



Baseline and Post-Intervention Assessment of Knowledge, Accessibility and Condoms Use in an African Rural Community

Ali Johnson Onoja¹ • Sheila Onoja¹ • Imam Adamu¹ • Paul Olaiya Abiodun² • John Shaibu¹ • Felix Olaniyi Sanni³

¹ Research Department, African Health Project, Abuja, Nigeria

² Department of National Integrated Specimen Referral Network, AXIOS International, Utako, FCT, Abuja, Nigeria

³ Department of West African Breast Cancer Study, Lagos State University Teaching Hospital, Ikeja, Lagos State, Nigeria
onojaali@yahoo.com

ABSTRACT

Introduction: Unprotected sexual intercourse is the most common mode of transmission of HIV/AIDS and other STIs in sub-Saharan Africa. The objective of this study is to assess the impact of health interventions on the knowledge, accessibility and condom use in an African rural community

Methodology: This is a quantitative survey that used a structured questionnaire among a representative sample of the general population aged 15 – 49 years. The data obtained include the demographics; age, sex, education, occupation, marital status, and information related to condom use. Data were analyzed using SPSS version 25.0.

Result: The baseline survey comprised 1021 (53.3%) males and 895 (46.7%) females while the final survey comprised 659 (54.2%) males and 556 (45.7%) females. Just 5.1% and 5.0% of the respondents in the baseline survey said female condoms are accessible and affordable but the values rose to 23.0% and 33.0% in the post-intervention survey. The overall usage of male condoms in the study population at the baseline was 41.9% and 58.8% in the final survey. The use of male condoms was very low among adolescents aged 15 -24 years (37.3%), uneducated (8.0%), primary education (27.4%), and the singles (47.5%). These values to 57.1%, 40.7%, 54.0%, and 60.4% respectively in post-intervention survey. The overall uptake of female condoms was 4.5% at the baseline survey and slightly increased to 11.8% at the post-intervention survey with the highest improvement seen among uneducated (from 3.2% to 36.4%). Due to the interventions, significantly improved confidence and correct use of condoms were observed among the uneducated (5.6% to 26.7%), had primary education (19.1% to 30.1%) but no effect was seen associated with marital status, sex, and age.

Conclusion: This study found a very high knowledge of male condoms among the respondent, both before and after the health intervention. However, there was very poor knowledge of female condoms, and the use of both condoms. We, therefore, advocate more intervention to include awareness creation, talks, Television and radio programs, counseling and free supply of female condoms to promote the prevention of STIs and HIV in the community.

To cite this article

[Onoja, A. J., Onoja S., Adamu I., Abiodun, P. O., Shaibu, J. & Sanni, F. O. (2020). Baseline and Post-Intervention Assessment of Knowledge, Accessibility, and Condoms Use in an African Rural Community. *The Journal of Middle East and North Africa Sciences*, 6(06), 32-40]. (P-ISSN 2412- 9763) - (e-ISSN 2412-8937). www.jomenas.org. 4

Keywords: Condom, Intervention, Human Immunodeficiency Virus (HIV), Sexually Transmitted Infection (STI)

1. Introduction:

Unprotected sexual intercourse is the most common mode of transmission of HIV and AIDS in sub-Saharan Africa. Also, it is the mode of transmission of other STIs. The use of latex condoms substantially reduces the risk for both partners provided condoms are used correctly and consistently. Condoms also have contraceptive benefits. Proper understanding of the

correct and regular condom use effectiveness are essential factors influencing condom use because they promote condom acceptability its use (Anyanwu & Fulton, 2015).

The common obstacle to condom use includes personal and socio-environmental barriers (Chingle et al., 2017). Lack of perceived threat (Ibrahim, et al., 2014), absence of motivation (Coyle et al., 2012; Okafor



et al., 2017), inadequate or poor knowledge (Ibrahim, et al., 2014), perceived lack of control (Lammers et al., 2013a), fear of being suspected of HIV positive if they suggested the use of condoms during intercourse (Copen, 2017), feeling guilty, insulted or feeling ashamed to purchase condoms (Hu et al., 2020; Katikiro & Njau, 2012; Masoda & Govender, 2013; Nwachukwu et al., 2008) consumption of alcohol and drugs for sexual ability (Coyle et al., 2012; Kosugi et al., 2019; Masoda & Govender, 2013), anxiety and depression (Anthony et al., 2017), decreased sexual pleasure (Adedimeji et al., 2008; Anthony I. Ajayi & Akpan, 2018; Anyanwu & Fulton, 2015; Katikiro & Njau, 2012; Masoda & Govender, 2013; Wahdan et al., 2013), negative attitudes toward condom (Anyanwu & Fulton, 2015; Hu et al., 2020; Lotfi et al., 2012), dating an older partner (Gallo et al., 2011), and misperception (Anthony et al., 2016, 2017; Lammers et al., 2013a; Lotfi et al., 2012), are the major personal barriers to the use of condom.

