Original Article

Factors contributing to the upsurge of sexually transmitted infections in Gaborone, Botswana

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ABSTRACT

Background: Sexually Transmitted Infections (STIs) remain a major public health problem in sub-saharan African countries, particularly Botswana. In Gaborone, STIs increased from 24 272 in 2015 to 28 106 in 2016 (16%), despite intense advocacy for behavior change by stakeholders to reduce HIV and AIDS prevalence. This study aimed to establish the risk factors associated with STIs.

Materials and Methods: A case-control design was used to study 90 cases and 153 controls (Mean age= 28; SD= ± 6.48; age range= 18 – 60 years) enrolled from two health facilities. Data were collected through interviewer-administered questionnaires and participants were selected using simple random sampling. Data were captured and analyzed using SPSS statistical software (version 25).

Results: Traveling long distances to access condoms from clinics or pharmacies was a risk factor for contracting STIs among males [Adjusted Odds Ratio (AOR) = 3.46; 95% CI 1.37-8.73]. Negative attitudes, for instance, reduction of quality of sex (pleasure) caused by condom use, was found to be a risk factor among females (AOR= 4.15; 95% CI 1.71-10.08). Additionally, belonging to a particular religion, that is, Pentecostal, was a deterrent to contracting STIs for both genders (AOR=0.27; 95% CI 0.11-0.68).

Conclusions: Knowledge of the deleterious effects of STIs was not sufficient to curb contracting any of the infections. Barriers to easy access of condoms such as traveling long distances and negative attitudes towards condom use are obstacles to maintaining healthy behaviors. Stakeholders should increase condom collection points and change negative attitudes through the use of cost-benefit analysis in the AIDS era.

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INTRODUCTION

Sexually Transmitted Infections (STIs) are common ailments spread predominantly from person to person during sexual contact [1,2]. Nonetheless, occasionally the infections can be transmitted none sexually, for instance, Mother To Child Transmission (MTCT) during pregnancy or childbirth, through blood transfusions (e.g., hepatitis B) or shared needles (e.g., hepatitis C). More than 30 different bacteria, viruses and parasites cause these infections. Of the total pathogens, eight of them relate to the greatest incidence of STIs, with four of the eight curable, that is, syphilis, gonorrhea, chlamydia (caused by bacteria) and trichomoniasis (caused by parasites). Viruses cause the remaining four; hepatitis B, herpes simplex virus (HSV), HIV, and Human papillomavirus [2,3]. The last four are incurable although the symptoms decline through treatment.

STIs are prevalent in both high and low-income countries and remain a public health concern worldwide. The World Health Organization (WHO) estimates that globally, 340 million cases of STIs

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occur annually and the infections rank among the top five diseases in developing countries [2]. The Centre for Disease Control (CDC) has estimated that there are about 110 million cases of sexually transmitted infections in the United States[4].

In Botswana, STIs are of great concern as they are on the rise[5]. The findings of the Botswana Aids Impact Survey were reiterated by Gaborone City Council officials who are concerned about the growing number of sexually transmitted diseases in the city, despite the high numbers of condoms distributed[6]. Clinics distributed 407,879 condoms between July and September of 2016, with 183,213 of the condoms dispensed through health promotion campaigns[6]. In Gaborone, STIs increased from 24 272 in 2015 to 28 106 in 2016 (an increase of 16%), despite intense advocacy for behaviour change by stakeholders so as to reduce HIV and AIDs prevalence[7]. However, there is need to do more research on STIs in sub-Saharan Africa (SSA).

Previous research in Southern African Countries on STIs

There has been a dearth of research investigating the predisposing, enabling, and reinforcing factors contributing to contraction of other STIs other than HIV. This is because many studies have looked into HIV alone[8,9], despite HIV infection being one infection among many. STIs and HIV infection are linked due to similar behaviors that put people at risk to infection[10]. A study by Faimau, et al.,[11] on students' knowledge of HIV/AIDS, attitudes towards sexual risk behavior, and perceived behavioral control among college students in Botswana was done. This study was only limited to HIV/AIDS knowledge among University of Botswana and Boitekanelo College students with the exclusion of other STIs. The other study done by Nkwe[12] was on factors influencing STIs/HIV risk among Higher Education Institution students. Nkwe's study revealed that knowledge on some STIs apart from HIV was lacking.

