



## RESEARCH ARTICLE



## Understanding female condom use, acceptance, accessibility, awareness and knowledge among female public health students in a Nigerian university: A cross-sectional study

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## ABSTRACT

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**Background:** The female condom is both a means of mechanical contraception and protection against sexually transmitted infections (STIs) and unwed pregnancies. The use and uptake of female condoms have been advocated as one of the safest ways to halt the risk of unplanned/unwanted pregnancies and STIs including HIV. Our study aimed to explore the knowledge, awareness, utilization, acceptance and accessibility of FC among female public health students in a Nigerian University.

**Methods:** One hundred and ninety (190) female public health students took part in the study. A self-administered questionnaire was used to collect the data between August and December 2019. Data analysis was carried out using SPSS version 23.

**Results:** Overall percentage awareness of female condoms usage in this study was 52.0%. Less than a quarter (22.4%) reported having seen a pack of female condoms, while the remaining 77.6% of the participants reported having never seen a pack of female condoms. In addition, the majority (87.4%) of the respondents did not know whether a female condom interferes with sexual pleasure/sensation. The majority of the respondents (77.4%) concurred that utilizing a female condom implies that "I don't trust my partner". Concerning accessibility of the female condom, only 1.8% agreed that FC is easily accessible while more than half (54.2%) are uncertain of the accessibility.

**Conclusion:** Our study revealed a low level of knowledge and utilization of female condoms, and also limited access to the female condom as well as unsatisfactory acceptance and suboptimal awareness level which were suggested by the overall percentages in the study.

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## Introduction

Apart from being a contraceptive method, condom also protects users from acquiring STIs, if used properly. It has numerous benefits ranging from ease of use and access, as well as minimal untoward effects compared to other contraception method. Globally, the efforts to curb the spread of STIs and unplanned pregnancies have led to the introduction of female condoms (FC) to improve the sexual health of women by offering dual protection (3-7). More one out of three pregnancy in developing countries are unwanted/unwed/unplanned, thereby increasing attention of stakeholders to advocating contraception (8). The aftermath of some unplanned pregnancies include unsafe termination of pregnancy by quacks which pose major challenge to public health. The use and uptake of FC have been advocated as one of the major and safest means to prevention sex-related infections and to reduce the risk of unwanted pregnancies (1-8).

FC has double protective efficacy that is similar to male condoms and is frequently referred to as a women's empowerment tool (9). The increasing number of HIV cases and the specific vulnerability of women call for more proactive measures. Women should be empowered to act more autonomously in response to HIV prevention because women are more likely to contract STIs than men and are victims of unplanned pregnancies (10, 11). In 2018, *UNAIDS* estimated that HIV prevalence among people age 15–49 years was 1.5% and that young women are disproportionately affected by HIV in Nigeria, of which about half of adult living (55.56%) were women (11). This calls for the need to intensify efforts on public awareness as regards FC and its efficacy in protecting women against unwed/unplanned pregnancies and STIs.

In Nigeria, there have been efforts by many local and international organizations to promote the use of female condoms among women. This study aimed at understanding the knowledge level, awareness, utilization, acceptance and accessibility of FC among female public health students who are expected to be future advocates for the proper and consistent use of female condoms to forestall unwanted pregnancies and STIs.

## Materials and Methods

### *Participants and Settings*

The study setting was Osun State University, Nigeria, with an estimated more than 10,000 students. There are 6 campuses of which the main campus for health sciences is in Oshogbo, the state capital. The campus in Oshogbo is where the Science, Medical and the Public Health students are located. Of the total number of the university students in Oshogbo campus, only female public health students in their first year, second year, third year and fourth year and between the ages of 15 to 49 are included. The recruitment of study participants and collection of data were done between August and December 2019. The included female public health students were approached by research team members that took part in data collection and brief introduction about the study was also disseminated. The study participants were given adequate time to go through the study tool (questionnaire) and provide answer to all questions in the survey instrument. We did not provide any incentive for taking part in the study.

### *Survey Instrument*

We use a cross-sectional survey design. The questionnaire was adapted from a related study carried out in Ghana (12), and hence, revalidated for our study sample with a written permission gotten from the lead author. The survey instrument (questionnaire) was divided into four parts. The first part included questions on demographic characteristics of the participants and this included age, marital status, class year, employment status, religion and number of children expected in the future. The second part consisted of questions on the participants' knowledge of the female condom and some of the issues considered included whether they have accurate knowledge of the importance of the female condom in preventing unwanted pregnancies and STIs, ever seeing a pack of female condoms and whether the female condom is difficult to use/insert. The third part comprised questions on the acceptance of the FC by the participants. The last part of the questionnaire comprised questions on female condom utility and other information. Some of the issues covered included the female students ever using the female condom and frequency with the use. Some

items were also added to further explore condoms access to our respondents.