The common socio-environmental barrier to the use of condom includes the cost and accessibility of condom (Anthony & Akpan, 2018; Anyanwu & Fulton, 2015; Crosby et al., 2014; Hu et al., 2020; Wahdan et al., 2013) gender inequality, lack of mutual agreement of partners on the condom use during sexual intercourse (Anthony & Akpan, 2018), unsupportive environments (Lotfi et al., 2012), stigma attached to the condom (Anthony & Akpan, 2018; Anthony et al., 2017; Lammers et al., 2013a), and cultural norms or belief (Lotfi et al., 2012; Masoda & Govender, 2013; Nwachukwu et al., 2008; Yu et al., 2020). Other factors that affect condom use behaviors include religion (Benagiano et al., 2011; Oyediran et al., 2011), social norms, and perceptions (Anyanwu & Fulton, 2015; Benagiano et al., 2011; Oyediran et al., 2011).

In recent years, the distribution, acceptability, accessibility, and the use of condoms have increased (Warner et al., 2012). Literature has shown that the use of condoms is declining in Nigeria as a developing country; the trend that is contrary to the global rise in the use of condoms (Anyanwu & Fulton, 2015). Anyanwu and Fulton further relate this decline in the use of condoms in Nigeria to the rising cases of sexually transmitted infections (STIs) in the whole of the African region (Anyanwu & Fulton, 2015).

Researchers have advocated interventions such sex education, HIV and STIs awareness creation, counseling, availability, accessibility and promotion of condom use as means of reducing the risk of HIV infection and other sexually related diseases (Adeomi et al., 2014; Lammers et al., 2013a; Masoda & Govender, 2013; Okafor et al., 2017; Oyediran et al., 2011). Several research works have addressed the use of condoms in Nigeria, including the rural communities and among adolescents (Akinyemi et al., 2010; Ibrahim, et al., 2014) and in similar populations outside Nigeria (Coyle et al.,

2012; Crosby et al., 2014); however, studies relating to the assessment of the effects of interventions are uncommon and this is the basis of the current study.

2. Methodology:

This study was conducted on Bonny Island. The Island is a popular business area over 400 years back and this can be observed in its ethnic diversity. Bonny Island is located on the coast of Rivers State, occupying an area of 2.72 sq. km. along with the eastern coastal type of the Niger Delta area in southern Nigeria. It is a traditional Kingdom seen as a simple rural life with around 30,000 native Ibani people. In 2006, the Society for Family Health conducted the Ibani-Se HIV/AIDS pre-intervention survey that was used as a perfect document in the initiation of three years (2008-2011) intervention program. To respond to the growing spread of HIV and AIDS, the Ibani-Se HIV/AIDS Initiative was formed as a non-governmental public-private partnership by the Bonny Community, the Joint Industries Companies (NLNG, SPDC & ExxonMobil), Merck Sharpe & Dohme, and Nigerian Government agencies at Federal and State levels (the National Agency for the Control of AIDS and the Rivers State Action Committee on AIDS) to respond to the HIV/AIDS situation in the Bonny Kingdom.

The Initiative, in September/October 2006 conducted a Baseline Survey to judge the data, Attitudes, Practices, and behaviors of the mark audience towards the use of condoms. Critical to the development of any successful intervention program is putting in place a monitoring and evaluation process. This survey of condom use-related information was important to create a highly effective HIV/AIDS intervention in the Island, accurate baseline data were obtained from the various risk and work-related groups. The interventions include enlightenment programs, training, free tests, and logistics supplies. After 3 years of intervention, the effectiveness or advantage of the various types of interventions was assessed on key elements on knowledge, attitudes, and practices and beliefs using information extracted out of this post-intervention survey. This quantitative survey employed a structured questionnaire among a representative sample of the general population aged 15 - 49 years.

Also, data collected from family members listing formed the basis for systematic and proportional sampling allocation and the sampling frame for the respondent's selection. Also, the availability of such vital statistics would be relevant for subsequent program planning and intervention. Data were inputted with CSPro and transferred to SPSS version 20 for analysis. The next formula was used to determine the sample size for the mark group (persons with multiple non-marital partners).



$$n = D \frac{\left[\sqrt{2P(1-P)}Z_{1-\alpha} + \sqrt{P_1(1-P_1) + P_2(1-P_2)}Z_{1-\beta} \right]^2}{\Delta^2}$$

Where: D = design effect; P₁ = the estimated proportion at the time of the first survey;

P₂ = the proportion at some future dates such that the quantity (P₂ - P₁) is the size of the magnitude of change it is desired to be able to detect; P = (P₁ + P₂) / 2; Z_{1-α} = the z-score corresponding to the probability with which it is desired to be able to conclude that an observed change of size (P₂ - P₁) would not have occurred by chance; and Z_{1-β} = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P₂ - P₁) if one occurred.