Another study by Keetile and Letamo[8] established the influence of beliefs and attitudes about antiretroviral treatment on inconsistent condom use in Botswana. They found positive associations between the belief that ARVs cure AIDS and inconsistent condom use. There are several reasons people do not use condoms consistently, for instance, attitudes and beliefs, lack of knowledge, societal and community beliefs. Gender and age were also found to have an impact on condom use. Inconsistent condom use was mostly associated with females. Additionally, 48 % of the participants aged 45-49 years did not use condoms consistently, compared to only 11% of teenagers[8]. Inconsistent condom use increases the prevalence of STIs.

Females, particularly youths from impoverished backgrounds are typically more exposed to contracting STIs as a result of choice disability[13]. The females are mostly poor and uneducated, which forces them to have transactional sexual relations with individuals who in most cases prevent condom use. In addition, besides unequal power dynamics; culture, norms and values also play a significant role in putting females at higher risk of contracting STIs. Culture justifies and accepts multiple concurrent partners by males although it is unacceptable for women. For instance, in Swaziland, King Mswati can marry as many virgins as he wants.

Additionally, in-depth interviews of 28 people (14 males and 14 females) in Swaziland by Ruark et al.,[14] revealed that concurrency was normative, with most people having had at least one concurrent sexual partner, and all women reporting having had at least one partner who had a concurrent partner. This was found to be a result of social pressure and norms; a lack of social trust; poverty and a desire for material goods; and geographical separation of partners. The foregoing scenario is common in the whole of sub-Saharan African countries, particularly Botswana were the prevalence of STIs keep increasing. This proves that people do not perceive the spread of STIs seriously.

Despite reports on STIs increasing, no study was done to determine the predisposing, enabling, and reinforcing factors among individuals. Previous

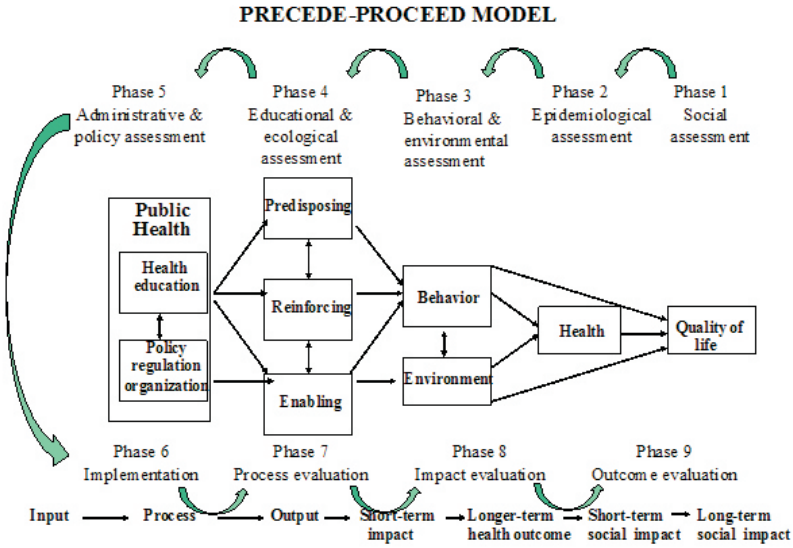
studies[15,16] on sub-Saharan African migrant workers on factors that reinforce failure to disclose one's HIV status found that people living with HIV and AIDS, in addition to dealing with challenges of living with an incurable disease, faced disclosure dilemma on how to divulge to their partners, families, and friends. The same applies to other STIs because of the internal and external stigma, and taboo attached to these types of diseases. Disclosure of STIs positive status to partners, friends, and relatives is a public health intervention strategy to reduce STIs and improve treatment and health care[17,18]. To establish the risk factors associated with STIs, The Precede–Proceed model (Green and Kreuter, 1999) was used. The theoretical framework explains the determinants of behavior: predisposing, enabling and reinforcing factors contributing to the upsurge of sexually transmitted infections. The Precede-Proceed Model will be explained next.

The Theoretical Framework (The Precede-Proceed model)

The Precede-Proceed model of behavior determinants provided the framework for the study. Condom use preventive health behavior can be explained as a function of the collective influence of several factors as behavior is a multifaceted phenomenon[19,20]. The model categorizes factors into three broad categories, namely predisposing, enabling and reinforcing factors (see Figure 1).

