claimed that alcohol impaired their judgement to practice safe sex [16]. Excessive alcohol consumption has been identified as one of the key contributing factors in the acquisition and transmission of HIV as the vast majority of people newly infected with HIV in Sub-Saharan Africa were infected during unprotected intercourse occurring after excessive alcohol intake [16, 17].

Socio-cultural practices, such as polygamy, allow men to have more than one wife, thus placing women at risk of contracting STIs, and these traditional social norms perpetuate women's vulnerability to STIs [4]. However, good cultural values which promote the preservation of family respect and loyalty to spouse have been found to impact sexual behaviour [1]. Faith-based institutions, such as the church, play an important role in promoting good behaviour among the youth as a tool to curb the spread of STIs [18]. The beliefs in the norms of religion afford members protection as they are less likely to engage in activities that their religion condemns, including sexual promiscuity [9].

At the time of the study (2016), anecdotally one-in-five of the women seeking medical attention for contraception and termination of pregnancy at a family planning clinic of a district hospital near Pretoria in South Africa had poor knowledge regarding STIs (including HIV). The aim of the study was to document the knowledge, attitudes, and beliefs of these child-bearing age women regarding STIs.

2. METHODS

This study was a cross-sectional study involving child-bearing women seen at the family planning clinic of the district hospital. The study population comprised women of childbearing age (aged between 18 and ≥ 49 years) seen at the clinic. Women below 18 years were excluded because of consent considerations. Based on 190 child-bearing women registered in the clinic records, using an estimated 95% confidence level and 5% confidence interval, the sample size was computed at 127 women, which was oversampled to 130.

A table of random numbers [19] was used to obtain the sample of 130 participants from the register. The participants with the selected numbers were contacted. The study aims and objectives were explained to each, who was then requested to participate. Where a selected individual declined participation, another number was randomly selected and the recruitment process repeated until the required sample size number was reached. All participants signed the informed consent form before participation. Data were analysed using both Microsoft Excel and SPSS software (version 22). Simple descriptive statistics were employed and the results are presented in Tables. Inferential statistics were done for an association of variables using the chi-square test and statistical significance was set at $p < 0.05$.

3. RESULTS

3.1. Baseline Characteristics

Table **1** demonstrates that the total number of participants was 130. The mean age of the participants was 29.32 with a standard deviation of 7.94. The quartile ages were 23 years for the lower age, 26 years for the middle age, and 36 years for the upper age. The majority of the participants, *i.e*, 94 (72.3%) were in the age group between 18 to 35 years, followed by the age group between 36 to 45 years, *i.e*, 34 (26.2%) participants. More than half, *i.e*, 73 (56.2%) of the participants were single. The majority of the participants, *i.e*, 74 (56.9%) had a secondary education status, followed by those with tertiary education, *i.e*, 49 (37.7%) participants. The number of participants who were employed, *i.e*, 62 (48.1%) was almost equally proportionate to those unemployed, *i.e*, 65 (50.4%). Among the participants, 35 (26.9%) participants were alcohol users.

Table 1. Demographic characteristics (n = 130).

Characteristic	Frequency	Percentage
Age Groups		
18 – 25	49	37.7
26 – 35	45	34.6
36 – 45	34	26.2
≥ 46	2	1.5
Mean: 29.32 years (SD±7.94)		
Range 18 - ≥ 46		
Education		
Primary	7	5.4
Secondary	74	56.9
Tertiary	49	37.7
Employment		
Unemployed	62	48.1
Employed	65	50.4
Not indicated	2	1.6
Marital Status		
Single	73	56.2
Married	48	36.9
Divorced	7	5.4
Widowed	2	1.5
Alcohol Consumption		
Yes	35	26.9
No	95	73.1

3.2. Knowledge on Symptom-free STIs, Risk Factors, and Types

Table **2** indicates that 123 (94.6%) participants were knowledgeable about STIs other than HIV that can be acquired through sexual intercourse. However, 32 (24.6%) and 41 (31.5%) participants did not know about the possibility that female or male persons, respectively, can have an STI other than HIV without having symptoms. The table also demonstrates that 89 (68.5%) and 82 (63.1%) participants were knowledgeable about the possibility of contracting STIs when having sex soon after delivery and during menses, respectively. Sixty-seven (51.5%) participants were knowledgeable about blood transfusion as a possible cause for STI. The most known STIs were HIV, *i.e.* by 117 (90%) participants, syphilis, *i.e*, 95 (73.1%) participants, and gonorrhoea, *i.e*, by 59 (45.4%) participants.

