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Pitout JDD, Church DL, Gregson DB, Chow BL, McCracken M, Mulvey M, Laupland KB (2007). Molecular epidemiology of CTXM-producing *Escherichia coli* in the Calgary Health Region: emergence of CTX-M-15-producing isolates. *Antimicrob. Agents Chemother.* 51: 1281-1286.

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Full Length Research Paper

Assessing factors influencing university students to uptake voluntary counselling and testing (VCT) of human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS)

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This research sought to establish factors that influence students at a university in Tanzania to go for voluntary counselling and testing (VCT) of human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS). The study adopted a case study design done under an interpretivist paradigm and employed a qualitative research approach. Sixty seven respondents were selected by using purposive and snowball samplings. Primary data was obtained from semi-structured interviews and focus group discussions. Secondary data was obtained from documentary reviews of reports at the university in which the study was carried out. Data was analysed by using content analysis. It was found that university students recommended VCT services to other people but would not go themselves because of fear of the consequences of HIV positive results such as stigmatization, isolation and stress. Students also do not go for VCT because they are unsure about confidentiality issues, and they have a misunderstanding of benefits of HIV testing and peer pressure. Few students went for VCT as they were influenced by factors such as marriage, the need to know their statuses, encouragement from different organisations and the great role that is played by peer educators. The study concluded that until an effective treatment for HIV/AIDS is discovered and availed to the affected individuals and communities, VCT remains the major strategy for the reduction of the disease. University students' attitudes towards VCT play an indispensable role towards the attainment of the services. The study recommends that sensitization about HIV/AIDS VCT be increased so that students may be able to break the bond of terror and go for HIV testing in order to access life prolonging drugs earlier if they are HIV positive. More HIV/AIDS programmes such as seminars which are related to VCT should be frequently done in universities.

Key words: Human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS), voluntary counselling and testing, university students.

INTRODUCTION

Human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS) has become a global disease, spreading rapidly since the first cases were identified in the 1970s. The global summary of the AIDS

epidemic as of December, 2007 states that the number of people living with HIV in 2007 was 33.2 million, the number of people newly infected with HIV in 2007 was 2.5 million and the number of AIDS deaths

in 2007 was 2.1 million people (United Nations AIDS (UNAIDS) and World Health Organization (WHO), 2007). Tanzania mainland has a generalized HIV prevalence, and the primary mechanism for HIV transmission in the country is unprotected heterosexual intercourse, which constitutes about 80% of all new infections (Tanzania Commission for AIDS (TACAIDS), 2008). By early 2008, it was estimated that 1.3 million people, including adults and children in Tanzania mainland were living with HIV, and 10% were children (below 18 years) (United Republic of Tanzania, 2010). Tanzania is currently implementing a national HIV testing campaign that was inaugurated by His Excellency, President Jakaya Mrisho Kikwete on 14 July, 2007. The inauguration was followed by campaigns all over the country to open new testing sites and to encourage people, using the media and posters, to go for voluntary counselling and testing (VCT) (TACAIDS, 2008).

Tanzania responded to the widespread incidence of HIV/AIDS by establishing VCT centres all over the country including in universities. The HIV incidence slowed in the United Republic of Tanzania to about 3.4 per 1000 person in the years between 2004 and 2008. This development was attributed to an increase in testing rates which in 12 months grew from a baseline of 4.9% from 2003 to 2004 to 29.5% in 2010 among women, and from 7.3 to 25.0% among men (World Health Organization (WHO), United Nations AIDS (UNAIDS) and United Nations International Children Education Fund (UNICEF), 2011). According to the UNAIDS (2011), VCT refers to a process that is initiated by the individual(s) who wants to learn his or her status. It differs from provider-initiated testing and counselling because HIV testing should always be confidential, accompanied by counselling, and conducted only with informed consent (a principle that UNAIDS refers to as 'the three Cs').

Counselling is mandatory prior to testing and after testing. Counselling is an interpersonal, dynamic communication process between a client and a trained counsellor who is bound by a code of ethics and practice to resolve personal, social or psychological problems and difficulties. Counselling requires empathy, genuineness, absence of any moral or personal judgment and the respect necessary to assist the client to explore, discover and clarify ways of dealing with a concern (UNAIDS, 2011).

The main objectives of HIV-related counselling is to prevent the risk of exposure for those who are not infected; to minimize the risk of re-exposure for those who are HIV infected; and to provide psychological support to both the HIV infected and those affected by HIV/AIDS (Ministry of Health, 2003). According to the UNAIDS (1997), voluntary testing is beneficial to the people and it should be provided in a non-stigmatizing environment. The services should include pre-testing, informed consent

and post-testing. The UNAIDS and WHO (2007) reported that potential benefits of HIV/AIDS testing and counselling for an individual include improved health status through good nutritional advice and early access to care and treatment for HIV-related illness; emotional support; better ability to cope with HIV-related anxiety; and awareness of safer options for reproduction and blood donation.

Pregnant women who use VCT services can learn early about their sero-positive status benefit in terms of preventing HIV transmission to their newborn babies through the use of anti-HIV drugs, safer breastfeeding practices, replacement feeding or early weaning for babies after birth (UNAIDS, 2000).

Despite all the perceived benefits of HIV testing, only 15% of Tanzanian adults were reported to have ever undertaken an HIV test (Tanzania Commission for AIDS, 2004). The youth, mainly at risk of contracting the virus, were reported by some investigators to be professing ignorance and reluctance to go for VCT in various centres located in the country. Maliyamkono and Manson (2006) assert that it is estimated that less than 5% of the population of Tanzania has accessed VCT services, largely due to the associated stigma and high cost. Njau et al. (2012) argued that fears of negative consequences from knowing one's HIV status, including stigma, blame, physical abuse or divorce, remained a concern and a potential barrier to the successful utilization of VCT centres in Tanzania.

As a way of influencing people to obtain VCT services, the United Republic of Tanzania improved quality of life and well-being by ensuring all people, more particularly the poor and vulnerable, had access to essential services including HIV and AIDS prevention and treatment and social protection programmes (United Republic of Tanzania, 2010). Kisesa et al. (2002) contend that the utilization of VCT services in Tanzania had been low, with client volume ranging from 35 to 155 clients per site every year. African Medical and Research Foundation (AMREF) (2002) found that the reasons given by prospective clients for not accessing VCT services included fear of positive results, not perceiving the benefits of having an HIV test, perceiving VCT services as not being customer friendly, a lack of confidentiality of the service providers and poor quality of services offered. The Ministry of Health and Child Welfare (2008) in Zimbabwe explicitly revealed that there is massive under-utilization of VCT centres scattered all over the country. The common reasons which were cited by centres had to do with stigma and discrimination, fear of testing positive and a negative attitude towards the offer of services. In some countries, VCT centres are under-utilized because they offer inadequate services which do not meet client needs (UNAIDS, 2001).

Many studies about VCT have been conducted in

Tanzania; however, none of these studies seems to have been done about factors influencing university students to uptake HIV/AIDS VCT. The lack of knowledge in this area is the problem which this study addresses. University students have been targeted because the majority of them have negative attitudes towards HIV testing, and those who are training to become teachers will have the responsibility of teaching children about VCT.

The conceptual framework underlying this study was based on the ideas of Kosslyn and Rosenberg (2001) who argued that attitudes towards VCT can be positive, negative or ambivalent. What influences a person to go or not to go for VCT is whether the attitude is positive, negative or neutral. People with a positive attitude towards VCT comprehend the benefits of knowing their status. Their behavior causes them to have strong beliefs that VCT is essential and is the principle preventative criterion which enables people to prolong their lives. As a result of that positive attitude, they are influenced to go for HIV testing. People with negative attitudes towards VCT have a misconception of the benefits of the services. They are afraid of knowing their HIV test results and they think that knowing their status simply means knowing how soon they are going to die. They do not want to go for VCT because they think that when they find out that they are infected, they will suffer from psychological torture that will result from stigmatization. Such negative attitudes causes a behaviour of strong belief against the provision of VCT services, and the end result will be shunning the services. An ambivalent attitude sees people understanding the benefits and shortcomings of VCT. They believe that VCT is beneficial and at the same time scary. Their actions, therefore remain ambivalent and results in not knowing whether they should be tested or not.

MATERIALS AND METHODS

The study employed a qualitative approach and its paradigmatic position is interpretivism. According to Lapan et al. (2012), all qualitative research has an interpretive perspective which focuses on uncovering participants' views. The interpretive paradigm was preferred because it could allow respondents to explain their views about HIV/AIDS VCT. Schultz and Hatch (1996) contend that the interpretive paradigm seeks to understand and explain meaningful social actions and it creates opportunities for the researcher to comprehend meanings of the phenomenon. A qualitative research approach was used mainly because it could allow the researcher to collect data by interacting extensively and closely with participants during the study.

Leedy and Ormrod (2001) said that qualitative research enables a researcher to interact with respondents in order to gain insight into the nature of a particular phenomenon; the research design that was used is a case study of Fox University (pseudonym). The sample of this study comprised three groups of people: (i) The HIV/AIDS VCT counsellors, (ii) peer educators and (iii) undergraduate students in the Faculty of Education [Bachelor of Arts with Education (BA Ed) and Bachelor of Science with

Education (BSc Ed)]. The 'sample size' was as follows: Three HIV/AIDS VCT counsellors; four peer educators and 60 Faculty of Education undergraduate students (30 BA Ed and 30 BSc Ed). This makes the total of 67 respondents. Purposive sampling, which is characterized by deliberate targeting of respondents, was used to select the university, HIV/AIDS counsellor, peer educators and undergraduate students.

Fraenkel and Wallen (2000) argued that in almost all qualitative researches, purposive sampling is adopted, in which researchers use their judgment to select a sample that they believe, based on prior information, to provide the data they need. Only Bachelor of Education undergraduate students were selected purposively because they comprise the largest population at Fox University and they are prospective teachers who will be teaching children about HIV testing in their life skills classes. Four prominent peer educators who deal with HIV/AIDS-related issues were selected by using snowball sampling. Snowball sampling was ideal to use as the researcher did not know the four peer educators who exclusively dealt with HIV/AIDS and VCT at the university. Thus, the dean of students directed the researcher to a student who was the head of peer educators. The head of peer educators recruited another three peer educators who dealt with HIV/AIDS matters at Fox University. Data was collected by using interviews (with VCT counsellors and peer educators), focus group discussions (FGDs) (with students) and documentary review (surveillance reports). There were six FGDs in total. Each FGD had ten students. According to Greenbaum (1993), a FGD consists of approximately six to twelve people in each group.

Validity and reliability of the study were enhanced by trustworthiness and triangulation of data collecting instruments. Both face and catalytic validity were employed to further ensure maximum validity. Data was analysed by using content analysis. Interviews and FGDs were recorded on an audio tape. Data was organised, transcribed and analysed. The researcher read the data thoroughly, divided it into segments of information and labeled each segment with codes. The researcher searched for patterns in coded data to categorize them, and information overlapping as redundancies was removed from codes. Lastly, codes were collapsed into themes and each theme was discussed in detail. Ethical clearance was obtained from the university prior to commencement of the study. All participants were informed that their involvement was voluntary. They were free to withdraw at any point of the study. Pseudonyms were used, participants' confidentiality was maintained and they all signed consent forms.

RESULTS

Students' reasons for going for VCT

The HIV/AIDS counselor pointed out that some students may be driven towards VCT because they would be eager to know whether they are HIV positive or negative. The rationale behind that would be to know whether they should take life-prolonging drugs or not. Students from the FGDs raised a lot of ideas relating to wanting to know their status as the reason for VCT. They brought out the aspect of relationships, suggesting that some of them might want to know their status after having a relationship with an unfaithful partner. One student from FGD 1 said:

'I went for VCT because a condom burst during sexual

intercourse with my boyfriend whom I suspected to be having a secret relationship with somebody else'.

All students in FGDs reported that people are influenced to go for VCT after risky sexual intercourse. Some might wish to know their status after suspecting an activity they were involved in could cause them to contract HIV. For example, one might want to know his/her status after being pierced by a sharp object that might have cut someone else or because of an accident in which other people's blood splashed over their wounds. One student from a FGD said:

'I am scared to go for HIV testing because friends and relatives will discriminate against me. However, I will have no choice but to go for HIV testing when I fall victim to sexual abuse, when someone's blood comes into contact with my body or when a sharp object pierces me.'

All FGDs brought up the idea that some of their fellow students might be influenced to go for VCT because of health problems. They may suffer from some unknown diseases and decide to go for VCT to find out whether they are infected with HIV or not. Students reported that they will be influenced to go for VCT when the time comes. In this case, the "time comes" when one experiences health problems in which he/she will go to find out about their status. Some students highlighted that in spite of the fact that they might be ill, they will still remain steadfast against VCT. They think that if they go for VCT to find out about their status, their health conditions might deteriorate if they learn that they are infected with HIV/AIDS. One student said:

'I am afraid of going for HIV testing because if I find out that I am infected, I will be affected more.'

Members of all FGDs and all interviewed people indicated that in Tanzania, some religious leaders encouraged couples to go for HIV testing before they got married. Thus, 'marriage' is one of the factors that influenced Fox University students to go for VCT. Some people may decide to go for VCT before or shortly after their marriage, especially in the case of women. One student from a FGD said:

'I will go for VCT when I am pregnant. This will enable me to give birth to an uninfected baby. It is through VCT that Mother to Child Transmission (MTCT) can be prevented by not breastfeeding.'

Going for HIV testing for marriage purposes and because of pregnancy was reiterated by all groups as advantageous because when people got tested, it was a sign of care for the future. This will mitigate the rampant spreading

of HIV and help people plan for the future, according to their HIV test results. One student said:

'I will not have a choice but to go for HIV testing when I am pregnant so that I may not infect the baby if I am HIV positive.'

Two peer educators and all FGDs were unanimous in echoing the sentiments of different organisations in encouraging people to go for VCT. A notable example that was reiterated by all groups and seems to be famous in Tanzania is the Kiswahili quotation from the President of the United Republic of Tanzania, Honourable J. Kikwete: *Tanzania bila ukimwi inawezekana* (Tanzania without HIV/AIDS is possible). The president's words have been acknowledged by the respondents as a great factor which influences people towards attaining VCT. Some government and non-government organisations which give assistance to people suffering from HIV/AIDS have also been taken as sources that influence university students and many other people to go for VCT. One peer educator specifically mentioned the African Medical and Research Foundation (AMREF), Tanzania Commission for AIDS (TACAIDS) and UNICEF as notable organisations which give assistance to HIV positive people. The assistance could be in the form of food, medication or payment of school fees for dependent children. Such help is obtainable by people who know their status through VCT. Thus, respondents made a point that the influence of organisations through advertisements and by offering to help infected people greatly influenced university students to go for VCT. One Student said:

'Universities and colleges should offer some grants and loans to students in order to encourage them to go for VCT.'

This view was supported by all students as a noble point that may be used to encourage them to utilize VCT centres. The role played by peer educators at the university has been recognized as a significant factor that influences students to go for VCT. HIV counselors reported that peer educators play a vital role in making students uptake VCT at Fox University. Peer educators at the university strived to promulgate HIV testing and encourage students to go for counselling so that they could live and be able to plan for the future. Some students from FGDs said that they knew of the availability of VCT services at the university campus because of peer educators. A student from FGD said:

'The work of peer educators is very significant because some students find it easy to seek counselling, advice and strength to go for VCT from their fellow college mates and peer educators rather than to go to professional

counselors who they hardly know and trust.'

One anonymous peer educator interviewed said that:
'The more the number of peer educators, the more information about HIV/VCT is broadcast, and the more the numbers of students who uptake VCT.'

Accessibility, affordability, reliability and dependability are factors which were brought up by the participants from FGDs. Students had different views in regards to accessibility of VCT centres. Some argued that nearness of VCT centres make it easier for students to uptake the services at their convenience. Others claimed that if a VCT centre was located near the university; few students would go because they would not want people who know them to see them visiting the facility. One unidentified student from a FGD said:

'If the VCT centre is located very near, like on campus as it is at Fox University, few students from that institution will go for testing because nobody likes his/her class mates to know that he/she has gone for VCT otherwise people seeing you going for VCT will jump to false judgments.'

Students agreed that VCT centres must be scattered all over the country so that they could have a wider choice of centres to go to. One HIV counsellor at the university reported that there were very few students who went for services at the centre on campus. The VCT centre's surveillance report showed that there were very few students who used the facility on campus and centres around. One HIV counsellor claimed that the majority of people who utilized the VCT centre at Fox University were people from outside the university especially pregnant women.

Students' reasons for not going for VCT

The greatest factor that was reiterated by all students which made them not want to go for VCT was fear. Students are afraid of the perceived consequences of HIV positive results, such as dying earlier, fear of losing everything that they worked for including their family and stigmatization. One student said:

"I cannot go for VCT because I am afraid of dying and losing my family."

Another student said:

"There is a lot of stigmatization which is associated with HIV testing. I am afraid of people knowing that I went for HIV testing, later on to be diagnosed HIV positive, they

will stigmatize me."

From all the FGDs, the major point that was raised was that it was not only the Fox University VCT centre that students were unwilling to go to, but that they just did not want to associate themselves with VCT as it brings about stigmatization. All three counselors reported that the VCT centre at the university campus was under-utilized because students were afraid of stigmatization associated with HIV testing. As a result of fear of stigmatization and unfavorable HIV testing results, students felt that living without knowing their status was better because they would not be worried about HIV/AIDS whenever they were ill. One student said:

"It is better not to go for VCT because if you are diagnosed positive, you will live a miserable life."

Students did not want to use VCT centres because they were not sure about confidentiality issues. They were worried that many counselors may disclose statuses of people who go for testing. One student from a group discussion said:

"I do not trust some of the HIV counselors in VCT centres. I am afraid that they may disclose my identity and status to people and everybody will ostracize me."

Some students showed lack of comprehensive knowledge about benefits of HIV testing. They showed a misunderstanding of benefits of VCT. They thought that once a person was contaminated with HIV/AIDS, there was no hope for living longer. Others thought that pregnant women who have the virus will definitely pass it to their unborn babies. Consequently, students thought that it was pointless to go for HIV testing because every person who is infected will die soon since there is no cure. One student said:

"I don't see the benefits of going for VCT because every infected person will die since HIV/AIDS is not curable. I don't believe that Anti-Retroviral drugs can prolong life of an infected person."

Another student said:

"I don't think it is possible for an HIV positive woman to give birth to a baby who is HIV negative."

Some students generally did not believe that VCT is one of the effective strategies of curbing the occurrence of AIDS. That is why they were not going for HIV testing. Some students were not going for VCT because of a misconception that only promiscuous people go for HIV testing. One student said:

"I have never cheated on my boyfriend and I don't think I am infected with HIV. Hence there is no need for me to go for VCT."

Another student said:

"VCT is used by people with many sexual partners."

Students thought that HIV/AIDS is only transmitted by sexual intercourse which is a misconception shared by some students. They linked VCT to sex and claimed that those who are faithful to their partners need no VCT. Some students stayed away from VCT because of peer pressure. One student said:

"My friends and I agreed not to go for VCT."

Students do not see potential benefits of knowing their status which is why they agree among themselves not to go for testing. The assumption here is since HIV/AIDS is incurable there is no point of knowing your status. One student said:

"If I go for testing and then a counsellor tells me that I am HIV positive, then what? I will never go there."