α = 0.05 (Z_{1-α} = 1.96)

β = 0.20 (Z_{1-β} = 0.84)

To determine the necessary sample size, and detect a change of at least 14 percent among people with multiple sexual partners and condom users within such relationships over a while when another survey will be conducted to assess program impact. We assumed P₁=0.5 which implies that P₂=0.5 + 0.14., the design effect is estimated at 1.5 for the cluster design to be used to sample the target groups. The level of precision is set at 0.05. The application of the above formula yields a sample size of 102 for each ward. Given a total of 12 wards in the entire Bonny Local government area, the total sample yield for the KAPB among the general population was 12 *101=1212 but 1215 were sampled. A sample of 1,379 persons 1,215 among the general population was selected for the general population. The

procedure allows all eligible respondents in the local government to have equal probability (equal chance) of being selected for the survey.

Ethical approval was obtained from the National Health Research Ethics committee (NHREC), Federal Ministry of Health for the seroprevalence aspect of the study. Additionally, in line with the National Guidelines for mobile Voluntary Counselling and Testing (VCT), the respondents' informed consent was sought and signed before the test was administered. Respondents also had the option of opting out or up taking the test after the counseling process and confidentiality was strictly preserved with the client not forced to give out names as their VCT forms were assigned codes. Although the code was linked to the questionnaire number, however, this has no link to the person, and confidentiality was guaranteed.

3. Results:

3.1. Socio-Demographic Profile of Respondents:

This section attempts to compare the socio-demographic characteristics of the baseline and the post-intervention survey population. The baseline survey comprised 1021 (53.3%) males and 895 (46.7%) females while the final survey comprised 659 (54.2%) males and 556 (45.7%) females. The age of the respondents ranged from 15 – 49 years with 794 (42.3%), 633 (33.7%), and 450 (24.0%) for age groups 15-24, 25-34, and 35 years and older respectively at baseline survey while 380 (31.3%), 387 (31.9%), and 446 (36.8%) were seen for these age groups in the final survey.

Table 1: Respondents who have ever heard of male condoms and agreed that condoms are affordable by socio-demographics

| Characteristics | Baseline survey | | | Final survey | | |
|--------------------------|----------------------------|-----------------------------|-------------|----------------------------|-----------------------------|------------|
| | Ever heard of male condoms | Male condoms are affordable | Total | Ever heard of male condoms | Male condoms are affordable | Total |
| Gender | | | | | | |
| Male | 93.8 | 64.8 | 1021 | 98.3 | 68.6 | 526 |
| Female | 85.3 | 45.5 | 895 | 97.8 | 55.0 | 438 |
| Age group | | | | | | |
| 15-24 yrs | 90.9 | 58.7 | 794 | | 59.0 | 288 |
| 25-34 yrs | 91.5 | 60.0 | 633 | 96.8 | 66.9 | 284 |
| 35 -49 yrs | 86.4 | 47.1 | 450 | 97.9 | 62.8 | 336 |
| Highest education | | | | | | |
| No formal edu. | 60.8 | 19.2 | 125 | 85.2 | 40.7 | 27 |
| Primary | 86.7 | 40.3 | 585 | 90.3 | 57.5 | 73 |
| Secondary | 94.2 | 66.6 | 1029 | 96.2 | 61.7 | 384 |
| Graduate | 99.1 | 73.6 | 110 | 99.3 | 69.2 | 104 |
| Postgraduate | 90.3 | 69.4 | 62 | 100 | 73.9 | 23 |
| Marital status | | | | | | |
| Single | 92.7 | 63.8 | 933 | 97.8 | 66 | 429 |
| Ever married | 87 | 48.3 | 979 | 89.9 | 59.5 | 506 |
| Total | 89.8 | 55.8 | 1916 | 95.4 | 62.4 | 964 |



3.2. Awareness and Opinions about Affordability of Male Condom

The survey sought information on respondents' perception of condom affordability and the findings as shown in Table 1 points out clearly that in the baseline surveys, just about 90% of the respondents reported having heard of male condoms and about 56% on an average of this people agreed that male condoms are affordable. However, in the final survey, an average of 95% reported having heard about male condoms and over 62% of these people agree that male condoms are affordable.

3.3. Awareness and Accessibility of Female Condom

All the female respondents, including those who were not sexually active, were asked if they have heard, used, and where they could get the female condom. As shown in Table 2 the majority of respondents in the baseline survey believed that female condoms can not be obtained easily with just 5.1% positive perception. About the affordability of female condoms, just 5% agreed that it was affordable. The post-intervention survey revealed a drastic increase in the opinion of the respondents about female condoms; overall 23% and 33% agreed that Female condoms are easy to obtain and affordable respectively.

3.4. Sources of Information on the use of Condoms

The data from the post-intervention survey shows that most of the villagers hear about condoms from television, public lectures, and radio Table 3.

