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# Cervical Cancer Awareness and Its Risk Factors Amongst Female Undergraduate Students of Rivers State University

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**Abstract:** Cervical cancer has been associated with a high mortality rate among women in low- and middle-income countries such as Nigeria. Adequate knowledge and awareness of cervical cancer among women is essential for the control and prevention of deaths related to cervical cancer. A cross sectional study of the awareness of cervical cancer and associated risk factors was carried out in 253 students in Rivers state. The results showed that only 27 (11.5%) have good knowledge of pap smear, 3 (1.6%) indicated that they had done a pap smear and the findings were negative. Seventy-three (35.6%) respondents were sexually active, with most of the respondents (74%) that were sexually active reportedly had their first sexual experience between the 15 – 20 years. The last sexual exposure was mostly within a year (64.4%) among the respondents. Many of the respondents (88.2%) reported having one sexual partner. Only 20.9% indicated that they were in a relationship and 73.5% of those in relationship admitted to using one form of contraception. The most commonly used contraceptive was a condom (7.2%), followed by pills (6.4%) among the sexually active students. Most of the respondents (40.6%) indicated using contraceptive just once. The relationship of cervical cancer awareness and the demographic profile of the respondents were not statically associated or significant by age, faculty, level of study, marital status or education. However, level of knowledge of pap smear was statistically associated with current relationship status ( $p=0.007$ ), having given birth (0.036) and smoking habits ( $p<0.01$ ) among the respondents.

**Keywords:** Cervical Cancer, Pap Smear, Risk Factors, Awareness, Risk, Undergraduates

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## 1. Introduction

Cervical cancer is the most common gynaecological cancer and a leading cause of cancer death in women in Nigeria [1]. It is currently the fourth most frequent cancer in women with an estimated 570,000 new cases in 2018 representing 6.6% of all female cancers. Approximately 90% of deaths from cervical cancer occurred in low- and middle-income countries [2]. It is a leading cause of morbidity and mortality among women in the low- and

middle-income countries (LMICs) [3]. the high incidence and mortality from cervical cancer in sub-Saharan Africa have been attributed to lack of awareness of cervical cancer among the population, health-care providers and policymakers; limited access to high-quality health-care services and cervical screening programmes; and lack of functional referral systems. All these lead to advanced stage at diagnoses. 4 In developed countries, incidence and mortality from cervical cancer have been reduced through measures which include cytological screening and

prompt treatment of early cervical lesions [4, 5]. The uptake of screening programmes may be assisted by raising awareness about cervical cancer risk factors including young age at first sexual intercourse, [6–8] multiple male sexual partners, high parity, infections with the human papillomavirus, young age at first full-term pregnancy prolonged use of oral contraceptives and HIV infections [9–12]. Similarly, early help-seeking may be promoted if women in the LMICs become more aware of the symptoms of cervical cancer including intermenstrual vaginal bleeding, post-menopausal vaginal bleeding, post-coital vaginal bleeding, offensive vaginal discharge and lower abdominal pain [4, 13–15]. The appropriate awareness of cervical cancer has been reported to increase people's ability to detect early symptoms and signs of cancer [3]. In the United Kingdom [UK], knowledge and understanding of cancer risk factors and outcomes of cancer treatments influenced individuals' intentions and actual participation in cancer prevention programmes [16]. In addition, better knowledge of cancer warning signs has also been linked with early help-seeking [17]. Regarding cervical cancer, a substantial body of research has shown that awareness of cervical cancer and knowledge of its risk factors and symptoms can increase uptake of cervical screening and encourage early help-seeking for symptoms suggestive of cervical cancer [18]. However, there are limited data on levels of awareness about cervical cancer, including perceptions, beliefs and knowledge about cervical cancer risk factors and symptoms among young adults in Nigeria. The objective of this study was to investigate the awareness about cervical cancer risk factors and symptoms and beliefs about cervical cancer prevention among female undergraduate students in Rivers state, Nigeria.

