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Knowledge of cervical cancer among adolescent girls in selected secondary schools in Ile-Ife, Nigeria

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Abstract

Background: Cervical cancer continues to be one of the major causes of death among women, ranking as the fourth most common cause of female death globally. Over 90% of cases and related deaths occur in low- and middle-income countries (LMICs), including Nigeria.

Methods: This was a cross-sectional study with sample size of 251 among adolescent girls of senior secondary schools in Ile-Ife. Selection was through a multistage sampling process. Data was obtained using a self-administered structured questionnaire and result was analysed using the Statistical Packaged for Social Sciences version 25.0.

Results: A total of 254 responses were collected. The data showed that 9.1% of participants had good knowledge about cervical cancer. Factor like occupation of the father was associated with knowledge of cervical cancer.

Conclusion: Majority of the participants have poor knowledge on cervical cancer.

Keywords: Knowledge; Cervical Cancer; Adolescent Girls; Secondary Schools; Ile-Ife; Nigeria

1. Introduction

Cervical cancer is a malignant tumour that grows at the squamo-columnar junction, which is the area where the epithelial lining of the ectocervix meets the endocervix (Tomasi, Opata and Mowa, 2019). It is the fourth leading malignancy among women and the second major cause of mortality due to cancer, after breast cancer in women globally (World Health Organization; WHO, 2018; WHO, 2022). Cervical cancer is a disease that ensues from many risk factors like early exposure to sexual intercourse, multiple sexual partners, tobacco smoking, immunosuppression and family history of cervical cancer (Murray, Rosenthal and Pfaller, 2015). Yearly, over 530,000 new cases are reported worldwide, and roughly 270,000 women die as a result of cervical cancer worldwide (Jodjana, Windiani, Adnyana, Pratiwi and Soetjiningsih, 2023).

In the United States, findings had shown that adolescents between 14 - 19 years who are sexually active had the highest prevalence of HPV infection which is the major risk factor of cervical cancer (Santos, Silva, Carneiro, Coura-Vital and Lima, 2020). The World Health Organization emphasized that, 19 of the leading 20 countries with the highest cases of cervical cancer were in sub-Saharan Africa (WHO, 2022). Over 80% of incidence and mortality is in low-and-middle

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income countries (LMICs) with the highest mortality in sub-Saharan Africa (Sung et al., 2021). As stated in 2018, Nigeria had 14,943 new cases of cervical cancers and 10,403 associated mortality which amount to one-fifth of cancer mortality in West Africa (GLOBOCAN, 2018; Morhason-Bello, Kareem and Adewole, 2020). Cervical cancer continues to be a public health issue across the world causing high mortalities among women (WHO, 2021).

Human papillomavirus (HPV) is the major risk factor for cervical cancer, and this virus is identified in 99.7% of cervical cancer cases worldwide (Krieking, Castellsague, Cibula and Demarteau, 2014). Almost all cases of cervical cancer are associated to HPV, contracted mainly by sexual intercourse (Bosch, Lorincz, Muñoz, Meijer and Shah, 2022). The highest rates of HPV infections was found to be common among women below 25 years old (Santos, Silva, Carneiro, Coura-Vital and Lima, 2020; Ifediora and Azuike, 2018).

Screening program using the Papanicolaou test (Pap test) can help in early detection and this has contributed to significant decrease in death due to cervical cancer (AbdAllah et al., 2016). As option to the Papanicolaou test, some other screening methods have been developed and used, especially in developing countries (AbdAllah et al., 2016). Visual inspection with acetic acid and Lugol's iodine tests have been considered (AbdAllah et al., 2016). Asides screening tests for early diagnosis and treatment, mortality from cervical cancer can also be avoided through the HPV vaccination of adolescents (Canfell et al., 2020).

2. Material and methods

The study was carried out among adolescent senior secondary schools' girls in Ile-Ife, Osun state, Southwest, Nigeria. The population of the city was over 500,000 people, which is the highest in Osun State according to population census of 2006 (The Guardian Nigeria News, 2019). The main city of Ile-Ife is divided into two local government areas; Ife-east and Ife-central with a total of 21 political wards each (The Osun State Government, 2024). The city is located between latitudes 7°28′N and 7°45′N and longitudes 4°30′E and 4°34′E (Ajala and Olayiwola, 2013). Ile-Ifẹ is known worldwide for its ancient and naturalistic bronze, stone and terracotta sculptures, as far back to between 1200 and 1400 CE (Suzanne, 2015). The ancient city is known as the cradle of Yoruba ethnic group and also has Obafemi Awolowo University and Obafemi Awolowo University Teaching Hospital Complex.