3.5. The use of Male and Female Condom during sexual intercourse

Table 4 shows a very poor usage of both male and female condoms among the people of Bonny kingdom. The use of male condoms was very low among adolescents aged 15 -24 years (37.3%), among respondents with no formal education (8.0%), had primary education (27.4%), and the singles (47.5%). The final survey revealed an improvement in the uptake of male condoms during sexual intercourse to 57.1%, 40.7%, 54.0%, and 60.4% respectively for these groups. The overall usage of male condoms in the study population at the baseline was 41.9% and 58.8% in the final survey. The use of a female condom was poorer as compared to the use of male condoms. The overall uptake of female condoms was 4.5% at the baseline survey and slightly increased to 11.8% at the post-intervention survey with the highest improvement seen among the respondents without formal education (3.2% to 36.4%).

3.6. Confidence in the use of Condoms

Table 5 shows that the intervention did not change the confidence of male study participants on the correct use of condom but there was an improvement in female respondents. A slight improvement was also observed among adolescents aged 15-24 years old. Also, significantly improved confidence was observed among respondents who were not educated (5.6% to 26.7%) and those that had primary education (19.1% to 30.1%) due to the interventions but no effect was seen associated with marital status.

Table 2: Respondents opinions about female condoms by socio-demographics

| Characteristics | Baseline survey | | | Final survey | | |
|--------------------------|-----------------------------------|-------------------------------|-------------|-----------------------------------|-------------------------------|-------------|
| | Female condoms are easy to obtain | Female condoms are affordable | Total | Female condoms are easy to obtain | Female condoms are affordable | Total |
| Gender | | | | | | |
| Male | 5.8 | 6.1 | 1021 | 19.6 | 34.7 | 571 |
| Female | 4.3 | 3.7 | 894 | 16.8 | 36.6 | 501 |
| Age group | | | | | | |
| 15-24 yrs | 5.0 | 4.5 | 794 | 19.8 | 27.8 | 303 |
| 25-34 yrs | 6.0 | 5.9 | 632 | 18.7 | 33.2 | 321 |
| 35+ yrs | 4.0 | 4.4 | 450 | 16.2 | 30.8 | 388 |
| Highest education | | | | | | |
| No formal education | - | - | 125 | 11.8 | 28.1 | 34 |
| Primary | 2.7 | 1.9 | 585 | 6.9 | 30.1 | 87 |
| Secondary | 6.2 | 7.0 | 1029 | 18 | 33.4 | 400 |
| Graduate | 10.9 | 8.2 | 110 | 20.5 | 35.2 | 117 |
| Postgraduate | 4.8 | 4.8 | 62 | 38.5 | 37.2 | 26 |
| Marital status | | | | | | |
| Single | 5.8 | 6.1 | 933 | 18.3 | 38.2 | 475 |
| Ever married | 4.4 | 3.9 | 978 | 17.0 | 34.9 | 572 |
| Total | 5.1 | 5.0 | 1915 | 22.9 | 33.1 | 1072 |

Table 3: Socio-demographics distribution of respondents' sources of information about the use of condoms

| Characteristics | Public lectures | Posters | Handbills | Road shows | Television | Radio | Hospital/ Medical personnel | Pharmacy, PMS/ Chemist | Family Planning Clinics | Others | Total |
|-----------------------|-----------------|------------|------------|-------------|-------------|-------------|-----------------------------|------------------------|-------------------------|------------|------------|
| Gender | | | | | | | | | | | |
| Male | 21.1 | 6.3 | 3.4 | 6.6 | 32.9 | 16.6 | 7.6 | 0.5 | 1.1 | 3.9 | 380 |
| Female | 20.5 | 4.9 | 4.9 | 5.7 | 27.4 | 17.9 | 12.2 | 1.1 | 2.0 | 3.4 | 263 |
| Age group | | | | | | | | | | | |
| 15-24 yrs | 20.6 | 5.2 | 6.2 | 8.2 | 29.2 | 16.0 | 8.2 | 1.0 | 2.3 | 3.1 | 194 |
| 25-34 yrs | 17.1 | 5.4 | 3.4 | 4.9 | 33.2 | 16.6 | 12.7 | 1.0 | 2.0 | 3.7 | 205 |
| 35+ yrs | 24.2 | 6.6 | 2.9 | 5.4 | 29.5 | 18.4 | 7.8 | 0.4 | 0.7 | 4.1 | 224 |
| Education | | | | | | | | | | | |
| No formal | 36.8 | 0.0 | 0.0 | 5.3 | 31.6 | 15.8 | 10.5 | 0.0 | 0.0 | 0.0 | 19 |
| Primary | 19.7 | 5.6 | 7.0 | 7.0 | 21.1 | 25.4 | 4.2 | 2.8 | 1.6 | 5.6 | 71 |
| Secondary | 19.0 | 6.1 | 3.6 | 7.1 | 29.7 | 19.3 | 9.6 | 0.8 | 1.3 | 3.5 | 394 |
| Graduate | 22.3 | 4.1 | 5.0 | 2.5 | 37.2 | 10.7 | 12.4 | 0.0 | 1.7 | 4.1 | 121 |
| Postgraduate | 35.3 | 5.9 | 5.9 | 5.9 | 29.4 | 0.0 | 5.9 | 0.0 | 5.9 | 5.8 | 17 |
| Marital status | | | | | | | | | | | |
| Single | 19.9 | 5.9 | 6.3 | 6.3 | 30.7 | 17.4 | 8.0 | 0.0 | 1.3 | 4.2 | 287 |
| Ever married | 22.5 | 5.4 | 2.4 | 5.7 | 30.9 | 18.0 | 9.0 | 0.9 | 1.6 | 3.6 | 33 |
| Total | 22.3 | 3.1 | 3.6 | 10.1 | 30.6 | 13.7 | 10.9 | 0.9 | 1.8 | 3.0 | 642 |