### **Informed consent**

No formal ethical approval was gotten. However, the researchers obeyed strictly all the ethical considerations involved in conducting studies involving human participants. We ensured confidentiality and anonymity by not putting names or attaching any identifiable signs to the survey instrument, and the rights to withdraw from the study at any-time was emphasized.

### **Data analysis**

Data analysis was carried out using SPSS version 23. Frequencies, percentages, and Chi-Square tests were used to summarize the data with the margin of error was set at 5% (with  $p \leq 0.05$  as significance level).

## **Results**

### **Participants' characteristics and female condom awareness**

One hundred-ninety (190) female public health students participated in the study. Overall percentage awareness of FC usage in this study was 52.0%. From the descriptive analysis, females between the ages of 15 and 19 years comprised 26.3% of the respondents while 46.3% and 27.4% of the total participants were between the ages of 20 and 24 years and 25 and 29 years respectively. Interestingly, it was observed that increasing age was associated with a reduction in awareness of FC use as 21.5%, 17.5% and 13.0% of awareness of FC use were reported by females between the ages of 15 and 19 years, 20 and 24 years and 25 and 29 years respectively. The majority of the participants were single 95.8% while 4.2% are married. However, the majority (89.5%) of participants are either married or have a dating partner and of which 14.2% of participants were cohabitating with their male partners. Participants with male partners (married or dating) have a percentage of awareness of FC use to be 49.0% while those without partners have 3% awareness. 35 (18.4%), 69 (36.3%), 50 (26.3%) and 36 (18.9%) of the respondents were in their first year, second year, third year and fourth year respectively.

The increase in the year of study was associated with increased awareness of FC use with

first year students, second year students, third year students and fourth year students reporting 11.0%, 12.0%, 13.0%, and 16.0% respectively. The percentage of the participants that are employed on a part-time basis 21.1% while 60.0% were self-employed with the remaining 18.9% being unemployed or unengaged. Awareness of FC use was highest among the self-employed (32.8%), followed by students that are employed part-time (17.2%), with students who are not employed at all reporting 2% of awareness FC use. Almost half of the participants were Christians (44.6%) while the remaining comprised Muslims (45.4%) and those who belong to other religions (10.0%). The percentage of awareness of FC use was highest among Christian participants (35.9%) followed by Muslims (10.0%) and others (6.1%). The majority of the females in the study wish to have between 1 and 3 children (65.8%), while the remaining 34.2% either want no children or want more than 3. (**Table 1**)

Table 1: Participants' Characteristics and female condom awareness

<b>Characteristics</b>	<b>F (n)</b>	<b>P (%)</b>	<b>A-FC (%)</b>
<b>Age</b>			
15-19	50	26.3	21.5
20-24	88	46.3	17.5
25-29	52	27.4	13.0
<b>Marital Status</b>			
Single	182	95.8	49.0
Married	8	4.2	3.0
<b>Year of study</b>			
First year	35	18.4	11.0
Second year	69	36.3	12.0
Third year	50	26.3	13.0
Fourth year	36	18.9	16.0
<b>Employment Status</b>			
Part time	40	21.1	17.2
Self employed	114	60.0	32.8
Unemployed	36	18.9	2.0
<b>Religion</b>			
Christian	85	44.6	35.9
Islam	86	45.4	10.0
Others	19	10.0	6.1
<b>No of Children desired in the future</b>			
1-3	125	65.8	46.0
<1 or > 3	65	34.2	6.0
<b>Having a male partner (married or dating)</b>			
Yes	170	89.5	49.0
No	20	10.5	3.0
<b>Cohabitating</b>			
Yes	27	14.2	26.0
No	163	85.8	26.0

\*F = Frequency; \*P = Percentage; \*A-FC=Awareness of FC;

## Knowledge of Female Condom Use among the Respondents

Majority of the females (79.5%) know that using the FC during sexual intercourse can prevent HIV and other STIs as well as unplanned pregnancy. However, less than a quarter (22.4%) reported having seen a pack of the condoms, while the remaining 77.6% of the participants reported having never seen a pack of the condoms. However, less than half of the participants (44.7%) reported that the FC fresh from the pack should not transmit infection when used during coitus, with almost half of the respondents (49.5%) reporting no knowledge on whether the FC fresh from the pack can transmit an infection when used during sexual intercourse or not, with only 5.8% reporting an erroneous impression that the FC fresh from the pack can transmit an infection when used during sexual intercourse. It was further observed that more than half of the respondents (52.6%) reported no knowledge of the difficulty in using/inserting the FC while 42.1% were of the view that it is difficult to insert the FC, with only 5.3% of the respondents reporting that the FC is not difficult to use/insert. The percentages suggest that the level of FC knowledge among our respondents is suboptimal.