Some students stated they would like to go for HIV testing with their spouses. This issue was debatable among students. Some argued that going for VCT with your partner makes your relationship stronger because you will both know your status and what to do to live longer. Other students argued that going for VCT with your partner destroys marriages because if one is diagnosed with HIV/AIDS, the other one may reject him/her.

DISCUSSION

HIV/AIDS is creating a host of problems that threaten to overwhelm the very fabric and structure of educational organisation, management and provision as we have traditionally known it (Kelly, 2000). There is no cure for the disease and it is only through the use of preventative measures that it can be minimized. VCT is one of the principal criteria that can be used to ease the widespread incidence of HIV/AIDS. Despite the good things that come with VCT, people are quite skeptical about knowing their status. The study found that students did not go for VCT due to fear of testing positive with HIV/AIDS. AMREF (2002) postulates that the reasons given by prospective clients for not accessing VCT services included fear of positive results and not perceiving the benefits of having an HIV test when there is no treatment. Fear associated with self-diagnosis of HIV based on mere signs and symptoms presumably

related to HIV creates anxiety, which could be a hindrance to accessing HIV testing (Mugisha et al., 2011).

It also emerged from the study that students did not go for VCT because of stigma and discrimination associated with HIV positive people. Such a finding is consistent with the observation by the Zimbabwe Ministry of Health and Child Welfare (2008) that there is massive under-utilization of VCT centres scattered all over the country because of stigmatization and discrimination. People are afraid of stigmatization and discrimination which are associated with HIV/AIDS (Keikelame et al., 2010). Thus, there is a need for influencing people to obtain VCT services. Musemwa (2011) states that factors that influence university students to obtain VCT include improving current VCT campaigns, introducing rewards for attending VCT and to introduce couple's VCT as many students are in relationships and are sexually active.

Burke et al. (2002) argued that it is expected that with education and preventative medicine available, demand for VCT services could increase VCT in Tanzania. It is assumed that more education, more counselors and free testing would encourage people to go for VCT. Nations should strive to increase AIDS awareness programmes and avail medication such as antiretrovirals (ARVs) so that people can be influenced to go for HIV testing. Musemwa (2011) asserts that factors that influenced students' decisions to go for VCT include the understanding of perceived benefits of VCT concerning reducing this impact and also comprehending the perceived severity of HIV, particularly the impact HIV would have on the families.

Similarly, Sebudde and Nangendo (2009) claim that parental guidance and support should be encouraged because it leads to access and utilization of VCT services.

Zachariah (2003) maintains that the main reason why people accept VCT was because they engaged in unprotected sex. Some people had to go for HIV testing because a condom broke while having sex. Similarly, Wang et al. (2011) contended that people who do not use condoms frequently go for VCT. Some students at Fox University reported that VCT is obtained by people who practice unsafe sex. According to Killewo (1998), 96% of people who went for VCT in Tanzania utilized the services because they wanted to know about their status. Some people were about to be married and some lost their spouses, so they went for VCT to find out about their HIV status. University students are scared of getting tested. They would rather postpone testing to a later date. Nuwaha (2002) stated that people opt for VCT at a later date. The later date could be when they are about to be married or when they are pregnant. VCT is viewed as something that is scary, but helps to stabilize marriages and childbirth (Wang et al., 2011).

Accessibility and confidentiality are the prime factors

that influence university students to go for HIV testing. Butterworth (2003) argues that easy access to VCT centres has a major impact on VCT uptake. Confidentiality is taken seriously by people when it comes to HIV testing. Many people are afraid of seeking VCT services because they feel that if their statuses are known, they will suffer discrimination from families and their community. If people doubt the confidentiality at the centre offering the services, then uptake will be very low (Sibanda, 2008). Kisesa et al. (2002) maintained that in order to promote use of VCT services, VCT sites have to be confidential, client-centred and user-friendly since the majority of clients get to know about VCT services through word of mouth. The word could be coming from peer educators who strive to promulgate VCT or from clients who might have been tested. Thus, in order to influence many clients, VCT services have to be designed to focus on the needs of clients so that they will be enthusiastic about using the services.

Conclusion

The increasing HIV infection and AIDS problem calls for intensive and innovative approaches towards preventing further transmission of the virus. Until an effective treatment for the disease is discovered and availed to the affected individuals and communities, VCT remains the major strategy for the reduction of HIV. This study can reasonably conclude that university students' attitudes towards VCT play an indispensable role towards the attainment of the services. University students are influenced to go for VCT because of their desire to know their status, for marriage purposes, through encouragement from different stakeholders and the availability and accessibility of the services. They do not uptake VCT because of the perceived effects of an unfavorable result. Students are afraid of stigmatization, losing their friends and family members and dying soon when they learn that they are HIV positive. Some students do not want to uptake VCT because they doubt confidentiality in the centres. Some students do not uptake VCT because of peer pressure and they lack comprehensive knowledge about the benefits of knowing their status.

RECOMMENDATIONS

University students are not going for HIV testing mainly because of fear and lack of knowledge about potential benefits of knowing their status. This study therefore recommends that sensitization about HIV/AIDS VCT be increased so that students may be able to break the bond of terror and go for HIV testing. Peer educators should be encouraged to broadcast more information about VCT to

university students. More HIV/AIDS programmes such as seminars and workshops related to VCT should be frequently done at universities. The school curriculum should also include teaching about HIV/AIDS so as to educate children about the virus at a tender age. This will encourage students to have a better conception of HIV/AIDS and have a positive attitude towards knowing their status. All tertiary institutions should have an HIV/AIDS course in their curricula. The course should be made compulsory to all students. This could be a catchment area for educating university students and that would help produce qualified teachers who are fully aware of teaching about this incurable disease.

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Full Length Research Paper

Comprehensive knowledge, attitude and practice of street adults towards human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) in Northwest Ethiopia

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Street people are prone for many infectious diseases including human immunodeficiency virus (HIV). This study assessed comprehensive knowledge, attitude and practice of street adults towards human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS). A cross-sectional study was conducted on 325 street adults at two cities using a pretested questionnaire. Comprehensive knowledge on HIV/AIDS was assessed using five questions, attitude was measured using the Likert scale and practice by condom use and number of sex partners in the last one year. Descriptive statistics and bivariate/multiple logistic regressions were performed. The mean age of participants was 30.1 ± 9.0 standard deviation (SD) years. Majority (96.9%) had ever heard about HIV/AIDS. Main sources of information were radio (55.7%), neighbors (35.7%) and friends (33.2%). Only 31.4% had comprehensive knowledge, 23.7% favorable attitude and 27.7% used condom in their recent sexual intercourse. Almost a third (30.4%) had more than one sex partner in the last one year. Self-perceived risk of HIV infection was associated with knowledge, attitude and practice. The level of comprehensive knowledge, attitude and practice were low among street adults especially among those who cannot read and write. Prevention programs must equip street people with basic HIV/AIDS knowledge for behavioral change.

Key words: Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), comprehensive knowledge, street people, Ethiopia.

INTRODUCTION

According to the 2012 acquired immune deficiency syndrome (AIDS) pandemic report, the estimated number of adults living with human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) in 2011 were 34 million, with more than two-third (23.5 million) living in sub-Saharan Africa (United Nations Program on HIV/AIDS (UNAIDS), 2012). HIV/AIDS epidemic in Ethiopia is considered a "generalized" epidemic

which has affected all demographic, socio-economic, and institutional populations of the society (CSA/ORCMacro, 2006). Researches on the spread and determinants of HIV/AIDS in sub-Saharan Africa have shown differences by age, sex, urban/rural residence, and geographical regions within and between countries (Mishra et al., 2009).

Among the diverse determinants of HIV/AIDS are

knowledge on basic facts, attitude towards the disease and people living with it, and sexual behaviors are universal in any population group. HIV prevalence varies by sex and educational status among street dwellers, being significantly higher among females (Moges et al., 2006). It is vivid that HIV prevalence depends on knowledge of preventive actions, the attitude towards the disease and people's sexual behaviors. Knowledge about HIV/AIDS related issues is associated with delayed onset of sexual relations, consistent use of condoms and reduction in the number of sexual partners (Mudingayi et al., 2011).

Street people in Ethiopia, girls and women in particular, are exposed to sexual exploitation, rape and prostitution (Sorsa et al., 2002). The circumstances in which street people live and work increases their vulnerability to sexual exploitation and abuse, and puts them at a higher risk of sexually transmitted infections and HIV/AIDS (Gurung, 2004). Several studies had been done on the level of knowledge, attitude and practice towards HIV/AIDS in the general population and among diversified social groups (Negash et al., 2003). However, there is scarce evidence on HIV/AIDS associated behavioral risk factors, attitude and prevention among the various segments of the population in Ethiopia (Moges et al., 2006) especially among the most at risk populations such as street people. The fight against HIV/AIDS among street people suffers from gaps in research behavior change models, HIV testing, sero-prevalence, and treatment protocols (Kusserow, 1990).

It is a frequent observation to see adult street people in major towns in Ethiopia having one or two babies by their sides. This indicates that they are sexually active, be it safe or unsafe, and definitely unprotected. Hence, there is a need to address street people in the fight against HIV/AIDS. Lack of appropriate and systematic research to enable an effective response to the threat of HIV/AIDS among street-based people and limited prevention interventions targeting them in HIV/AIDS programs is one of the bottle necks for the prevention and control of HIV among street people. The research question of this study was 'what are the levels of comprehensive knowledge, attitude, and practice among street adults on HIV/AIDS?'

MATERIALS AND METHODS

Study design

A cross-sectional study was conducted in Gondar and 'Bahir Dar' cities of Amhara Regional State in March, 2011.

Study area

The study was conducted in two major cities (Gondar and Bahirdar) of Amhara National Regional State. These two cities are located about 550 and 727 km North-West of Addis Ababa, respectively. These cities were selected, being the highly populated cities with higher number of street people in the region. According to the 2006

annual report of the Regional Bureau of Labor and Social Affairs, among 3,576 street people in 32 urban areas of the region, 43% were from Bahirdar and Gondar cities. Additionally, urban areas in the region have higher burden of HIV/AIDS (HAPCO, 2010). In both cities, there were houses built by the government for beggars having dependent families.

Sampling

'Cluster' sites where street people mostly reside were selected using expert guidance from city administrations in both cities. All eligible street people were included in this study. Street people residing in the streets, verandas or compounds of churches and mosques, road sides and isolated camps for beggar people during the four weeks data collection period were interviewed.

Data collection

Data were collected using a structured and pretested questionnaire by ten trained final year health officer students using a face-to-face interview technique. Data were collected in the mornings of Sundays and other religious feast days around churches, roads and mosques where street people are frequently observed begging, and at night time after 9:30 pm on the streets where the homeless are residing. Women who reside at streets during the night for commercial sex work were not included in this study. The contents of the interview questionnaire were structured in a logical manner into four sections (socio-demography, HIV/AIDS knowledge, attitude, and practice questions). Pre-testing of the questionnaire was done on 30 similar subjects who were excluded from further analysis.

Operational definitions

People who make their lives on the street, live, beg, sleep at streets and/or road sides were defined as street people. People who had no formal homes (homeless) and sleep on streets, verandas, balconies, etc at night were classified as "on street" while those who had houses to go for sleep at night were termed as "off street" people.

Instrument used for knowledge and attitude

If a respondent knew that using condom correctly at every sexual intercourse and having just one uninfected faithful partner can reduce the risk of HIV infection, that a healthy-looking person can have HIV, and rejected the two most common local misconceptions (HIV can be transmitted through mosquito bites and by sharing food) (CSA/ORCMacro, 2006; CiCCiò and Sera, 2010), then he/she was considered to have comprehensive knowledge on HIV/AIDS. Attitude towards HIV/AIDS was assessed using Likert scale by asking nine items, each rated from one to five. The median value for the scaled responses was determined for all the nine response items. Then, each item response was added for each respondent and divided by nine to identify the mean score for each respondent. People who scored above or equal to the median were considered as having favorable attitude. Sexually active people were further inquired about condom utilization and the number of sexual partners they had. Non use of condom at all or an inconsistently use among unmarried or non-cohabiting people, or having two or more sexual partners in the last one year was considered as poor practice towards HIV/AIDS.

Data analysis

The data were entered into a computer using Epi Info version 3.5.3(CDC, Atlanta, Georgia) and exported to statistical package for social sciences (SPSS) version 16 (SPSS, Inc., USA) for analysis.

Table 1. Socio-demographic profile of street adults, North-West Ethiopia, March, 2011 (n = 325).

Variable	No (%)
Age (years)	
15-24	106 (32.6)
25-34	105 (32.3)
35-49	113 (35.1)
Sex	
Male	127 (39.1)
Female	198 (60.9)
Religion	
Orthodox	287 (88.3)
Muslim	35 (10.8)
Other**	3 (0.9)
Ethnicity	
Amhara	303 (93.2)
Tigre	7 (2.2)
Other**	15 (4.4)
Marital status	
Single	126(38.8)
Married	94 (28.9)
Divorced/ Separated	54 (16.7)
Widowed	21 (12.6)
Educational Status	
Cannot read and write	190 (58.5)
Read and write only	57 (17.5)
Elementary education (Grade 1-8)	78 (24.0)
Housing status	
On street	200 (63.3)
Off street	116 (36.7)

*Protestant, **Agew and Oromo.

Data were analyzed descriptively using frequencies and cross tabulations. Logistic regression analyses (bivariate and multiple) were employed to determine the effect of factor(s) on the outcome variable(s) and to control possible confounders. P-value < 0.05 was considered to show statistical significance. Factors found to have a p-value of 0.2 or less in the binary logistic regression were further entered into multivariate analysis.

Ethical considerations

Ethical approval was obtained from the Research and Publications Office (RPO) of the College of Medicine and Health Sciences, University of Gondar. Permission letters to conduct the research were obtained from Labor and Social Affairs Offices (LSAO) of both cities. The purpose of the study was explained to each participant. Since most were illiterate, only verbal consent was obtained regarding agreement to participate in the study after reading them

agreement to participate in the study after reading them the information and consent forms prepared in Amharic language. Names were not recorded in order to keep the identity of respondents anonymous and no incentives were given for individuals during data collection.

RESULTS

A total of 325 street adults aged 15 to 49 (mean age = 30 ± 9 SD) years were included in this study. Almost 61% (n = 198) were females. Majority were Amhara ethnics (93.1%) and Orthodox Christians (88.3%). Less than a third of the participants (28.9%) were married. More than two-third (69.2%) came from rural areas and engaged into street life, and 204 (59.8%) had regular work before street life (Table 1).

Knowledge of street adults on HIV/AIDS

A total of 315 (96.9%) participants said they had heard about HIV/AIDS. The three main sources of information on HIV to street people were radio (55.7%), neighbors (35.7%) and friends (33.2%). Though about 81% knew mother to child transmission of HIV, almost a quarter (24.6%) still believe HIV is solely a disease of prostitutes. The level of knowledge of participants ranges from 67.0 to 95.4% for each component of the five comprehensive knowledge questions (Table 2). However, only 99 (31.4%) had comprehensive knowledge on HIV/AIDS. Comprehensive knowledge towards HIV/AIDS was higher among males than females (38.9 versus 27.6%), and the never married ones than those ever been married (38.9 versus 22.2%).

Attitude of street adults towards HIV/AIDS

The median score for the nine attitude questions rated from 1 to 5 was 4. Among 300 people who responded to all attitude questions, 71 (23.7%) had favorable attitude towards HIV/AIDS while the remaining 229 (76.3%) had unfavorable attitude. More males had favorable attitude than females (33.0 versus 17.8%, $X^2 = 8.31$, $p = 0.003$). The responses to each attitude score are presented in Table 3.

Practice towards HIV/AIDS

Among the 158 ever sexually active street people, 61 (38.6%) had ever used condom of whom only 43 (70.5%) used it in their recent sexual intercourse. However, among those who reported condom use, only 20 (32.8%) used condoms in every sexual encounter. Almost a third of the sexually active street adults (30.4%) had two or more sex partners in the last one year. Proportion of condom users in the recent sex was relatively higher among

Table 2. Knowledge towards HIV/AIDS among street adults, northwest Ethiopia, March, 2011.

Knowledge question	Response		
	Yes (%)	No (%)	Total
HIV can be prevented by correct use of condom at every sexual intercourse	207 (68.3)	96 (31.7)	303
Having only one uninfected and faithful sexual partner can reduce the risk of getting HIV/AIDS	240 (78.4)	66 (21.6)	306
A healthy looking person can have the HIV virus in his/her blood	247 (81.2)	57 (18.8)	304
HIV can be transmitted through mosquito bites	99 (33.0)	201 (67.0)	300
HIV can be transmitted by eating together	14 (4.6)	292 (95.4)	306
Comprehensive* knowledge about HIV/AIDS	99 (31.4)	216 (68.6)	315

*Yes = if answered correct to all five question.

those having two or more sex partners (36.5 versus 20.5%). Just more than half (51.7%) of the street people in this study considered themselves to be at risk of contracting HIV infection.

Factors associated with Comprehensive knowledge, attitude or practice

In the bivariate analysis, younger street people (15 to 24 years) had a twice higher comprehensive knowledge towards HIV/AIDS (Crude Odds Ratio COR = 1.93 and 95% confidence interval (CI); 1.07, 3.47). But this was not significant after adjustment for other factors (Table 4). Those who had at least elementary education were almost three and half times more (Adjusted Odds Ratio AOR = 3.53 and 95% CI; 1.79, 6.95) likely to have comprehensive HIV knowledge compared to those who were not able to read and write. Street adults who perceived themselves at risk of HIV were almost two times (AOR = 2.15 and 95% CI; 1.19, 2.89) highly likely to have comprehensive knowledge on HIV/AIDS compared to those who do not perceive themselves at risk of HIV infection. Additionally, "on street" adults were less likely to know about HIV/AIDS compared to the "off street" ones, although the difference was not significant in the multivariate analysis.

Attitude towards HIV/AIDS among street adults was associated with several factors. In general, street people who were single, aged 25 to 34 years, males, educated and sexually active had favorable attitude towards HIV/AIDS (Table 5). Additionally, those who had comprehensive knowledge on HIV/AIDS were almost four times (AOR = 3.97 and 95% CI; 1.44, 10.91) more likely to have favorable attitude towards HIV/AIDS compared to their counterparts.

In the bivariate analysis, practice towards HIV/AIDS (condom use) was associated with a number of sex partners (COR = 2.24 and 95% CI; 1.11, 4.53), self-perception to be at risk of HIV, age 25 to 34 years and having good comprehensive knowledge on HIV/AIDS. Since the number of people using condom were very few, most factors considered were not significant in the multivariate analysis except self-perception to be at risk

of HIV infection. There is a ten times (AOR = 10.87 and 95% CI; 2.93, 40.25) higher likelihood of using condom among street adults who perceive themselves at risk of HIV infection.

DISCUSSION

The present study extends prior evidence by investigating levels of comprehensive knowledge, attitude and practice towards HIV/AIDS in a special group of people, and street adults. About 97% of participants had ever heard about HIV/AIDS. This is almost similar to the national (98.8%) and regional (97.2%) 2011 Demographic and Health Survey (DHS) reports for adults aged 15 to 49 years (CSA/ORCMacro, 2011).