Table 4: Respondents who use male and female condoms by socio-demographics

| Characteristics | Baseline survey | | | Final survey | | |
|--------------------------|------------------|--------------------|-------------|------------------|--------------------|------------|
| | Use male condoms | Use female condoms | Total | Use male condoms | Use female condoms | Total |
| Gender | | | | | | |
| Male | 51.3 | 4.0 | 1021 | 65.3 | 13.6 | 393 |
| Female | 31.1 | 5.1 | 894 | 50.8 | 9.7 | 330 |
| Age group | | | | | | |
| 15-24 yrs | 37.4 | 3.9 | 794 | 57.1 | 12.4 | 223 |
| 25-34 yrs | 55.4 | 6.5 | 632 | 60.3 | 14.8 | 230 |
| 35 +yrs | 32.0 | 3.1 | 450 | 59.2 | 8.8 | 270 |
| Highest education | | | | | | |
| No formal edu. | 8.0 | 3.2 | 125 | 40.7 | 36.4 | 19 |
| Primary | 27.4 | 3.1 | 585 | 54 | 6.6 | 93 |
| Secondary | 50.6 | 5.6 | 1029 | 57.6 | 10.7 | 447 |
| Graduate | 66.4 | 4.5 | 110 | 67.8 | 10.8 | 123 |
| Postgraduate | 59.7 | 3.2 | 62 | 71.4 | 0 | 18 |
| Marital status | | | | | | |
| Single | 47.5 | 5 | 933 | 60.4 | 10.9 | 351 |
| Ever married | 36.6 | 4.1 | 978 | 57.3 | 10.5 | 386 |
| Total | 41.9 | 4.5 | 1915 | 58.8 | 11.8 | 761 |

Table 5: Respondents who have the confidence to use a male and female condom correctly by socio-demographics

| Characteristics | Baseline survey | | Final survey | |
|--------------------------|--|-------|--|-------|
| | Confidence of correct use of male & female condoms | Total | Confidence of correct use of male & female condoms | Total |
| Gender | | | | |
| Male | 46.4 | 1021 | 42.05 | 519 |
| Female | 18.9 | 895 | 29.6 | 437 |
| Age group | | | | |
| 15-24 yrs | 31.2 | 794 | 33.7 | 291 |
| 25-34 yrs | 43.4 | 633 | 37.6 | 281 |
| 35+ yrs | 24.9 | 450 | 37.9 | 327 |
| Highest education | | | | |
| No formal education | 5.6 | 125 | 26.7 | 27 |
| Primary | 19.1 | 585 | 30.1 | 75 |
| Secondary | 41.5 | 1029 | 36.7 | 378 |
| Graduate | 89.1 | 110 | 40.05 | 99 |
| Postgraduate | 50.0 | 62 | 50.7 | 23 |
| Marital status | | | | |
| Single | 40.9 | 933 | 39.0 | 426 |
| Ever married | 26.6 | 979 | 24.6 | 506 |
| Total (%) | 33.6 | 1916 | 37 | 960 |

Table 6: Respondents preferred sources of condom placement by socio-demographics

| Characteristics | Baseline survey | | | Final survey | | |
|---------------------------|------------------------------|------------------------------|-----------|------------------------------|------------------------------|-----------|
| | Toilet/ Reception/ Cafeteria | Pharmacy/ Clinics/ Hospitals | Total (N) | Toilet/ Reception/ Cafeteria | Pharmacy/ Clinics/ Hospitals | Total (N) |
| Gender | | | | | | |
| Male | 1.2 | 73.7 | 1021 | 10.6 | 78.7 | 502 |
| Female | 1.7 | 62.3 | 895 | 8.0 | 80 | 410 |
| Age group | | | | | | |
| 15-24 yrs | 0.8 | 71.8 | 794 | 8.4 | 77.9 | 259 |
| 25-34 yrs | 2.2 | 71.3 | 630 | 8.6 | 80.4 | 240 |
| 35 + yrs | 1.1 | 60.2 | 450 | 10.7 | 80.1 | 296 |
| Level of education | | | | | | |
| No formal edu. | 0.8 | 33.6 | 125 | 1.8 | 68.2 | 20 |
| Primary | 2.1 | 55.5 | 584 | 8.6 | 77 | 58 |
| Secondary | 1 | 77.5 | 1029 | 8.1 | 82.2 | 342 |
| Graduate | 1.8 | 86.2 | 109 | 11.3 | 82.4 | 94 |
| Postgraduate | 3.2 | 79 | 62 | 23.9 | 82.6 | 22 |
| Others | | | | 16.2 | 66.7 | 22 |
| Marital status | | | | | | |
| Single | 0.9 | 74.8 | 933 | 10 | 81.6 | 380 |
| Ever married | 1.9 | 62.3 | 979 | 9 | 76.6 | 437 |
| Total | 1.4 | 68.4 | 1916 | | | |

3.7. The preferred source of Condoms:

The survey reveals that over 70% of males in both surveys get condoms from a pharmacy, clinics, or hospitals however in the final survey, 80% of females get their condoms from the pharmacy, clinics, or hospitals as compared to 62.3% reported in the baseline survey.

