



Knowledge, attitude, and willingness to undergo cervical cancer screening among female undergraduates in a southwestern tertiary institution

Adefala NO¹, Okoro NE¹, Nwankwo NV¹, Agu UO², Aigbavboa DO², Adeoti JV², Adesanya AZ², Florence AB²

¹Department of Community Medicine, Babcock University Teaching Hospital, Ilishan-Remo, Ogun State, Nigeria

²Benjamin S Carson College of Health and Medical Sciences, Babcock University, Ogun State, Nigeria

Abstract

Context: Cervical cancer screening identifies alterations in cervical cells that may develop into cancer. Different literatures have explored the knowledge and attitude of female undergraduates to cervical cancer screening; only a few of these have been carried out in private tertiary institutions. This study aimed to assess the knowledge, attitudes and willingness to undergo cervical cancer screening among female undergraduates in a tertiary institution.

Materials and Methods: Using a multistage sampling technique, this cross-sectional study was conducted among 399 female undergraduates at Babcock University. A structured self-administered questionnaire was used. Data were analyzed using IBM SPSS version 27.0. The level of significance was set at $p < 0.05$. Relevant descriptive and inferential statistics were calculated. Results were presented in tables.

Result: The majority of respondents were 15-20 years ($n=276$, 69.2%) with a mean age of 19.1 ± 22.3 years. Most respondents were in the 4th academic year ($n=95$, 23.8%). Overall, 220 (55.1%) respondents had good knowledge, and 211 (52.9%) had poor attitude. While 47% (11.8%) and 217 (54.4%) strongly agreed and agreed respectively, to undergo screening, 135 (33.8%) remained neutral. Presence of symptoms/risks was associated with willingness to undergo screening ($p < 0.01$).

Conclusion: Respondents showed good knowledge of cervical cancer screening. The majority had a poor attitude despite generally favourable willingness to undergo screening. Public health policy and practice should focus on improving attitudes by integrating symptom-independent screening education into routine school health services.

Keywords: Knowledge, Attitude, Cervical cancer, Female undergraduates, Babcock University

Introduction

Cervical cancer is a disease that can be prevented and treated.^{1,2} According to estimates, there will be 760,082 new cases of cervical cancer and 411,035 deaths worldwide among women by 2030.³ Around 90% of new cases and fatalities take place in low- and middle-income nations.¹ Nigeria has a significant contribution to the global burden of cervical cancer with an incidence of about 18.4 per 100,000 women and about 12,000 women being diagnosed every year.⁴

It is known that the Human Papilloma Virus (HPV) is causes more than 95% of cervical cancer cases and is

a significant risk factor.⁵ HPV strains, such as HPV 16 and 18, cause cervical cancer by starting the multiple steps that result in invasive cervical cancer.⁵ Early detection and lifestyle modification to lower morbidity risk or to find diseases soon enough to be treated most effectively are the aim of screening patients for the disease.^{2,4,6}

Corresponding Author:

Ngozi Onyinye Adefala

Department of Community Medicine, Babcock University Teaching Hospital, Ilishan-Remo, Ogun State, Nigeria.

ngoziadefala@gmail.com | ORCID: 0000-0002-8752-5605

DOI: 10.61386/imj.v19i4.1365

Screening tests helps to identify the population who need further tests to determine whether they have a disease, they are not considered to be diagnostic procedures.⁷ The goal of cervical cancer screening is to identify changes in cervical cells that may develop into cancer.^{8,9} The Papanicolaou smear test (pap-smear/cervical cytology), human papillomavirus (HPV) testing, and visual inspection techniques employing Lugol's iodine or acetic acid are all included in the screening.¹⁰ According to the American Cancer Society (ACS), women between the ages of 25 and 65 should have cervical cancer screening every 5 years, with an HPV test alone. Women can also be screened with an HPV/Pap co-test every 5 years or a Pap test every 3 years where HPV testing alone is not accessible.¹¹

Factors which have been shown to influence cervical cancer screening in developed nations include: an increased level of education about risk factors, how vital screening is, and screening at a young age.¹²⁻¹⁵ In developing nations, cervical cancer occurs more frequently as a result of a lack of screening, conflicting health demands, ignorance, false illness perceptions^{16,17}, low knowledge and risk perception of developing cervical cancer, low knowledge about the benefits of screening, and unfamiliarity with the location of screening sites.¹⁸ Screening at regular intervals reduces cancer incidence and mortality by up to 92%, offering high cost-effectiveness and improved survival rates.^{2,19} This study therefore aimed to assess the knowledge, attitudes and willingness to undergo cervical cancer screening among female undergraduates in a private tertiary institution in Nigeria.