Comprehensive knowledge on HIV/AIDS is a basic requisite for behavioral change in the context of HIV related risk behavior. Comprehensive knowledge on HIV/AIDS among street adults in this study (31.7%) was comparable to the national (30.0%) but lower than the regional (41.6%) 2006 Ethiopian DHS reports of same age group (CSA/ORCMacro, 2006). But it is higher than the 2005 Behavioral Surveillance Survey (BSS) report (18.5%) (Kassie et al., 2008). This difference could be explained by the five years time gap between the current study and the aforementioned reports. Similar to this study, a study conducted in southern Ethiopia also reported a low level of knowledge on HIV/AIDS among street people (Sorsa et al., 2002). Another study from Ghana indicated that 80% of the street adolescents (aged 11 to 19 years) had at least minimal knowledge of HIV, and 54% perceived themselves to be at risk for contracting HIV (Wutoh et al., 2006) which is similar to the current study (51.7%). Like many other studies (Gurung, 2004; Kassie et al., 2008; CiCCiò and Sera, 2010; Ochako et al., 2011), women had lower comprehensive knowledge on HIV/AIDS in this study.

The overall low level of favorable attitude (23.5%) indicated that still there were many people having miss beliefs about HIV/AIDS. Poor attitude may result from poor knowledge of the disease and in turn may lead to risky behavior (Mudingayi et al., 2011), as the level of knowledge influences attitudes on HIV/AIDS (Galvez et al., 2012).

Table 3. Attitude towards HIV/AIDS among street adults, North-West Ethiopia, March, 2011.

Attitude item	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)
Eat with an HIV+ person	37(12.4)	36(12.0)	12(4.1)	94(31.4)	120(40.1)
Share cloths with an HIV+ person	43(14.2)	54(17.8)	42(13.9)	91(30.0)	73(24.1)
Shake hands of an HIV+ person	25(8.2)	34(11.2)	15(4.9)	113(37.2)	117(38.5)
Caring as an attendant to an HIV+ person	25(8.3)	41(13.6)	36(11.9)	95(31.5)	105(34.8)
Work with an HIV+ person	21(6.9)	23(7.6)	16(5.3)	110(36.3)	133(43.9)
Abstain from sex to prevent HIV	9(3.0)	11(3.6)	17(5.6)	141(46.7)	124(41.1)
People should be faithful to one uninfected partner to prevent HIV	10(3.3)	19(6.3)	24(8.0)	159(53.0)	88(29.3)
People should use condom to prevent themselves from HIV	22(7.4)	23(7.7)	47(15.8)	137(46.1)	68(22.9)
Use condom to protect from HIV	38(12.8)	30(10.1)	51(17.1)	115(38.6)	64(21.5)
Overall attitude score					
Favorable			71(23.7%)		
Unfavorable			229(76.3%)		

Condom use in every sexual intercourse has remained one of the major indicators of behavior change in HIV/AIDS preventions. In the current study, 32.8% used condoms in every sexual encounter which is higher than a similar report from Nepal (20.9%) (Gurung, 2004). This study also showed that nearly a third of the sexually active street adults (30.4%) had two or more sex partners which is less than a similar report from Nepal (52%) (Gurung, 2004). The Nepalese study was on teenage street dwellers while the current study was among street adults (15 to 49 years) which can explain the difference in the risky behaviors, since young people are particularly vulnerable to HIV infection due to their risky sexual behaviors (CiCCiò and Sera, 2010).

At least primary education, being 'off street' at night and self-risk perception of HIV infection, were the factors associated with comprehensive HIV knowledge on HIV/AIDS. Educational status is the main determinant of HIV knowledge in this

study which is similar to many other studies (Sorsa et al., 2002; Eshetu et al., 2004; Kibombo et al., 2007). Similar to other studies (Eshetu et al., 2004; Gurung, 2004), people who perceived themselves to be at risk of HIV acquisition had a better level of comprehensive HIV/AIDS knowledge, had favorable attitude and good practice towards HIV/AIDS. Self-perceived risk of HIV infection is a universal determinant of comprehensive knowledge, attitude and condom utilization among street adults. It may serve as a motivation to get to know about, think of minimizing own risk and ultimately changed behaviors. However, it should be taken cautiously because the link between perception of risk and sexual behavior can work both ways (Dube, 1997) as one may perceive her/his risk of getting HIV infection to be high or low depending upon their previous sexual behavior or vice versa.

Knowledge about HIV/AIDS related issues is associated with delayed onset of sexual relations,

consistent use of condoms and reduction in the number of sexual partners (Mudingayi et al., 2011) which may result from risk perception. The key challenge for HIV/AIDS prevention education programs is applying methods that result in rapid enhancement in knowledge and attitudes regarding basic practices such as condom use and limiting sexual partners (Rahnama et al., 2011) and behavioral interventions are mostly difficult (Bonell and Imrie 2001). Despite the limitations of being cross-sectional and use of non statistical sampling techniques (as the lack of firm inclusion criteria makes estimating the population size of street people difficult), this study came up with evidence from a most at risk group of the population.

Conclusion

The level of comprehensive knowledge, attitude

Table 4. Logistic regression of factors with comprehensive knowledge towards HIV/AIDS among street adults, North-West Ethiopia.

Predictor Variable		Comprehensive knowledge			Crude OR (95% CI)	Adjusted OR (95% CI)
		Yes	No	Total		
Age	15-24	40	60	100	1.93 (1.07,3.47)*	1.17 (0.55, 2.48)
	25-34	31	69	100	1.30 (0.71, 2.38)	1.08 (0.47, 2.50)
	35-49	28	81	109	1.00	1.00
Background Residence**	Urban	32	63	95	1.12 (0.67,1.86)	1.00 (0.55, 1.84)
	Rural	67	147	214	1.00	1.00
Sex	Male	45	73	118	1.56 (0.96, 2.55)	1.47 (0.65, 2.10)
	Female	54	137	191	1.00	1.00
Marital Status	Single	44	74	118	1.00	1.00
	Married	21	70	91	0.51 (0.27, 0.93)*	0.92 (0.43, 2.00)
	Divorced	22	39	61	0.95 (0.50,1.80)	1.03 (0.45, 2.37)
	Widowed	12	27	39	0.75 (0.34,1.62)	1.20 (0.45, 3.17)
Educational Status	Unable to read and write	42	140	182	1.00	1.00
	Read and write only	22	32	54	2.29 (1.21,4.36)*	2.67 (1.31, 5.42)*
	Elementary	35	38	73	3.07 (1.73, 5.45)*	3.53 (1.79, 6.95)*
Sleeping at night	On street	53	139	192	1.00	1.00
	Off Street	44	65	109	1.78 (1.08, 2.92)*	1.62(0.88, 2.97)
Perceived risk of infection	Yes	64	104	168	2.50 (1.47, 4.26)*	2.15 (1.19, 2.89)*
	No	24	100	124	1.00	1.00

**Residence before engaging into street life, *Significant at $p < 0.05$. OR = odds ratio, CI = confidence interval.

Table 5. Logistic regression of associated factors with attitude towards HIV/AIDS among street adults, North-West Ethiopia.

Predictor variable		Favorable attitude			Crude OR (95% CI)	Adjusted OR (95% CI)
		Yes	No	Total		
Age	15-24	40	60	100	1.33 (0.87, 3.47)	2.04 (0.85, 4.90)
	25-34	31	69	100	1.16(0.71, 2.38)	3.13 (1.12, 8.72)*
	35-49	28	81	109	1.00	1.00
Marital Status	Single	37	83	120	2.52 (0.98, 6.54)*	4.57 (1.26, 16.53)*
	Married	12	79	91	0.86 (0.30, 2.48)	1.34 (0.36, 5.00)
	Divorced ⁺	19	42	61	2.56 (0.92, 7.13)	2.44 (0.69, 8.65)
	Widowed	6	34	40	1.00	1.00
Sex	Male	39	81	120	2.16 (1.27, 3.67)*	2.01 (1.05, 3.87)*
	Female	35	157	192	1.00	1.00
Educational status	Unable to read and write	32	155	182	1.00	1.00
	Read and write only	14	41	54	1.65 (0.81, 3.39)	2.17 (0.95, 4.94)
	Elementary	28	45	73	3.01 (1.65, 5.23)*	3.22 (1.49, 6.95)*
Background Residence	Urban	28	65	93	1.65 (0.95, 2.85)	1.47 (0.75, 2.91)
	Rural	46	176	222	1.00	1.00

Table 5. Contd.

Sleep at night	On street	34	156	180	1.00	1.00
	Off street	36	77	113	2.23 (1.30, 3.84)*	1.71 (0.86, 3.40)
Sexually active	Yes	17	36	53	2.91 (1.37, 6.18)*	3.37 (1.22, 9.44)*
	No	19	117	136	1.00	1.00
knowledgeable on HIV/AIDS	Yes	43	53	96	4.95 (2.81, 8.71)*	3.97 (1.44, 10.91)*
	No	28	174	212	1.00	1.00

*Significant at $p < 0.05$. OR = odds ratio, CI = confidence interval.

and condom utilization are low in this study population group and even lower among those who cannot read and write and those who did not perceive themselves at risk. Men, educated, those having comprehensive knowledge and those who perceived themselves at risk of HIV had favorable attitude towards HIV/AIDS. Self risk perception universally affects the three entities (comprehensive knowledge, attitude and practice) towards HIV/AIDS. These deficiencies also highlight the limited efforts taking place to address misconceptions and educate these sub-populations on HIV/AIDS. Hence, behavioural interventions that make individuals less vulnerable to becoming infected or infecting others with HIV should specially emphasize this special group of the population, street adults.

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Full Length Research Paper

Assessment of human immune deficiency virus (HIV) prevalence estimate among women of childbearing age in Nigeria: Relative inclusion fertility ratios approach

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Globally, human immune deficiency virus (HIV) constitutes a public health problem. Researchers have been curious about the true estimate of HIV prevalence in Nigeria. Therefore, the current study was designed to assess the reliability of the existing estimate in Nigeria. The study was cross-sectional in design and utilized data originally collected by National human immune deficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) and Reproductive Health Survey (NARHS) in Nigeria. Analysis was performed using Chi-square, logistic regression and relative inclusion ratio (Alpha = 5%). Mean ages of HIV-positive and HIV-negative women were 29.65 ± 8.5 and 27.88 ± 9.4 years, respectively. Overall fertility rate was higher among HIV positive women than HIV negative women. The multivariate analysis shows that women in the South-west were 0.428(C.I=0.202-0.908; $p=0.027$) less likely to contact HIV than their counterparts in the North-west. Also women who formally married were approximately 5 (C.I=2.401-9.367; $p<0.001$) times more likely to contact HIV than those who never married. The relative inclusion ratio (RIR) was higher in urban (1.16) than rural (0.97) areas, and the overall RIR was 1.02. The RIR found in our study is an indication of over-estimation of HIV prevalence in Nigeria. However, HIV prevalence was overestimated and underestimated in urban and rural areas respectively. Accurate statistics on HIV prevalence is necessary in Nigeria. This will assist HIV programmers in their strategies to combat HIV in Nigeria.

Key words: Relative inclusion ratio, fertility rate, human immune deficiency virus (HIV), prevalence, Nigeria.

INTRODUCTION

Human immune deficiency virus (HIV) is a public health concern. Recent estimate of the people living with human immune deficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) (PLWHA) worldwide was 33.4 million, comprising 15.7 million women and 2.1 million children aged below 15 years (United Nations Programme on HIV/AIDS (UNAIDS)/World Health Organization (WHO), 2009). Nigeria is the second largest with the burden of the disease (4.5%) in sub-Saharan Africa and first in West Africa sub-region (Federal Ministry of Health (FMOH), 2012). The disease has serious impact on virtually every facets of human endeavor

endeavor including socioeconomic activities, particularly fertility of the infected individuals.

Fertility is one of the key components of population change of a country; therefore any disease affecting it will have serious impact on demographic transition and future age structure of the country. Nigeria has experienced high fertility levels over the last two decades despite numerous policy oriented programmes by the government and international agencies. For instance, the past three consecutive National Demographic and Health Survey (NDHS) results show that the total fertility rate (TFR) for 1999, 2003 and 2008 were 5.6, 5.7 and 5.7, respectively.

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The influence of HIV/AIDS on fertility had been widely explored and most findings revealed that the disease tends to reduce fertility (Chin, 1998; Zeba et al., 1998; Stover, 2004).

Researchers have adopted different techniques to link HIV/AIDS with fertility. One of such methods is the comparison of relative age-specific fertility rates of women who are HIV positive with those of HIV negative (Stover, 2004). The method is referred to as relative inclusion ratio (RIR). To substantiate this, Carpenter et al., (1997) in their study established a relationship between HIV and fertility using this approach. In the study, it was found that for all reproductive age groups, the proportions of women infected with HIV were much lower for those who gave birth than those who did not give births.

The RIR is the ratio of the fertility rate in HIV positive women of reproductive age to the fertility rate of HIV negative women of reproductive age (15 to 49 years). Nicoll et al. (1998) used this ratio to compare the relative fertility in HIV infected and uninfected women. A ratio of 1.00 is indications of accurate estimation of HIV prevalence in the general population while a ratio of less than and above 1.00 show an underestimation and overestimation, respectively.

This study aimed to assess the level of accuracy of the estimate of HIV prevalence with the view to knowing the direction of the estimate. It also strives to identify factors that are predictors of being infected with HIV virus in Nigeria. These objectives would provide information on how to strengthen HIV estimate and create an avenue for the implementation of various evaluations of HIV programmes in Nigeria and other countries with similar population structure. This will assist in actualization of the sub-theme of Millennium Development Goals (MDGs) to combat HIV/AIDS in Nigeria.

MATERIALS AND METHODS

The study area

Nigeria is a democratic Federal Republic in West Africa comprising thirty-six states and one Federal Capital Territory, with capital city in Abuja. The country which consists of over 160 million inhabitants was made up of 36 states formally grouped into six geopolitical zones: North West, North East, North Central, South West, South East and South-South.

Sampling procedure and data collection

The study was cross-sectional in design and utilized data originally collected by National HIV/AIDS and Reproductive Health Survey (NARHS) in Nigeria which focused on women of reproductive age who must have given birth to at least a child. It adopted a multi-stage cluster sampling technique to select the eligible respondents. Ethical clearance was obtained from the Institutional Review Board (IRB) of the National Institute of Medical Research (Nigeria) prior the commencement of the primary survey. Oral and written informed consents were sought from each respondent before a questionnaire was administered, and each sero-test conducted. Pre

and post test counseling were provided to all respondents who agreed to be tested. Where a respondent chose not to participate, the questionnaire was returned as refusal. Respondents who were sero positive were referred to a hematopoietic cell transplant (HCT)/anti-retroviral therapy ART site for follow up. In order to protect the anonymity of the results during the processing phase, the master survey data file was kept at FMOH; all hard copies and files were stored in locked cabinets.

During the actual survey, primary data were collected by personal interview using well-structured questionnaire which included socio-demographic characteristics, knowledge and perception of HIV/AIDS, attitude and use of family planning, knowledge about family planning among others. Two questionnaires were used for the primary data collection: an individual questionnaire for each respondent and a one page questionnaire for the biomarker component. These instruments were based on the questionnaires developed by the NARHS National programme which was adapted from International standard questionnaires such as the Demographic Health Survey (DHS) and adapted to Nigeria's specific data needs. The questionnaires as well as all survey procedures including those relating to the HIV was translated and piloted prior to implementation of the main survey.

Laboratory method

HIV testing was done using National guidelines for rapid-test as outlined in the UNAIDS/WHO guidelines (UNAIDS/WHO, 2005). Therefore, for ethical reasons, pre and post test counseling were conducted using Determine and Statpak or Determine and Bundi for parallel testing. Individuals who tested positive or whose tests were indeterminate were referred to the nearest HIV treatment facility for confirmatory testing and follow up. A unique random identification number (bar code) was assigned to each dried blood spot (DBS) and labels containing that code affixed to the filter paper card, the questionnaire, and a field tracking form at the time of the collection of the sample. After fieldwork was completed in a sampled cluster, the questionnaires, dried blood spot and sample transmittal forms were sent to the central office of the technical management committee for logging and checking prior to data entry. DBS samples were checked against the transmittal form and then forwarded to designated testing laboratories. No identifier other than the unique identification label affixed at the time of the collection of the samples accompanied the specimen to the laboratory.

Data analysis

Data were analyzed using relative inclusion ratio approach, Chi-square and logistic regression model. The dependent variable was HIV status (either positive or negative) whereas, socio-demographic variables such as age, gender, marital status, place of residence etc. were the independent variables. The logistic regression model was used to identify predictors of HIV status determination. This is of the form;

$$\log\left(\frac{Y_i}{1 - Y_i}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n$$

Where γ is 1 if HIV status is positive and 0 if otherwise. The parameters $\beta_0, \beta_1, \beta_2, \dots, \beta_n$ are to be estimated. The odd ratio of each parameter is estimated as $\exp(\beta_i)$; $i = 1, 2, 3, \dots, n$.

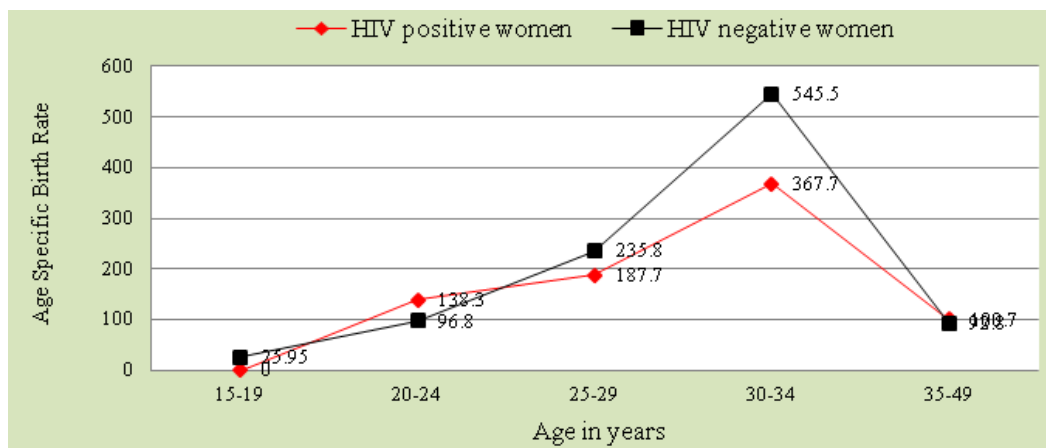


Figure 1. Age specific births per 1000 women years of exposure of HIV positive and HIV negative women in Nigeria.

RESULTS

Socio-demographic characteristics of women according to their HIV status

The data as shown in Table 1 is evidenced that the prevalence of HIV among the women studied was 4.1%. The mean ages for HIV-positive and HIV-negative women were 29.7 ± 8.4 and 27.9 ± 9.4 years respectively ($p < 0.001$).

The prevalence of HIV increases consistently from age 15-19 (1.4%) to 30-34 (7.6%) years with a slight reversal at ages 35 years and above. Differential also existed in HIV prevalence across all the six geo-political zones in Nigeria with the highest prevalence recorded by Northcentral (6.3%) and least in the Northwest (2.3%). In Nigeria, women who were formally married (10.6%) had higher prevalence of HIV than their counterparts who were either not married (2.9%) or currently married (4.0%).