4. Discussion

4.1. Awareness and Affordability of Condom

Awareness is usually the first step in knowledge acquisition. All respondents, including those who were not sexually active, were asked where they could get male and female condoms. Both males and females showed a very high level of awareness of condoms



which is an improvement from the previous records though quiet also impressive. This finding contrasts the previous report in Nigeria which found a large knowledge gap between males and females (Lammers et al., 2013b). This very high level of awareness was higher among adolescents and younger adults and increased with an increase in the level of education. Several studies in Nigeria and similar populations have noted the higher knowledge of condoms among younger and more educated people (Akinyemi et al., 2010; Coyle et al., 2012).

Good knowledge and positive attitudes towards the use of condoms was noted to reduce HIV prevalence HIV/AIDS in some parts of Nigeria and Africa (Chingle et al., 2017; Lammers et al., 2013; Masoda & Govender, 2013). The data from the post-intervention survey shows that most of the villagers hear about condoms from television, public lectures, and radio. Studies have reported a significant association between the knowledge of the correct use of condoms with age, education, and radio (Masoda & Govender, 2013).

Sustained use of condoms may be difficult to achieve if people perceive condoms as not affordable. While responses from the study participants showed that male condoms are readily available and affordable in the community, the female condom is rather not available or affordable. This might be the reason why the use of female condoms is very rare among the villagers as against male condoms. Though there was an improvement in the final survey due to intervention, yet this improvement did not correlate with the high level of condom awareness seen in the community. Similar poor knowledge of availability and affordability of condom has been reported in Nigeria (Adedimeji et al., 2008; Lammers et al., 2013b); a study even reported that many respondents stated that paying for condoms was a barrier to regular use (Masoda & Govender, 2013). This calls for more interventions such as awareness creation, talks, Television and radio programs, counseling, and condom free supply of female condoms.

4.2. The use of Condoms among the respondents

The respondents were asked if they use any of the male or female condoms regularly during sexual intercourse. In this survey, the proportion of persons who have ever used condoms is taken as one of the indicators of condom use. Although it may not necessarily reflect current behavior, it may provide some insight into current behavior. People who have ever used condoms are more likely to be current users and those who have ever used condoms but are not currently doing so may also offer an important reason to drop out. Our study found a fair use of male condoms and very poor use of condoms in the Bonny community. Although there was an improved use of male condoms in the post-intervention survey; this increase could be termed

marginal when compared to the level of awareness recorded in this study. Also, with regards to the female condoms, though a little improvement was observed, it is still termed very low because it does not reflect a safe line of HIV prevention for ladies. Similar to our findings poor use of condoms has been noted in Nigeria (Anyanwu & Fulton, 2015).

The use of condoms was higher among educated respondents as compared with the uneducated ones. Also, the use of condoms was lower among adults and married people than the respondents within the age gap 15 – 34 years. The poor use of condoms found in this study is due to the poor knowledge of availability and affordability of condoms, particularly female condoms. This finding corroborates a previous finding in Nigeria that noted that lack of knowledge on where condoms are available reduced condom use in both males and females (Lammers et al., 2013b).

Age, living in urban areas and education have been noted as the independent predictors of condom use. A Nigerian based study reported that condom use was higher among youths and respondents that had tertiary education in Ekiti and Nasarawa States in Nigeria (Anthony & Akpan, 2018). This is also consistent with the reports of some other similar studies (Baidoobonso et al., 2016; Copen, 2017; Westercamp et al., 2010). The higher use of condoms among younger adults might be due to their preference for condom than hormonal contraceptives. Studies have noted lower uptake of contraceptives among younger adults than the adults because they believe that hormonal contraceptives can delay conception and can be harmful to the body (Anthony & Akpan, 2018; Anthony et al., 2017). It may also be because younger adults take condoms as a harmless method of preventing unwanted pregnancies.

This study found a very high knowledge of male condoms among the respondent, both before and after the health intervention. However, there was very poor knowledge of female condoms, and the use of both condoms. The respondents reported unavailability and unaffordability of condoms in the Bonny community, particularly the female condom. Health interventions in this community have been able to improve the knowledge of condom but little effect was felt on the uptake of condoms. We, therefore, advocate more intervention to include awareness creation, talks, Television and radio programs, counseling and free supply of female condoms to promote the prevention of STIs and HIV in the community.