Methodology

Study area and study design: This study was conducted at Babcock University, Ilishan-Remo, Ogun State, a Nigerian private, faith-based tertiary institution located equidistant between Ibadan and Lagos.^{20,21} The institution has a total of 19 halls of residence, of which 10 host 5,595 female students. This study was a descriptive cross-sectional study and lasted about 6 months.

Study population: The study population included female undergraduate students resident in the halls and excluded those who were unavailable during the designated study period and who were too ill to participate.

Sample size determination: The Cochran formula for

cross-sectional studies was used to determine the minimum sample size:

$$n = Z^2pq/d^2$$

where:

N = minimum sample size

Z = Standard normal deviate set at 1.96, which equals a 95% confidence level.

p = proportion of female undergraduates in a Nigerian university with good knowledge of cervical cancer screening = 22.6% = 0.22622

q = 1-p (0.774)

d = error margin, which is set at 0.05

$N = (1.96)^2 \times (0.226) \times (0.774) \div (0.05)^2$
 ≈ 269

Accounting for 10% non-response rate:

$269 / 1 - 0.1 \approx 299$

The calculated minimum sample size was 299; this was increased to 399 to provide a sufficiently large sample

Sampling technique: The multi-stage sampling technique was applied in selecting the study participants. In the first stage, a list of all female undergraduates at Babcock University was obtained from the registry. They were then stratified based on their halls of residence. In the next stage, the sample population (minimum sample size) was then distributed proportionately across the halls of residence based on the population of each hall of residence (proportionate allocation). In the final stage, the study participants in each hall were selected by simple random sampling (by balloting). The sampling frame used in this stage was a list of all the female undergraduates in each hall of residence

Data collection tool:

A pre-tested self-administered questionnaire adapted from a previous study²³ was used. The questionnaire had four sections consisting of the social demographic information, knowledge of cervical cancer screening, attitude towards cervical cancer screening (which included a question on willingness to undergo screening) and factors influencing cervical cancer screening.

Data analysis

Data analysis was done using the IBM Statistical Package for the Social Sciences (SPSS) version 27.

Categorical data were summarised as frequencies and proportions. The chi-square test was used to test for association between independent variables (socio-demographic variables) and the dependent variables (willingness to undergo cervical cancer screening) at a 95% confidence interval. The level of significance was set at a p-value less than 0.05.

One mark was given for each correct option on questions used to assess their knowledge. The total obtainable score was 6 points. Those scoring ≥ 5 points were classified as having good knowledge of cervical cancer screening, while those scoring < 5 points were classified as having poor knowledge. A Likert scale was used for attitude assessment based on eight questions. The Likert scale responses were coded from 5 to 1, ranging from strongly agree (5) to strongly disagree (1). The maximum obtainable score was 40 points. Those scoring ≥ 20 points were classified as having a good attitude towards cervical cancer screening, while those scoring < 20 points were classified as having a poor attitude. A bivariate analysis was done to identify the factors associated with the willingness to undergo cervical cancer screening.

Ethical considerations

Ethical approval was obtained from the Babcock University Health Research and Ethics Committee (Ref: BUHREC 605/23). A detailed explanation of the study's objectives and procedures was given to the respondents. To maintain confidentiality, the data collection tool was numbered. Softcopy data was stored securely in password-protected devices

Results:

Table 1 shows the sociodemographic characteristics of the respondents. The mean age of respondents was 19.91 ± 2.23 years. The predominant age group was 15-20 years (69.2%). The Yorubas made up 50.9% of the respondents. Christians were in the majority (83.7%). Most of the respondents were residents in the Havilah Gold Hall (14.8%). Students in the 4th academic year were predominant (23.8%).

Table 2 shows the knowledge of the respondents concerning cervical cancer screening. Overall, 55.1% had good knowledge while 44.9% had poor knowledge.