The prevalence of HIV also varied according to the women's religion with Christian religion having higher proportion of its members being HIV positive (5.3%) than Muslim women (2.6%) ($p < 0.001$). There was a significant association between ever had Antenatal Care (ANC) and HIV status. Of all the women who had gone for ANC during their last pregnancy, 4.8% of them were HIV positive as against 2.8% of those who did not attend ANC.

Table 2 shows Fertility rates and Relative Inclusion Ratios for HIV positive and HIV negative women of reproductive age in urban and rural Nigeria. In urban area, the fertility rates increases from 0 births per 1000 women years of exposure among HIV+ women in age group 15-19 to 819 births per 1000 women years of exposure for those in age group 30-34, but falls to 46.1 for women in ages 35 years and above. Similar pattern existed for the women who tested positive to HIV in urban area of Nigeria.

The data further show that in the rural area, the fertility rates were consistently higher among HIV negative women than their counterparts who tested positive except for the last age group (35+) where the fertility rate was higher for HIV+ women (133.8 births per 1000 women years of exposure) than HIV negative women (99.5 births per 1000 women years of exposure).

The overall fertility rate for all HIV+ women in urban (314.6 births per 1000 women years of exposure) was lower than that of rural (395.0 births per 1000 women years of exposure). The reverse of this pattern was observed for HIV negative women (272.3 and 406.0 for urban and rural areas respectively). For all women who participated in the study, fertility rates were higher among HIV negative women in age groups 15-19, 25-29, and 30-34 years than HIV positive women but lower in age group 20-24 and 35-49 years.

The relative inclusion ratio (RIR) was higher in urban (1.16) than rural (0.97) and the overall RIR was 1.015. In urban and rural areas, the RIR peaked at age group 20-24 (RIR=4.2, C.I.=3.78-4.62) and 35-39 (RIR=1.35, C.I.=1.29-1.39) respectively. In overall sample, RIR was 1.015 (C.I.=1.00-1.02) and mostly prominent among women aged 20-24 years (RIR=1.43, C.I.=1.38-1.48).

Age specific fertility rates (Births per 1000 women years of exposure) among women of reproductive age in Nigeria

Figure 1 displays the pattern of age specific fertility rates (ASFR) for rural, urban and total for Nigeria. The graph was plotted to see clearly the shape in order to know whether the data follows the expected distribution in any setting. The data show that the ASFR peaked among women in age group 30 to 34 for both HIV positive and HIV negative women. It further shows that HIV positive women have more births than HIV negative women in

Table 1. Respondents socio-demographic characteristics and HIV status.

Background characteristic	HIV status		p-value
	Positive n (%)	Negative n (%)	
Total	170 (4.1)	4025 (95.9)	
Age group*			
15-19	13 (1.4)	902 (98.6)	0.00
20-24	38 (4.5)	812 (95.5)	
25-29	35 (4.8)	698 (95.2)	
30-34	44 (7.6)	535 (92.4)	
35 and above	40 (3.6)	1078 (96.4)	
Location			
Urban	67 (4.7)	1367 (95.3)	0.14
Rural	103 (3.7)	2658 (96.3)	
Zone**			
North West	20 (2.3)	857 (97.7)	0.00
North East	28 (4.6)	578 (95.4)	
North Central	47 (6.3)	698 (93.7)	
South West	32 (4.0)	760 (96.0)	
South East	19 (3.8)	482 (96.2)	
South South	24 (3.6)	650 (96.4)	
Marital status*			
Currently married	110 (4.0)	2658 (96.0)	0.00
Never married	34 (2.9)	1152 (97.1)	
Formally married	25 (10.6)	211 (89.4)	
Contraceptive use			
Ever users	43 (7.1)	239 (92.9)	0.37
Never users	84 (4.1)	2136 (95.9)	

Table 2. Respondents socio demographic characteristics and HIV status.

Background characteristic	HIV status		P value
	Positive n (%)	Negative n (%)	
Education			
Quranic/Primary	54 (4.7)	1101 (95.3)	0.88
Secondary	68 (4.5)	1456 (95.5)	
Higher	17 (5.1)	317 (94.9)	
Religion*			
Islam	52 (2.6)	1915 (97.4)	0.00
Christianity	116 (5.3)	2085 (94.7)	
Other	2 (4.2)	23 (95.8)	
Ever had ANC visit			
Yes	65(4.8)	1297 (95.2)	0.02
No	21(2.8)	740 (97.2)	

Table 2. Contd.

Age at first sexual intercourse			
15-24	118 (4.9)	2311 (95.1)	
25-34	10 (8.9)	102 (91.1)	0.15
35+	0 (0)	2 (100)	
Mean	25.87	29.88	
Children ever born			
1-2	10 (8.5)	108 (91.5)	
3-4	12 (7.8)	142 (92.2)	0.50
5+	17 (3.5)	470 (96.5)	
Mean	5.03	6.18	

*Significant at 0.1%; **significant at 5%; ANC = antenatal clinic.

Table 3. Fertility rates and Relative Inclusion Ratios for HIV positive and HIV negative women of reproductive age in urban and rural Nigeria.

Age group (years)	HIV status						RIR (95% CI)
	Positive			Negative			
	Number of births in the last one year	Women years of exposure (Y ₂)	Fertility rate (95% CI)	Number of births in the last one year	Women years of exposure (Y ₂)	Fertility rate (95% CI)	
Urban							
15-19	0	40.3	0 (0-0)	12	1038.5	11.6 (0.4-23.5)	0 (0-0)
20-24	12	50.3	238.6 (46-430)	50	888.7	56.3 (29-84)	4.20 (3.78-4.62)
25-29	14	42.6	328.6 (23- 636)	108	800.6	134.9 (93-177)	2.4 (3.97-4.43)
30-34	15	18.3	819.7 (642-997)	217	548.9	395.3 (325-466)	2.07 (1.87-2.28)
35-49	21	45.6	46.1 (21.6-70.5)	772	979.4	78.8 (74.6-83.1)	0.58 (0.53-0.63)
Total	62	197.1	314.6 (203-426)	1159	4256.1	272.3 (249-296)	1.16 (1.13-1.18)
Rural							
15-19	0	37.5	0 (0-0)	67	2005.5	33.4 (19-48)	0 (0-0)
20-24	5	72.6	68 (45-181)	200	1693.6	118.1 (91-145)	0.58 (0.54-0.62)
25-29	10	85.3	177 (30- 324)	426	1463.9	291 (249-333)	0.61 (0.56-0.65)
30-34	16	66.0	240 (75-404)	600	948.8	632.4 (244-338)	0.38 (0.33-0.43)
35-49	103	77.5	133.8 (75.9-343.5)	2009	2018.7	99.5 (99.0-100.0)	1.35 (1.29-1.39)
Total	134	338.9	395.0 (301-489)	3302	8130.5	406.0 (387-425)	0.97 (0.96-0.98)

Table 3. Contd.

Urban and rural								
15-19	0	77.8	0 (0-0)	79	3044	25.95(16-36)	0 (0-0)	
20-24	17	122.9	138.3 (29-248)	250	2582.3	96.80 (76-117)	1.429 (1.38-1.48)	
25-29	24	127.9	187.7 (58-317)	534	2264.5	235.80 (204-267)	0.796 (0.77-0.83)	
30-34	31	84.3	367.7 (225-510)	817	1497.7	545.50 (503-588)	0.674 (0.64-0.71)	
35-49	124	123.1	100.7 (83.9-117.5)	2781	2998.1	92.8 (912-943)	1.086 (1.07-1.10)	
Total	196	536	365.7 (293-438)	4461	12386.6	360.2 (345-375)	1.02 (1.00-1.02)	

CI = Confidence interval; HIV = human immunodeficiency syndrome; RIR = relative inclusion ratio.

early childbearing period (15 to 19), but the number of births was lower in age group 20 to 24 years and consistently higher among older women.

DISCUSSION

The present HIV prevalence in Nigeria has been an issue of contemporary discourse. Researchers have diverse opinion on the estimated figure. While some were of the view that the figure was underestimated others claimed it was overestimated. Although, nobody can say what the exact prevalence was, because the estimate was based on samples of women selected from the population of women of reproductive age in Nigeria. This may obviously be subjected to sampling errors and other errors peculiar to such surveys. As an attempt to let people know the swing of the prevalence of HIV in Nigeria, we provide a means of assessing the estimated figure using relative inclusion ratio which is based on the fertility experience of HIV positive and HIV negative women. This was done against the backdrop of scarce information of such in Nigeria. We used fertility rates instead of the conventional live birth rates as reported in previous studies (Nicoll et al., 2011).

Findings from this study showed that mean age at first intercourse for HIV positive was lower compared to that found among HIV negative women (table 2). This difference might be due to the fact that both populations were exposed to various degrees of information particularly on sexual education in early part of their life. Also, the mean number of births in the past one year was higher among HIV positive women than HIV negative women (table 1). The overall fertility rates observed in HIV positive women population was higher than that of all HIV negative women. This difference may be attributed to the fact that HIV women might want to bear children quickly before their health conditions degenerates particularly those who are not attending ART clinic (Laura et al, (2003). The prevalence of HIV was higher among the formally married women (table 1). The multivariate result of this study also justified this finding. This is in line with previous study reported by Engene and Charles (Engene and Charles, 2008). Higher prevalence among formally married women might be attributed to risky sexual behavior after separation or divorced their last partner and being formally married is associated with increasing lifetime number of sexual partners (Hattingh et al, 2009). The prevalence of HIV was also higher among women in age group 30 to 34 than any other age

segments of population of women under study. Though, one would have expected higher prevalence among younger women because they are more sexually active. However, no explanation could be put forward for this deviation. Poverty, low literacy levels, high rates of casual and transactional unprotected sex in the general population, particularly among youth between the ages of 15 and 24 is major factors in the transmission of HIV in Nigeria (NACA, 2007).

Our study further revealed that higher fertility rate was observed among HIV positive women in rural than urban area (table 3). This finding is consistent with the findings from previous studies where similar pattern was also observed (Zaba et al., 2010; Gray et al, 2010). Possible explanation for the finding is that urban women are more educated, have more access to health information and health facility than rural women. They are less likely to indulge in risky sexual behavior than their rural counterparts (Helene et al, 2004). For instance, condom use which is widely known to be a protective measure against contacting HIV/AIDS during sexual intercourse is more commonly used in urban than rural areas (Adebimpe W. O and Asekun O.E.O, 2012).

The urban and rural RIR was higher and lower than one respectively (table 3), but the RIR was estimated to be higher than one for Nigeria. Higher

Table 4. Logistic regression analysis of socio-demographic characteristics influencing HIV status determination.

Background characteristic	β	Significance	Exp (β)	95% CI for Exp (β)	
				Lower	Upper
Age group					
15-19 (ref)	Ref.	Ref.	1.000	Ref.	Ref.
20-24	0.208	0.730	1.231	0.378	4.007
25-29	-0.601	0.086	0.548***	0.276	1.090
30-34	-0.497	0.157	0.608	0.305	1.212
35 and above	-0.652	0.062	0.521***	0.263	1.033
Zone					
North west (ref)	Ref.	Ref.	1.000	Ref.	Ref.
North east	-0.188	0.696	0.829	0.323	2.128
North central	-0.796	0.065	0.451***	0.194	1.051
South west	-0.849	0.027	0.428**	0.202	0.908
South east	-0.133	0.750	0.876	0.387	1.982
South south	0.016	0.973	1.016	0.402	2.568
Marital status					
Currently married (ref)	Ref.	Ref.	1.000	Ref.	Ref.
Never married	1.557	0.000	4.742*	2.401	9.367
Formally married	0.462	0.419	1.587	0.518	4.860
ANC					
Yes (ref)	Ref.	Ref.	1.000	Ref.	Ref.
No	-0.424	0.119	0.655	0.384	1.115
Religion					
Islam (ref)	Ref.	Ref.	1.000	Ref.	Ref.
Christianity	1.068	0.323	2.910	0.351	24.151
Others	0.311	0.771	1.364	0.169	10.993

*Significant at 0.1%; **significant at 5%; ***significant at 10%; ANC = antenatal clinic; ref = reference category, β = covariate, exp (β) = estimate of the odds ratio.

estimate of RIR above one in the urban area shows that HIV prevalence was over-reported in the area. The estimated RIR in our study was higher than the one reported for urban area in Cameroon by Engene and Charles (Engene and Charles, 2008). Also, an estimate of RIR lower than one in rural area indicates under-estimation of HIV in the rural areas of Nigeria. This estimate was slightly higher than the figure estimated by Desgrées du Loû and colleagues for rural area of Ivory Coast (Desgrées du Loû et al, 1999).

The multivariate analysis shows that being in the South-west is more protective against contacting HIV than being in the North-west (table 4). Also, women who were formally married were strikingly more likely to contact HIV than those never married. Possible explanation for this differential is that women in the South-west part of Nigeria are more educated and less likely to indulge themselves in HIV risk behaviors than women in the North-west. Previous studies have shown that women in the South-west were more likely to use condom during sexual intercourse than women from any parts of Nigeria

(NDHS, 2003; NDHS, 2008; NPC, 2006).

Limitation

The current study used secondary data and as such, possibility of non-representative sample errors cannot be completely eliminated from the findings of this study. Relative inclusion ratio approach only uses current fertility of women in its estimation, it does not account for other factors that could lead to either under-estimation or over-estimation of HIV prevalence. Further research is thus needed in this regard.

Conclusion

The RIR found in our study is an indication of over-estimation of HIV prevalence in Nigeria. However, HIV prevalence was overestimated and underestimated in urban and rural areas respectively. Accurate statistics on

HIV prevalence is necessary in Nigeria. This will assist HIV programmers in their strategies to combat HIV in Nigeria.

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Full Length Research Paper

Condom use among at-risk African American young adults

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This study investigated sexual risk behaviors of at-risk males and females in the Philadelphia and Hartford Research and Education on Sexual Health and Communication (Project PHRESH.comm) study. We employed the Theory of Planned Behavior and sexual scripting theory to understand sexual risk behaviors of 18 to 25 year-old Hartford, Connecticut (CT) African Americans. Focus group and sexual relationship life history interviews were coded and analyzed for themes. Seven themes emerged: factors that informed condom use decisions; condom use negotiation; spontaneity and condom use; emotion and sex without condoms; resources and condom use; condom use infractions and partner informing; and knowledge and condom use efficacy. The study revealed that love or concern for a partner's feelings might alter sexual scripts and intentions to use condoms. Difficulty reconciling condom use with intimacy needs led to sex without condoms. Very importantly, an information deficit seemed to interfere with consistent condom use across relationship types, and among pregnant women in precarious sexual situations suggesting the need for education and re-education about condom use among African American young adults.

Key words: Condom, sex, love, African American.

INTRODUCTION

Human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS), sexually transmitted diseases (STDs), unintended pregnancies, and abortions remain serious public problems for African American young adults. The sexual trajectory for African Americans begins early; 15.2% report un-coerced sex by age 13, compared with 3.4% of White youths (Youth Risk Behavior Surveillance-United States, 2009), which potentially increases the numbers of their sexual partnering relationships, subsequent sexual and reproductive morbidities, unintended pregnancies and abortions, and early parenting. In 2009, in Hartford, Connecticut, the site

from which the sample was drawn, for African Americans compared with Whites, gonorrhea rates were nearly 3.50:1; syphilis rates were nearly 3.50:1; and chlamydia rates were 2.50:1. From 2005 to 2009, the HIV/AIDS rate among Hartford African Americans was 44%, although they represent only 13.3% of the population (Connecticut Department of Public Health AIDS and Chronic Diseases, 2010). Complicating the sexual and reproductive health morbidities are STD infections that increase the potential for contracting HIV (Fleming and Wasserheit, 1999). Much higher abortion rates also have been reported (32.5% versus 8.5% per 1,000, respectively) for African

American young adults compared with their White peers (Pazol et al., 2009). Risky sexual behaviors have been associated with social and cultural influences. Semi-closed sexual networking systems, whereby African American people have sex primarily within their ethnic group, has been implicated as a causative factor for their HIV/STD burden, given the heavy concentration of HIV/STDs in African American communities (Laumann and Youm, 1999). Lower marriage rates (Goodwin et al., 2009), greater rates of sexual relationship concurrency and non-monogamous sexual partnering (Adimora et al., 2007), along with the challenges of negotiating safe sex across a range of sexual relationship types (Singer et al., 2006) increase sexual health risk. Secrecy among men who have sex with men and who also have unprotected sex with female partners (Montgomery et al., 2003), and HIV- and AIDS-related stigma interfere with disclosure as well as involvement in HIV-related preventive and health seeking behaviors (Radcliffe et al., 2010).

To date, barring abstinence or being in a long-term, mutually monogamous relationship with an uninfected partner, the key to most successfully protecting oneself against HIV/STDs and unintended pregnancy is consistent condom use (Workowski and Berman, 2006). Nonetheless, consistent condom use can be challenging, particularly in circumstances of multi-partnering and in non-monogamous relationships as compared with monogamous ones (Hock-Long et al., 2013). Although relationship type can influence sex risk behaviors, interpersonal relationship factors remain under-examined. The crux of the matter (consistent condom use from the beginning to the end of sex) may be in the interplay of not only social and cultural factors but also interpersonal affective dynamics in sexual and romantic relationships.

Within relationships, human beings of both genders experience and respond to each other's emotions of love, spontaneity in sexual expressions, passion, and physical desire; and sex without condoms is considered more intimate and, thus, more satisfying. Such intimate affective relationship factors can influence sexual behaviors, including condom use.

In light of the unyielding public health dilemma of high HIV/STD rates and unintended pregnancies and resulting abortions in African American communities, and given the preventive benefits that consistent condom use can provide, we seek to understand what factors are associated with condom use among heterosexual African American young adults in Hartford, Connecticut. We use the theory of planned behavior (Ajzen, 1991) and sexual scripting theory (Simon and Gagnon, 1986) to understand condom-use behaviors, and given the backdrop of poverty within which sex-risk behaviors occur for these participants, consider the findings in a structural violence context.

Theoretical perspective

Sexual risk behavior has cognitive and interpersonal affective attributes, and behaviors occur within social contexts. As noted, we use the theory of planned behavior (Ajzen, 1991) and sexual scripts (Simon and Gagnon, 1986) to explain the risk behaviors of participants in this study. The theory of planned behavior (TPB) has been used to understand sexual behavior from a cognitive perspective. TPB posits that "attitude toward a behavior", a favorable or unfavorable appraisal of behavior; "subjective norm", social pressure to perform or not to perform a behavior; "perceived behavioral control", actual behavioral control whereby an individual has the resources, opportunity, and ability to perform a behavior; and "intention" to perform the behavior, are antecedents that predict behavior that is under a person's volitional or actual control.

While social pressures and actual control both influence attitude, the more favorable the attitude toward performing the behavior, the greater is the intention and potential to perform that behavior. However, mere formation of an intention is insufficient to predict behavior. Although people have a tendency to perform behaviors that they perceive will produce desirable outcomes, a critical predictor of the performance of a behavior is the presence of actual control. A high level of actual control wherein the individual has the requisite opportunities, resources, and ability to complete the behavior increases the potential of performing that behavior. TPB is supported by empirical evidence that shows that intentions and their antecedents are related to safe-sex behaviors (Sheeran and Taylor, 1999). The theory has received much support for its usefulness when studying health behaviors (Godin and Kok, 1996), including condom use in Black populations (Giles et al., 2005). TPB helps the understanding of cognitive aspects of sexual behaviors; however, this framework does not fully explain how affective dynamics (Dutta-Bergman, 2005) that occur within 'interpersonal' sexual and romantic relationships, for example emotions of love, caring, or the desire to sexually please oneself or a partner, can bear upon safe sexual behaviors despite people's intentions.