Table 2. Knowledge about risk factors and types of STIs.

Questions	Yes (%)	No (%)
Knowledge About STIs		
• One can get other STIs other than HIV through sexual intercourse	123 (94.6)	7 (5.4)
• It is possible for a woman to have an STI other than HIV and not have symptoms?	98 (75.4)	32 (24.6)
• It is possible for a man to have an STI other than HIV and not have symptoms?	89 (68.5)	41 (31.5)
Possible Risk Factors of STIs		
• Bad hygiene		
• Using unclean water	12 (9.2)	118 (90.8)
• Sex during menses	5 (3.8)	125 (96.2)
• Having sex soon after delivery	82 (63.1)	48 (36.9)
• Blood transfusion	89 (68.5)	41 (31.5)
• Infected swimming pool	67 (51.5)	63 (48.5)
• I do not know	14 (10.8)	116 (89.2)
6 (4.6)	124 (95.4)	
Types of STIs		
• Tuberculosis		
• Gonorrhoea	9 (6.9)	121 (93.1)
• Syphilis	59 (45.4)	71 (54.6)

(Table 2) contd.....

• HIV	95 (73.1)	35 (26.9)
• Hepatitis B	117 (90.0)	13 (10.0)
• Hepatitis C	4 (3.1)	126 (96.9)
• Chlamydia	10 (7.7)	120 (92.3)
• Herpes	28 (21.5)	102 (78.5)
• Do not know	24 (18.5)	106 (81.5)
	0 (0.0)	130 (100.0)

Table 3. Knowledge of the route of infection, symptoms, and complications of STIs.

Parameter	Yes (%)	No (%)
STIs Routes		
Sexual intercourse	126 (96.9)	4 (3.1)
Blood transfusion	51 (39.2)	79 (60.8)
Sharing needles	34 (26.2)	96 (73.8)
Sharing clothes and other items	5 (3.8)	125 (96.2)
Sharing food	2 (1.5)	128 (98.5)
Mother to child	58 (44.6)	72 (55.4)
Do not know	1 (0.8)	0 (0.0)
STI Symptoms		
Abdominal pain	79(60.8)	51 (39.2)
Discharge from vagina/penis	108 (83.1)	22 (16.9)
Itching in the genital area	24 (18.5)	106 (81.5)
Burning pain on urination	38 (29.2)	92 (70.8)
Pain during intercourse	35 (26.9)	95 (73.1)
Genital sores	64 (49.2)	66 (50.8)
Swelling in the genital area	74 (56.9)	56 (43.1)
Blood in urine	31 (23.8)	99 (76.2)
Failure to pass urine	8 (6.2)	122 (93.8)
Loss of weight	6 (4.6)	124 (95.4)
Weakness	4 (3.1)	126 (96.9)
Do not know	2 (1.5)	128 (98.5)
Complications		
Infertility	55 (42.3)	75 (57.7)
Premature birth	25(19.2)	105 (80.8)
Stillbirth	20 (15.4)	110 (84.6)
Ectopic pregnancy	61 (46.9)	69 (53.1)
Miscarriage	107 (82.3)	23 (17.7)
Cervix cancer	88 (67.7)	42 (32.3)
Do not know	4 (3.1)	126 (96.9)

3.3. Knowledge on Routes of Infection, Symptoms, and Complications of STIs

As shown in Table **3**, the majority of participants, *i.e*, 126 (96.9%) knew that sexual intercourse is the route of transmission of STIs. Fifty-eight (44.6%) participants knew about the transmission of STI from mother to child, while 51 (39.2%) and 34 (26.2%) participants knew about blood transmission and the sharing of needles, respectively, as routes of STI transmission. Furthermore, the majority of participants, *i.e*, 108(83.1%) knew about discharge from vagina/penis as symptoms of STIs, while 79 (60.8%) participants knew as much about abdominal pains. A low number of participants, *i.e*, 24 (18.5%) knew about itching in genital areas, 35 (26.9%) about pain during intercourse, and 38 (29.9%) about burning in urination as symptoms of STIs. Regarding complications of STIs, miscarriage by 107 (82.3%) participants, cervical cancer by 88 (67.7%) participants, and ectopic pregnancy were the highest known complications.