Table 3 shows respondents' attitudes towards cervical screening. Overall, 47.1% of respondents had a good attitude towards cervical cancer

Table 1: Sociodemographic characteristics of respondents (n=399)

Variables	Frequency (%)
Age (years)	
15-20	276 (69.2)
21-25	114 (28.6)
26-30	9 (2.3)
Mean age	19.91 ± 2.23
Ethnic group	
Yoruba	203 (50.9)
Igbo	130 (32.6)
Hausa	20 (5.0)
Others	46 (11.5)
Religion	
Christianity	334 (83.7)
Islam	65 (16.3)
Traditional	0 (0.0)
Others	0 (0.0)
Hall of residence	
Ameyo Adadevoh hall	35 (8.8)
Havilah Gold hall	59 (14.8)
White hall	50 (12.5)
Ogden	18 (4.5)
Nyberg	17 (4.3)
Platinum	36 (9.0)
Crystal	54 (13.5)
Queen Esther	46 (11.5)
Felicia Adebisi Dada	38 (9.5)
Diamond	46 (11.5)
Academic year	
First year	76 (19.0)
Second year	94 (23.6)
Third year	94 (23.6)
Fourth year	95 (23.8)
Fifth year	23 (5.8)
Sixth year	17 (4.3)

Table 2: Knowledge of cervical cancer screening among respondents (n=399)

Variables	Frequency(%)
Heard about cervical cancer?	
Yes	351 (88.0)
No	48 (12.0)
I heard about cervical cancer screening?	
Yes	376 (94.2)
No	23 (5.8)
Source of information on cervical cancer and screening.	
School	344 (86.2)
News media	206 (51.6)
I health institutions	351 (88.0)
Family, friends, neighbours	296 (74.2)
Internet	239 (59.9)
How often should a person be screened?	
Once a year	29 (7.3)
Every 3 years	178 (44.6)
Every 5 years	49 (12.3)
I don't know	143 (35.8)
Who should be screened?	
Sexually active individuals	119 (29.8)
Women of 25 years and above	32 (8.0)
Prostitutes	0 (0.0)
Elderly women	0 (0.0)
All	226 (56.6)
I don't know	22 (5.5)
Which screening method do you know?	
Papanicolaou smear	44 (11.0)
Biopsy	106 (26.6)
Visual inspection with acetic acid	9 (2.3)
All	87 (21.8)
None	153 (38.3)
Knowledge score	n=399 (%)
Good knowledge (≥ 5 points)	220 (55.1)
Poor knowledge (< 5 points)	179 (44.9)

screening, and 52.9% had a poor attitude.

Table 4 shows the factors associated with willingness to undergo cervical cancer screening among the respondents. Presence of symptoms/risk was significantly associated with the willingness to undergo cervical cancer screening ($p < 0.001$).

Table 3: Attitude of respondents towards cervical cancer screening (n=399)

Variables	Strongly agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly disagree n(%)
It is helpful to detect cervical cancer early	270(67.7)	129(32.3)	0(0.0)	0(0.0)	0(0.0)
I may be at risk of getting cervical cancer.	0(0.0)	47(11.8)	142(35.6)	110(27.6)	100(25.1)
Getting cervical cancer is serious.	316(79.2)	83(20.8)	0(0.0)	0(0.0)	0(0.0)
Do you think that there are effective methods to reduce the risk of cervical cancer?	189(47.4)	97(24.3)	113(28.3)	0(0.0)	0(0.0)
Do you think cervical cancer can cause death?	188(47.1)	210(52.6)	0(0.0)	1(0.3)	0(0.0)
Do you think any woman acquire cervical cancer?	142(35.6)	179(44.9)	78(19.5)	0(0.0)	0(0.0)
Do you think screening helps in prevention of cervical cancer?	221(55.4)	142(35.6)	36(9.0)	0(0.0)	0(0.0)
I am willing to be screened for cervical cancer	47(11.8)	217(54.4)	135(33.8)	0(0.0)	0(0.0)
Attitude score					n=399(%)
Good attitude (≥ 20 points)					188(47.1)
Poor attitude (< 20 points)					211(52.9)

Table 4: Factors associated with willingness to undergo cervical cancer screening among respondents

Factors	Willingness for screening		χ^2	p-value
	Yes	No		
Religion				
Yes	0 (0.0)	4 (1.0)	0.136	0.712
No	13 (100.0)	382 (99.0)		
Culture				
Yes	0 (0.0)	4 (1.0)	0.136	0.712
No	13 (100.0)	382 (99.0)		
Side effects				
Yes	8 (61.5)	174 (45.1)	1.374	0.241
No	5 (38.5)	212 (54.9)		
Presence of symptoms/risk				
Yes	4 (30.8)	22 (5.7)	12.975	<0.001*
No	9 (69.2)	364 (94.3)		
Logistics challenges				
Yes	1 (7.7)	6 (1.6)	2.749	0.097
No	12 (92.3)	380 (98.4)		
Information via campaigns/workshops				
Yes	1 (7.7)	81 (21.0)	1.361	0.243
No	12 (92.3)	305 (79.0)		
Media portrayal/misinformation				
Yes	0 (0.0)	9 (2.3)	0.310	0.578
No	13 (100.0)	377 (97.7)		