The research was a descriptive cross-sectional elicited among adolescent senior secondary schools. Sample size was determined by using the sample size formula as follows:

$$n = \frac{z^2 pq}{d^2}$$

Where
n= sample size
z=1.96 (standard normal deviate) at 95% confidence interval
p= Proportion of individuals with the factor of interest = 18.1% (0.181),

i.e., respondents who had good knowledge of cervical cancer based on study by Amu, Ndugba and Olatona (2019).

$$q = 1 - p = 1 - 0.181 = 0.819$$

d= Absolute standard error or confidence interval set at 0.05

$$\text{Therefore, } n = \frac{1.96^2 \times 0.819(1-0.819)}{0.05^2}$$

$$n = 227.78$$

n is approximately 228. Factoring in a non-response rate of 10%, minimum sample size $= 228 + (\frac{10}{100} \times 228) = 228 + 22.8 = 250.8$.

Therefore, minimum sample size is 251. However, 254 data were collected. Instruments for data collection were self-administered questionnaires, designed after consideration of previous studies. It includes both open and closed ended questions divided into three (3) sections of study objectives. Socio-demographic characteristics, awareness of cervical cancer and knowledge of cervical cancer among adolescent girls in secondary school in Ile-Ife.

Data was collected by means of paper based self-administered questionnaires. Respondents were interviewed during break session and the interview was conducted at a location that ensured respondents privacy and comfort. Each data collection lasted for a period of 15 minutes. Three (3) research assistants were trained over a period of three days on how to administer questionnaire. The minimum qualification of the research assistants was Bachelor of Science (BSc).

One public and 2 private secondary schools were selected from each of the two Local Government Areas in Ile-Ife by simple random sampling. Giving a total of six schools (2 public and 4 private).

Data was entered manually into the IBM SPSS version 25 software. Data was then checked for completion and subsequently cleaned. Statistical Package for the Social Sciences (SPSS) version 25 was used for the analysis of data collected. Frequencies, proportions and percentages for categorical variables of interest were computed. Variables were measured using quantitative methods. Independent variables were the socio-demographic characteristics of the respondents while the dependent variable was knowledge of cervical cancer. In determining the knowledge of cervical cancer, an 18-point questions covering knowledge on cervical cancer (from the knowledge section of the questionnaire was used). Each correct response was scored one while I don't know or wrong response was scored zero. Respondents who scored 9-18 were categorized as having good knowledge while those that scored 0-8 were categorized as having poor knowledge. Level of knowledge of cervical cancer and factors associated with knowledge of cervical cancer were expressed as the proportion of the adolescent girls attending the school during the period of study and expressed as a percentage of the total study population. All variables were presented using descriptive statistics (frequency and percentage). To determine whether the independent and dependent variables were associated, the chi-square test was employed, at a 95% confidence interval, $p<0.05$ was deemed statistically significant.

Ethical approval was obtained from the Research Ethics Committee of the Osun State Ministry of Health, Osogbo. Consent was obtained from the parents of the selected participants by sending the consent forms through their children or wards. The form contained a brief explanation of the objectives and procedures of the study. Prior to administration of questionnaires, participants were furnished with adequate information about the study and their assent obtained. Participants were assured of their confidentiality and the anonymity of the obtained information. Participation was voluntary, and participant were informed they can withdraw their participation at any point without any prejudice.