## 2. Methods

### 2.1. Study Area

The study was carried out in the Rivers state University, Port Harcourt. The University is located in the Diobu area of Port Harcourt, Rivers State, Nigeria. The university consists of 9 academic faculties and 61 departments. The university host students from various socio-cultural backgrounds in Nigeria and serves as a catchment area for tertiary education in southern Nigeria.

### 2.2. Study Design

The descriptive cross-sectional study design was adopted for the study.

### 2.3. Ethical Consideration

Ethical approval for the study was obtained from the Research and Ethics committee of the Rivers State University prior to commencement of the study. Willing informed consent was also obtained from all willing participants in the study and no personal identifiers of the respondents were

collected for the purpose of the study.

### 2.4. Study Sample

The target population for the study include female students that are at least 18 years old and are currently attending the Rivers state university. Two hundred and thirty-five (235) undergraduate students of the Rivers state University were selected by systematic random sampling for the study.

### 2.5. Data Collection

A structured interviewer-administered questionnaire was used to collect socio-demographic data, data on knowledge of cervical cancer, awareness of pap smear and risk factors for cervical cancer among the respondents.

### 2.6. Data Analysis

The data was analysed with the statistical package for social sciences (SPSS) version 25. All results were presented in mean, frequency and percentage as appropriate. Chi-square was used to assess the association of socio-demographic data and level of knowledge of cervical cancer among the respondents. All analysis was done at a 95% confidence interval and a p-value less than 0.05 was considered significant.

## 3. Results

Table 1 shows the demographic distribution of the respondents. Most of the respondents (52.8%) were between 14 – 19 years. Similarly, most of the respondents (49.8%) were in 200 level and were Christians (97.4%). Majority of the students (91.9%) were also unemployed.

Table 2 showed the awareness of cervical cancer among the respondents. Many of the respondents (71.5%) indicated that they have heard about cervical cancer. The most common source of the information among respondent that have heard about cervical cancer was the internet (26.8%) followed by television (19.1%) and school (18.3%). The most common predisposing factors for cervical cancer as reported by the respondents were sexual intercourse (29.8%), improper hygiene (16.8%) and genetics (9.8%). The respondents indicated that the symptoms for cervical cancer include; vaginal discharge (26.4%), vaginal bleeding after sexual intercourse (23.0%) and bleeding after attaining menopause (4.7%). The general rating for awareness of cervical cancers showed that only 22.6% of the respondents had good awareness of cervical cancer.

Table 3 shows that the level of general awareness of Pap smear is poor in majority of the respondents, 208 (88.5%). Only 27 (11.5%) have good knowledge of pap smear, 3 (1.6%) indicated that they had done a pap smear and the findings were negative.

Table 4 shows the distribution of risk factors for cervical cancer among the respondents. The results showed that 73 (35.6%) were sexually active, with most of the respondents

(74%) that were sexually active reportedly had their first sexual experience between the 15 – 20 years. The last sexual exposure was mostly within a year (64.4%) among the respondents. Many of the respondents (88.2%) reported having one sexual partner. Only 20.9% indicated that they were in a relationship and 73.5% of those in relationship admitted to using one form of contraception. The most commonly used contraceptive was a condom (7.2%), followed by pills (6.4%) among the sexually active students. Most of the respondents (40.6%) indicated using contraceptive just once. Among the respondents, 36 (15.3%) admitted having had an STI in the past, with most (73%) indicating that they have had an STI only once and 18.9% indicated to having an STI twice. Majority of the respondents indicated that they treated their STI at the hospital (47.2%) and at the local pharmacy store aka chemist (36.1%). Only 50% of the respondents that have had an STI reported finished their treatment regimen for STI.

