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Condom use and associated factors among HIV-positive patients accessing care at a private tertiary health institution in the southwest, Nigeria

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Abstract
Objective: This study aimed to assess the knowledge, attitude and practice towards condom utilization and other associated factors among people living with HIV/AIDS enrolled in the Virology clinic in Babcock University Teaching Hospital (BUTH) Ilishan, Ogun state, Nigeria.
Methods: This cross-sectional study was conducted among 285 ART users selected using a systematic random sampling method. The minimum sample size was estimated using the formula z^2pq/d^2 and a 24% prevalence extracted from a previous similar study. Data were elicited using a structured interviewer-administered questionnaire, analyzed using SPSS version 20, and presented as tables. The Chi-square test was used to assess associations between categorical variables. The level of significance was set at the 95% confidence interval with a p-value of 0.05.
Results: From the total respondents, 180(63.2%) were females, 93.7% had good knowledge, 141(49.5%) believed ARV prevents transmission of HIV and 144 (50.5%) strongly agreed that condom reduces sexual pleasure. Majority 254 (89.1%) were currently using condoms, 131 (46.0%) used a condom consistently, while 108 (37.9%) frequently use a condom during sexual intercourse. The Use of condoms had statistically significant associations with occupation ($p<0.001$), married at pre-diagnosis of HIV ($p<0.001$), married at post-diagnosis of HIV ($p<0.001$) and education ($p= 0.015$).
Conclusion: The majority of the respondents had good knowledge and were using condoms. Discussions on safe sex and improved positive attitudes towards condom use should, however, be encouraged further.

Keywords: Condom use, Knowledge, Attitude, Practice, HIV, ART.

Plain English Summary: Acquired Immunodeficiency Syndrome, caused by the human immunodeficiency virus is a global problem as seen in the estimates given by the World Health Organization. Condoms serve to protect against not only transmission of HIV but also prevent other sexually transmitted infections. People living with HIV/AIDS who practice safe sex by using condoms consistently and correctly stand to reap the benefits of preventing unintended pregnancies, preventing re-infection with drug-resistant strains of the virus as well as preventing themselves from contracting other sexually transmitted infections.
This study did not only assess condom use among HIV positive patients attending the antiretroviral clinic at Babcock University Teaching Hospital but also assessed what other possible factors (positive or negative) could be linked with the use of condoms among this group of patients.

Background

For more than three decades, the world has been affected by the Human Immune Deficiency Virus (HIV) infection which causes the clinical syndrome Acquired Immune Deficiency Syndrome. The primary mode of HIV

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transmission is unprotected sex (1). Globally, Nigeria is rated as having the second-largest epidemic of HIV (2). In 2014, approximately 3.2 million people were living with HIV in Nigeria, with a prevalence of 2.9% in adults (3). There were 220,000 new HIV infections and 160,000 deaths attributed to AIDS (3). In 2015, about 60 % of new HIV infections in Central Africa as well as West Africa occurred in Nigeria (4). Uganda, South Africa and Nigeria account for approximately half of all new HIV infections in sub-Saharan Africa yearly (4).

Unprotected sex has been attributed to about 80% of new HIV infections in Nigeria, with most of the infections seen to occur in key populations such as sex workers (5). Sex workers, men who have sex with men and people who inject drugs constitute only 3.4 % of the Nigerian population, yet account for about 32% of new HIV infections (6).

Several behavioral, socioeconomic, and cultural factors related to condom use have been identified. Some of these factors include negative attitudes towards condoms, low perception of risk to HIV infection, lack of familiarity with condoms, alcohol use, lack of education, women's economic dependence on men, and their limited power in negotiating safe sex (3).

Consistent condom use is an effective barrier method against the transmission of HIV. However, existing reports on the frequency of consistent condom use have targeted the general population, rather than people living with HIV/AIDS because of the belief that the use of condoms is of no importance to the HIV patient (7).