Sexual scripting is a metaphor for understanding sexual behaviors. Sexual scripting theory posits that mediators of sexual behavior patterns are located within the 'cultural', or social collective; the 'intrapsychic', or personal values and desires; and the 'interpersonal', where individuals participate in scripting their sexual experience together (Simon and Gagnon, 1986). These scripts subconsciously guide individual sexual behavior, couple interaction, and the ways in which the broader society evaluates such behavior. It is at the interpersonal level that an individual must reconcile personal values and desires with those of the other. Sexual scripts can

influence safe-sex behaviors, and the concept has been used in research to examine sex-risk behaviors (Bowleg et al., 2004), including condom use among heterosexual African Americans.

Condom use as a preventive measure has become an important part of people's sexual scripting; however, its use is inconsistent across relationship types. A potentially problematic aspect of sexual scripting in regard to condom use is that it interferes with intimacy and sexual pleasure (Bowleg et al., 2004). A strategy to help reduce sexual and reproductive health disparities among African American young adults may be developed once we understand the complexity of sexual scripts and sexual behaviors that happen not just as individual phenomena but also within sociocultural and interpersonal contexts. In this study, TPB and sexual scripting inform the understanding of sexual risk behaviors related to condom use among high-risk urban African American young adults in sexual and romantic interpersonal relationships.

We report findings on sociocultural and interpersonal factors related to condom use among African Americans from Hartford, Connecticut, where 38% of the population is African American and over 18% live below poverty level (Poverty, 2011). Both of these factors, which have been strongly associated with higher HIV/STDs and rates of unintended pregnancy and resulting abortions, limit access to effective preventive and curative health care. The burden of these health risks is particularly problematic for sexually active Black young adult males and females between the ages of 15 and 24 (Centers for Disease Control [CDC], 2008).

METHODOLOGY

This study is based on qualitative data from the CDC-funded study Philadelphia and Hartford Research and Education on Sexual Health and Communication (Project PHRESH.comm), a five-year qualitative and quantitative, multi-method study (2004 to 2008). The study investigated the context within which African American and Puerto Rican young adults communicate sexual values and negotiate barrier contraception. The study included focus group discussions, in-depth individual sexual and romantic life history interviews, sexual behavior diaries, and structured interviews, which enables triangulation (Crabtree and Miller, 1999). Purposive sampling was used to recruit participants through street-outreach strategies and from family planning and STD clinics, community colleges, youth and young adult programs, and parks and recreation sites.

Following approvals from the CDC, University of Connecticut, the Hispanic Health Council in Hartford, Connecticut, and the Family Planning Council of Philadelphia Institutional Review Boards, individuals who met the study criteria (age 18 to 25, self-identified African American or Puerto Rican, had sex with a member of the opposite sex in the last year) were invited to participate, and informed consent was obtained from each participant. Recruiters were African American and Puerto Rican males and females. All interviewers were bilingual females. Focus group discussions (FGDs), which were used to elicit information on cultural norms for

communication concepts, sexual behaviors, relationship types, communication strategies, and patterns of negotiation, were conducted separately with African American and Puerto Rican participants. Sexual relationship history interviews (SRIs) were used to elicit sexual life histories through open-ended individual interviews that lasted one to two hours. For these interviews, a written guide and open-ended techniques were used to elicit information about the participant's self-identified most important sexual and romantic relationships, the contexts of these relationships, sexual history, and communication and negotiation in regard to prevention patterns across sexual relationships.

In this study, data from the Hartford African American FGDs of males and females who comprised four groups (two male and two female) for a total 42 people (15 males and 27 females), as well as data from the 29 open-ended SRIs of 14 males and 15 females were analyzed. The combination of these two methods, the individual-level SRI and group-level FGD fortify the understanding of sexual risk behaviors and condom use among African American young adults. Of the focus group participants, 8% also took part in the SRIs. Participants received the equivalent of \$15 per hour for their time, and bus tokens were provided as needed.

Analysis

An interpretive approach (Crabtree and Miller, 1999) was used to understand factors that influence condom use among African American participants. FGDs and SRIs were tape recorded, transcribed verbatim, and coded for major themes in ATLAS.ti, a software program for managing and analyzing qualitative data. Each participant also completed a two-page form that collected basic demographic and sexual and reproductive information. Small teams analyzed the data through engaging in close, multiple readings of all the text data (about 2,000 pages of text), coding the text, reviewing code summaries across cases, and triangulating themes between methods FGDs and SRIs. Of the text material, 10% was coded by two independent raters to assess intercoder-reliability. Ninety percent reliability (number of agreements/number of agreements + disagreements) was achieved (Schensul et al., 1999).

Participant characteristics

The mean age of participants in both the FGDs and SRIs was 20 (range = 18 to 25). Nearly all (95%) were unmarried and lived in economically disadvantaged inner city areas in single-mother-headed homes. Approximately three-quarters (75% of males and 70% of females) had moved one or more times in the last year, 40% had dropped out of high school, and only 38% were currently employed. Approximately 33% already had one or more children. Of both men and women, 45% reported having had five or more lifetime sexual partners and almost half had ever had an STD.

In a prior publication from this project (Singer et al., 2006), a hierarchy of sexual partnering relationships that were casual (primarily sexual) or committed (sexual and romantic), and that were either concurrent or serial was described. Different relationship types were embedded in a social strategy that spread access to resources (for example, things, emotional fulfillment, access to children, access to preferred sexual behaviors) over a network of intimates. Due to the instrumental nature of some of the kinds of relationships, committed sexual and romantic relationships carried a heavy risk of perfidy or being conducted with concurrent sexual relationships (Singer et al., 2006).

In casual relationships, participants engaged sexually with

strangers and acquaintances or with friends for various reasons. Within the relationship hierarchy, condoms were deemed normative with casual partners but were soon abandoned in committed relationships. However, actual condom use was inconsistent across all relationships because it was dependent on the actual context (physical and emotional) of the sex act. Although most participants idealized a loving, monogamous relationship, disenchantment set in after infidelity (Abraham et al., 2011).

In this paper, we addressed seven emergent themes from the Hartford, Connecticut, sample of the Pittsburgh Hill/Homewood Research on Eating, Shopping and Health (PHRESH) study that shape condom use behavior: factors that informed condom use, condom use negotiation, spontaneity and condom use, emotion and sex without condoms, resources and condom use, condom use infractions and partner informing, and knowledge and condom use efficacy.

RESULTS

Factors that informed condom use

Within the range of sexual and romantic relationships described above, participants described methods used to determine whether the partner was “clean” (HIV/STD-free). A male participant stated that he would ensure that his partner was clean by way of olfactory and visual checks that, if passed, would justify sex without condoms.

“Look, I got my angle close to smell it (the vagina) and I was just like, look. I was like, okay. Ain’t got no green stuff, no yellow stuff coming down. I’m trying to smell, right. That’s how it gets done with any female.”

HIV/STD-free status was ascertained through documentation of a partner’s sexual health status in clinic visits. These visits, often done together upon the urging of one partner or mutually agreed on, served the purpose of relationship building and of confirming and disclosing sexual health status to determine whether condom use was necessary. This behavior occurred in a variety of relationship types, including sexual relationships that were intended to be monogamous, or when the intention was to protect oneself while conducting concurrent sexual relationships. As one young woman stated:

“I showed him my papers, and he was like, ‘Oh, you really clean, you ain’t had nothing.’ Actually, we both made sure we were safe. We went to the clinic.”

Feeling invincible, a cognitive marker of youth that has behavioral ramifications was a factor in the non-use of condoms. A male participant who contracted an STD during late adolescence explained:

“I couldn’t believe it, like, damn, I got a STD. That shit shocked me, like, ‘cause, you know what I’m saying; you

never think you can get anything. But, really, anybody can get anything, so. It was like that. It was crazy.”

Thus, participants’ situation-dependent reliance on semi-scientific methods and clinic test results to assess partners’ risk of infection suggests a degree of pragmatism while operating from a basis of relative ignorance in regard to prevention of sexually transmitted infections, HIV, and pregnancy. The use of testing, at times, signaled the hope to begin a serious relationship risk-free, but continued partner concurrency, along with random condom use, undermined this approach.

Condom use across partners

It was not unusual for sexual partners to move in and out of relationships or sometimes to resume sexual relationships with prior partners. Some participants protected themselves against HIV/STDs with condom use, at least during the initial stage of their renewed involvement. As one female participant stated:

“We used condoms because we haven’t been together in a while, and I don’t know who he’s been messing with, I don’t know what he got.”

Trust in regard to sexual fidelity factored into the use of condoms use, particularly in situations where its use was discontinued and a partner later requested resumption of condoms use. This is seen in a female participant’s narrative:

“Sometimes I would tell him to use a condom and then it would be an argument because now, since I told him to stop using it once, and when I tell him to put on one, he is like, who you fucking?”

Some participants reckoned with the importance of condom use when aware that they and their partners were having concurrent sexual relationships, and this factored into being intentional about using condoms. One female participant stated:

“I know I wasn’t the only person that he was having sex with, and he knew that he wasn’t the only person that I was having sex with. But with everybody I have sex with, I use a condom. And him, it was just, like, you need to put a condom on, yo, because I don’t be around you all the time, and I know I’m not the only person that you’re having sex with. So . . .”

Whether to use condoms also hinged upon a particular partner’s attitude. A lackadaisical attitude suggests that a person may not be using condoms regularly with other

partners and, therefore, condom-less sex may present a health risk, as this young man indicated:

“Some females that I mess with [have sex with], they just don’t say nothing [do not request condom use]. So if I’m about to stick it in there, and they don’t say nothing, I’ll put a condom on just for that purpose”.

Avoidance of pregnancy only, not of HIV/STDs, was at times, the impetus for condom use. A male participant stated:

“I was 20, and, at the time, I was like ‘I don’t want no kids’ ‘cause I grew up raising other kids. So I was like, ‘I don’t want no kids.’ So I always used a condom, regardless”.

For some females, however, sex without a condom was not negotiable. Thus, they ensured that condoms were used during sex.

“No, it’s like automatic, it’s automatic, cause it’s like, I feel like it’s awkward to be, like, “well you know, ahm, you need to put on a condom.” No, cause if I feel like if you’re not putting it on, or you’re not gonna put it on, or you’re not putting it on fast enough, I would do it myself. I don’t wanna talk about it; we already know what’s going on. Hello!”

In these situations, condom use is dependent either on a “blanket-policy” approach to universal condom use with all partners, which was relatively rare, or on a delicate negotiation based on the relationship dynamics of the specific relationship. In the latter, the outcome was open to repeated negotiations over time as the relationship evolved.

Spontaneity and condom use

Both male and female participants discussed how condom-less sex occurred as a result of the spontaneous nature of sex and the desire for sexual gratification. In these instances, spontaneity complemented by a lack of intention to use a condom resulted in no active measure for HIV/STDs or pregnancy prevention by either party. This is seen in this female participant’s narrative:

“It happened so fast, like, you know what I’m saying? And I thought he was going to put one on just by me not even saying nothing. He didn’t even put one on, and I know I should’ve said, “Put a condom on,” but I didn’t even tell him. So, it just [happened]-everything just happened so fast. That’s what happened.”

Another female participant acknowledged her role in

dissuading her partner from using condoms during sex with her.

“He felt more safe using a condom, but it’s like, when you’re so in the heat of the moment, I didn’t want him to use one. I pressured him not to use condoms . . . we just get in the moment, have sex, forget about the condom. No, honestly, it was more like a forgetful moment. When we remember, we put them on.”

As explanation for not using a condom, a female participant stated:

“I don’t think he liked using the condom. If he had them right there, he’d use it. But if they weren’t right around, because he knew I was on the pill, he wasn’t really worried about it, so . . .”

As a further explanation for not using a condom, a male participant stated:

“A condom, no, I’m sorry, I wanted that ass. That’s it.”

Another male participant explained how both his own as well as his partner’s desire for sexual gratification superseded condom use.

“I can’t feel nothing. She was like, “I can’t feel nothing either.” I mean I can, but I can’t feel like I want to feel it. So she was like, “Just take it off.” I wanted to feel everything. I wanted her. I wanted her to feel me, and I wanted to feel her.”

Despite contracting an STD as a result of unprotected sex, another male participant described how he continued to take the health risk of having condom-less sex.

“I got real scared [about contracting an STD], but then, when you get horny, you’re not scared and that fear goes away.”

Other male participants provided similar explanations. These narratives highlight some basic human responses as barriers to condom use and to sexual spontaneity and are dilemmas in many human sexual relationships. The apparent challenge is to maintain sexual and reproductive health efficacy that includes condom use while preserving sexual spontaneity.

Emotion and sex without condoms

Consideration for a partner’s feelings can negate people’s intentions to use condoms, as can lack of

availability in the moment. A participant explains how his partner's emotional response influenced his intentions not to use condoms.

"No, 'cause I didn't want to hurt her feelings. And 'cause I didn't want to say, "Oh, I went to get a condom because I don't know what you got. You might have AIDS or something. Not to scare you, but I'm just saying I didn't know what kind of virus and germs and bacteria you got."

Similarly, consideration for a partner's feelings in the process of relationship building often influenced the choice not to use condoms.

"To them [girls], it's more like, it shows them that they're the only girls that you're shagging, so it's really no need for no condom. It's more like you're my number one. That's all it is."

Having a personal history of few sexual partners or the belief that a new partner has a history of few sexual partners is also rationale for condom-less sex, as the presumption is that one is not likely to be HIV/STD-infected. In such situations, participants are unwilling to suggest condom use to avoid imparting the judgment of sexual multi-partnering and thereby diminishing the meaning of the newness of the experience of sex together. This combination of faulty risk assessment and the desire to preserve meaning are summed up in this male participant's statement:

"You're young, and I haven't even had that many partners, and she was like, "Yeah, that's me." So, I didn't want her to, like, think of anything [that there is a perception that she had many sexual partners], when I just be like, "Yo, let's put on a condom." 'Cause we didn't do it at all with a condom. I didn't want to go through all that"

Another male participant described a similar line of reasoning for not using condoms:

"Cause with her, she only shagged one other dude other than me. Like her first and then right after she broke with her first, she met me. So, it's like, I don't know. I didn't really think. I just did it. That was crazy. I wasn't thinking she was a whore [had many sex partners] or anything, so STDs wasn't on my mind."

Complacency that the relationship is mutually monogamous tended to occur early in sexual and romantic relationships and resulted in non-use of condoms. In this circumstance, sex without condoms was unplanned and predicated upon sexual desire but also indicated emotional commitment to the relationship. A male participant stated:

"The second week I was like, 'I don't have any condoms. I'm horny.' We had sex."

For some participants, contracting an STD served as a warning of the consequences of unprotected sex even within committed relationships, which roused them to engage in regular condom use. After contracting an STD, this male participant took note, stating:

"That's when it just hit me like, yo, you got to use a condom all the time."

Resources and Condom Use

Poverty and the inability to initiate healthful preventive behaviors converged in the following statement, similar versions of which were made by other participants. A male participant stated:

"Sometimes you don't have them [condoms] there, and you don't have money for them."

This causes one to consider that a lack of resources may interfere with access to condoms. Although free condoms are often available in marginalized communities, knowledge of their availability and access to them is not assured. Moreover, many participants spoke on the issue of serendipitous sexual encounters that occur in overcrowded housing conditions.

"When you have the opportunity to be alone, you may not be in a place that has condoms (for example, the school bathroom, under the bleachers, in the park, at a friend's house, in a car)"

This was especially the case for participants during their early adolescent years, when most of them began having sex, and for those who already had children of their own. Finding a place to have sex can be difficult when people live in extended family situations in which there is almost always someone home.

Condom use infractions and partner informing

Both male and female participants discussed infractions related to consistent condom use, which interfered with their efficacy to protect themselves from HIV/STDs and unintended pregnancies. A female participant described the challenge of ensuring that her partner wore a condom during sex and her being oblivious that he had removed the condom.

"And then when he does not put it on, like, I would have

to put it on [his penis] myself. And then when I do put it on, and we be like doin' it [having sex], it's like he'll take it off, and I wouldn't know the difference because I'm already so wet. So I wouldn't know, and when I'm done then he'd be like, "Oh, I came in you." I be like, "What are you talking about?"

Another participant contracted an STD that she attributed to her partner's removal of the condom during sex without her knowledge.

"So, but I didn't know that he was not wearing it. Like, he'll put it on when we're gonna have sex, but like when we're done it's not on anymore. Like he'll take it off. He'll try to be funny and take it off. That's when I knew I caught something [STD]."

A female participant explained males' and females' motives for condom use infractions:

"Boys don't trust girls with handling condoms 'cause girls be popping holes in condoms, trying to get pregnant and stuff like that. They don't trust girls, but I don't trust boys, I know every dude I've been with talk about, 'yeah you will have my baby.' Like Joseph, he broke a condom on purpose cause he wanted me to have a baby with him."

In non-committed sexual relationships and in cases in which participants had concurrent relationships, maintaining lines of communication was problematic for structural reasons related to poverty (for example, disconnected phones, lost cell phones, frequent residence change) and prevented informing partners that an STD might have been acquired or transmitted. A female participant stated:

"I didn't get to talk to him because when I did call to let him know [I was infected], the number was disconnected. There was no way for me to reach him, and I ended up giving it [STD] to my baby's father, who I'm with now. And I told him [my baby's father] everything."

In discussions laced with angry undertones, participants describe instances of contracting an STD during condom-less sex with partners who had concurrent sexual relationships. Out of revenge, this female participant did not inform the partner she suspected of infecting her. As she stated:

"I left him alone. I didn't even tell him nothing. The next person I had sex with, we got tested together [before sex]."

Knowledge and condom use efficacy

Although most participants were broadly aware that

condom use could be an effective preventive measure against HIV/STD and unintended pregnancies, their practices highlight errors in their knowledge of how to use a condom. For example, the use of a new condom from start to finish of each sex act was not always practiced, as indicated by this male participant:

"I may use the same one [condom] again, it depends."

Condom use from the beginning to the end of sex was inconsistent because partners did not internalize the message that HIV/STDs or unintended pregnancy could occur. A female participant stated:

"When we have intercourse, like, he'll put it in and then he'll take it out. Then when he felt he was about to bust [have an orgasm] he'll put a condom on."

Some participants were not mindful of the HIV/STD risk that exists from unprotected genital-genital contact, whether or not their partners reached orgasm during intercourse, or of the risks associated with oral-genital sex. They also were not mindful of the ineffectiveness of the withdrawal method as a protective mechanism against pregnancy. As one male participant stated:

"You've not come [have not ejaculated], or if the male removed his penis before ejaculating, you're not in me [when you ejaculate], so [because you pulled out] it wouldn't matter."

Another male participant explained:

"After I ejaculated, she put her mouth there [on a condom-less penis] and she took it. I didn't ask her to. I didn't ask her to do nothing. I mean, she did it. She took it upon herself saying "I'm gonna drink him up and I'm gonna swallow it." So I said [to myself]: "Okay, well . . . just gonna let her do it."