Predisposing factors (e.g., knowledge, attitudes, beliefs, skills, and self-efficacy) relate to the motivation of an individual or group to act[19]. The same authors posited that reinforcing factors (e.g., social support, peer influence, family influence) come after a behavior that provides continued reward or incentive for repetition of that behavior. In addition, enabling factors (e.g., program services and resources or development of new skills) were said to come before behavioral or environmental changes that allow a motivation or environmental policy to be realized[19]. All the three factors predispose a person to good health.

Figure 1: Precede–Proceed model of behavior determinants (adapted from Green and Kreuter, Health Promotion Planning, 3rd ed., 1999).



This paper therefore aims to establish the risk factors (predisposing, enabling, and reinforcing) that lead to the increase of the spread of STIs in the capital city of Botswana, Gaborone. The triggers leading to the increase of STIs, purportedly reported by the Ministry of Health & Wellness need to be examined. Additionally, the epidemiological answers that lead to the increase in prevalence of STIs should be given. It is vital to study how often STIs occur in the different groups of people and why. Epidemiological information will thus help the Botswana government to plan and evaluate strategies to prevent STIs. Further, the answers may guide health personnel to manage patients who have already developed the disease efficaciously.

Furthermore, identifying factors contributing to STIs can be viewed as important because it may enhance the self-efficacy of those at risk to adopt

positives sexual behaviours.. The results of the current research would also help indicate where sexually transmitted risk communication needs to be improved.

The research questions of interest were the following:

- What knowledge, attitudes and beliefs contribute to contraction of STIs?
- How do we determine service factors that negatively affect preventive health behaviors of using condoms?
- How do we determine rewards or punishments following and/or anticipated because of a sexual behavior?

METHOD

Study design

A matched case control study was conducted from February 2018 to April 2018 with the primary aim of identifying risk factors for the development of STIs in cases and controls reporting at two clinics in Gaborone. The design is advantageous in that it can evaluate confounding and interaction because case control studies are usually more equally balanced. Additionally, case control studies are usually retrospective, suggesting that investigators look at previous data and therefore investigate whether the STIs can be associated with suspected risk factors so as to prevent further occurrence of the diseases[21].

Study setting and population

The study participants were men and women aged 18 – 60 years attending clinics 1 and 2 for routine healthcare and STIs treatment. The matched case control study included both men and women who were sexually active and of reproductive age. The two health care facilities were selected because they are the only HIV/AIDS and STIs sentinel sites in Gaborone.

Sample size

An assumption that the proportion exposed in the control group was 20% and an odds ratio of 2 at 95% confidence, and 80% power was made. A sample size of 80 cases and 160 controls was calculated and adjusted for 12 % non-response to obtain a sample size of 90 cases and 181 controls. The number interviewed were 80 cases and 181 controls, making a total of 271 participants.

Sampling strategy

Both Cases and Controls were a clinic based population and were sampled in each site using systematic random sampling as the participants were arriving at the health care facilities. Controls were the first two patients who met matching criteria and who reported to the same health facility after an eligible case. The participants were selected from each site until the calculated sample size was achieved per site.

Data collection procedures

A structured standardized questionnaire was administered by a trained research assistant to obtain detailed information on potential risk factors for STIs, including demographic characteristics, predisposing factors (e.g., knowledge and attitudes towards STIs), enabling factors (e.g., convenience and accessibility to condoms) and reinforcing factors (e.g., motivation to use condoms, regrets and satisfaction). Prior to questionnaire administration, participants who volunteered were given all the necessary information about the study, their potential contribution, the risks and benefits before they signed the informed consent forms. Identifiers were removed from the data to ensure anonymity and all data was kept confidential for it was accessible to the research team only. There were no incentives given to participants. Minimal risk was anticipated as most participants may have felt invasion of their privacy. The participants were however assured of privacy and confidentiality. Data were entered using SPSS version 25 and were stored in a pass-word protected computer to deny access to information to everyone else apart from the research team.

Permission to conduct the study was sought from the University Of Botswana Office Of Research and Development (ORD), the Ministry of Health and Wellness, and the Greater Gaborone District Health Management Team (DHMT).

Data and Statistical Analysis

Data were checked for possible errors and missing values prior to analysis. Descriptive statistics (frequencies, percentages and cross tabulation) and inferential statistics were used to describe the data and measure associations between variables. Logistic regression was used to obtain odds ratios (AOR) and 95% confidence intervals (CI) for selected risk factors associated with STIs. A p value of less than 0.05 was considered as significant in this study.