3.4. Attitudes and Beliefs Regarding STIs

Regarding attitudes, Table **4** demonstrates that a high proportion of participants, *i.e*, 127 (98.4%) regarded condom use as a preventative measure for STIs, an individual with an STI should be treated, as regarded by 125 (97.7%) participants, and that an individual who is not sure about symptoms of STIs must contact health care personnel by 100 (77.5%) participants. 74 (57.3%) participants regarded STIs as not dangerous because they are curable. The table also demonstrates

participants' beliefs that STIs can be cured, regarded by 128 (99.2%) participants and prevented, according to 124 (95.4%) participants, and also that women were at a high risk to acquire STIs as regarded by 77 (59.2%) participants.

3.5. Knowledge of STIs and Alcohol Consumption

Table **5** shows that there was a statistically significant association between participants' knowledge of occurrence of STIs without symptoms and alcohol consumption among women (21; 60.0% *versus* 77; 81.1%; p = 0.021) and among men (18; 51.4% *versus* 71; 74.7%; p = 0.018). There was also a pointer towards a significant association between the participants' knowledge that blood transfusion can transmit STIs and their alcohol consumption (13; 37.1% *versus* 54; 56.8%; p = 0.051).

Table 4. Attitudes and beliefs regarding STIs.

Attitude	Agree (%)	Disagree (%)	Not Sure (%)
• STIs are not dangerous diseases because they can be cured	74 (57.3)	25 (19.4)	30 (23.3)
	-	-	-
• One should avoid having sexual contact with a person infected with STI because he can infect you	-	-	-
	71 (55.0)	27 (21.0)	31 (24.0)
• Persons who do not want to become infected with an STI should use a condom when having sexual intercourse	-	-	-
	-	-	-
• Persons who get STIs should be treated	-	-	-
	127 (98.4)	1 (0.8)	1 (0.8)
• If a person is not sure about symptoms of STIs he/she must contact health personnel	-	-	-
Beliefs	-	-	-
	125 (97.7)	3 (2.3)	0 (0.0)
	-	-	-
	100 (77.5)	5 (3.9)	24 (18.6)
	Yes (%)	No (%)	Don't know (%)
• STIs can be cured	-	-	-
	128 (99.2)	1 (0.8)	0 (0.0)
• STIs can be prevented	124 (95.4)	4 (3.1)	2 (1.5)
• Women are at a high risk to acquire STI's	77 (59.2)	26 (20)	27 (20.8)
-	-	-	-

Table 5. Knowledge of STIs versus alcohol consumption (n = 130).

Knowledge of STIs	Alcohol Consumption? n (%)		*p*-value
-	**Yes**	**No**	-
A person can have STIs without symptoms (Women)	-		-
Yes	21(60)	77(81.1)	0.021
No	14(40)	18(18.9)	-
-	-		-
A person can have STIs without symptoms (Men)	-		-
Yes	18(51.4)	71(74.7)	0.018
No	17(48.6)	24(25.3)	-
-	-		-
Hepatitis B causes STIs	-		-
Yes	1(2.9)	3(3.2)	1
No	34(97.1)	92(96.8)	-
	-		-
Chlamydia causes STIs	-		-
Yes	7(20)	21(22.1)	1
No	28(80)	74(77.9)	-
	-		-

(Table 5) contd.....

Herpes simplex causes STIs	-		-
Yes	6(17.1)	18(18.9)	1
No	29(82.9)	77(81.1)	-
-	-		-
Sharing needles is a route of STIs	-		-
Yes	10(28.6)	24(25.3)	0.822
No	25(71.4)	71(74.7)	-
-	-		-
STIs can be transmitted through the mother-to-child route	-		-
Yes	12(34.3)	46(48.4)	0.169
No	23(65.7)	49(51.6)	-
-	-		-
STIs can cause Infertility	-		-
Yes	15(42.9)	40(42.1)	1
No	20(57.1)	55((57.9)	-
-	-		-

3.6. Level of Education and Knowledge on STIs

Table **6** indicates that there was a significant association between the women's knowledge of STIs and their level of education with respect to knowledge of symptoms occurring in females and males who have acquired STIs (p = 0.002 and p = 0.000), respectively; chlamydia as an STI (p = 0.005), genital herpes as an STI (p = 0.000), and that infertility can be a complication of STIs. There was a high proportion of women who did not know that Hepatitis B can be an STI, regardless of their level of education (4; 3.1% versus 126; 96.9%).