**Table 1. Socio-demographic profile.**

Variable (n=235)	Frequency	Percent
Age		
14 – 19 years	124	52.8
20 – 25 years	97	41.3
26 – 31 years	14	6.0
Faculty		
Agriculture	10	4.3
Biomedical sciences	15	6.4
College of health sciences	20	8.5
Education	25	10.6
Engineering	26	11.1
Environmental sciences	10	4.3
Humanities	26	11.1
Law	32	13.6
Management sciences	17	7.2
Sciences	30	12.8
Social sciences	24	10.2
Level of study		
100	74	31.5
200	117	49.8
300	37	15.7
400	7	3.0
Marital status		
Single	229	97.4
Married	6	2.6
Religion		
Christianity	234	99.6
Islam	1	0.4
Tribe		
Igbo	39	16.5
Ijaw	23	9.8
Ikwerre	40	17.0
Kalabari	14	6.0
Ogba	7	3.0
Ogoni	12	5.1
Okrika	8	3.4
Others	27	11.5
Occupation		
Student and unemployed	216	91.9
Student and employed	19	8.1

**Table 2. Awareness of cervical cancer.**

Variable (n=235)	Frequency	Percent
Have you heard of cancer of the cervix		
Yes	168	71.5
No	67	28.5
If yes, how?		
Radio	19	8.1
Television	45	19.1
Newspaper	8	3.4
Magazine	10	4.3
Internet	63	26.8
Friend	22	9.4
Relations	12	5.1
Hospital	32	13.6
School	43	18.3
What is/are the predisposing factor (s) to cancer of the cervix		
Sexual intercourse	70	29.8
Genetics	23	9.8
Mosquito bite	0	0.0
Improper hygiene	39	16.8
Sharing toilets	11	4.7
I don't know	55	23.4
What symptom (s) point to cancer of the cervix?		
Vaginal discharge	62	26.4
Vaginal bleeding after sexual intercourse	54	23.0
Body rash	8	3.4
Weight gain	2	0.9
Bleeding after attaining menopause	11	4.7
I don't know	64	27.2
General rating for awareness of cervical cancer		
Good	38	22.6
Poor	197	83.8

Table 5 shows a distribution of other risk factors for cervical cancer among the respondents. Only 3.8% of the respondents indicated that they have had given birth and 55.6% of them indicated they had given birth just once. Most of the respondents (59.6%) indicated that they take fruits and vegetables regularly. Only 4.7% of the respondent's smoke with majority indicating they have smoked for 1 year (45.5%) and majority (63.6%) indicated that they were occasional smokers. Only 9.4% indicated having a family history of cancer.

Table 6 showed that the relationship of cervical cancer awareness and the demographic profile of the respondents were not statically associated or significant by age, faculty, level of study, marital status or education.

Table 7 showed that level of knowledge of pap smear was statistically associated with current relationship status ( $p=0.007$ ), having given birth (0.036) and smoking habits ( $p<0.01$ ) among the respondents.

**Table 3.** Awareness and Uptake of Pap smear.

Variable (n=235)	Frequency	Percent
Have you heard about pap smear?	Yes	No
Yes	49	20.9
No	186	79.1
If yes, do you know about pap smear as screening modality for cancer of the cervix? N=49		
Yes	37	75.5
No	4	8.2
I don't know	8	16.3
If yes, how is pap smear done? N=49		
By using skin scrapings	1	2.0
By using scalp scrapings	2	2.2
By using cervical scrapings	30	61.2
By using armpit hair	1	2.0
I don't know	17	34.7
Do you think screening for cancer of the cervix is necessary		
Yes	155	66.0
No	23	9.8
I don't know	57	24.3
General rating on the knowledge of pap smear (n=49)		
Good	27	11.5
Poor	208	88.5
Have you ever done a pap smear		
Yes	3	1.6
No	190	98.4
If yes, how many times have you done it?		
Once	3	100.0
What year was the last one done?		
3 years ago	1	33.3
4 years ago	2	66.7
What health facility was it done		
Clinic	3	100.0
What was the result of the last one		
Negative	3	100.0