Consistent condom use among HIV/AIDS patients is vital to prevent the transmission of the virus and to prevent other multiple infections in already infected persons (8). Factors considered as barriers to the consistent use of condoms with stable partners include the belief that condoms are of no importance in an HIV positive sero-concordant relationship, poor sexual satisfaction with condoms, the need to raise a child, use of alcohol by the husband, anxiety, depression, inadequate counseling by healthcare providers (3). The correct and consistent use of condoms decreases the risk of transmission of HIV from very low to negligible (3).

Condoms are an important weapon in the battle against HIV/AIDS, sexually transmitted infections as well as unwanted pregnancies (6). They are also useful as a method of family planning (9). However, data from the literature shows that being aware of a positive HIV status does not translate to the use of condoms in all sexual relations (10). Among factors contributing to low condom use include; difficulties in negotiating the use of condoms, domestic violence, abuse of alcohol, low educational level, and reproductive intentions (11).

Unsafe sex by people living with HIV/AIDS (PLWHA) is of interest because they risk transmitting HIV to their HIV-negative sexual partners; re-infecting themselves with new strains of the virus which may be drug-resistant and they also risk super-infection with different viral microorganisms (12). Also, pregnancy in HIV positive women of reproductive age presents a risk of transmission of HIV to the baby (13). Available epidemiological literature indicates that despite the health benefits associated with effective use of condoms among the people living with HIV/AIDS, the prevalence of condom use is still wanting (14).

Finding out if the use of condoms among HIV positive patients is consistent or inconsistent along with other associated factors will help in the development of strategies to address inconsistent condom use and promote consistent condom use as well as further reduce transmission of HIV/AIDS. To provide highly effective measures that reduce the transmission of HIV, it is necessary to study the knowledge of the mechanism of HIV transmission, sexual behavior, and the use of condoms among patients who are HIV positive.

With the reported high prevalence of HIV in Nigeria and the dearth of information on consistent use of condoms and other preventive measures, it becomes expedient to understand condom use with the view of instituting appropriate preventive measures. The general aim of this study was to determine the prevalence of current condom use and other associated factors among HIV positive patients attending the virology clinic at Babcock University Teaching Hospital (BUTH). The specific aims were to assess the knowledge of condom use; describe the attitude to condom use and to determine factors associated with the use of condoms among HIV positive patients attending ART clinic in BUTH.

Methods

study area

This descriptive, cross-sectional study was carried out in the virology Clinic of Babcock University Teaching Hospital, Ilishan Remo Ogun State, Nigeria. Babcock University is a private university owned and operated by the Seventh-

day Adventist church in Nigeria. It is located between Ibadan and Lagos. The teaching hospital located within its environment has about fifteen (15) departments and this includes the Department of Community Medicine.[15]The Department of Community Medicine offers a wide range of services including infant welfare services, antiretroviral therapy services, anti-TB clinics, voluntary counseling, and testing services. The virology clinic runs thrice a week, during which HIV positive patients (adults and children) receive adequate care (15).

The study population included all HIV positive patients attending the Virology clinic at Babcock University Teaching Hospital. The sample size was determined using Cochran's formula. The standard normal deviate was set at a 95 % confidence level, the prevalence of condom use among HIV positive patients (24%) from a previous study (16) with the allowable margin of error of 5% was inputted into the formula to give a total sample size of 280. Correcting for a possible 10% non-response rate, the total sample size became 315.

Systematic random sampling was used to select participants. The average number of patients attending the Virology clinic was determined from the clinic records (about 900) and subsequently, the sampling interval was calculated to be approximately three. The first patient was selected by simple random sampling and subsequently, every 3rd patient was selected over 7-8weeks. This study included all HIV positive patients attending ART clinic in BUTH and excluded all HIV positive patients who were not willing to take part in the study, HIV positive patients who were not ambulatory or on admission as well as HIV positive children less than 15 years.

Data was collected using a descriptive quantitative interviewer-based questionnaire, pre-tested at the virology clinic, General Hospital Ijebu-ode. The questionnaire consisted of sections for socio-demographic characteristics, HIV status, knowledge of the use of condoms, attitude to condom use, the practice of condom use, sexual history, and associated factors. Data obtained from the study were analyzed using statistical package for social sciences (SPSS version 20) software program and was presented in frequency distribution tables with percentages. Chi-square was used to test the significance at $p<0.05$ between respondents' characteristics and condom use. The correct answer on knowledge questions carried 10 marks while the wrong answer had no mark. The highest possible mark was 60marks. The score range from 0-29 marks interprets poor knowledge while from 30marks and above interprets good knowledge of condom use.