Table 6. Knowledge *versus* the level of education.

Level of education			**P-Value**
	Know	Do not know	
1. Knowledge regarding STI symptoms among females			
Primary and less	2 (2.0)	5 (15.6)	0.002
Secondary	53 (54.1)	21 (65.6)	
Tertiary	43 (43.9)	6 (18.8)	
Total	98 (100.0)	32 (100.0)	
2. Knowledge regarding STI symptoms among males			
Primary and less	1 (1.1)	6 (14.6)	0
Secondary	46 (51.7)	28 (68.3)	
Tertiary	42 (47.2)	7 (17.1)	
Total	89 (100.0)	41 (100.0)	
3. Knowledge that STIs can be transmitted through blood transfusion			
Primary and less	2(3)	5(7.9)	0.238
Secondary	36(53.7)	38(60.3)	
Tertiary	29(43.3) 67(100.0)	20(31.7)	
Total		63(100.0)	
4. Hepatitis B can be an STI			
Primary and less	0	7(5.5)	0.625
Secondary	2(50)	72(57.1)	
Tertiary	2(50)	47(37.3)	
Total	4(100.0)	126(100.0)	
5. Chlamydia is an STI			
Primary and less	1(3.6)	6(5.9)	0.005
Secondary	9(32.1)	65(63.7) 31(30.4)	
Tertiary	18(64.3)	102(100.0)	
Total	28(100.0)		
6. Genital Herpes is an STI			

(Table 6) contd.....

Primary and less	1(4.2)	6(5.7)	0
Secondary	3(12.5)	71(67)	
Tertiary	20(83.3)	29(27,3)	
Total	24(100.0)	106(100.0)	
7. Sharing of needles can be a route of STIs			
Primary and less	1(2.9)	6(6.25)	0.207
Secondary	16(47.1)	58(60.4)	
Tertiary	17(50.0)	32(33.3)	
Total	34(100.0)	96(100.0)	
8. STIs can be transmitted from mother to child			
Primary and less	1(1.7)	6(8.3)	0.712
Secondary	30(51.7)	44(61.1)	
Tertiary	27(46.6)	22(30.6)	
Total	58(100.0)	72(100.0)	
9. Infertility can be a complication of STIs			
Primary and less	2(3.6)	5(6.7)	0.003
Secondary	23(41.8)	51(68)	
Tertiary	30(54.5)	19(25.3)	
Total	55(100.0)	75(100.0)	

4. DISCUSSION

The study has demonstrated the knowledge, attitudes, and beliefs of child-bearing women seen at a district hospital in Tshwane, South Africa regarding STIs. The participants responded to questions enquiring on their knowledge of risk factors, the types, routes of infection, and complications of STIs. Their attitudes and beliefs regarding STIs were also elicited, as well as the effect of the level of education and alcohol use on their knowledge about STIs.

4.1. Knowledge on Symptom-Free STIs, Risk Factors, and Types

The majority (72%) of the participants in this study were in the age group between 18 to 35 years, in keeping with most studies conducted on knowledge, attitudes, and beliefs regarding STIs [1-32]. Young adults have been found to be at high risk for acquiring STIs as they move away from families and attend learning institutions where they are at high risk of having multiple sexual partners and practice unsafe sex [21]. There has been much emphasis on HIV/AIDS as the dreaded infection in communities [22, 23], such that inquiry on other STIs among patients may be downplayed. In this study, the participants were asked about their knowledge on other STIs other than HIV/AIDS and their responses indicated that almost all of them (95%) were well-informed. Furthermore, their knowledge that STIs can occur without symptoms in males and females (*e.g*. chlamydia, gonorrhoea, and genital herpes) [24] was also inquired. Again, their response indicated high proportions of knowledge (> 68%) in this regard.