## 4. Discussion

Knowledge of cervical cancer and associated risk factors have been reported to correspond with an increased level of preventive measures among women with a consequent decline in incidence of mortality due to cervical cancer. An assessment of the awareness of cervical cancer among 253 female undergraduates in Rivers state Nigeria showed the 71.5% indicated that they have heard about cervical cancer. The most common source of the information among respondent that have heard about cervical cancer was the internet (26.8%) followed by television (19.1%) and school (18.3%). This is consistent with the reports of similar studies across sub-Saharan Africa which showed that between 50 – 80% of women in urban cities reportedly have heard about cervical cancer [18–21]. However, there are varying distributions on the source of information cervical cancer which is in contrast with the findings of this study. Other studies report TV/radio to be the most common source of information (28 – 40%) for the women, followed by the internet which accounted for an average of 15% as a source of information for women in urban areas [1, 3, 17, 22]. These difference could be attributed to the peculiar characteristics of the study population in the current study which are all students of a tertiary institution with the internet being the most popular source of information for a lot of tertiary students nowadays [7, 16, 23].

**Table 4.** Risk factors for cervical cancer.

Variable (n=235)	Frequency	Percent
Have you ever had sex		
Yes	73	35.6
No	132	64.4
If yes, at what age did you first have sex (n=73)		
9 - 14 years	4	5.5
15 – 20 years	54	74
21 – 26 years	15	20.5
When was your last sexual exposure (n=45)		
Within a year	29	64.4
More than a year ago	15	33.3
2 years ago	1	2.2
How many partners did you have at that period?(n=68)		
One	60	88.2
Two	6	8.8
Three	2	2.9
Are you currently in any sexual relationship? (n=116)		
Yes	49	20.9
No	186	79.1
If yes, do you use any form of contraception?		
Yes	36	73.5
No	13	26.5
What type of contraceptives?		
Condom	17	7.2
Pills	15	6.4
IUCD	1	0.4
Safe period	7	3
How long have you used contraception?		
One	13	40.6
Two	12	37.5
Three	4	12.5
Four	1	3.1
Five	2	6.3
How many sexual partners have you had in the past 3 months		
None	5	9.8
One	36	70.6
Two	7	13.7
Three	2	3.9
Four	1	2
Do you think your partner (s) is/are faithful? (n=61)		
Yes	32	52.5
No	6	9.8
I don't know	23	37.7

**Table 4.** Continued.

Variable (n=235)	Frequency	Percent
Have you ever had any sexually transmitted infection		
Yes	36	15.3
No	199	84.7
If yes, how many times have you had an STI?		
Once	27	73
Twice	7	18.9
Thrice	2	5.4
Five times	1	2.7
How did you treat the last STI?		
Hospital	17	47.2
Chemist	13	36.1
Self-medication	2	5.6
No treatment	4	11.1
Did you complete the drugs for the last one?		
Yes	19	50
No	19	50

**Table 5.** Other risk factors for cervical cancer.

Variable	Frequency	Percent	
Have you ever given birth			
Yes	9	3.8	
No	226	96.2	
If yes, how many times			
Once	5	55.6	
Twice	2	22.2	
Five times	2	22.2	
Do you take fruits and vegetables regularly?			
Yes	140	59.6	
No	95	40.4	
Do you smoke cigarettes?			
Yes	11	4.7	
No	224	95.3	
If yes, for how long have you been smoking			
One year	5	45.5	
Two years	3	27.3	
Three years	1	9.1	
Four years	1	9.1	
Ten years	1	9.1	
How often do you smoke?			
Daily	2	18.2	
Weekly	1	9.1	
Monthly	1	9.1	
Occasionally	7	63.6	
How many sticks			
One	4	36.4	
Two	4	36.4	
Three	1	9.1	
Four	1	9.1	
Five	1	9.1	
Is there anyone in your family that has had any form of cancer			
Yes	22	9.4	
No	213	90.6	
If yes, what is your relationship			
Cancer type	Family member	1	11.1
Breast cancer	Aunt (2) cousin (2), niece	5	55.6
Bone cancer	Uncle	1	11.1
Prostate cancer	Father		
No knowledge of cancer type	Aunt, uncle	2	22.2