Ethical clearance was obtained from Babcock University Research and Ethical committee. Informed consent was obtained from the participants while the highest level of confidentiality of the information was maintained.

Results

Table 1 shows the socio-demographic characteristics of the respondents. The mean age was 36.3 ± 10.6 years. One hundred and five (36.8%) were males and 180 (63.2%) were females. Fifty-eight (20.4%) were single pre-diagnosis of HIV while 196 (68.8%) were married pre-diagnosis of HIV. In contrast, 38 (13.3%) were single post-diagnosis of HIV while 216 (75.8%) were married post-diagnosis of HIV. Seventy-seven (27.0%) were engaged in professional occupations while 31 (10.9%) and 49 (17.2%) had skilled and unskilled occupations respectively. One hundred and eighty-three (64.2%) were in monogamous marriage, 64 (22.5%) were in polygamous marriage while 38 (13.3%) were cohabiting with their partners. One hundred and twenty-two (42.8%) had no formal education. One hundred and fifty (52.6%) were drinking alcohol and 128 (44.9%) were smoking cigarettes. Thirty-one respondents (10.9%) had partners who smoked cigarettes while 254 (89.1%) had partners who did not smoke cigarettes.

Table 2 shows the knowledge of respondents about condoms. All 285(100.0%) of the respondents had heard about condoms, the three major sources of information were media 134 (47.0%), Health workers 55 (19.3%), and Family/friends 45 (15.8%). Two hundred and eight (73.0%) had heard of the female condom. All 285 (100.0%) agreed that condoms serve to protect against HIV transmission; condoms serve to protect against transmission of other STIs as well as prevent unwanted pregnancies. Two hundred and sixty-seven (93.7%) had good knowledge while 18 (6.3%) had poor knowledge.

Table I: Socio-demographic characteristics of respondents (n=285)

Variables	Frequency	Percentage
Age (years)		
18 – 27	57	20.0
28 – 37	126	44.2
38 – 47	75	26.3
48 -60	17	6.0
>60	10	3.5
Mean ±SD = 36.20 ± 10.588		
Sex		
Male	105	36.8
Female	180	63.2
Marital status pre-diagnosis of HIV		
Single	58	20.4
Married	196	68.8
Divorced/Separated	31	10.9
Marital status post-diagnosis of HIV		
Single	38	13.3
Married	216	75.8
Divorced/Separated	31	10.9
Respondent's occupation		
Professional	77	27.0
Technical	128	44.9
Skilled manual	31	10.9
Unskilled	49	17.2
Nature of relationship		
Monogamous	183	64.2
Polygamous	64	22.5
Cohabiting	38	13.3
Educational background		
No formal education	122	42.8
Primary	92	32.3
Secondary	12	4.2
Tertiary	59	20.7
Number of children		
0-1	38	13.3
2-3	140	49.2
>3	107	37.5
Drinks alcohol		
Yes	150	52.6
No	135	47.4
Smokes cigarettes		
Yes	128	44.9
No	157	55.1
Partner/spouse drinks alcohol		
Yes	175	61.4
No	110	38.6
Partner smokes cigarettes		
Yes	31	10.9
No	254	89.1

The total number of participants was 285. The response rate was 90.5%

Table 2: Knowledge of respondents(n=285) on condoms.