Conflict of Interest

The authors have no conflict of interest to declare.

**Corresponding Author:**

Ali Johnson Onoja, Ph.D.

Research Department, African Health Project, Abuja, Nigeria.

E-mail: onojaali@yahoo.com**References:**

- Adedimeji, A. A., Heard, N. J., Odutolu, O., & Omololu, F. O. (2008). Social factors, social support, and condom use behavior among young urban slum inhabitants in southwest Nigeria. *East African Journal of Public Health*, 5(3), 215–222. <https://doi.org/10.4314/eajph.v5i3.39006>
- Adeomi, A. A., Adeoye, O. A., Asekun-Olarinmoye, E. O., Abodunrin, O. L., Olugbenga-Bello, A. I., & Sabageh, A. O. (2014). Evaluation of the effectiveness of peer education in improving HIV knowledge, attitude, and sexual behaviors among in-school adolescents in Osun state, Nigeria. *AIDS Research and Treatment*, 2014(November). <https://doi.org/10.1155/2014/131756>
- Ajayi, Anthony I., & Akpan, W. (2018). Determinants of condom use among parous women in North Central and South Western Nigeria: A cross-sectional survey. *BMC Research Notes*, 11(1), 1–6. <https://doi.org/10.1186/s13104-018-3573-5>
- Ajayi, Anthony Idowu, Nwokocha, E. E., Adeniyi, O. V., Ter Goon, D., & Akpan, W. (2017). Unplanned pregnancy-risks and use of emergency contraception: a survey of two Nigerian Universities. *BMC Health Services Research*, 17(1). <https://doi.org/10.1186/s12913-017-2328-7>
- Ajayi, Anthony Idowu, Nwokocha, E. E., Akpan, W., & Adeniyi, O. V. (2016). Use of non-emergency contraceptive pills and concoctions as emergency contraception among Nigerian University students: Results of a qualitative study. *BMC Public Health*, 16(1). <https://doi.org/10.1186/s12889-016-3707-4>
- Akinyemi, A. I., Aransiola, J. O., Banjo, O., Bamiwuye, O., Fadeyibi, O., & Adewuyi, A. (2010). Influence of independent and proximate variables on condom use in selected states in Nigeria. *African Journal of Reproductive Health*, 14(4 Spec no.), 51–60. <https://doi.org/10.2307/41329754>
- Anyanwu, P. E., & Fulton, J. (2015). Knowledge and perception of young adults in Nigeria on the effectiveness of condom use in the prevention of sexually transmitted infections. *International Journal of Adolescent Medicine and Health*, 2015(November). <https://doi.org/10.1515/ijamh-2015-0050>
- Baidoobonso, S., Bauer, G. R., Speechley, K. N., Lawson, E., & The BLACCH Study Team. (2016). Social and Proximate Determinants of the Frequency of Condom Use Among African, Caribbean, and Other Black People in a Canadian City: Results from the BLACCH Study. *Journal of Immigrant and Minority Health*, 18(1), 67–85. <https://doi.org/10.1007/s10903-014-9984-z>
- Benagiano, G., Carrara, S., Filippi, V., & Brosens, I. (2011). Condoms, HIV, and the Roman Catholic Church. *Reproductive BioMedicine Online*, 22(7), 701–709. <https://doi.org/10.1016/j.rbmo.2011.02.007>
- Chingle, M. P., Odunze, P. A., Mohammed, A., Bitto, T. T., Sodipo, O. Y., & Zoakah, A. I. (2017). Predictors of male condom utilization in Plateau State, Nigeria. *Nigerian Journal of Clinical Practice*, 20(9), 1079–1087. https://doi.org/10.4103/njcp.njcp_56_17
- Copen, C. E. (2017). Condom use during sexual intercourse among women and men aged 15–44 in the united states: 2011–2015 national survey of family growth. *National Health Statistics Reports*, 2017(105).
- Coyle, K. K., Franks, H. M., Glassman, J. R., & Stanoff, N. M. (2012). Condom Use: Slippage, Breakage, and Steps for Proper Use Among Adolescents in Alternative School Settings. *Journal of School Health*, 82(8), 345–352. <https://doi.org/10.1111/j.1746-1561.2012.00708.x>
- Crosby, R. A., Milhausen, R. R., Sanders, S. A., Graham, C. A., & Yarber, W. L. (2014). Condom use errors and problems: a study of high-risk young Black men residing in three Southern US cities. *International Journal of STD and AIDS*, 25(13), 943–948. <https://doi.org/10.1177/0956462414526707>
- Gallo, M. F., Warner, L., Bell, A. J., Bukusi, E. A., Sharma, A., Njoroge, B., Ngugi, E., Jamieson, D. J., & Eschenbach, D. A. (2011). Determinants of condom use among female sex workers in Kenya: A case-crossover analysis. *Journal of Women's Health*, 20(5), 733–738. <https://doi.org/10.1089/jwh.2010.2436>
- Hu, L., Luo, Y., Zhong, X., Lu, R., Wang, Y., Sharma, M., & Ye, M. (2020). Condom Use and Related Factors among Rural and Urban Men Who Have Sex With Men in Western China: Based on the Information-Motivation-Behavioral Skills Model. *American Journal of Men's Health*, 14(1), 1–10. <https://doi.org/10.1177/1557988319899799>
- Ibrahim, M. T. O., Arisegi, S. A., Awosan, K. J., & Erhiano, E. E. (2014). Knowledge of HIV/AIDS, risk perception, sexual lifestyle, and condom use among drivers in Sokoto, Nigeria. *Journal of Infectious Diseases and Immunity*, 6(3), 19–25. <https://doi.org/10.5897/jidi2013.0129>
- Katikiro, E., & Njau, B. (2012). Motivating Factors and Psychosocial Barriers to Condom Use among out-of-School Youths in Dar es Salaam, Tanzania: A Cross-Sectional Survey Using the Health Belief Model. *In Aids*, 2012, 1–8. <https://doi.org/10.5402/2012/170739>
- Kosugi, H., Shibamura, A., Kiriya, J., Wafula, S. W., & Jimba, M. (2019). Consistent condom use among highly effective contraceptive users in an HIV-endemic area in rural Kenya. *PLoS One*, 14(5),