In regard to the risky sexual activity of "running train" (one woman having sex with a number of men in succession), a participant explained his choice for sexual gratification when condoms are not available. It was clear that he did not recognize that HIV/STDs could be transmitted via an oral-genital mode of contact.

"Most of the time, if you ain't have no condom, you would just get some head (oral-genital sex)."

He further explained his reasons in regard to condoms while running train on a female, before or after other males.

"I don't know which one of them nine niggers is holding

[has HIV/STDs], so I ain't messing with it [no penile penetration of the vagina without a condom]. If it's me first, I don't care [may not use a condom], but if I'm going after two or three people, oh no. I'll be downstairs like, yo, who's got a condom. Let me get that. Let me see that for a minute."

Few studies have addressed condom use by pregnant women, although they, of course, are also at risk for HIV/STDs. A female participant failed to consider her susceptibility to these infections despite her awareness that her partner did not regard their relationship as monogamous.

"When I got pregnant, I went, 'I don't want to use condoms no more. I'm pregnant. I'm not using no condoms.'"

In this uncommitted relationship in which the young woman was impregnated by a different sex partner from the current one, and with the knowledge that the current sexual partner had other sexual partners, she was neither mindful of the potential for transmitting HIV/STD and agreed to sex without condoms. As the current male partner explained, because pregnancy, a *fait accompli*, was the major risk in their minds, condoms were considered superfluous.

"The first night, we was doing [it], we had a condom on. But like halfway through, it was, like, take that shit off. That shit don't make no sense. When she told me to take it off I just took it off. I wanted to take it off. One, she was pregnant already. She can't get pregnant twice. So, it was like she was already pregnant."

Thus, misinformation about the transmission of HIV/STDs and how to use a condom effectively still contributes to STD risk despite years of public health interventions to improve knowledge about these topics in marginalized communities. The overall low educational achievement of the participants also may hamper full understanding of the reproductive system and the biological risks of STDs and pregnancy.

DISCUSSION

This qualitative study used TPB and sexual scripting to examine condom use among urban African American young adults in Hartford, Connecticut. Seven themes emerged from the data: factors that informed condom use; condom use across partners; spontaneity and condom use; emotion and sex without condoms; resources and condom use; condom use infractions and partner informing; and knowledge and condom use efficacy. The

findings of this study call attention to an association between factors in the affective domain, specifically emotions that occur in interpersonal relationships that can influence sex risk behaviors. Although there are indications that condom use varies according to the type of interpersonal relationship, affective responses that commonly alter people's sexual behavior and that influence condom use remain understudied.

Despite acknowledging the usefulness of condoms in preventing HIV/STDs and unintended pregnancies, both male and female participants used condoms inconsistently from the beginning to end of sex in all sexual and romantic relationship types. Their appraisal of the utility of condoms was therefore, not at issue, nor was the broader social norm of condom acceptability. In particular, participants' intention to use condoms, and to execute condom use across the variety of sexual and romantic relationships, was impeded by the difficulty in effectively broaching the subject of condom use across relationship types. Their participation in concurrent relationships with self-assigned hierarchical emotional levels (Singer et al., 2006) interfered with the intention to use and the actual control of the use of condoms consistently across relationships and throughout the act of sex. Therefore, while TPB explains that the intention to perform an act in addition to having actual control to perform that act increases the potential for that act to be performed, other factors may influence condom use.

Our finding that emotional and interpersonal factors in regard to wanting to establish a relationship and to maintain trust and intimacy influence condom use corroborates that of other research (Corbett et al., 2009). Research has shown that the use of condoms is challenging in sexual relationships that are inconsistent, when there are concerns about trust and fidelity, and when there is reluctance to use condoms on behalf of one of the partners in a relationship (Hock-Long et al., 2013).

However, actual control of the use of condoms correctly and consistently, despite the range of affective influences present in various interpersonal relationship types, was an important challenge for most participants. In the process of building sexual and romantic relationships, participants often did not initiate condom use, thus preventing their use. Participants had difficulty using condoms where there was concern that a partner may feel rejected or insulted. Reconciling condom use with intimacy desires brought on fears of obliterating inter-couple closeness, and issues of trust in regard to relationship fidelity arose when condom use was requested, even more so in relationships perceived to be committed ones. A lack of condom availability in the heat of the moment was also an important reason for non-use, as many who have experienced the passion of youth can attest. Interpersonal behavioral factors interfered with

efficacious condom use even in the presence of proactive intentions when there was awareness or suspicion of concurrent sexual partnering or to prevent HIV/STDs and unintended pregnancies. Both males and females reported impairing the integrity of condoms by putting holes in them, thus rendering them potentially ineffective against HIV/STDs and unintended pregnancy.

Another significant finding was that an information deficit in regard to condom use was apparent in several areas. While pregnant, women did not use condoms even with partners known to be in concomitant sexual relationships. Participants reported using olfactory and visual checks to rule out HIV/STD infections. They also reported giving or receiving oral-genital sex, and participating in penile-vaginal and penile-anal sex without protective devices such as condoms, where there is skin-to-skin or genital-mucosal contact. Similar to the findings of other studies, participants also reported reusing condoms (Crosby et al., 2002). Dual methods of contraception, for example, the use of condoms for the purpose of preventing HIV/STDs by women already taking oral contraception, was often not considered. These experiences occurred against the backdrop of structural factors of poverty that can obscure the procurement of condoms. These structural factors delay knowledge and impede the use of free condom sources, which affects intentions to use and actual control of the use of condoms.

Unmitigated HIV/STD rates and high unintended pregnancy rates heighten the importance of examining diverse contributory factors, particularly in view of the complexity of African American lives and their impact on sex risk behaviors. Additionally, poverty, which is more frequently experienced in African American communities (Poverty, 2012), remains the single most important demographic factor associated with HIV infection rates among heterosexual inner-city residents (Denning and DiNenno, 2010). These structural violence factors promote the marginalization of African Americans through their perpetuating the cycle of poverty that has been linked with risky sexual behaviors and which results in high rates of HIV/STDs and unintended pregnancies' occurring across generations.

Although not explicitly examined in this study, these issues that facilitate risky sexual behaviors are common among urban African Americans. However, locating findings related to sexual health risk behavior within the unique structurally violent environment in which they occur for African American young adults would not only help us understand these behaviors but also can serve as the contextual basis for developing more effective preventive measures. Altering ineffective sexual scripts through education and re-education about correct condom use and improving strategies to normalize condom use in African American communities are needed to increase condom use in the face of interpersonal affective

challenges inherent in various relationship types.

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Full Length Research Paper

Barriers to repeated use of female condom among women and men of reproductive age in Nigeria

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Repeated use of female condom is very low in Nigeria. Just three out of ten persons who have ever used female condoms intend to continue using it. This study conducted in three Nigerian States was aimed at identifying the barriers to repeated and non repeated use of female condom. Among men and women of reproductive age, 16 focus group discussions (FGDs) and 16 in-depth interviews (IDIs) were conducted using structured tools. Key findings showed that first experience with the use of female condom was a major reason for continuing or discontinuing use of female condom. First use experience was influenced by what users were told and the skills they have in wearing female condom. Informed and supported female condom users were willing to repeat its use while those who were not, had "bad" first experiences. Female condom is a unique commodity. Just handing it out without proper education will pose a serious challenge for its continuous and sustained use. Frontline staff should be well informed and educated on the product. First time users should be supported to use the product.

Key words: Female condom, repeated use, sustained use, men and women of reproductive age, first experience.

INTRODUCTION

Almost twenty years after its first introduction, the female condom has yet to become a common good. Despite small successes to scale up female condom programming such as the 2005 United Nations Population Fund (UNFPA) Global Female Condom Initiative, which resulted in a more than threefold increase of female condom distributed in Africa over a period of three years, the overall global distribution remains low (Peters et al., 2010). Several institutions and partners in Nigeria are currently supporting female condom programming. These institutions and partners include the Federal Ministry of Health (FMoH), the National Agency for the Control of AIDS (NACA), Society for Family Health (SFH) with the support of Oxfam Novib and UNFPA among others. Most

female condom programmes primarily target women aged 15 to 49 years, while men aged 15 to 64 years who desire an effective, high quality condom brand and whose support is needed to enhance product uptake are the secondary target. Nigeria currently promotes the use of FC2, a second generation of female condom.

Female condoms work to prevent pregnancy. By acting as a barrier, it prevents the exchange of fluid between sexual partners. This way, the use of female condoms reduces the risk of sexually transmitted infections including human immunodeficiency virus (HIV).

Evidence from a quantitative study conducted in August, 2011 shows that repeated use of the female condom is still a major challenge among users (SFH, 2011).

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While the number of female condom distributed annually has been on the increase in Nigeria, this increase has largely been because of the introduction of the product to new users. Available evidence shows that 67% of those who have ever used female condom stopped using the product, 7.4% stopped but resumed use while only 29.6% have used a female condom and are still using it within the last 12 months (SFH, 2011). Of those who stopped using female condom within the last 12 months, only 28.6% intends to use it in the future. The study conducted in 2011 was conducted among women and men of reproductive age in three Nigerian States: Edo, Delta and Lagos, with a sample size of 1,652 (male: 542 and females: 1,020). The long term sustained use of female condom requires that users are satisfied with the product and continue using it. Repeated use of female condom ensures acceptance that will continue to drive demand for the product, thereby ensuring programme sustainability.

There are several obstacles related to introducing female condom to potential users. These include getting people to change their sexual behaviour, overcoming deeply rooted biases especially among providers and addressing gender disparities. Other obstacles include lack of communication between sexual partners and between providers and patients, and the stigma attached to all condoms (Warren et al., 2003). Warren et al. (2003) suggested that to overcome the barriers, quality information should be made available, quick response to requests for information and supplies of the female condom, support should be given to the development of introductory strategies, and new ideas should be catalyzed to expand good practices.

A study to assess the viability of the use of the female condom among Spanish university students showed that gender and type of couple (steady versus casual) condition the use of the female condom. The study also confirms that knowledge and experiences gained by young people in the use of the male condom will tend to bias them unfavourably against the female condom in favour of the more familiar male one (Fernandez et al., 2006).

Refusal and initial difficulty collectively affect the use of female condom among a large proportion of women. The refusal to try female condom largely reflects aversion to insertion; women who try but experience difficulties have different profiles, which implies that these women have different programmatic needs, and different interventions are needed to promote the use of female condom among them (Artz et al., 2002). Artz et al. (2002) stated that interventions for women in the first group might include desensitization, teaching partners to insert the female condom or emphasizing use of the male condom instead. They noted interventions for women in the second group might include supervised insertion practice and added instruction as needed, as well as efforts geared toward

building women's sexual assertiveness.

The Harriet and Robert Heilbrunn Department of Population and Family Health, Columbia University in a survey placed the effectiveness of female condom at 95% with perfect use and 80% with typical use, but noted that the shortfall of female condom as a preventive measure is the fact that it is more expensive than male condom and also the challenges to use in a relationship with weak partner cooperation and/or intimate partner violence coercion and latex allergy. In summary, the research suggested that teaching women possibility of unforeseen occurrences and proper usage will help in promoting female condom usage.

The Women Health Line 2009 suggested that the unappealing or unusual appearance of the female condom, inadequate data regarding its effectuality and safety, and the one-size-to-fit-all female condoms that are available might not favour many women. Some women also feel self-conscious because of the visible outer ring or frame outside the vagina (Beksinska et al., 2010). Beksinska et al. (2010) also mentioned that hardness to insert and remove the condom might also pose a problem to some women. They also suggested that adding more lubricant to the FC2 female condom can lessen these problems. The author also highlighted the issue of accessibility and limited availability. The wider use of the female condom in countries with severe HIV and acquired immune deficiency syndrome (AIDS) epidemics depends on the commitment of governments and other major donors. He recommended that to achieve its full potential, much greater effort needs to be made worldwide to make the female condom more affordable, accessible and acceptable.

Napierala et al. (2008) identified the following as predictors of female condom uptake: interest in using female condom, liking female condom better than male condoms, and believing one could use them more consistently than male condoms. They also reported that though female condom may not be the preferred method for the majority of women, with access, proper education, and promotion, they may be a valuable option for some Zimbabwean women (Napierala et al., 2008).

Choi et al. (2008) in a study on the efficacy of female condom skill trainings in risk reduction among women suggested that skills training can increase female condom use and protected sexual acts without reducing male condom use among women.

There have been many studies on the use of the female condom in developing countries. Many have involved commercial sex workers who generally accept the device more quickly than other women. Most studies have shown high or moderate acceptability among sex workers, including those in China, Costa Rica, Côte d'Ivoire, Thailand, and Zimbabwe. But these studies also revealed a number of barriers to the use of the female

condom, including clients' distrust of unfamiliar methods, inconvenience, insertion difficulties, discomfort or pain from the inner ring, and itching (Heidi Brown, 2003).

While many of these women said they liked the female condom and would recommend it to others, they still preferred to use the male condom for sex work. This suggests that the female condom may be a useful back-up method for commercial sex workers when men refuse to use the male condom.

Studies among women and heterosexual couples in China, Kenya, South Africa, and Zambia also showed relatively high levels of acceptability. Users often overcame initial problems with the female condom after several uses. In fact, women in Kenya, and both men and women in China found that the device made sexual intercourse pleasurable. However, there was some resistance to its use, particularly in South Africa, for a variety of reasons, including appearance, difficulties concerning its use, reluctance among male partners, over-lubrication and messiness, concern that the device is too large and reduced sensation (Population Reference Bureau, 2003).

Study objective and research questions

The objective of the study is to provide evidence for interventions that will promote the use of female condom.

Research questions

The objectives of the study are:

1. Within the Nigerian context, what are the possible reasons for the low levels of repeated use of female condom among women and men of reproductive age?
2. What are the possible options to address the issues related to repeated use of female condom?

METHODOLOGY

Qualitative methods via focus group discussions (FGDs) and in-depth interviews (IDIs) were used. Interview sessions were conducted using Pidgin English (local language).

Study locations and population

The study locations were Delta, Edo and Lagos states. These states were selected as the Universal Access to Female Condom (UAFC) project is currently being implemented in the states. The primary study populations are men and women of reproductive age who are currently using and/or have previously used a female condom. The secondary study populations were the distributors of the product (community female condom distributors).

Data collection

FGD and IDI interview guides were used to collect data. Both tools were field tested before the actual fieldwork. The number of FGDs and IDIs conducted are stated in the Table 1. The interview guides have seven sub headings: introduction; awareness of female and male condom; knowledge and perceptions about female condom; experiences with the use of female condom; reasons for first use; reasons for repeated (non repeated use); suggestions on how to improve access to and use of female condom.

Selection of participants

Average number of participants per focus group discussion (FGD) was 8. Participants for the study were purposively selected. The minimum criteria for inclusion were:

1. Must be within age 18 to 49 for females and 18 to 64 for males.
2. Must have used and stopped or currently using female condom.

Participants were drawn from the general population. They were recruited by community distributors who know those who have been buying female condom from them and those who used to buy but have stopped. Participation was voluntary. Community distributors were community members trained to educate people and also distribute female condoms. In order to encourage active participation, the focus groups were made up of similar individuals that is, persons of the same sex, average age and average level of education. In-depth interview (IDI) participants among the distributors for IDI were systematically selected. This was done by obtaining the list of all distributors. They were arranged by sex in an alphabetical order. With a given interval, the respondents were systematically selected. In all, 16 community distributors (9 females and 7 males), were interviewed from a list of 97 persons.

Data analysis and report writing

Discussions were recorded and later transcribed for analysis. Notes were also taken during the interviews. During the analysis, notes taken were compared with the transcription report. Analysis and report writing were done in line with the thematic areas in the discussion guides. The transcription was done by four persons. Data analysis was done by the lead principal investigator with the support of those that conducted the transcription.

Ethical approval

Ethical approval was obtained from the National Health Research Ethics Committee of Nigeria (NHREC).

RESULTS

Of the 127 FGD participants, 74 were females. Most had secondary school education. The average age for females was 28 years while that of males was 36 years. All participants could speak and understand Pidgin English which was used to conduct the sessions. 58 of the interview session participants were current users. Within the context of this study, current user is used to describe

Table 1. Study groups by state.

Study group	Edo	Delta	Lagos	Total
Females who are currently using female condom	1 FGD	1 FGD	2 FGD	4 FGDs
Females who have stopped using female condom	1 FGD	1 FGD	2 FGD	4 FGDs
Males who are currently using female condom	1 FGD	1 FGD	2 FGD	4 FGDs
Males who have stopped using female condom	1 FGD	1 FGD	2 FGD	4 FGDs
Community distributors of female condom	6 IDIs	6 IDIs	4 IDIs	16 IDIs

FGD = focus group discussions, IDIs = in-depth interviews.

males and females who currently use female condom (within the last 12 months). Non users are those who have used female condom previously but stopped within the last 12 months.

Reasons for first time use

Two reasons were given as the main reason for the use of female condom the very first time: Curiosity and the hope that it will prevent unplanned pregnancy. None of the participants reported purchasing female condom the first time they used it, rather, they got it from free samples given during female condom awareness creation events.

“I used it out of curiosity and to prove if all those things they have been saying about it is true. That was on my mind my when I tried it the first time” (Male interview participant).

“I used to see this FC and I feel like trying out new thing. That is how I used it the first time.” (Female interview participant).

Reasons for repeated use of female condom

Positive first experience

Participants were asked to give reasons motivating their continued use of the female condom. Findings indicate that a first positive experience was a key factor that encouraged repeated use of female condom.

“It was nice. It was very nice. Nice in the sense that I did not find any difficulty in using it, the insertion was fine, the usage was also fine, no difficulty in that as well” (Male interview participant).

Females also expressed the same opinion. For them, positive experience meant they had limited challenge inserting it, little complaint from their partners and were

comfortable using it.

Perceived benefits accruable from the efficacy of FC

Married couples became regular users mainly because of the intrinsic benefits. Their opinion is that female condom is an effective way to prevent pregnancy and sexually transmitted infections (STIs) without any concern about side effects, unlike other contraceptive methods such as pills and injectables.

“When you consider what FC does and what you are going to save yourself from, you will not mind continuing to use it.” (Male interview participant).

“My husband said he likes it ... People complain of side effects when using other family planning methods like injectables and pills. One does not have such experiences using female condom” (Female interview participant).

Opportunity to meet the sexual needs of their spouse irrespective of the women natural cycle

The fact that even if a woman is menstruating or breastfeeding, with a female condom she can still have sex was a motivating factor for its repeated use for some women. Having sex when breast feeding or menstruating was not reported as being necessary because of pleasure but to keep their marriages.

“It is used to protect our marriage. For instance, when your husband wants you (wants to have sex with you) and you say no because you are nursing a baby and at another time you refuse, there will be quarrels. So, it is good to use FC” (Female interview participant).

“I like female condoms because my husband is not around, he works offshore and whenever he is around and we make love (have sex) I don't get scared if I am

having my Menstrual flow or not. Because with the use of female condom I can still make love and by so doing prevent my husband from going out” (Female interview participant).

Stronger and feels natural

Some respondents feel that if female condom is properly used, it gives a natural feeling as if one is having sex without a condom. Some also feel the female condom is better lubricated and so reduces pains that may be as a result of the woman not being properly lubricated.

“For me, the reason I continue to use is one, the texture is more enjoyable. It is as if you did not use condom at all, it is very soft. Again the moment the lady wears it, it covers everywhere. The lady will only need to guide you into it and once you enter you have a smooth ride and your mind is at rest. More so, the female condom has more lubricant than male condom which makes for easy entry; no matter how big your penis is the lubricant will make it enter easily” (Male interview participant).