Variables	Frequency	Percentage
Ever heard of condoms		
Yes	285	100.0
If yes, where condoms were heard		
School	40	14.0
Religion house	11	3.9
Family/Friends	45	15.8
Media	134	47.0
Health workers	55	19.3
Heard of the female type condoms		
Yes	208	73.0
No	77	27.0
Condoms serve to protect against HIV transmission		
Yes	285	100.0
No	0	0.0
Condoms serve to protect against transmission of other STIs		
Yes	285	100.0
No	0	0.0
Condoms serve to prevent unwanted pregnancies		
Yes	285	100.0
No	0	0.0
Knowledge of condom use		
Good knowledge	267	93.7
Poor knowledge	18	6.3

Table 3 describes the HIV status of respondents as well as other associated factors. One hundred and twenty-nine (45.3%) were diagnosed as HIV positive 1-5years ago. Seventy-seven (27.0%) were diagnosed as HIV positive more than 10 years ago. Two hundred and eighty-four (99.6%) had disclosed their status to their partners. Sixty-eight (23.9%) had partners who were also positive while 217 (76.1%) had HIV negative partners. Two hundred and eighty-five (100%)were on HAART of which 15 (5.3%) have been on HAART for more than 10 years. One hundred and nine (38.2%) had a CD4 count below 200 cells/mm^3 while 46 (16.1%) had a recent CD4 count above 500 cells/mm^3.

Table 3: HIV status and other associated factors of respondents(n=285)

Variables	Frequency	Percentage
Duration of HIV diagnosis (Years)		
1-5	129	45.3
6-10	79	27.7
> 10	77	27.0
Disclosed your status to your spouse/ partner		
Yes	284	99.6
No	1	0.4
Knows partner's status		
Yes	285	100.0
If yes, the status of partner		
Positive	68	23.9
Negative	217	76.1
On HAART		
Yes	285	100.0
If yes, duration on HAART		
< 6months	82	28.8
6-12 months	103	36.1
1-5 years	77	27.0
5-10 years	8	2.8

> 10 years	15	5.3
Most recent CD4 count		
<200	109	38.2
200-500	130	45.6
>500	46	16.1

Table 4 describes the attitude of respondents towards the use of condoms. One hundred and seventy-five (61.4%) strongly disagreed that condoms should be used at all times during sex, while 144 (50.35%) agree that condoms can be used only once for sex. Two hundred and eight (73.0%) strongly agreed that condoms should be used in casual relationships. One hundred and forty-four (50.5%) strongly agreed that condom reduces sexual pleasure while 33 (11.6%) strongly disagreed that condoms reduce sexual pleasure. One hundred and forty-one (49.5%) agreed that ARVs prevent transmission of HIV. Forty-six (16.1%) agreed that there were cultural hindrances to the use of condoms. One hundred and seventy-five (61.4%) agreed that condoms should be used in stable relationships.

Table IV: Attitude of respondents(n=285) towards the use of condoms

Variables	Strongly disagree (%)	Disagree (%)	Indifference (%)	Agree (%)	Strongly agree (%)
Condoms should be used at all times during sex.	175(61.4%)	0(0%)	0(0%)	0(0%)	110(38.6%)
Condoms should be used once	141(49.5%)	0(0%)	0(0%)	144(50.35%)	0(0%)
It should be used in casual relationships	0(0%)	77(27.0%)	0(0%)	0(0%)	208(73.0%)
It is embarrassing to buy condoms for use	110(38.6%)	77(27.0%)	0(0%)	0(0%)	98(34.4%)
Condoms reduces sexual pleasure	33(11.6%)	31(10.9%)	77(27.0%)	0(0%)	144(50.5%)
ARVs prevents transmission of HIV	46(16.1%)	0(0%)	98(34.4%)	141(49.5%)	0(0%)
Condom use implies distrust of spouse/partner	78(27.4%)	161(56.5%)	0(0%)	0(0%)	46(16.1%)
My religion supports the use of condoms	46(16.1)	0(0%)	0(0%)	206(72.3%)	33(11.6%)
There are cultural hindrances to the use of condoms	141(49.5%)	0(0%)	0(0%)	46(16.1%)	8(34.4%)
Condoms should be used in stable relationships	0(0%)	0(0%)	0(0%)	175(61.4%)	110(38.6%)

Table 5 shows the practice of the use of condoms among respondents. All, 285 (100.0%) have used condoms. The prevalence of clients who currently use condoms was 89.1%. One hundred and thirty-one (46.0%) used condoms always while 108 (37.9%) were frequent users of condoms. Forty-six (16.1%) used condoms occasionally at sexual contacts. One hundred and twenty-four (43.5%) used condoms to prevent pregnancy while 102 (35.8%) used it to prevent transmitting HIV to spouse/partner, 23 (8.1%) used condoms due to partner preference. One hundred and forty (49.1%) were pregnant after been diagnosed with HIV, of this, 86 (30.2%) were planned, 54 (18.9%) were accidental pregnancies.