RESULTS

A total of 243 (90%) participants out of 271 from clinic 1 and 2 health facilities participated in the study. The mean ages (28 years) for enrolled participants with an age range of 18-60 years suggest younger people (23-37 years) have a higher prevalence of STIs. There were 86 (35%) males and 157 (65%) females. Ninety (37%) were the cases and 153 (63%) were the controls. Characteristics of all study participants are presented in detail in Table 1.

Table 1: Demographic information of participants

Characteristics	Males						Females	
	Cases		Controls		Cases		Controls	
	n=32 % (35.6)		n=54 % (35.3)		n=58 % (64.4)		n=99 % (64.7)	
Age	Frequency	%	Frequency	%	Frequency	%	Frequency	Proportion
18-22	1	3.1	14	25.9	5	8.6	24	24.2
23-27	8	25.0	17	31.5	26	44.8	39	39.4
28-32	10	31.3	15	27.8	10	17.2	21	21.2
33-37	9	28.1	3	5.6	9	15.5	5	5.1
38-42	3	9.4	2	3.7	6	10.3	10	10.1
43-47	1	3.1	2	3.7	11	1.7	-	-
48+	0	-	1	1.9	1	1.7	-	-
Employment Status								
Full time employment	13	40.6	20	37.0	27	46.6	31	31.3
Self-employed	15	46.9	6	11.1	7	12.1	15	15.2
Part-time employed	3	9.4	9	16.7	8	13.8	15	15.2
Students	1	3.1	13	24.1	8	13.8	21	21.2
unemployed	-	-	6	11.1	8	13.8	17	17.2

Most male and female cases were in the age group 28-32 years and 23-27 years. Most of the male cases were self-employed as compared to female cases who had full-time employment.

Predisposing factors

Table 2 shows that commonly known STIs among both cases and controls were syphilis and Gonorrhea. The least known was Human Papilomavirus (HPV). Females who believed that condom reduces the quality of sex were 4.2 times more likely to contract STIs compared to their female counterparts [AOR= 4.15, 95% CI: 1.71-10.08)]. There was a significant relationship between females who were parents and contracting STIs [AOR=2.36, 95% CI: 1.18-4.71). Males who knew that condom use protect against STIs had 65% less probability of contracting STIs compared to males who lacked the knowledge [AOR=0.35, 95% CI: 0.37-0.91)]. Similarly, males who were of Pentecostal religion had 72% less probability of contracting STIs as compared to males who were not. Belonging to Pentecostal religion was also a protective factor among females as compared to females of other faiths [AOR=0.28 (95% CI 0.11-0.68) (see Table 2).

Table 2: Predisposing factors leading to sharp increase in the contraction of STIs

Variable		Males			Females		
		Cases	Controls	AOR	Cases	Controls	AOR
		n=32	n=54	(95% CI)	n=58	n=99	(95% CI)
Do you know;							
i.Syphilis	Yes	31	45	6.2 (.75-51.45)	53	88	1.33 (.44-4.02)
	NO	1	9	1.0	5	11	1.0
ii.Gonorrhea	Yes	29	43	2.47 (.63-9.64)	49	85	0.90 (.36-2.22)
	No	3	11	1.0	9	14	1.0
iii.Herpes	Yes	12	27	0.60 (.24-1.47)	26	55	0.65 (.34-1.27)
	No	20	27	1.0	32	44	1.0
iv. HPV	Yes	9	18	0.78 (.43-2.35)	21	37	0.95 (.49-1.86)
	No	23	36	1.0	37	62	1.0
v. chlamydia	Yes	14	24	0.97 (.43-2.35)	27	43	1.11 (.58-2.04)
	No	18	30	1.0	31	55	1.0
HPV leads to cervical cancer	Yes	9	12	1.37 (.50-3.73)	21	36	0.99 (.51-1.95)
	No	23	42	1.0	37	63	1.0
STIs can be symptom free	Yes	7	24	1.62 (0.37-1.91)	25	42	1.03 (.53-1.98)
	No	25	30	1.0	33	57	1.0
Condoms can protect against contraction of STIs	Yes	32	52	0.35 (0.13-0.97)	55	94	0.98 (0.22-4.24)
	No	0	2	1.0	3	5	1.0
STIs may cause PID	Yes	8	23	0.45 (.17-1.18)	27	55	0.70 (.36-1.34)
	No	24	31	1.0	31	44	1.0
Are you a parent	Yes	25	24	1.48 (.41-5.31)	41	50	2.36 (1.18-4.71)
	No	7	30	1.0	17	49	1.0
I talk about STI with my children	Yes	5	4	1.37 (.26-3.60)	17	19	1.70 (0.82-3.71)
	No	27	48	1.0	41	80	1.0
Embarrassed to talk about STIs to anyone else	Yes	8	11	1.30 (.46-3.68)	13	14	1.75 (.76-4.05)
	No	24	43	1.0	45	85	1.0
Hold value in sex before marriage	Yes	9	18	0.78 (.30-6.18)	22	43	0.80 (0.41-1.54)
	No	23	36	1.0	36	56	1.0
Value early child bearing	Yes	25	33	2.27(.84-6.18)	34	56	2.27 (.84-6.18)
	No	7	21	1.0	24	43	1.0