Regarding source of knowledge about the FC, 26.3% reported their friends as the source, 13.2% of the respondents gained knowledge from the media, while 7.9% of the respondents reported knowledge of FC from a public lecture/school. However, the remaining 48.4% did not indicate any source of knowledge about the FC. It was also observed that only 4.2% of our respondents reported receiving advice/education from their health workers on FC. (Table 2)

Table 2: Knowledge of the female condom among our respondents

Statements	(N)	(%)	P-value
<b>Using the female condom during sex can prevent HIV and other STIs</b>			
Yes	151	79.5	0.002*
No	25	13.1	
Don't know	14	7.4	

Table 2 (continued)

Statements	(N)	(%)	P-value
<b>Using the female condom can prevent pregnancy</b>			
Yes	151	79.5	0.001*
No	25	13.1	
Don't know	14	7.4	
<b>Ever seen a pack of female condoms before</b>			
Yes	43	22.6	0.002*
No	147	77.4	
Don't know	0	0.0	
<b>The female condom fresh from the pack can transmit an infection when used during sexual intercourse</b>			
Yes	85	44.7	0.001*
No	11	5.8	
Don't know	94	49.5	
<b>The female condom is difficult to use/insert</b>			
Yes	80	42.1	0.151
No	10	5.3	
Don't know	100	52.6	
<b>Source of Knowledge</b>			
Friends	50	26.3	
Media	25	13.2	
Public Lecture/ School	15	7.9	
Health workers	8	4.2	
None	92	48.4	

\*P value less than 5% = statistical significance

## Acceptance of the female condom

About 10% of the participants reported that the FC interferes with their sexual pleasure/sensation while only 2.6% of the respondents disagreed that the FC interferes with their sexual pleasure/sensation. The remaining 87.4% of the respondents did not know whether the FC interferes with sexual pleasure/sensation. Some 32.6% reported using an FC during sex is not comfortable, while only 11.5% reported that using an FC during sex is comfortable. The remaining 55.9% of the participants did not know whether using an FC during sex is not comfortable. Further, 12.6% of the respondents agreed that FC is too wet or too slippery while only 8.4% disagreed. The remaining of the respondents did not know whether the FC is too wet or too slippery. Only 15.3% of the respondents agreed that FC has an unpleasant scent while 5% of the respondents disagreed that the FC has an unpleasant scent. However, the remaining of the respondents did not know whether FC has an unpleasant scent or not. In addition, 21.5% of the respondents agreed that FC makes noise when used

during sexual intercourse with the remaining of the respondents reporting that they don't know. **(Table 3)**

Table 3: Acceptance of female condom among women in their reproductive ages

Statements	(N)	(%)	P-value
<b>Using the female condom interferes with my sexual pleasure</b>			
Agree	19	10.0	0.002*
Disagree	5	2.6	
Don't Know	166	87.4	
<b>Using a female condom during sex is not comfortable</b>			
Agree	62	32.6	0.003*
Disagree	22	11.5	
Don't Know	106	55.9	
<b>The female condom is too wet or too slippery</b>			
Agree	24	12.6	0.134
Disagree	16	8.4	
Don't Know	150	79.0	
<b>The female condom has an unpleasant scent</b>			
Agree	29	15.3	0.001*
Disagree	10	5.2	
Don't Know	151	79.5	
<b>The female condom makes noise when used during sexual intercourse</b>			
Agree	41	21.5	0.125
Don't Know	149	78.5	

\*P value less than 5% = statistical significance

### Female condom use and accessibility among our respondents

About 13.9% of the participants concurred that their partners do not like them using FC during sex. 13% of the respondent agreed toward it when their mate/partners request that they use FC. Half of the respondents (52.6%) never insert/put on the FC before they start any sexual acts. Interestingly, majority of the respondents (77.4%) concurred that utilizing a FC implies that "I don't trust my partner". Concerning accessibility of the female condom, only 1.8% agreed that FC is easily accessible while more than half (54.2%) are uncertain of the accessibility. Furthermore, 46% do not know whether FC is expensive or not. **(Table 4)**