Factors affecting repeated non-use of female condom

Negative first experience

Findings show that the experiences of most of the participants, especially the women, were generally negative which were mainly related to:

1. Perceived complexity (difficulty of insertion);
2. The time it takes to complete the insertion process;
3. Discomfort experienced in the process of use like pains from the inner ring;
4. Fear of possibility that it might slip inside the vagina and;
5. Intimidation as a result of the size of the FC.

Some of such experiences are relived through the following statements:

“Mine was positioning, I tried all the positions in your chart. By the time I got the best position I was already tired. Inserting it was another thing. I had to summon courage to try again; I relaxed a little before I could successfully insert it” (Female interview participant).

“It was only the insertion that was the problem but after that it was a free flow but for her she complains because the information we heard was not enough and the fixing was not okay” (Male interview participant).

Resistance to change and fact that it is a “new” product

Some participants’ reasons for not using female condom continuously is that they are used to male condom and do not just like to change.

“It is just like the Gold Circle (a brand of male condom in Nigeria) it took time before it became accepted. They had to go down very well (create more awareness)” (Female interview participant).

“FC is a new product and response to any new thing is what we are experiencing about the product. What is important now is sensitization because it is not unexpected that people resist new things and find excuses for rejecting it (Female interview participant).

Phobia for size and fears of possibility of FC sliding inside the vagina

A good number of the female participants stopped out of fear that female condom is too large and could cause problems if it goes into the vagina. This is the reason why some females hold it during sex. Some of the women participants also complained that they experienced pain caused by the inner ring during sex.

“The first thing when you open it especially for those who have never seen it is the surprise exclamation about the size that it is too big... The next thing they ask is ‘will it not go out or in during use?’” (Female interview participant).

“Somebody is having sex and you are afraid if the condom will not slip in. How will one explain it that after you have had a sex you are taken to the hospital to remove a condom? So, the fear this may happen did not make me enjoy it” (Female interview participant).

Insertion difficulty and time it takes

For some single men who stopped using it, the reason they gave was that it is too cumbersome and time wasting to get the woman ready for sex with a female condom. They said the urge for sex could not be sustained by the long process of complex insertion of female condom. Also, single men who stopped using it said that male condoms are faster to use than female condoms.

“Another thing again is that... some stubborn men complain of time of insertion. They say the time is too

long and they cannot wait for all that cumbersome process before having sex. So time wasting and impatience is what happened here” (A male IDI participant).

“Another thing is the time taking to insert female condom, like I said earlier if not for the fact that it protects against STIs and help in FP, before the woman finishes inserting it, the man’s urge will have gone down and his penis will not get to the point of ejaculation” (Male FGD participant).

Limited support for FC use

A large number of FGD and IDI participants across the states mentioned lack of social support from friends and community members as a key factor why people initially use the female condom and then stopped. According to them, education will remove all fears, negative peer influence and perceptions.

“If you come from that angle maybe they have used the product and they share their experience within colleague; their colleagues now starts to condemn the product and they may create the fear that was not there originally to make the person doubt her pleasant experience as fake. They may make her feel that she need not be deceived and so on. This could create fear within her without knowing that her colleagues are the deceivers. However, this action may result in creating wrong impression that may make the person to stop using it” (A male FGD participant).

Suggestions and recommendations for improvement in the use of FC

This section presents participants’ suggestions and recommendations on how to improve the low repeated use of FC. Their views are categorized into two: what should be done about the product and what should be done about the target users of the product.

What should be done about the product

In response to perceived intimidating large size, hard, and painful outer ring, and the ugly, loose nature of female condom, majority of the participants suggested that the manufacturer of female condom (FC2) should reduce the size by making it smaller and of different sizes, remove or replace the inner ring with softer ring and manufacture what can hold the FC to the waist of the woman to keep it firm. Some also suggested that the texture should be made more sensitive and probably add

flavour to it to increase the sexual pleasure. Some FGD participants in two groups suggested the design of instrument that can aid insertion which will reduce the perceived stress of insertion that discourages repeated use:

“My own (suggestion) is, if they could do it (FC) to give 100% assurance like if there is a way it could be glued to the woman’s body or something to hold it to the body so that the fear of it falling inside could be removed. That will help” (A female FGD participant).

“It can pull in sometimes when sexual intercourse is taking place. So if they can make it like underwear it will be better” (Female FGD participant).

“If they could make it like g-string underwear so that you just wear it. When you wear it the man will just push the condom inside and it will stay” (Female FGD participant).

“The lubricant should have a good fragrance like banana, apple etc. It should come in different colours” (Female FGD participant).

To improve access, participants suggested that promoters of female condom should study channels used in distributing male condom and adopt similar channels to enable effective penetration. By this, more distributors and dealers will be expected to become interested in the female condom.

“They have only one (distributor) here in Warri who buys from Benin But if we have more distributor and you go to one who is selling at N1,000 per carton instead of N500, people will ask you to go to another distributor selling at N500. So, if customers did not come to you and you know that every day you are short by the number of the customers that used to come to you, those who sell at high prices will reduce their prices. So they should increase the number of distributors when the demand has started increasing” (Male IDI participant).

Another suggestion was to get the product packaged into small units or sizes to allow for ease of carrying it around like most male condom. In their words, they suggested the following:

“The size ... should be reduced...” (Male FGD participant).

“Packaging matters a lot. How you see it whether it is romantic, attractive, potable is very necessary” (Male FGD participant).

Participants were very much concerned about the price of female condom. Many felt it is too expensive. To ensure

uniform price, participants recommended printing of the recommended price on the pack.

What should be done about the target users

Massive awareness to erase erroneous perceptions of female condom was suggested by all the participants across the states. The recommendations include increase in awareness and knowledge about female condom using interpersonal communication (IPC) activities such as rallies and road shows, one-on-one educational contacts, group meetings in strategy places such as market, religious houses, schools and seminars.

“Yes we need to do something because most people are very ignorant... So in the aspect of education, you should organize seminars, workshops to enlighten them. You should go to the higher institutions even though they know about it, give them more orientation. You can also use TV shows, even on radio you can tell them about it” (Female FGD participant).

“There should be forums created and seminars especially for women so that they can experiment it and teach them on how to use it...” (Female FGD participant).

For effective reach of targets, various mass media channels especially, TV, radio and billboards, below-the-line items like information, education and communication (IEC) materials, handbills, posters, souvenir were suggested as mediums of communication. Some of them recommended the use of audio and video drama in popular TV stations, with strong emphasis on Cable TV Channels.

“In line with what my brother said now, we need strong advert in the media. For instance, African magic is a very strong media vehicle that is recommended because majority of women watch it and the primary target of female condom is women. The advert should carry the message educating people on the use, insertion process and the advantages. We noticed that even though the product is targeted at the women, they are the main people rejecting it because they don't know how to insert it. It is men that are even encouraging us to adopt it. Testimonial adverts strategy could be adopted whereby influential female character could be used to promote the advert on TV. This will attract more women to it” (Female FGD participant).

DISCUSSION

From the various views of participants and observations in the field, the study provided more insight into the use

and repeated use of female condom. Female condom presents the additional advantage of giving fulfilled sexual pleasure, protection against STI including HIV and prevention of unplanned pregnancy without any side effects. This study corroborates with some previous studies already cited in this study on reasons for low use and continuous use of female condom.

In Nigeria, out of excitement and curiosity or because they were given something free to try, many people (male and female) have tried to use female condom with inadequate knowledge and have ended up with erroneous perceptions about insertion and use of female condom. This first trial experience has negatively affected the repeated use of FC. Evidence suggests that adequate knowledge and skill to use a female condom are contributes to its repeated use. There is therefore, the need to provide adequate female condom education to potential users in order to maximize the benefits.

Most women who have used and still use female condom did use it because of their partner, to keep their marriages. This is a reflection of the value most women place on marriages. Could the same be expected from men? It is important that this is reciprocal. In addition, there are still lots of misconceptions about female condom. For example, some interviewees said they hold the female condom during sex out of fear. Definitely, it will be challenging to enjoy sex while holding it to prevent it from slipping in. Again this is a possible reflection of limited understanding on how to use female condom.

Experiences from females were generally negative. Very few seem to be happy with the use of female condom. Some males said their female partners used it because they insisted. While the support of males is very important, acceptance of female condom by females is also very important. It is important they are convinced that female condom empowers them. The limited distribution channels and unstable prices experienced by some users were identified as factors that are affecting low repeated use of the product, unstable prices not from the programming team but from community distributors who want to maximise all possible gains in the course of distributing the commodity.

Conclusions

In line with recommendations by the participants, the major solution to the problems of low repeated use of FC lies primarily in awareness creation through more education on how to use. The following recommendations are forwarded:

1. Frontline staff's (IPC conductors) capacity should be built to effectively communicate the benefit of the use of female condom and skills on how to use female condom.

There is need for training and re-training of frontline staff. The training should among others focus on their understanding of the female anatomy, right insertion of female condom, addressing fears and myths concerning the use of female condom and negotiation skills.

2. Programmes should aim at increasing knowledge and positive attitudes towards female condom by stressing the advantages and promoting the 'natural' sexual pleasure and no-side-effect attributes of the FC. Most women who use female condom do so because of the perceived benefits which they get using female condom. These benefits include the fact there is no side effect when using female condom when compared with other methods; the almost natural feeling when female condom is used properly; the security from infection due to the unfaithfulness of a partner; and the security it brings to marriage as women can have sex with their spouse even during menstruation.

3. Building community and social support: Engagement with community leaders and the general public is highly recommended to create social support for the use of female condom. Well placed female individuals could be engaged to publicly declare their support for the use of female condom.

4. Considering that acceptance of female condom is still low, more efforts should be on creating demand than on placing target on number of female condoms to be distributed. The desire to meet these targets is resulting to frontline staff not properly educating people on its use. In some cases, the product is just given out without proper education on how to use it. These have very high possibility of recruiting a huge army of unsatisfied users which ultimately will make female condom programming unsuccessful.

5. Female condom is still very largely subsidized. This needs to be continued, as general acceptance is still low and price of male condom also low.

LIMITATION OF THE STUDY

The study was a qualitative study and all limitations associated with qualitative studies apply to it.

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Full Length Research Paper

Factors associated with consistent condom use among senior secondary school female learners in Mbonge subdivision of rural Cameroon

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The aim of this study was to examine the factors associated with consistent condom use among senior secondary school female students in Mbonge subdivision of Cameroon within the parameters set by the Health Belief Model (HBM). The objective of the study was to report on the components of the HBM with statistically significant explanatory associations with consistent condom use during sexual intercourse to prevent human immune deficiency virus (HIV) transmission. A quantitative, correlational design was adopted, using self-administered questionnaires to collect data from 210 female students selected through disproportional, stratified, simple random sampling technique, from three participating senior secondary schools. Statistics were calculated using statistical package for social sciences (SPSS) version 20 software program. As many as 54.0% of the respondents reported having ever had sex, among whom only 29.6% reported using condoms consistently. Multinomial logistic regression analysis based on the components of the HBM show that perceived susceptibility to human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS) ($p = 0.023$), perceived self-efficacy for condom use ($p = 0.003$) and the socio-demographic variables ($p = 0.000$) are the most significant factors associated with consistent condom use at the level $p < 0.05$.

Key words: Rural Cameroon, Mbonge subdivision, senior secondary school female students, consistent condom use, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), health belief model (HBM).

INTRODUCTION

One of the current challenges on the prevention and control of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) faced worldwide is among youths of age 15 to 24 years. Of the 34 million people living with HIV/AIDS (PLWHA) worldwide in 2010, almost 68% reside in sub-Saharan Africa (SSA), a region with only 12% of the world's population (United Nations Program on HIV/AIDS (UNAIDS), 2011). Here also, more than elsewhere, young people between the ages of 15 and 24 remain the most threatened, accounting for 62%

accounting for 62% of PLWHA, with young girls being at greater risk of infection than young boys (UNAIDS, 2006). Juveniles in Cameroon aged 15 to 24 comprise 21.5% of the total population, and the estimated HIV/AIDS prevalence rate in this group was 9.1% (United Nations Population Fund (UNFPA), 2005). In fact these youths are the future of Cameroon, and thus an important age group for the growth and prosperity of the country.

HIV/AIDS intensifies gender inequality. Nowhere is the epidemic's feminization more apparent than in SSA

where it is reported that almost 60% of adults living with HIV are women, and 75% of young people infected are girls (UNAIDS, 2008). The biological make-up of the female genitalia coupled with the gender/structural constraints within which sex takes place thus exposes sexually active women to contracting the disease more than their male counterparts. Heterosexual transmission of HIV accounts for about 90% of new infections in Cameroon (Fonjong, 2001). Hence, young people are at risk of getting the disease as soon as they initiate sexual activity.

In Cameroon, 61% of PLWHA are women (National AIDS Control Committee, 2006), and the prevalence among women of reproductive age was 6.8% (Nussbaum, 2010). HIV/AIDS prevalence among females in villages in rural Cameroon is high (6.3%) (Nyambi et al., 2002). This can be attributed to the fact that rural Cameroonians often face lack of job opportunities, declining incomes, bad educational and medical infrastructures and poverty.

The condom is the single, most effective available technology to reduce the sexual transmission of HIV (Cates, 2001; Holmes et al., 2004). Although more than 90% of Cameroon's youths know that consistent condom use could prevent HIV infection (Rwenge, 2000), only 47% female youths used them at their previous high risk sexual encounters. This indicates a gap between knowledge and behaviours. Many Cameroonian youths engage in risky sexual behaviours such as having unprotected sexual intercourse which may lead to sexually transmissible infections (STIs), including HIV/AIDS (Arcand and Wouabe, 2010; Kongnyuy et al., 2008; Mosoko et al., 2009). Despite the risks, consistent condom use has remained fairly low (Van Rossem and Meekers, 2000).

Although rural settings comprise the majority of the country's population and in certain rural areas such as in the Southwest region where this study is conducted, HIV prevalence is more than the national rate (11.0%) (UNAIDS, 2005); little data on condom use and the factors that influence consistent use exists. It is against this back drop that we seek to examine the factors associated with consistent condom use among senior secondary school female learners in Mbonge rural town of Cameroon. We are not aware of any published studies that have reported on this subject.

This study focuses on youths in the senior secondary schools, including a large proportion of the 15 to 24 year age group. As a group, secondary school learners are more accessible for research than their non-school going peers. This paper uses the main psychosocial concepts of the HBM, namely: perceived susceptibility, perceived severity, perceived benefit, perceived self-efficacy and socio-demographic variables as the theoretical perspective to examine, explain and predict factors associated with consistent condom use among senior secondary school female learners in Mbonge rural area of Cameroon

(Bartholomew et al., 2006; University of Twente, 2010).

MATERIALS AND METHODS

A quantitative, correlational design was adopted in this study. The population refers to the entire set of cases about which the researcher would like to make generalisations and who met the sampling criteria. In this study, the accessible population included all the senior secondary school learners in Mbonge rural town of Cameroon; that portion of the target population to which the researcher had reasonable access (Burns and Grove, 2005). A disproportional, stratified, simple random sample was selected for this study. Probability sampling was used because it increased the likelihood that all the elements in the population would have an equal chance of being included in the sample (Brink et al., 2006). The school attendance registers of the learners were used as the sampling frame to select a sample of 210 grade 10 to grade 12 (form five to upper sixth) female learners from three senior secondary schools in Mbonge sub division of Cameroon.

The data were collected during the first term of 2012 by means of a self-administered questionnaire comprising items regarding socio-demographic characteristics and items relating to the major components of the HBM and condom use. A four-point Likert type scale was used to rate the responses using the following response categories: strongly agree, agree, disagree and strongly disagree (Babbie, 2005). The questionnaire was pretested to clarify instructions, relevancy, usability and completion time, to refine and introduce modifications where necessary and to ascertain reliability and validity (Bless and Higson-Smith, 2000).

During the pre-test, 10 learners who did not participate in the actual study completed the questionnaires. They required no assistance, understood the questions and needed approximately 15 min to complete the questionnaires. The final questionnaires were administered to 210 female learners from three senior secondary schools in Mbonge sub division of Cameroon during normal class periods with the permission of the principals and the co-operation of the teachers concerned. One research assistant was available to assist the learners and to answer questions while they completed the questionnaires.

The reliability of the research instrument used for the study was tested using the coefficient alpha and by pre-testing the questionnaires. The following types of validity were also established: face validity, content validity, construct validity and criterion-related validity. This was ensured by constructing items to represent the different components of the HBM based on literature review. The questionnaires were also subjected to scrutiny by a statistician.

Permission to conduct this study was granted by the HIV/AIDS prevention Research Network, Cameroon (HIVPREC) an Non-governmental organization (NGO) for the prevention of HIV/AIDS through formalized education, working in the South West region of Cameroon, and the principals of the three participating schools. Participation was voluntary and informed written consent was obtained from each learner and her parents/guardians prior to data collection. A questionnaire was handed to each learner when she produced a signed consent form from a parent/guardian and from herself. Anonymously completed questionnaires were kept in a separate container from the signed informed consent forms in order to maintain anonymity. Anonymity was also maintained by reporting the findings of the three schools combined and by not providing comparisons among the three schools. Confidentiality was maintained because only the researcher had access to the completed questionnaires which were locked up. Subsequent to the acceptance of the research report, these would be destroyed.

Data were analysed using statistical package for social sciences (SPSS) version 20. Data were summarized by means of descriptive

statistics including the frequency table. More advanced statistics included the chi square test at the 0.05 significant level and the multinomial logistic regression test.

Model specification and estimation procedure

Multinomial logistic regression analysis was performed to examine the probability of using condoms consistently during sexual intercourse. Logistic regression does not require the predictors to be normally distributed, linearly related, or to have equal variances within each group. Logistic regression is especially useful when the distribution of responses on the dependent variable is expected to be non-linear with one or more of the independent variables (Agresti, 2007; Hosmer, 2000). The procedure gives rise to estimates of the likelihood of a certain event occurring, given a set of explanatory variables. The HBM was tested, drawing on it relevant theory and assumptions with regard to this study. The aim was to retain the assumptions of the model's application as much as possible and to assess the contributions of each component of the HBM and the various combinations of the components with regard to consistent condom use among senior secondary school female learners in rural Cameroon. The different modeling alternatives considered are:

1. Maintaining the assumptions of component of the HBM;
2. Integration of the components with high explanatory powers and significant levels [Integrated Value Mapping (IVM)].

Model estimation focused on mapping out the significant drivers of consistent condom use from a vector of consistently significant components suggested by the relevant theory underpinning the HBM.

During the regression analyses, items under each component of the HBM were considered together. The dependent variable 'regularity of condom use' remained the same for all the modeling alternatives (the major components of the HBM, and IVM). For specific values of the independent variables (the various components of the HBM and the IVM), the estimated value of P is the probability of the event that respondents mentioned that they used condoms consistently during sexual intercourse.

MEASURES

Outcome (dependent) variable

Consistent condom use

The outcome variable for this study is consistent condom use during sexual intercourse as reported by the female learners. This measure was derived from the question:

"How often do you use a condom with a partner during sexual intercourse?".

The response options were: '1 = always', '2 = most of the time', '3 = seldom' and '4 = never.' This question was asked only to respondents who were sexually active.