Age had an impact on sexual engagement. People were involved in sexual intercourse as young as 15 years old. Participants' sexual activity was highest at 18 and 21 year olds, with a frequency of 41(16.9%).

Additionally, the type of condom preference varied. One hundred and twenty two (50.2%) participants preferred flavored condoms bought from shops to free condoms issued in clinics and hospitals.

Enabling factors

Health posts opening at convenient hours (24hrs) is a protective factor from contracting STIs among males as they may collect condoms from the clinic at any convenient time reducing having unprotected sex (see Table 3), [AOR= 0.27, 95% CI: 0.11-0.67). Travelling for a long distance to get condoms is a risk factor of contracting STIs among males as they may have unprotected sex in the heat of the moment. Travelling long distances to collect condoms may also be burdensome depending on perceived susceptibility, severity, benefits, and self-efficacy. The males who have to travel long distances to get condoms are 3.46 times more likely to contract STIs compared to those who do not need to travel long distances [AOR= 3.46, 95% CI: 1.37-8.73]. Females who had regular sex partners were 4.2 times more likely to have STIs compared to females who did not have regular sex partners [AOR= 4.18, 95% CI: 1.51-11.55].

Table 3: Enabling factors for contracting STI among cases and controls by gender

Variable		Males			Females		
		Cases	Controls	AOR	Cases	Controls	AOR
		n=32	n=54	(95% CI)	n=58	n=99	(95% CI)
Condoms always available	Yes	19	41	0.46 (.18-1.19)	38	76	0.58 (.28-1.18)
	No	13	13	1.0	20	23	1.0
Health post open at convenient hours	Yes	14	40	0.27 (0.11-.67)	38	67	0.91 (.46-1.80)
	No	18	14	1.0	20	32	1.0
Travel a long distance to get condoms from the clinic	Yes	22	21	3.46 (1.37- 8.73)	24	27	1.88 (.95-3.73)
	No	10	33	1.0	34	72	1.0
Have regular sex partner	Yes	25	37	1.64 (.59-4.53)	53	71	4.18 (1.51-11.55)
	No	7	17	1.0	5	28	1.0
Use condoms at first intercourse	Yes	27	51	0.38 (.07-1.43)	52	90	0.87 (0.29-2.57)
	No	5	3	1.0	6	9	1.0
Able to resist unwanted sex	Yes	6	32	0.16 (.06-.45)	46	77	1.10 (0.50-2.42)
	No	26	22	1.0	12	22	1.0
Relation with last sex partner was spouse, boyfriend/girlfriend	Yes	22	36	1.10 (0.43-2.81)	43	58	2.03 (1.00-4.13)
	No	10	18	1.0	15	41	1.0
Laws and policies may promote STI contraction	Yes	24	31	2.54 (.94-6.91)	34	53	1.23 (0.64-2.37)
	No	7	23	1.0	24	46	1.0

Reinforcing factors

Females who have unprotected sex are 2.4 times more likely to have regrets after having unprotected sex as compared to those who use protection during intercourse [AOR= 2.40, 95% CI: 1.08-2.27] (see Table 4).

Table 4: Reinforcing factors contributing to the contraction of STIs among cases and controls by gender.

Variable	Males				Females		
	Cases		Controls	AOR (95% CI)	Cases	Controls	AOR (95% CI)
	n=32		n=54		n=58	n=99	
Have regrets after having unprotected sex?	Yes	19	33	0.93 (0.38-2.27)	48	66	2.40 (1.08-2.27)
	No	13	21	1.0	10	33	1.0
Give/receive payments for sex	Yes	1	2	0.84 (0.07-9.64)	3	4	1.30 (0.28-6.00)
	NO	31	52	1.0	55	95	1.0

There were different reasons for using protection during sexual intercourse. Participants (52; 21.4%) use condoms to protect against HIV contraction as compared to 14 (5.8%) who use them for protection against STIs in general. Referent others responded differently to STI diagnosis. There was approximately a 50% chance that referent others can be tolerant or angry when someone is diagnosed as having STIs.