In this study, the main possible risk factors of STIs were identified as having sex soon after delivery (69%), sexual intercourse during menstruation (63%), and blood transfusion (52%). A study on postpartum sexually transmitted infections found that 27% of women were diagnosed with STIs postpartum. However, the study also showed that the incidence of postpartum infection was higher among the women who had contracted an STI during pregnancy (43%) [25]. There is evidence that sexual intercourse during menstruation can be a risk factor for STI [26], particularly, candidiasis and bacterial vaginosis as a result of the hormonal change in the woman's body during this period [27], and indeed, a study found self-reported STI history among women who had engaged in sexual intercourse during menstruation [28, 29]. A systematic study on knowledge gaps of STIs in Africa quoted a study conducted in Nigeria which reported a 73% prevalence of knowledge that blood and blood products can be modes of STIs transmission [30]. The difference could be ascribable to the difference in the level of education in the two studies: most of the participants (62%) in our study had primary and secondary education, compared to the Nigerian study all of whom were secondary school adolescents [30].

Regarding knowledge about types of STIs, the majority (95%) of the participants in this study were knowledgeable about infections other than HIV/AIDS that can be acquired through sexual intercourse. A study conducted among dermatology patients in an urban city of Vietnam indicated a much lower percentage (57.4%) of patients who knew that HIV/AIDS was an STI [31]. The authors of this study are not able to give possible reasons for this difference, as they would have expected a similarly high proportion in the Vietnam study, given the long history and pandemic nature of HIV/AIDS [32]. However, a study conducted in India on the knowledge and attitude about STIs other than HIV/AIDS among college students found a similar proportion (99%) to ours [21]. Our study reported that 73.1% of participants knew that syphilis was an STI, and a comparable proportion (68.3%) was found in a study conducted in Italy among similar age-group participants [33]. The finding that very low proportions (below 10%) of participants displayed very poor knowledge that hepatitis B and C can be sexually transmitted [34, 35], points towards a gap in patient knowledge on STIs.

4.2. Knowledge on Routes of Infection, Symptoms, and Complications

Regarding the routes of infection, most participants in this study indicated sexual intercourse (97%), mother to child (46%), blood transfusion (39%), and sharing of needles (26%) as the most known routes. These routes of transmission have been reported in other studies as well [36 - 38]. The level of misconceptions (transmission through sharing of clothes and food items) was significantly low (less than 5%) among the participants of the current study, which was a positive finding for women's health. Symptoms mainly identified in this study were: discharge from the penis/vagina (83%), abdominal pain (61%), swelling (57%), and sores (49%) in the genital area. Other studies have listed similar symptoms albeit with differing proportions to our study [39 - 41].

Complications of STIs predominantly known by the participants in this study were miscarriage (82%), cervical cancer (68%), ectopic pregnancy (47%), and infertility (42%). These have been listed in other literature [42, 43]. In Italy, high school and university students were reported to have poor knowledge of the complications of STIs, making them vulnerable to unprotected sex [44], as confirmed by a study conducted in rural Kilimanjaro, which demonstrated that low knowledge of STI complications correlated "significantly with recent (past 4 weeks) practice of multiple sexual partners and not using condoms with casual (sexual) partners." [45].

4.3. Attitudes and Beliefs Regarding STIs

Almost 60% of the respondents agreed with the statement that STIs are not dangerous because they can be cured. This was higher than the 24.5% that was reported in a study conducted among university students in Thailand [46]. The authors of this study, again thought that the explanation of this difference is the difference in the levels of education between the women in the current study, most of whom (62.3%) had a secondary level of education and below, compared to the university students in the Thai study. The high proportion of women who regarded STIs as not dangerous is a cause for concern as it could lead to a lack of prevention against STIs. However, there were high proportions of participants in this study who agreed with the statements that unprotected sexual intercourse with STI-infected individuals should be avoided to prevent being infected, condoms should be used to prevent STIs, persons infected with STIs should receive treatment, and that persons who are not sure about STI symptoms should contact health care personnel for assistance. These latter responses are an indication that the participants, on average, had a positive attitude in their health-seeking behaviour [47, 48]. The authors of this study are of the view that the positive attitudes were influenced by their reasonable knowledge of the routes of infection, symptoms, and complications of STIs since one's knowledge tends to influence one's attitude [46].