*statistically significant

Discussion

More than half of the respondents had a good knowledge of cervical cancer screening. This finding is similar to a study done in 2019 among female undergraduates at the School of Basic Medical Sciences, University of Benin, Edo state.²⁴ This may be a result of an increase in health education at schools and on various social media platforms. The majority of participants in this study obtained information about cervical cancer screening from health institutions. This finding was in contrast to a study done in Botswana²⁵ where the majority of the participants got information about cervical screening from news media, brochures and other print material. This contrast could have been due to participants in

the current study having more frequent contact with health facilities in the university campus (e.g., antenatal care, family planning, immunization clinics), making health workers their major source of information. On the frequency of screening, 44.6% of participants said screening should be done every 3 years, when compared to a study done in Ethiopia²⁶ where the majority of the participants choose not to respond when asked about the frequency of screening, a few held the view that screening should be limited to females who are twenty-five years old and above. This difference may be due to better knowledge among participants in this study. This shows that information on cervical screening (based on guidelines) can improve knowledge of cervical cancer screening intervals.

In this study, less than half of the respondents didn't know of any screening method; this was similar to the finding of a study in the United Kingdom conducted among sub-Saharan female undergraduates, where less than half of the respondents didn't know of any screening method.²⁷ The finding could potentially be attributed to the insufficient accessibility of comprehensive and detailed information. This reveals that extensive information on the various methods of cervical cancer screening is imperative. The most known screening method among the participants in this study was biopsy. This finding is in line with a previous similar study done in Ethiopia.²⁶

In addition, a notable 67.7% of participants acknowledged the significance of early detection of cervical cancer. This was in contrast to findings from a UK study where 37.1% of sub-Saharan African students participated in screening programs despite being informed about cervical cancer, indicating a spectrum of attitudes toward the perceived benefits of early detection.²⁷ Exploring perceptions of personal risk, this study revealed a unique perspective, with none of the respondents considering themselves at risk of developing cervical cancer. This differs from an Eritrean study²⁸, where 42% of participants expressed a perceived need for screening. These differences underscore the variability in perceived susceptibility among diverse populations, highlighting the importance of tailoring awareness campaigns to address specific concerns. Concerning the seriousness of cervical cancer, 79.2% of respondents acknowledged its gravity. The consistent recognition of the seriousness of cervical

cancer emphasizes the potential impact of educational initiatives targeting misconceptions and fears associated with screening.²⁹ Furthermore, less than half of the respondents in this study believed in the effectiveness of preventive methods. This was in contrast to a Zambian study³⁰ where more than half of their respondents indicated that early detection and treatment of pre-cancerous cells were primary motivators for undergoing cervical cancer screening and were effective preventive methods. This underscores the importance of tailoring messaging to emphasize both the efficacy of preventive measures and the significance of early detection in comprehensive cervical cancer prevention strategies. This study presents nuanced perspectives on cervical cancer screening attitudes. These differences in early detection recognition, perceptions of personal risk, and acknowledgement of cervical cancer's seriousness highlight diverse viewpoints among participants, contributing to a broader understanding of these attitudes among female undergraduates.

The presence of symptoms or perceived risk was associated with the willingness to undergo cervical cancer screening ($p < 0.001$). This shows that respondents who experience symptoms or perceive themselves at risk are more motivated to act to protect their health by undergoing screening. This is in line with the Health Belief Model³¹ where perceived susceptibility and cues to action (for example, symptoms) increase preventive behaviours. In contrast, a study in a Nigerian community³² revealed that the attitude of respondents was associated with the willingness to undergo cervical cancer screening. In the current study, 11.8% of respondents strongly agreed to the willingness to undergo cervical cancer screening. This was in contrast to a Nigerian study at a university³³ where 52.8 % reported willingness to screen, and the absence of symptoms was explicitly cited as a reason for unwillingness to test, showing that asymptomatic students downplayed their need for screening.

In conclusion, while the knowledge of cervical cancer screening among respondents is relatively high, gaps remain in risk perception and confidence in the effectiveness of screening methods, which may limit the willingness to undergo cervical cancer screening.^{17,34,35} Public health policy should therefore prioritize campus-based education delivered through health institutions. Practice needs to move beyond

awareness to emphasize perceived susceptibility, benefits of early detection, and effectiveness of preventive methods, especially for asymptomatic young women who underestimate their risk. The observed association between symptoms or perceived risk and willingness to screen reveals the need for routine screening.

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Conflict of interest statement: The authors have declared no conflicts of interest.

Acknowledgement: The authors acknowledge all study participants.

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