DISCUSSION

Most of the participants in the study were females and the age group frequently visiting health facilities for medical assistance was 23-27 years old. In the current study, younger females contracted STIs at a younger age than males. This finding was inconsistent with Garg, et al.,[22], who found that the history of younger males in the age group of 15-29 years who contracted an STI was significantly higher compared to the corresponding age group of males. Additionally, men are more likely to have suffered from STIs than women[23]. The finding was in contrast to current findings where females had a larger proportion of 64.7% cases as compared to males with 35.3% (see table 1).

Predisposing factors

Knowledge of STIs was high in the study population although it was not sufficient to enable safe behaviors. Prevention of STIs through condom use was a well-known protective measure in practice, however, reported condom use was low as most participants felt that condom use reduces the quality of sex (low perceived benefit) thus reflecting a discrepancy in knowledge and practice. The current study finding is inconsistent with that by Chadambuka, et al.,[2] who highlighted a relationship between knowledge and behaviour. The aforementioned authors also linked behaviour to perceptions that people have around the subject of STIs.

In the current study, both male and female cases and controls had significant differences in attitudes. Female case patients had negative attitudes towards condom use. This is evidenced by significantly higher STI risk among those who agreed with the statement "condom use reduces the quality of sex". In comparison with literature, a research done by Chadambuka, et al.,[2] showed that in addition to the foregoing perception, condom use also signified a lack of trust of the other partner and "people in a steady relationship do not have to use condoms".

Nonetheless, even though the statements were used for this study, their association was non-significant.

The figures on HPV give us a sense of disquietude because its prevalence is much higher than the most talked about HIV, whereas HPV is the number one cause of cervical-cancer; not just in America but in the rest of the world, Botswana included[24,25]. In addition, belonging to Pentecostal religion was found to be significantly protective against STI among males and females. The findings are similar to those of Chadambuka, et al.,[2]. These religions condemn adultery and fornication, and premarital sex. The need for conformity to their principles and religious beliefs, and the norms of their organizations afford members protection as they are less likely to engage in unsanctioned sexual activities. Chadambuka, et al.,[2] assumed that the protective effect of religiosity could be mentioned less due to cases being less likely to report belonging to pentecostal religion once diagnosed with STI as this may be embarrassing. There were no members of the Apostolic Religion in the current study as they are less likely to seek health care and are prohibited from seeking treatment in their teachings.

Generally, having positive attitudes towards condomless sex has led to a few of the exposed population to contract STIs. A higher proportion of controls for both genders evidences this. This evidence shows the effectiveness of STI preventative measures that are currently put in place nationally by different organizations through different programs.

In addition, the study showed that people engage in sexual activity at a much younger age. The majority of research participants had sex at the age of 18 and 21 years. This means that people between 18-21 years were at a higher risk of contracting STIs especially females because the cervix of adolescents' females is covered with cells that are especially prone to STIs attack, and such STIs include Chlamydia[26].

Flavored condoms bought from shops were the most preferred and this finding answered the council principal economist's question 'why is there an inconsistency between the growing numbers of STIs with the number of condoms that were distributed?' [6]. Condom users do not like the type of condom that is distributed as they prefer the flavored condoms, leading to an upsurge in STIs.

Enabling factors

Enabling factors as explained in the Precede–Proceed model include factors involving accessibility and availability of resources. The current study found that there is an association between travelling a long distance to get condoms from the clinics and STI contraction. This may promote a sharp increase of contraction of STIs when individuals' access to condoms is hindered. Individuals may feel knackered to travel to the clinic and instead get involved in unprotected sexual intercourse. This finding was inconsistent with that by Kange'the[27], who found that STIs, particularly HIV and AIDS, increase because of choice disability. Choice disability is caused by determinants of health (e.g., poverty) as females may indulge in unprotected sex because they get more benefits or money, for instance, prostitutes. They do not have a choice to refuse condom use because they are into prostitution to eke a living. It may also be a cultural issue, whereby women do not have the liberty to deny their partners conjugal rights even if the partners do not want to use condoms.