3. Results

Table 1 Socio-demographic Characteristics of the Respondents on Biodata (n=254)

Characteristic	Frequency	Percent
Age (Years)		
10 - 13	29	11.4
14 - 16	215	84.6
17 - 19	10	3.9
Mean = 14.8661 SD = 1.28759		
Religion		
Christianity	202	79.5
Islam	47	18.5
African Traditional Religion	5	2.0
Ethnicity		
Yoruba	223	87.8
Hausa	18	7.1
Igbo	5	2.0
Others**	8	3.1
Place of Residence		

Urban	220	86.6
Rural	34	13.4
Type of school		
Private	167	65.7
Public	87	34.4
Class		
SS 1	104	40.9
SS 2	103	40.6
SS 3	47	18.5
Sub-class		
Science	159	62.6
Commercial	27	10.6
Art	68	26.8

** Others ethnic group: Edo, Isobo, Ghanian

Table 2 Socio-demographic Characteristics of the Respondents on Social activities (n=254)

Characteristic	Frequency	Percent
Ownership of mobile phone with internet services		
Yes	168	66.1
No	86	33.9
Ownership of social media account		
Yes	147	57.9
No	107	42.1
Membership of School Health Club		
Yes	51	20.1
No	203	79.9

Table 3 Socio-demographic Characteristics of the Respondents' Parents (n=254)

Characteristic	Frequency	Percent
Father's occupation		
Civil servant (Non-Health Professional)	74	29.1
Civil servant (Health Professional)	23	9.1
Business man	100	39.4
Petty trader	3	1.2
Farmer	24	9.1
Others**	30	11.8

Mother's Occupation		
Civil servant (Non-Health Professional)	43	16.9
Civil servant (Health Professional)	41	16.1
Business woman	110	43.3
Petty trader	40	16.7
Farmer	1	0.4
Others**	19	7.5
Father's level of Education		
Primary	4	1.6
Secondary	61	24.0
Tertiary/Higher Education	189	74.4
Mother's level of Education		
Primary	7	2.8
Secondary	57	22.4
Tertiary/Higher Education	190	74.8

**Other Fathers' occupation: Transporter, Carpenter **Other Mothers' occupation: Seamstress, Hair stylist

Table 4 Sources of Information on Cervical Cancer among Adolescent Girls in Secondary Schools in Ile-Ife (July 2024)

Sources	**Frequency(n=254)**	**Percentage#**
Healthcare worker	68	42.5
Family members	59	36.9
Friends	57	35.6
Social media/Internet	76	47.5
Television/Radio	58	36.2
Book/Magazine	46	28.8
School/Class lesson	78	48.8
Church/Mosque	24	15.0
Market	7	4.4

= Multiple response

Table 5 Cervical Cancer Knowledge among Adolescent Girls in Secondary Schools in Ile-Ife (July 2024)

Knowledge Statement	**Frequency(n=254)**	**Percent**
Cervical cancer affects both men and women		
Yes	67	26.4
No	67	26.4
Don't know	120	47.2
Human papilloma virus (HPV) is not a risk factor of cervical Cancer		
Yes	38	15.0
No	50	19.7

Don't know	166	65.4
Human papilloma virus (HPV) can be sexually transmitted		
Yes	67	26.4
No	33	13.0
Don't know	154	60.6
Having multiple sexual partners is a risk factor for cervical cancer		
Yes	73	28.7
No	47	18.5
Don't know	134	52.8
Adolescent girls do not need to be vaccinated against Human Papilloma Virus (HPV)		
Yes	39	15.4
No	88	34.6
Don't know	127	50
Smoking is not a risk factor of cervical cancer		
Yes	50	19.7
No	67	26.4
Don't know	137	53.9
Cervical cancer can be caused by spiritual attack		
Yes	32	12.6
No	95	37.4
Don't know	127	50.0
Early sexual activity is a protective factor for cervical cancer		
Yes	30	11.8
No	78	30.7
Don't know	146	57.5
Giving birth to many children is a risk factor for cervical cancer		
Yes	28	11.0
No	68	26.8
Don't know	158	62.2
Abnormal vaginal discharge is not a symptom of cervical cancer		
Yes	46	18.1
No	42	16.5
Don't know	166	65.4
Bleeding in between period is a symptom of cervical cancer		
Yes	42	16.5
No	36	14.2
Don't know	176	69.3
Foul smelling vaginal discharge is not a symptom of cervical cancer		