A high proportion of participants had a belief that STIs can be cured (99%) which corresponded to their attitude that STIs are not dangerous (60%). It is a misconception that all STIs are curable since some are amenable to cure, e.g. syphilis, gonorrhoea, and chlamydia, and some are incurable e.g. HIV/AIDS, hepatitis B, human papillomavirus (HPV), and genital herpes (HSV) [49, 50]. This belief carries the risk of infection as the women could neglect protective measures against STIs. However, their beliefs that women are at a higher risk to acquire STIs, and that STIs can be prevented, were not contradictory to available scientific evidence [40, 51, 52].

4.4. Knowledge of STIs and Alcohol Consumption

Although slightly above one in four (27%) of the participants were alcohol users, our study did not demonstrate a clear correlation between alcohol consumption and knowledge of STIs. In a systematic study on alcohol consumption and STIs, eight studies reported a significant association between excessive alcohol consumption and at least one STI [53]. The authors of the current study concede that the absence of the correlation of these two variables may have come as a result of the non-specific enquiry on 'excessive alcohol consumption, the current study simply required the participants to indicate if they used alcohol or not. However, the study also demonstrated that there was a significantly large proportion of non-alcohol users who knew that a woman or a man can have symptom-free STIs ($p < 0.05$). We did not find studies that reported the effect of alcohol use in association with knowledge of symptoms-free STIs. The closest study to the subject was conducted in England, which showed that 59.7% of the participants knew that STIs, in general, can be symptom-free [54], and a Brazilian study which addressed the effect of alcohol consumption by women before or during sexual intercourse, rendering them vulnerable to STIs [55].

4.5. Level of Education and Knowledge on STIs

The study revealed a significant association between the women's knowledge of STIs and their level of education with respect to knowledge of symptoms occurring in females and males, chlamydia and genital herpes is STIs and that infertility can be a complication of STIs. This meant that the higher the education level, the better the knowledge on STIs on the indicated parameters. A similar finding has been reported in a study on patient's awareness of STIs at a public hospital in Malaysia. However, the study, unlike our study, comprised both male and female patients. The current study also showed a high proportion of women who did not know that Hepatitis B can be an STI, regardless of their level of education, in keeping with a study conducted in Nigeria, where secondary school adolescents never mentioned hepatitis B at all in their list of known STIs [36].

4.6. Study Limitations

The results of this study are based on the self-reported account of the participants, which may be subjected to social desirability bias. The participants were not asked if they consumed alcohol excessively or not, as it is excessive alcohol consumption that is deleterious to health [40]. Therefore, the study is limited in terms of the association of alcohol and patient knowledge on STIs. In the literature review that we conducted, there was a scarcity of studies on knowledge, attitude, and beliefs particularly among patients, and most studies were conducted on college and university students. This limited the comparison of the current study findings to similar studies, but it also highlighted the gap in studies conducted on knowledge, attitudes, and beliefs in the various settings.

CONCLUSION

A high proportion of child-bearing age women at the district hospital demonstrated good knowledge on STIs

(including HIV/AIDS), their route of transmission, symptoms, complications, risk factors, and types of STIs. The myth held by a high proportion that STIs can be cured as well as their unfamiliarity with some of the common STIs is a challenge for the health care professionals that requires the continuous offering of patient education on STIs. The significant association between the level of education and knowledge of STIs on some types of STIs and the lack thereof on other types indicates that education on STIs should not be confined to the less educated, with the assumption that the educated should know better.

AUTHORS' CONTRIBUTIONS

MPT conceptualized the research idea and collected data. MPT, NDK, and MLH analysed data and participated in the first manuscript draft. All authors reviewed the various drafts and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Ethics Committee of Research Ethics Committee at the Sefako Makgatho Health Sciences University, South Africa (Clearance certificate number: SMUREC/M/214/2015:PG). Permission to conduct this study was obtained from the Chief Executive Officer of the district hospital.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

Written informed consent was obtained from each participant prior to the study.

AVAILABILITY OF DATA AND MATERIALS

The raw data and materials used to support the findings of this study are available from the corresponding author [L.M.H.] upon request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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