Table 4: Female condom use among women of reproductive age

Statements	(N)	(%)	P-value
<b>My spouse/main partner does not like me to use the female condom during sex</b>			
Agree	26	13.9	0.001*
Disagree	6	3.2	
Don't Know	158	82.9	
<b>I like it if my spouse/main partner asks me to use a female condom</b>			
Agree	25	13.0	0.001*
Disagree	17	9.1	
Don't Know	148	77.9	
<b>I have insert/put on the female condom before I start any sexual act as a measure to prevent unwanted pregnancy, HIV and other STIs</b>			
Most times	11	5.8	0.021*
Sometimes	39	20.5	
Don't want to disclose	40	21.1	
Never	100	52.6	
<b>Using a female condom means that I do not trust my partner</b>			
Agree	147	77.4	0.051
Disagree	43	22.6	
<b>FC is easily accessible from the nearby shop or chemist</b>			
Agree	3	1.8	0.132
Disagree	84	44.0	
Don't know	103	54.2	
<b>FC is expensive</b>			
Agree	22	11.6	0.001*
Disagree	81	42.4	
Don't know	87	46.0	

\*P value less than 5% = statistical significance

### Discussion

Our study revealed that the overall awareness regarding FC among female public health students is suboptimal in that about half of the respondents are aware of FC. This can be compared with another study conducted in Ghana where the awareness level is almost half among women of reproductive ages. (12) Contrastingly, previous studies carried out in Nigeria, Botswana, Tanzania and Rwanda revealed high level of awareness of FC among young women (13-16). However, our findings regarding the low awareness of FC among female public health student is worrisome in that they are expected to become a professional who will need to advocate and provide sensitization on FC to the public. This calls for the need to provide hands-

on training to raise awareness level of FC among our respondents.

Regarding the knowledge of FC, our findings revealed that the knowledge level of the female public health students is low. This is evident in that almost half of our respondents reported no knowledge on whether the FC fresh from the pack can transmit an infection when used during sexual intercourse or not. In addition, majority have not seen a female condom people and about half of the respondents do not understand whether it is difficult to insert or not. The low knowledge was consistent with previously published study conducted among Tanzanian, Zimbabwean and Ghanaian women (12, 15, 17). Suboptimal FC knowledge among female public health students is a further concern.

Acceptance level of FC among the female public health students may not be determinable in that majority answered do not know to the acceptance statements asked to them. However, this is worrisome in that the acceptance level of FC among the respondents should be high owing to their course of study. Studies have however revealed low level of acceptance among young women (12, 18-19) and among healthcare providers in United State of America, South Africa and Kenya (20). It is therefore important to provide accurate information regarding the benefits of FC to women of reproductive ages and essentially the future public health professionals. Curricula review aimed at practical exposure on sexual health among our respondents will improve their knowledge on the benefits of FC to public health which may influence their acceptance and clear possible misconceptions regarding FC.

The low knowledge and unsatisfactory acceptance seem to influence the utilization of FC among our respondents. However, the utilization level of FC can be concluded to be low. This is suggested in that half of the respondents agreed that they have never use female condom before they start any sexual act. Low utilization among our respondents is similar to previous studies (12, 16, 21-24). Interestingly, majority of the respondents concurred that utilizing a FC implies that they do not trust their partner. This is a further concern among these future public health

professionals. Nonetheless, our study does not probe to understand how often they have unprotected sex without condom use with their partners. We recommend a future study to confirm this among healthcare professions and trainees.

Our respondents reported friends as the major source of knowledge regarding FC. This is in contrast with study in Italy (25), in Nigeria (13) and Tanzania (26, 27), where mass media is the major source of information regarding FC. This implies that there is need to equip student with knowledge in academic setting as part of their training and importantly to ensure clear and accurate information on all aspects relating to the female condom including information on its correct usage.

Concerning access to female condoms, only 1.8% agreed that FC is easily accessible while almost half do not know the cost of FC. This lack of access could affect acceptance of the FC and its usage as some earlier studies have reported (17, 22). These findings imply that there is the need for increased access to the FC with a much-needed public education of the relevance of the FC to women, including healthcare trainees. Many initiatives have been drawn up to increase access to male condom. This study further suggests that efforts should be put in by stakeholders to improve access to FC.

### **Limitations**

This study only justifies the state of issues among female public health students in Osun State University and may not be generalizable to the whole country. However, with the nature of the course of study, our study still offers a key insight into understanding the level of knowledge, awareness, utilization, acceptance and accessibility of FC among female public health students of the university. In addition, the study is not without barriers, barriers such as social desirability bias and fear of judgement may be a challenge.

### **Conclusion**

Our study revealed FC knowledge, awareness and utilization is suboptimal as well as unsatisfactory

acceptance level of FC among the female public health students. These findings suggest that there is a need to create awareness among public health students as they are expected to enlighten the general population about their sexual and reproductive health including the use of FC.

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### Competing interests

The authors declared no competing interests

### Contributions

All authors contributed equally to writing the draft, collecting data and literature review. All authors read and approved of the final manuscript.

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