Explanatory (independent) variables

Perceived susceptibility to HIV

This was constructed from two questions, each considered separately: 'HIV/AIDS is a serious threat in Cameroon,' and 'a healthy looking person can be HIV positive'. The coefficient alpha

for this 2-item scale was 0.418. The response options were rated on a four-point Likert scale as '3 = strongly agree', '2 = agree', '1 = disagree' and '0 = strongly disagree'. 'Strongly agree' and 'agree' were coded as the index category.

Perceived severity of HIV/AIDS

This measure was based on the degree of agreement with the following statements: 'HIV/AIDS is a disease like any other', 'some traditional healers can cure AIDS', 'some antibiotic can cure AIDS' and 'Anti-Retroviral Therapy (ART) can cure AIDS'. The Cronbach's alpha for this 4-item scale was 0.474. The response options were the same as for 'perceived susceptibility' and were coded in the same manner.

Perceived benefit of condom use

This measure was based on the degree of agreement with the following statement: 'Correct and consistent use of condoms during sexual intercourse could prevent transmission of HIV/AIDS'. The response options were the same as for 'perceived severity' and were coded in the same manner.

Perceived condom use self-efficacy

This measure was based on the degree of agreement with the following statements: 'I have confidence that I could refuse sex with my partner if he refuses to use condoms' and 'I feel confident that I can convince my partner(s) to use condoms during sexual intercourse'. This 2-item scale had a Cronbach's alpha of 0.572. The response options were the same as for 'perceived benefit' and were coded in the same manner.

Perceived barriers to condom use

This measure was based on the degree of agreement with the following statements: 'Should a condom slip off during sexual intercourse it will land up in my stomach,' 'Latex condoms cause itching', 'I am allergic to lubricants used in condoms' and 'I feel embarrassed to ask my partner to use condoms'. The Cronbach's alpha for this 4-item scale was 0.499. The response options were the same as for 'perceived self-efficacy and were coded in same manner.

Socio-demographic variables

The following socio-demographic variables were included in the study: age group, marital status, academic profile, house of residence, religious affiliation, and father's and mother's monthly incomes. Age was self-reported by respondents in years. Marital status was dichotomized as 'single' (index category) and 'married or cohabiting'. Academic profile was dichotomized as 'passed on merit' (index category) and 'promoted on trial or repeated'. House of residence was dichotomized as '5 rooms or more' (index category) and 'four rooms or less'. Religious affiliation was dichotomized as 'Christian' (index category) and 'others'. Father's and mother's monthly incomes were dichotomized as '200,000XAF and above' (index category) and 'less than 200,000XAF'.

Sexual experience

This was measured with the question: Have you ever had sexual intercourse with a male partner? With '1 = yes' or '0 = no' as response options. Condom use prevents sexual transmission of

HIV only when used correctly and consistently.

RESULTS

Descriptive statistics

The descriptive statistics of the explanatory and dependent variables are shown in Table 1. Most of the respondents (92.4%; $n = 194$) were 16 to 24 years old. Most respondents (93.3%; $n = 194$) were single, and all were senior secondary school female learners. Of the respondents, 98.0% were Christians. Most of the respondents (72.5%) passed their exams on merit and most of their fathers' and mothers' monthly incomes were less than 200 000XAF (51.7 and 76.2%, respectively). With respect to the different components of the HBM, perceived susceptibility to HIV/AIDS was quite high; 77.7% of the respondents perceived that HIV/AIDS is a serious threat in Cameroon, 87.8% perceived that a healthy looking person can be HIV positive. Perceived severity of HIV/AIDS was also high; 54.5% of respondents perceived that HIV/AIDS is a disease like any other, only 14.3% perceived that some traditional healers can cure AIDS, only 15.4% perceived that some antibiotics can cure AIDS, and only 18.8% perceived that ART can cure AIDS. The perceived effectiveness of using condoms to prevent HIV/AIDS was relatively high. Majority of the respondents 77.6% agreed that correct and consistent use of condoms during sexual intercourse can prevent HIV/AIDS.

Relatively fewer respondents perceived some barriers to condom use: 32.4% of the respondent agreed that should a condom slip off during sexual intercourse, it will land up in their stomach, 53.2% agreed that latex condoms cause itching, 36.2% agreed that they are allergic to lubricants used in condoms and 39.2% agreed that they feel embarrassed to ask their partners to use condoms. For perceived self-efficacy for condom use, about 75% of the respondents agreed that they have the confidence that they could refuse sex with their partners if they refuse to use condoms, while 67.7% agreed that they felt confident that they can convince their partner(s) to use condoms during sexual intercourse.

Of the respondents, 54.0% were sexually active, while only 29.6% of these sexually active respondents were using condoms consistently.

Model result

The HBM asserts that the motivation for people to take action to prevent a disease is based on how strongly they believed that they are susceptible to the disease in question; whether the disease would have serious effect on their lives if they contract it, whether the suggested health intervention is of value, whether the effectiveness of the treatment is worth the cost, which barriers they

must overcome to institute and maintain specific behaviours, and whether they can successfully take the recommended action.

The level of significance of the various components of the HBM is explained by the p-values of the log-likelihood chi-square statistics (Table 2). If this p-value is discussed at $\alpha = 0.05$, then perceived susceptibility to HIV/AIDS ($p = 0.023$), perceived self-efficacy for condom use ($p = 0.003$) and the socio-demographic variables ($p = 0.000$) have good significant levels ($p < 0.05$), thus denoting the adequate explanatory power of these components in explaining consistent condom use among female learners in rural Cameroon. Also according to the Pseudo-R square (Cox and Snell) values, these components explained between 19 to 82% of variation in consistent condom use. The IVM for these three components taken together remained very stable, with $p = 0.000$ (Table 2). The significant levels of the HBM components followed the same patterns as their explanatory powers, with socio-demographic variables having the highest explanatory power of 82.2% (Pseudo R-square = 0.822), followed by perceived condom use self-efficacy, 22.9% (Pseudo R-square = 0.229) and perceived susceptibility to HIV/AIDS, 19.4% (Pseudo R-square = 0.194). The IVM had the strongest explanatory power, 93.6% (Pseudo R-square = 0.936).

The likelihood ratio test (Table 3) summarises the relationship between the predictors and the outcome variables for the IVM (components of the HBM with satisfactory explanatory powers and high significance perceived susceptibility to HIV/AIDS, perceived condom use self-efficacy and the socio-demographic factors).

The results as depicted in the table reveal that learners who perceived that HIV/AIDS is a serious threat in Cameroon are more likely to consistently use condoms; learners who felt confident that they can convince their partners to use condoms during sex are also more likely to consistently use condoms; learners whose fathers are higher income earners are also more likely to consistently use condoms; and learners who are Christians are less likely to use condoms during sex.

DISCUSSION

The majority of the respondents were among the age group hardest hit by HIV/AIDS (USAID, 2008). Single persons are predisposed to sexual temptations which might increase their vulnerability to STIs and HIV/AIDS (Nahamya and Elangwe, 2005). Gender inequality places women at a greater risk of being infected by HIV/AIDS. Women and young girls lack power over their bodies, and their sexual lives, social and economic inequalities increase their vulnerability for contracting and living with HIV/AIDS. With increasing levels of poverty in Cameroon, women, especially female learners have found themselves in casual relationships with men for financial gains. Women might therefore find it difficult to demand

Table 1. Characteristics of senior secondary school female learners in Mbonge, Cameroon.

Characteristic	Frequency	Percentage
Age group		
11-15	16/210	7.6
16-24	194/210	92.4
Marital status		
Single	194/208	93.3
Married or cohabiting	14/208	6.7
Academic profile		
Pass on merit	150/207	72.5
Promoted on trial or repeated	57/207	27.5
House of residence		
5 rooms or more	107/203	52.7
4 rooms or less	96/203	47.3
Religious Affiliation		
Christian	195/199	98.0
Others	4	2.0
Father's monthly income (in XAF)		
200 000 and above	85/176	48.3
Less than 200 000	91	51.7
Mother's monthly income (in XAF)		
200 000 and above	50/185	23.8
Less than 200 000	135	76.2
Perceived susceptibility to HIV/AIDS		
<i>HIV/AIDS is a serious threat in Cameroon</i>		
Agree	154/198	77.7
Disagree	44/198	22.3
<i>A healthy looking person can be HIV positive</i>		
Agree	180/205	87.8
Disagree	25/205	12.2
Perceived severity of HIV/AIDS		
<i>HIV/AIDS is a disease like any other</i>		
Agree	108/198	54.5
Disagree	90/198	45.5
<i>Some traditional healers can cure AIDS</i>		
Agree	29/204	14.3
Disagree	175/204	85.7
<i>Some antibiotics can cure AIDS</i>		
Agree	31/198	15.6
Disagree	167/198	84.4

Table 1. Contd.

Anti Retroviral Therapy (ART) can cure AIDS		
Agree	37/197	18.8
Disagree	160/197	81.2
Perceived benefit of condom use		
Correct and consistent condom use can prevent HIV/AIDS.		
Agree	153/197	77.6
Disagree	44/197	22.4
Perceived barriers to condom use		
Should a condom slip off during sex it will land up in my stomach		
Agree	58/179	32.4
Disagree	121/179	67.6
Latex condoms cause itching		
Agree	74/139	53.2
Disagree	65/139	46.8
I am allergic to lubricants used in condoms		
Agree	50/138	36.2
Disagree	88/138	63.8
I feel embarrassed to ask my partner to use condoms		
Agree	73/186	39.2
Disagree	113/186	60.8
Perceived condom use self-efficacy		
I have confidence that I could refuse sex with my partner if he refuses to use condoms		
Agree	147/196	75.0
Disagree	49/196	25.0
I feel confident that I can convince my partner(s) to use condoms during sexual intercourse		
Agree	130/192	67.7
Disagree	62/192	32.3
Sexual experience		
Have you ever had sexual intercourse with a male partner?		
Yes	108/200	54.0
No	92/200	46.0
Regularity of condom use		
How often do you use a condom with a sexual partner during sex?		
Always	32/108	29.6
Most of the time	33/108	30.6
Seldom	14/108	13.0
Never	29/108	26.8

Denominators may vary due to missing values.

condom use, as they become subordinates or dependent of mainly older men; women are also biologically prone to

infection, and HIV is more easily transmitted from men to women than the reverse (UNAIDS, 1997).

Table 2. Multinomial logistic regressions between explanatory variables and consistent condom use.

No.	Model components	LR Chi-square	df	p-values	Pseudo R-square	N	Explanatory power of model (%)
1	Perceived susceptibility to HIV/AIDS.	39.715	24	0.023	0.194	184	19.4
2	Perceived severity of HIV/AIDS.	47.30	48	0.501	0.236	176	23.6
3	Perceived Benefit of condom use.	17.52	12	0.131	0.089	187	8.9
4	Perceived Barriers to condom use.	42.25	48	0.707	0.317	111	31.7
5	Perceived condom use self-efficacy.	47.135	24	0.003	0.229	181	22.9
6	Socio-Demographic variables.	246.555	104	0.000	0.822	143	82.2
7	Integrated value mapping (IVM): combination of components 1, 5 and 6	349.056	212	0.000	0.936	127	93.6

df = degree of freedom.

Religion could hamper the effective use of condoms for HIV prevention (Ehlers, 1999). The Roman Catholic Church opposes condom use in favour of "direct contact" (Alsan, 2006; Bradshaw, 2003). This could have serious implications for spreading HIV. A high level of academic engagement has an influence on the age of sexual initiation and makes health education messages more meaningful (Moore and Burton, 1999; Mouton, 2001). Adolescents with high academic aspirations are more likely not to jeopardize their academic careers by unwanted pregnancies and STDs, including HIV/AIDS, by not using condoms.

Table 1 reveals misconceptions regarding the cure of HIV/AIDS by some respondents. Such misconceptions revealed a gap in knowledge regarding the cure of HIV/AIDS among the female learners. HIV/AIDS has no cure. Such misconceptions could give rise to risky sexual behaviours among learners, with the belief that if they contract HIV/AIDS as a result of such risky sexual practices, they could be cured.

As the data revealed, some learners perceived certain barriers in using condoms. There should be no embarrassment in using or buying condoms. A condom can be bought or used at any age

any age. Insisting on condom use suggests that one knows how to take care of oneself. It also shows that one is aware of the benefits of condom use during sex. Condoms do not break or slip off during sex, unless they are being used incorrectly. To avoid a condom breaking, one needs to put it on carefully, ensuring there is no air bubble at the end and be careful of sharp nails, jewellery or teeth (Hirsch, 2007).

Most men and women should have no problems using condoms. The side effects that can occasionally occur include:

1. Allergy to latex condoms.
2. Irritation of the penis or vagina from lubricants with which some condoms are treated.

For people who may have an allergic skin reaction to latex, male and female condoms made of polyurethane are available (Hirsch, 2007).

The data revealed that some learners did not have the self-efficacy to use condoms effectively. According to the HBM, learners who perceived themselves to be susceptible to HIV/AIDS need to have the confidence that they can use condoms, before they could use condoms correctly and

consistently to prevent HIV/AIDS. Learners with low condom use self-efficacy might not use condoms consistently during sexual intercourse to prevent HIV/AIDS. We examined factors associated with consistent condom use among senior secondary school female learners in Mbonge rural town of Cameroon. This study demonstrated the utilization of the HBM for investigating factors associated with consistent condom use among senior secondary school female learners in Mbonge subdivision of Cameroon. Although the percentage of sexually active female learners who consistently used condoms during sexual intercourse was low (29.6%), there were significant associations between perceived susceptibility to HIV/AIDS, perceived condom use self-efficacy and socio-demographic factors and consistent condom use.

The concepts and relationships described within the HBM work synergistically to create a greater understanding of the phenomenon of interest, reducing or avoiding a disease condition (HIV/AIDS) and aimed to explain or predict health behaviours (Jones and Bartlett, 2010). The HBM has the premise that individuals will take action to prevent, control or treat a health problem if they

Table 3. Components of the IVM: likelihood ratio tests.

Effect	-2 Log Likelihood of reduced model	Chi-Square	df	Significance
Perceived susceptibility	-	-	-	-
HIV/AIDS is a serious threat in Cameroon	70.677	66.775	12	0
Perceived condom use self-efficacy	-	-	-	-
I feel confident that I can convince my partner(s) to use condoms during sex	93.492	89.59	12	0
Socio-demographic variables	-	-	-	-
Religious affiliation	100.841	96.939	20	0
Fathers' monthly incomes	94.066	90.164	12	0

df = degree of freedom.

perceive themselves to be susceptible to the health problem, if they perceive the problem to be severe in its nature and/or in its consequences, if they perceive that the action will benefit them and produce desirable outcomes, if they perceived few barriers to taking that action and if they believe in their ability to successfully take the recommended action to prevent, control or treat the health problem (Stout, 1997).

Bernardi (2002) stated that "the degree of perceived susceptibility to HIV seems to affect individuals' actual control in using condoms consistently during sex". Rosenstock (1990) who developed the HBM suggested that preventive action is more likely among those who feel vulnerable to a disease. This study reveals that female learners may not be motivated to use condoms consistently during sex when they fail to recognize their personal susceptibility to HIV/AIDS. The findings on perceived susceptibility corroborate other findings (Meekers and Klein, 2002).

We observed in this study that having self-efficacy in terms of having the confidence to convince one's partners to use condom during sexual intercourse increases a female learner's ability to consistently use condoms during sexual intercourse to prevent HIV/AIDS. Bandura (1994) suggested self-efficacy to be the most powerful tool to increase condom use among women. Therefore an important consideration in promoting condom use is the need to provide women with condom negotiation skills. The findings on self-efficacy corroborate other findings (Beaudoin, 2007).

Majority of the learners' parents were poor. Poverty could influence female learners' behaviors by reducing access to information about safe sex practices or by inhibiting their ability to put such information into practice. Low socioeconomic status has persistent negative effects on female sexual behaviors and also increases their risk of contracting HIV/AIDS.

The high explanatory powers of socio-demographic variables, perceived susceptibility to HIV/AIDS and perceived self-efficacy for condom use indicate that psychosocial variables and sensitization with regard to HIV/AIDS and condoms were the major critical components with

with regard to consistent condom use. This implies that female learners were not actually aware of their susceptibility to HIV/AIDS and the facts surrounding HIV transmission and prevention in their environment.

The log likelihood ratio tests suggest that the items in Table 3 with a significance level of $p < 0.05$ were the most significant predictors of consistent condom use. All these items should be considered in designing any policy geared towards increasing condom use among female learners in Mbonge, Cameroon.

The important point this study brings to the fore that the three components of HBM with the highest significant levels and explanatory powers namely: perceived susceptibility to HIV/AIDS, perceived condom use self-efficacy and socio-demographic variables are the main factors associated with consistent condom use among female students in rural Cameroon. The findings also implied that the combination of these three components with the highest explanatory powers and good reliability resulted in a synergistic effect on consistent condom use. Our findings suggest that HIV prevention programmes for female students should emphasise these three elements concurrently as a strategy to improve on the regularity of condom use. Such programmes should also measure female students' self-efficacy that they can use condoms consistently.

As depicted by the results of this study, health education messages that focus on the perceived severity of HIV/AIDS, the perceived benefits of condom use and the perceived barriers to condom use as a strategy to improve the regularity of condom use among female learners in rural Cameroon may be counterproductive.

HIV prevention education and condom promotion must overcome the challenges of complex gender and cultural factors. Young girls and women are regularly and repeatedly denied information about use and access to condoms. Often, they do not have the power to negotiate the use of condoms. Since most women aged 15 and above are sexually active in Cameroon (USAID, 2008), understanding and promoting change in individual behaviour for HIV prevention is necessary. Recent analysis of AIDS epidemic in Uganda has confirmed that

increased condom use was an important factor in the declined in HIV prevalence in the 1990s (Singh et al., 2003). The same results were obtained in Thailand, Cambodia and Brazil (UNAIDS et al., 2004).

In spite of the gender/structural constraints within which sex takes place in Cameroon, if women are able to insist/negotiate condom use with their partners, then it would enhance safe sex practices for both sexes. In this situation, women would benefit enormously in reducing their risk of contracting HIV/AIDS.

Conclusion

Although further investigation is still needed, the overall impression is that the study justifies the HBM as a useful model in understanding, explaining and predicting consistent condom use among female students in rural Cameroon. Perceived susceptibility to HIV/AIDS, perceived condom use self-efficacy and socio-demographic factors are important and direct determinants of consistent condom use.

LIMITATIONS

This study has several limitations. The sample size was small and the sample was homogeneous as it was limited to participants from only three senior secondary schools in Mbonge subdivision. The inclusion of more schools and learners will increase the sample size and provide a larger variety of respondents. The internal consistency of some of the HBM components was relatively low. Since the value of the Cronbach's alpha depends on the inter-correlation and the number of items (Sijtsma, 2009), the low Cronbach's alpha can be explained by the heterogeneity in HIV-related behaviours and the small number of items within each component of the HBM. The data collection took place in predominantly Christian areas of Cameroon. Different results may be obtained if data is collected from predominantly Muslim or male students. In addition, because most of the items in the questionnaire elicit self-reported information on sensitive issues such as condom use and HIV/AIDS, the respondent might have been bias in responding to these items. However, assurance of confidentiality and anonymity might have minimized this problem.

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