Yes	43	16.9
No	41	16.1
Don't know	170	66.9
Cervical cancer may not present with signs and symptoms at early stage		
Yes	69	27.2
No	32	12.6
Don't know	153	60.2
Cervical cancer is treatable if it presents early		
Yes	99	39.0
No	19	7.5
Don't know	136	53.5
There are currently vaccines for cervical cancer prevention		
Yes	97	38.2
No	25	9.8
Don't know	132	52.0
Cervical cancer cannot be prevented with vaccination		
Yes	38	15.0
No	69	27.2
Don't know	147	57.9
It is not possible to screen for cervical cancer		
Yes	30	11.8
No	57	22.4
Don't know	167	65.7
Pap smear is a test to screen for cervical cancer		
Yes	34	13.4
No	25	9.8
Don't know	195	76.8

Table 6 Cervical Cancer Knowledge Categorization among Adolescent Girls in Secondary Schools in Ile-Ife (July, 2024)

	Frequency(n=254)	**Percent**
Good	23	9.1
Poor	231	90.9

Table 7 Association between Knowledge of Cervical Cancer and Socio-demographic Characteristics among Adolescent Girls in Secondary Schools in Ile-Ife (July, 2024)

	Poor Knowledge	**Good Knowledge**	**χ2**	**p-value**
Age				
10 – 13	25	4	2.602	0.272

14 – 16	196	19		
17 – 19	10	0		
Religion				
Christianity	186	16	2.759	0.252
Islam	40	7		
African Traditional Religion	5	0		
Class				
SS1	91	13	3.021	0.221
SS2	95	8		
SS3	45	2		
Sub-Class				
Science	144	15	0.406	0.816
Commercial	24	3		
Art	63	5		
Place of Residence				
Urban	200	20	0.003	0.960
Rural	31	3		
Tribe				
Yoruba	204	19	1.012	0.798
Igbo	16	2		
Hausa/Fulani	4	1		
Others	7	1		
Usage of internet-enabled Phone				
Yes	155	13	1.045	0.307
No	76	10		
Social Media Accounts				
Yes	136	11	1.047	0.306
No	95	12		
Type of School				
Private	155	12	2.069	0.150
Public	76	11		
Presence of School Health Club				
Yes	44	7	1.703	0.427
No	144	10		
School without Health Club	73	6		
Occupation of Father				
Civil servant	69	5	13.736	0.017**

(Non-health Professional)				
Civil servant (Health Professional)	19	4		
Business Man	92	8		
Petty trader	3	0		
Farmer	18	6		
Others**	30	0		
Occupation of Mother				
Civil servant (Non-health Professional)	42	1	8.966	0.110
Civil servant (Health Professional)	37	4		
Business woman	98	12		
Petty trader	36	4		
Farmer	0	1		
Others**	18	1		
Father's Level of Education Primary				
Primary	4	0	1.244	0.537
Secondary	57	7		
Tertiary/Higher Education	173	16		
Mother's Level of Education				
Primary	7	0	1.475	0.478
Secondary	51	6		
Tertiary/Higher Education	173	17		

** Father's Occupation: Transporter, Carpenter
** Mother's Occupation: Seamstress, Hair stylist
** Tribe: Edo, Isobo, Ghanian

There was a statistically significant relationship between respondents' knowledge of cervical cancer and the occupation of their fathers (p=0.017). Other socio-demographic characteristics were not found to have statistically relationship with knowledge.

4. Discussion

A total of 254 students participated in this study with response rate of 100%. Mean age was 14.87 ± 1.3. This was similar to a study conducted by Aimiosior and Omigbodun (2020) among female secondary school students in Ibadan, Nigeria where the mean age of the respondents was 14.4 ± 1.2. Also, it was consistent with a survey conducted by Fagbule et al. (2020) among senior secondary school students across six states in Nigeria with mean age of 16.4 ±2.0. Furthermore, Nakayita et al (2023) conducted a study among school girls on HPV vaccine uptake in Uganda with the mean age of 12.11 ±1.651. In a similar study carried out in Brazil, the mean age of the participants was 12.4 ± 1.0 (Santos et al., 2020).

Most participants 202 (79.5%) were Christians, this could be because Ile-Ife has been known with existence of various Christian missionaries which have been existing more than a century ago, among them is Saint Paul's Anglican Church, Ayegbaju, Ile-Ife which was built over 100 years ago (Punch Newspaper, 2023). 223 (87.8%) of participants were of Yoruba ethnicity, this could be because the study was carried out in south-western part of Nigeria which is dominated

by people of Yoruba ethnic origin (Usman and Falola, 2019). On place of residence, 220 (86.6%) of respondents lived in the urban areas of Ile-Ife. This is likely due to the reported rapid urban expansion of the city (Oloukoi et al, 2014).