The most common predisposing factors for cervical cancer as reported by the respondents were sexual intercourse (29.8%), improper hygiene (16.8%) and genetics (9.8%). The respondents indicated that the symptoms for cervical cancer include; vaginal discharge (26.4%), vaginal bleeding after sexual intercourse (23.0%) and bleeding after attaining menopause (4.7%). These responses are consistent with reports of other publications which showed that vaginal bleeding and discharge are likely symptoms of cervical cancer [1, 2, 24, 25]. The study showed that only 22.6% of the respondents had good awareness of cervical cancer and only 27 [11.5%] have good knowledge of pap smear. This is relatively lower than the finding of Sadoh et al., [7] which reported that 40% of the students in Benin city had good awareness of cervical cancer. Similarly, Godson et al [9] reported that 35% of the students showed good awareness of cervical cancer. This is an indication that the awareness of cervical cancer among students in Rivers states is lower compared to other parts of the country.

**Table 6.** Relationship between cervical cancer awareness and socio-demographic profile.

Variable (n=235)	Frequency	Percent
	Knowledge of cervical cancer	
	Good	Poor
Age		
14 – 19 years	19 (8.1)	105 (44.7)
20 – 25 years	15 (6.4)	82 (34.9)
26 – 31 years	4 (1.7)	10 (4.3)
Chi-square	1.690	
P value	0.430	
Faculty		
Agriculture	3 (1.3)	7 (3.0)
Biomedical sciences	2 (0.9)	13 (5.5)
College of health sciences	5 (2.1)	15 (6.4)
Education	3 (1.3)	22 (9.4)
Engineering	3 (1.3)	23 (9.8)
Environmental sciences	4 (1.7)	6 (2.6)
Humanities	3 (1.3)	23 (9.8)
Law	4 (1.7)	28 (11.9)
Management sciences	1 (0.4)	16 (6.8)
Sciences	8 (3.4)	22 (9.4)
Social sciences	2 (0.9)	22 (9.4)
Chi-square	13.154	
P value	0.215	
Level of study		
100	13 (5.5)	61 (26.0)
200	22 (9.4)	95 (40.4)
300	3 (1.3)	34 (14.5)
400	0 (0.0)	7 (3.0)
Chi-square	3.829	
P value	0.280	
Marital status		
Single	37 (15.7)	192 (81.7)
Married	1 (0.4)	5 (2.1)
Chi-square	0.001	
P value	0.973	
Occupation		
Student and unemployed	32 (13.6)	184 (78.3)
Student and employed	6 (2.6)	13 (5.5)
Chi-square	3.621	
P value	0.057	

The results showed that 73 (35.6%) were sexually active, with most of the respondents (74%) that were sexually active reportedly had their first sexual experience between the 15 – 20 years. This is consistent with the findings of other studies which report that between 60 – 80% of young adult females reported having their first sexual experience between 15 – 20 years old in different parts of the country [1, 7, 9, 10, 17, 24]. The most commonly used contraceptive was a condom (7.2%), followed by pills (6.4%) among the sexually active students. Most of the respondents (40.6%) indicated using contraceptive just once. This is consistent with the reports of other studies indicating that the most used forms of contraceptives are condoms and pills among female undergraduates (26–28).

Among the respondents, 36 (15.3%) admitted having had an STI in the past, with most (73%) indicating that they have had an STI only once and 18.9% indicated to having an STI twice. Majority of the respondents indicated that they treated their STI at the hospital (47.2%) and at the local pharmacy store aka chemist (36.1%). Only 50% of the respondents that have had an STI reported finished their treatment regimen for

STI. The pattern and prevalence of STI observed in this study is in contrast with the findings of a similar study in Zaria which reported a lower STI prevalence of 10.5% (7).