Table 6 compares the socio-demographic characteristics of respondents with current use of condoms. There were statistically significant associations between occupation (χ^2 =285.001, P-value <0.001), married at pre-diagnosis of HIV (χ^2=285.000, P-value <0.001), married at post diagnosis of HIV (χ^2 =174.658, P-value <0.001) and education (χ^2=10.46, P-value = 0.015) with the use of condom.

Table V: Practice of condom use among respondents(n=285)

Variables	Frequency	Percentage
Ever used condoms		
Yes	285	100.0
Currently, use condoms		
Yes	254	89.1
No	31	10.9
If yes, type being used		
Male type condom	105	36.8
Female type condom	180	63.2
If no, intention to use condoms in the future(n-31)		
Yes	31	10.9
Condoms use at each sexual contact		
Always	131	46.0
Frequently	108	37.9
Occasionally	46	16.1
Why condom is used		
To prevent pregnancy	124	43.5
To prevent transmission of HIV to spouse/partner	102	35.8
For birth spacing	36	12.6
Partner preference	23	8.1
Been pregnant post diagnosis of HIV		
Yes	140	49.1
No	145	50.9
If yes, pregnancy planned or accidental		
Planned	86	30.2
Accidental	54	18.9

Table 6: Socio-demographic characteristics of respondents and current use of condom

	Current user	Not current user	Total	χ^2	p-value
Age distribution (years)					
18 – 27	50(87.8%)	7(12.3%)	57(100.0%)	1.488	.829
28 – 37	113(89.7%)	13(10.3%)	126(100.0%)		
38 – 47	66(88.0%)	9(12.0%)	75(100.0%)		
48 -60	15(88.2%)	2(11.8%)	17(100.0%)		
>60	10(100.0%)	(0.0%)	10(100.0%)		
Sex					
Male	96(91.4%)	9(8.6%)	105(100.0%)	.912	.340
Female	158(87.8%)	22(12.2%)	180(100.0%)		
Respondent's occupation					
Professional	77(100.0%)	0(0.0%)	77(100.0%)		
Technical	128(100.0%)	0(0.0%)	128(100.0%)	285.000	.001*
Skilled manual	0(0.0%)	31(0.0%)	31(0.0%)		
Unskilled	49(100.0%)	0(0.0%)	49(100.0%)		
Marital status pre-diagnosis of HIV					
Single	58(100.0%)	0(0.0%)	58(100.0%)		
Married	196(100.0%)	0(0.0%)	196(100.0%)	258.000	.001*
Divorced/separated	0(0.0%)	31(100.0%)	31(100.0%)		
Marital status post diagnosis of HIV					
Single	37(97.4%)	1(2.6%)	38(100.0%)		
Married	211(97.7%)	5(2.3%)	216(100.0%)	174.658	.001*
Divorced/Separated	6(19.4%)	25(80.6%)	31(100.0%)		
Educational background					
No formal education	110(90.2%)	12(9.8%)	122(100.0%)	10.496	.015*
Primary	75(81.5%)	17(18.5%)	92(100.0%)		
Secondary	12(100.0%)	0(0.0%)	12((100.0%)		
Tertiary	57(96.6%)	2(3.4%)	59((100.0%)		

Discussion

The majority of respondents (93.7%) had an overall good knowledge of condoms. This is slightly lower than what obtained from a similar study in Namibia where 97% of women who participated in the study and were HIV positive knew that it is vital to protect themselves against unwanted pregnancies and all 100% knew that prevention of unwanted pregnancies minimizes the chances of transmitting HIV to their newborn baby (17). The majority of the respondents (60.2%) from this present study got their information about condoms through the media, health workers, and school while some got their information through friends and families.

