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Research Article

Knowledge of Cervical Cancer and Cervical Cancer Screening Methods Among Female Secondary School Students in Ibadan, Nigeria

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ABSTRACT

Cervical cancer is the most common cancer of the female genital tract worldwide and a leading cause of cancer-related deaths. For many years, the cervical Papanicolaou smear or Pap Test has been the standard method for cervical cancer screening. Screening with a Pap test has been shown to reduce the cervical cancer incidence by 60-90% and mortality by up to 90%, especially when more than 70% of those at risk accessed the test. The objective of the current study was to ascertain the level of knowledge of screening for cervical cancer among female secondary school pupils, since they were or would soon be at risk of the disease. This cross-sectional descriptive study recruited 361 female secondary school students from three different schools in Ibadan. Data was obtained over a period of five months, using a structured self-administered questionnaire, and analysed using the Statistical Package for Social Sciences (SPSS) version 22. Of the 361 respondents aged 10 to 21, 78.7% had heard about cervical cancer but only 11% had good knowledge about it. Nearly 85% of the respondents had never heard about cervical cancer screening methods. Pupils attending private schools were more likely to have a better knowledge of cervical cancer screening methods than those attending public schools ($p < 0.001$). Majority of the secondary school students were not equipped with sufficient knowledge about cervical cancer, its causation and the screening methods to prevent it. Such information ought to be included in the curricula of secondary schools.

Keywords: *Cervical cancer, screening, human papilloma virus, pap smear*

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INTRODUCTION

Cervical cancer is one of the greatest threats to women's lives and is presently the most common cancer affecting the female genital tract in the world. Cervical cancer, caused by the human papillomavirus (HPV), is the third leading malignancy among women in the world (Ferlay *et al*, 2013) and the second most common cancer among women in developing countries (WHO, 2017).

The incidence of cervical cancer in Nigeria is approximately 250/100,000 women. (Pisani P *et al*, 1999). The primary cause of cervical cancer is infection with one or more types of high-risk human papilloma virus (HPV) which is transmitted by sexual contact. Carcinoma of the cervix is associated with many risk factors, including early age at first sexual intercourse, multiple male sexual partners, male sexual partners who have had multiple partners, early age at first birth, multiparity, smoking, long-term use of oral contraceptive pills and immunosuppression, all of which facilitate the ability

of HPV to cause malignant change in cervical epithelial cells. (Rakotomahenina *et al*, 2014)

For many years, the cervical Pap test has been the standard method for cervical cancer screening. Screening with the Pap test had been shown to reduce the incidence of cervical cancer by 60 to 90% and mortality rates by as much as 90%. (Boardman *et al*, 2016). The major factor influencing the uptake of cervical screening is lack of awareness about screening and women who lack knowledge about cervical cancer and its prevention are unlikely to access screening services. (Ayinde *et al* 2004; Liao *et al*, 2006)

Over 70% of cervical cancers in sub-Saharan Africa are detected in their late stages, predominantly due to lack of information about the disease and lack of screening services (Yakasai *et al*, 2013; Adefuye *et al*, 2014). Nigeria has not recorded successes in implementing structured cervical cancer screening till date; rather it has been an opportunistic procedure, dependent on the woman's initiative and/or that of her healthcare provider. This inadvertently leads to

inappropriate utilization of screening facilities and lack of follow-up of abnormal results. There is currently no mass screening program for the detection of cervical cancer in Nigeria. Services are only available in a few health facilities and are not adequately utilized.

Knowledge of cervical cancer varies among women from country to country, even in the developed world. In Zaria Nigeria, a cross sectional study done to evaluate the knowledge of cervical cancer showed that 43.5% of the respondents had only a fair knowledge of cervical cancer and screening. (Ahmed *et al*, 2013). Other studies done in Nigeria had also shown consistently poor knowledge about the nature of cervical cancer and screening for the disease. (Ayinde *et al*, 2004; Ayinde *et al*, 2005, Adekanle *et al*, 2011; Adejuyigbe *et al*, 2014).

One of the main reasons for the huge difference in incidence and mortality from cervical cancer between developed and developing countries is this lack of awareness among the population and health care providers. (Arbyn *et al*, 2020) Only a few studies have been done on the knowledge of cervical cancer and screening methods for the disease among students in Nigeria (Ayinde *et al*, 2004; Oladepo *et al*, 2009; Adejuyigbe *et al*, 2013, Amin *et al*, 2020) and even fewer have focussed on secondary school pupils (Ifediora *et al*, 2018). An assessment of the current state of knowledge of cervical cancer and cervical screening and disease among this segment of the population is essential to planning for appropriate intervention measures to prevent the disease in the population.