Similar to Chadambuka, et al.,[2] and Ruark et al, [28] having a regular sex partner and having one's last sex partner as spouse was protective because individuals seek gratification from their spouses; and for those in steady relationships, the likelihood of acquiring an STI becomes minimal. Nonetheless, the association from the current study was significant among females and not among males. In addition, similar to Ruark et al.,[28] and Chadambuka et al.,[2] male partners in the current study were more likely to have had unprotected sex outside marriage or committed relationships therefore putting them at high risk to contracting STIs, thereby infecting their partners.

The current study also found that 27.9% of the men, as compared to 21% of the women reported having last sex with a non-regular partner. The current findings are similar to Ruark et al.,[28] findings,

although almost all male participants in the Swazi study had sex with another non-regular partner and husbands of all female participants had multiple concurrent partners, suggesting why there is an increase in the spread of STIs in most Southern African countries. The foregoing studies prove that men are more likely than women to have multiple concurrent partners and/or casual partners.

Reinforcing factors

Many people reported to have regrets after having unprotected sex. In addition, an insignificant number of people tend to give/receive payment for sex which shows a positive sexual behavioral response. This finding is similar to findings on choice disability[13], which reinforces women to continue with risk behavior (e.g., transactional sex) because they need to make a living.

The current study found that participants (52; 21.4%) use condoms to protect against HIV contraction as compared to 14 (5.8%) who use them for protection against STIs in general. This is because of lack of knowledge on the deleterious consequences of contracting other STIs other than HIV. The lack of knowledge poses risks to sexual partners who test HIV negative because they find no reason to further use condoms for protection. Stakeholders should include prevention of all STIs in their HIV campaigns. It should therefore be noted that not being diagnosed with HIV is not a guarantee that one cannot contract any other STI. People's perception in this regard should be changed through awareness on the importance of condom use.

Almost equal proportion of people may respond differently upon being notified of an STI contraction by a close relative. How people in one inner circle respond to disclosure of health status may hinder openness about being infected by an STI and as a result an individual may end up infecting their partners. For instance in studies on disclosure of one's HIV status[16,29] it was found that fear of disclosure leads to non-disclosure which prevents those infected with the virus from seeking the necessary medical treatment as well as psychological help. Fear of disclosure also leads to an increase in STI prevalence as treatment adherence becomes difficult without partner finding out that their significant other is on medication.

Stigma is another determinant that leads to failure to disclose one's STI positive status[30]. A previous researcher revealed that 11.2% of the men and 5.8% of women decided not to attend any social gathering while 17.1% of men and 16.3% of women decided not to visit a hospital even when they were required to seek treatment[30]. Participants in Hasan's study feared stigma or were dealing with internal stigma. Thus, stigma should be dealt with to help with disclosure and reduce the spreading of STIs. It is also important to create a platform in relationships where both parties are free to disclose their status to each other, thereby reducing transmission of STI as preventative measures are taken into consideration.

CONCLUSION

Knowledge of STI alone was not sufficient in providing protection from STI contraction. The three determinants of behaviors (predisposing, enabling and reinforcing factors), must always be taken into consideration for any intervention. Knowledge as a predisposing factor alone was not sufficient to determine behavior because other negative enabling factors like long distance and unavailability of condoms hindered the use of condoms. Other significant risk factors were more related to people's attitudes towards sexual behaviors. Attitudes towards condom use need to be improved through education and dispelling of misconceptions. Consistent condom use and fidelity are important for both males and females to prevent the spread of STIs. Perfumed condoms must always be available in public places like resting rooms/toilets, tuck shops, and other vending places and vending machines to enable easy accessibility. Awareness on STIs should be raised among young populations even below 18 years since majority of the people become sexually active during teenage years.

Take home message

Health behavior is multifaceted. People might be knowledgeable on the correct action but knowledge alone although necessary, may not be sufficient to

cause behavioral change. Any change to behavior can be explained as a function of the collective influence of predisposing, enabling and reinforcing factors.

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Authors contributions

All authors contributed towards writing this article. RT had the initial idea for the paper. All the authors (RT, DA, MMM, LB, TT, EP, BM) discussed the data and insights of the paper. All authors edited the manuscript and approved the final version.

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Ethical Approval

The study was approved by the Ethical and Research Committee of the University Of Botswana Office Of Research and Development (ORD), the Ministry of Health and Wellness of Botswana, and the Greater Gaborone District Health Management Team (DHMT).

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