- e0216208.
<https://doi.org/10.1371/journal.pone.0216208>
19. Lammers, J., van Wijnbergen, S. J. G., & Willebrands, D. (2013a). Condom use, risk perception, and HIV knowledge: A comparison across sexes in Nigeria. *HIV/AIDS - Research and Palliative Care*, 5, 283–293. <https://doi.org/10.2147/HIV.S31687>
 20. Lammers, J., van Wijnbergen, S. J. G., & Willebrands, D. (2013b). Condom use, risk perception, and HIV knowledge: A comparison across sexes in Nigeria. *HIV/AIDS - Research and Palliative Care*, 5(March 2014), 283–293. <https://doi.org/10.2147/HIV.S31687>
 21. Lotfi, R., Tehrani, F. R., Yaghmaei, F., & Hajizadeh, E. (2012). Barriers to condom use among women at risk of HIV/AIDS: A qualitative study from Iran. *BMC Women's Health*, 12. <https://doi.org/10.1186/1472-6874-12-13>
 22. Masoda, M., & Govender, I. (2013). Knowledge and attitudes about and practices of condom use for reducing HIV infection among Goma University students in the Democratic Republic of Congo. *Southern African Journal of Epidemiology and Infection*, 28(1), 61–68. <https://doi.org/10.1080/10158782.2013.11441521>
 23. Nwachukwu, A. E., Egenegbe, J. A., Nwachukwu, P. O., & Blinkhorn, A. S. (2008). A progress report on a community-based HIV/AIDS Health Education program in rural Nigeria. *International Journal of Health Promotion and Education*, 46(4), 128–132. <https://doi.org/10.1080/14635240.2008.10708145>
 24. Okafor, U. O., Crutzen, R., Aduak, Y., Adebajo, S., & Van den Borne, H. W. (2017). Behavioral interventions promoting condom use among female sex workers in sub-Saharan Africa: a systematic review. *African Journal of AIDS Research*, 16(3), 257–268. <https://doi.org/10.2989/16085906.2017.1358753>
 25. Oyediran, K. A., Feyisetan, O. I., & Akpan, T. (2011). Predictors of condom use among young never-married males in Nigeria. *Journal of Health, Population, and Nutrition*, 29(3), 273–285. <https://doi.org/10.3329/jhpn.v29i3.7875>
 26. Wahdan, I., Wahdan, A., El Gueneidy, M., & Abdel Rahman, I. (2013). Prevalence and determinants of condom utilization among people living with HIV/AIDS in Egypt. *Eastern Mediterranean Health Journal*, 19(12), 967–974. <https://doi.org/10.26719/2013.19.12.967>
 27. Warner, L., Gallo, M. F., & MacAluso, M. (2012). Condom use around the globe: How can we fulfill the prevention potential of male condoms? *Sexual Health*, 9(1), 4–9. <https://doi.org/10.1071/SH11072>
 28. Westercamp, N., Mattson, C. L., Madonia, M., Moses, S., Agot, K., Ndinya-Achola, J. O., Otieno, E., Ouma, N., & Bailey, R. C. (2010). Determinants of consistent condom use vary by partner type among young men in Kisumu, Kenya: A multi-level data analysis. *AIDS and Behavior*, 14(4), 949–959. <https://doi.org/10.1007/s10461-008-9458-1>
 29. Yu, F., Hein, N. A., & Bagenda, D. S. (2020). Preventing HIV and HSV-2 through knowledge and attitudes: A replication study of a multi-component community-based intervention in Zimbabwe. *PLoS ONE*, 15(1), 1–25. <https://doi.org/10.1371/journal.pone.0226237>

Received April 18, 2020; reviewed May 01, 2020; accepted May 21, 2020; published online June 01, 2020