9.1% of participants had good knowledge about cervical cancer. This is similar to findings from a study done among secondary school girls in Ibadan, Nigeria where only 11% had good knowledge about cervical cancer (Aimiosior and Omigbodun, 2020). In a study conducted in Zimbabwe, 47% had good knowledge of cervical cancer (Mapanga, Girdler-Brown and Singh, 2019). In a similar study in Malaysia, there was a low knowledge of cervical cancer among the participants (Jalani et al., 2016). In contrast, a study done among secondary school girls in a rural community, Kebbi State Nigeria reported that 80% of participants had good knowledge of cervical cancer (Egbon, Ojo, Aliyu and Bagudu, 2022). Also, a study done in Ethiopia reported that 59.2% of respondents had good knowledge on cervical cancer (Mihretie et al., 2023). In addition, in a similar study done in United States, 73% of participants had good knowledge on cervical cancer (Strohl et al., 2015).

Concerning the sources of information of cervical cancer, the most popular sources were school (48.8%), internet/social media (47.5%), and healthcare workers (42.5%). No published articles were found to support the results on sources of cervical cancer information in Nigeria. However, the findings were similar to a study done in Ghana among adolescent girls by Hallidu, Odonkor and Sumaila (2021). They found that sources of information on cervical cancer among the adolescents were health workers (45%) and media (45.1%). The results were also similar with that of Yuen et al (2018) in China, who found that sources of information on cervical cancer among adolescent girls were school (53.3%) and health workers (39.5%). However, the findings contrast that from a study done in Port-Harcourt, Nigeria where the participants stated their sources of information on cervical cancer to be School (4.1%), Media (2.6%) and health workers (5.9%) (Omojunikanbi, Anyeji and Omojunikanbi, 2024). Also, a study conducted among adolescent school girls Ethiopia, found that respondents' sources of information on cervical cancer were school (8.7%), media (34.4%) and health workers (25.7%) (Mihretie et al., 2023). The findings also contrast ~~those from~~ a study in Poland by Wojewoda et al (2024) where the sources of cervical cancer information were school (53%), social media (20%) and healthcare workers (23%).

There was statistically significant relationship between respondents' knowledge of cervical cancer and their fathers' occupation (p= 0.017). This is similar with a study in Minna, Nigeria, which stated that the high extent of cervical cancer knowledge among the female secondary school adolescent girls were solely dependent on adolescents' parents' occupation (p = 0.043) (Sulaiman and Bisallah, 2019). This finding was also similar to that from a study done in Uganda (p= 0.021), which reported that adolescent girls whose parents were health professionals had good knowledge of cervical cancer (Bitariho et al., 2023). Similarly, a study in India had it reported that there was a significant association between parent occupation and knowledge of cervical cancer among the adolescent girls (p= <0.05) (Goutami and Jyothi, 2014). However, the result was not similar with that of study done in Benin city, Nigeria where peer training was associated with knowledge of cervical cancer (p= < 0.0001) (Sadoh et al., 2018). The finding was as well not similar with a study conducted in Cameroon where age (p = 0.007) and educational level (p = 0.0008) were associated with knowledge of cervical cancer respectively (Ayissi et al., 2012).

5. Conclusion

Good knowledge of cervical cancer among adolescent girls in secondary schools is pertinent in prevention of the disease especially at primary level of prevention. Few of respondents had good knowledge of cervical cancer. This finding can be a contributing factor in occurrence new cases of cervical cancer among respondents in future. It can as well increase the risk of late detection of the disease. Also, it can promote engagement of risky behaviours and ~~as well~~ reduce health-seeking behaviours on cervical cancer. In addition, it may increase the economic and social burden of cervical cancer and also increases the psychological impact of those at high risk.

Compliance with ethical standards

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Disclosure of conflict of interest

There was no conflict of interest to be disclosed

Statement of ethical approval

Ethical approval for this study was gotten from the Research Ethics Committee of the Osun State Ministry of Health, Osogbo, Nigeria.

Statement of informed consent

Consent was obtained from the parents of the selected participants by sending the consent forms through their children or wards

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