**Table 7.** Relationship exposure to risk factors and level of awareness of Pap smear.

Variables (n=235)	Knowledge of pap smear		Chi-square (p-value)
	n (%)	n (%)	
Have you ever had sex	Good	Poor	
Yes	13 (6.3)	60 (29.3)	3.33 (0.068)
No	12 (5.9)	120 (58.5)	
If yes, at what age did you first have sex (n=73)			
9 - 14 years	1 (1.4)	3 (4.1)	0.36 (0.833)
15 – 20 years	10 (13.7)	44 (60.3)	
21 – 26 years	2 (2.7)	13 (17.8)	
When was your last sexual exposure (n=45)			
Within a year	3 (6.7)	1 (2.2)	0.39 (0.823)
More than a year ago	7 (15.6)	12 (26.7)	
2 years ago	0 (0.0)	22 (48.9)	
How many partners did you have at that period?(n=68)			
One	11 (16.2)	49 (72.1)	0.45 (0.798)
Two	1 (1.5)	5 (7.4)	
Three	0 (0.0)	2 (2.9)	
Are you currently in any sexual relationship? (n=116)			
Yes	11 (4.7)	38 (16.2)	7.31 (0.007)*
No	16 (6.8)	170 (72.3)	
If yes, do you use any form of contraception?			
Yes	8 (16.3)	28 (57.1)	0.004 (0.95)
No	3 (6.1)	10 (20.4)	
How many sexual partners have you had in the past 3 months			
None	2 (3.9)	3 (5.9)	3.83 (0.428)
One	5 (5.8)	31 (60.8)	
Two	2 (3.9)	5 (9.8)	
Three	1 (2.0)	1 (2.0)	
Four	0 (0.0)	1 (2.0)	
Do you think your partner (s) is/are faithful? (n=61)			
Yes	7 (46.7)	1 (6.7)	5.36 (0.068)
No	1 (6.7)	2 (13.3)	
I don't know	4 (26.7)	0 (0.0)	
Have you ever had any sexually transmitted infection			
Yes	6 (12.2)	3 (6.1)	0.59 (0.440)
No	21 (42.9)	19 (38.8)	
Have you ever given birth			
Yes	3 (1.3)	6 (2.6)	4.391 (0.036)*
No	24 (10.2)	202 (86.0)	
Do you smoke cigarettes?			
Yes	5 (2.1)	6 (2.06)	13.09 (<0.001)*
No	22 (9.4)	202 (86.0)	
Is there anyone in your family that has had any form of cancer			
Yes	5 (2.1)	17 (7.2)	3.01 (0.083)
No	22 (9.4)	191 (81.3)	

\*Statistically significant (p<0.05).

The relationship of cervical cancer awareness and the demographic profile of the respondents were not statically associated or significant by age, faculty, level of study, marital status or education in the current study. This is in contrast with the findings of Saha [21] which reported that age and marital status were significantly associated with good levels of awareness of cervical cancer among students. However, in the current study, the level of knowledge of pap smear was statistically associated with current relationship status

(p=0.007), having given birth (0.036) and smoking habits (p<0.01) among the respondents. The results showed that most of respondents (72.3%) that were not in a relationship had a poor awareness of pap smear. Similarly, 86% of the respondents that had not given birth were found to have a poor awareness of pap smear. Majority of the non-smokers (86.0%) were also found to have a poor awareness of pap smear also. This finding is consistent with the findings of similar studies which indicated that a higher proportion of females that were not sexually active and not in a relationship had a poor level of awareness about pap smear [10, 25, 29]. This is an indication that birth history, sexual experience, contraceptive use and STI's are associated with the level of awareness of cervical cancer among women [5, 6, 10, 16, 25].

## 5. Conclusion

The findings of this study showed that most of the respondents had poor awareness of cervical cancer. The poor awareness was found to be significantly higher among students that reportedly have no sexual experience of have not given birth. Demographic information was not found to be associated with the level of awareness of cervical cancer and pap smear among the students. Based on the findings of the study, an increased level of awareness on cervical cancer is urgently needed among female undergraduates in Rivers state, Nigeria.

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