The findings of this current study showed that the proportion of respondents who used condoms consistently was 46.0%. This estimate differs from reports from previous studies carried out among HIV positive women who were also sexually active in Ethiopia (56.7%) (18), Uganda (55%) (19) and Italy (60%) (20). It is, however, quite similar to the results from studies carried out among patients on ART in some settings. For instance, condom use in patients on antiretroviral therapy in India was reported at 89% (21) although the study participants were financing treatment themselves, they probably were economically stable. Higher levels of condom use have also been reported among patients on highly active antiretroviral therapy in developed countries (22).

Condom use in our study was highest in women aged 28-37 and 38-47 years (89.7% and 88.0% respectively), who were either single or married. Various socio-demographic and behavioral factors, like sex, age, education, marital status, type of partner, lack of perception of the severity of the infection, are important among people living with AIDS (23, 24).

Higher educational level was a positive factor for current condom use in this study. This finding agrees with previous studies carried out in Addis Ababa public hospitals (25) and Ghana (26) which revealed that respondents with secondary education or higher were currently using condoms and were more likely to be consistent with its use compared to those with lower educational levels. This is probably due to the participants' knowledge of condom use in preventing resistant strains and other sexually transmitted infections. From this study, most participants (93.7%) had adequate knowledge of the use of condoms. Also, this could be a high self-efficacy for condom use among people who have secondary and tertiary education (27). This study identified additional sources of information on condom use besides the media as; health workers (19.3%), family and friends (15.8%), and school (14.0%). Modern media, such as radio, television, internet, has over time become popular and central in the lives of many people across all age groups (28). Findings from this study indicates that 150 (52.6%) respondents drink alcohol and 175 (61.4%) had partners who drink alcohol, this could negatively affect consistent condom use, due to the effect of alcohol.

A meta-analysis based on 27 studies reported that consumption of alcohol was found to be significantly associated with unsafe sex among HIV positive patients (29). Reasons for this association could be that alcohol, known to act directly on the brain, reduces inhibitions and diminishes the perception of risks and therefore leads to a tendency to have unsafe sex (30). According to this current study, a lower proportion of the participants were taking alcohol as compared to their spouses. Spousal influences could, therefore, have decreased the use of condom among some of the participants since alcohol has a direct relationship with non-use of condoms (29). It has been shown that unsafe sex among HIV positive patients could be related to a lack of control over the male partner's use of condoms, less assertiveness and the partner's need to have children (31).

Although some HIV positive persons use condoms at each sexual contact, the others who engage in unsafe sexual behaviors place others at risk of infection (26, 32), hence it is vital to develop behavioral interventions that would increase safer sex practices among these clients. The cross-sectional nature of this study limits the assessment of temporal relationships between condom use and the associated factors.

Conclusion

Knowledge of condoms was good and it is being used by the majority of the respondents. The reasons for the use of condoms among HIV positive patients are to reduce unwanted pregnancies and also to decrease the transmission of HIV infection to infants and the other partner in the case of serodiscordant relationships. However, good knowledge did not translate to the appropriate attitude towards the use of condoms. The consistent use of condoms is determined by alcohol consumption, the desire for children, the need to prevent unintended

pregnancies, HIV status disclosure. Reduction of alcohol intake; HIV status disclosure and use appropriate family planning services would improve the consistent use of condoms.

List of abbreviations

HIV: Human Immunodeficiency Virus
AIDS: Acquired Immunodeficiency Syndrome
WHO: World Health Organization
HAART: Highly Active Antiretroviral Therapy
ARV: Antiretroviral
ART: Antiretroviral Therapy.

Declarations

Ethical approval and consent to participate
Ethical approval was obtained from Babcock University Health Research Ethics Committee (BUHREC377/18). Written consent was obtained from respondents and strict confidentiality of all information and findings was maintained throughout the study.

Consent for Publication
The authors hereby transfer all copyright ownership exclusively to the journal, if this work is published by the journal.

Conflicts of Interest
The authors have declared no conflict of interest.

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Authors Contributions
The first author conceived the research idea and wrote the first draft. All authors drafted the manuscript and approved the final submission.

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