MATERIALS AND METHODS

This was a cross-sectional study involving one-time interaction with female senior secondary school students in Ibadan, South-western Nigeria. These female students fall within the age group of those who should be well informed about cervical cancer and the screening methods available for it if cervical cancer is to be prevented in the population in future.

Study Area and Setting: The study was conducted in three purposively selected secondary schools in Ibadan North Local Government Area of Oyo State, Nigeria which has 173 listed secondary schools. St Louis Grammar School is a government owned, girls-only, school, with about 3000 pupils, located in the densely populated Mokola neighbourhood of Ibadan. Oritamefa Baptist Model School is a private, co-educational school located at Total Garden, Ibadan and has a population of about 1650 students, about 54% being female. Abadina College is a government owned co-educational school located on the main campus of the University of Ibadan with about 1600 pupils, about 50% of whom were female.

Sample Size and Sampling: A total of 361 participants was estimated as the required minimum sample size using an assumed prevalence of 43.5% (Ahmed *et al*, 2013), at 95% confidence level and with a precision level of 6%. A non-response rate of 20% was assumed in arriving at this sample size. Three secondary schools were purposively from among the schools listed in Ibadan North Local Government Area to reflect representation from co-educational and single-sex

schools and covering the socio-economic spectrum of the population. After talking to the students in each class about the study, a non-probability sampling technique was used to select eligible participants for the study by asking for volunteers. All willing students were given self-administered questionnaire to fill in the schools after calculating the number per school. Only females in the senior secondary schools were included in the study. Male students and all students in the junior secondary school were excluded.

Data Collection Instruments and Quality Control:

Questionnaires were distributed to participating students in the senior secondary classes of the schools to collect relevant information for the study. The questionnaire contained the following sections: demographic information and level of family-life education, knowledge about cervical cancer, knowledge about screening and vaccination against cervical cancer. Each student filled the questionnaire in about ten minutes. Data was collected over a period of five months (April- August 2016). Participation in the study was voluntary and written informed consent was obtained from the parents of the respondents prior to their participation. The respondents filled an assent form.

Data Analysis: Data obtained from this study was entered into a spread sheet. Analysis was done using the Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics such as frequency counts, percentages, tables, mean and standard deviation were used to summarise the result. The chi-square test was used to investigate significant associations between variables of interest at a statistical significance of $p < 0.05$. Knowledge of cervical cancer was assessed on a scale of 10 and classified as poor (scores <mean minus 1SD or less> = < 1.8082), average (scores <mean minus 1SD to mean plus 1SD> = 1.8083 to 5.0431) and good (scores <greater than mean plus 1 SD> = > 5.0431). Similarly, knowledge of cervical cancer was assessed on a scale of 10 and classified as poor (scores <mean minus 1SD> = < 0.0266), average (scores <from mean minus 1SD to mean plus 1SD> = 0.0267 to 1.63) and good (scores <greater than mean plus 1SD> = > 1.63).

Ethical Considerations: Participation in the study was voluntary and written informed consent was obtained from the parents and guardians of the respondents prior to their participation. The respondents filled an assent form before filling the questionnaire. Ethical approval was obtained from the Joint Health Research and Ethics Committee of the University of Ibadan and the University College Hospital, Ibadan.

RESULTS

The respondents ranged in age from 12 to 21 (mean \pm SD: 14.4 \pm 1.2) years. A total of 205 (56.8%) respondents were from the single-sex school while 156 (43.2%) were from the co-educational schools, 77 being from the private school. (Table 1)

Table 1:
Socio-Demographics Characteristics of the 361 Respondents

Demographic Factors		n (%)
School of Respondents	St. Louis Mokola	205 (56.8)
	Oritamefa	77 (21.3)
	Abadina	79 (21.9)
Age Range	10-14	183 (53.2)
	15-19	159 (46.2)
	20-24	2 (0.6)
	No Response	17 (4.7)
	None	7 (2.0)
Level of Education of Mother	Primary	58 (16.5)
	Secondary	114 (32.4)
	Tertiary	173 (49.1)
	No Response	9 (2.5)
Level of Education of Father	None	11 (3.2)
	Primary	40 (11.5)
	Secondary	96 (27.6)
	Tertiary	201 (57.8)
Nature of School	Public School	284 (78.7)
	Private School	77 (21.3)

Knowledge of Cervical Cancer: A total of 284 (78.7%) of the respondents had heard about cervical cancer and 79.6% of them correctly identified breast cancer as the commonest female cancer in Nigeria. Concerning the cervical cancer, only 52.1% identified early age at sexual debut, and 50.7% identified multiple sexual partners as risk factors. Less than half (46.5%) identified smoking as a risk factor (Table 2). Using the Knowledge Score, only 11% had good knowledge of cervical cancer and 13% had poor knowledge. (Figure 1). The level of education of the parents of the respondents had no association with knowledge of cervical cancer, neither did the nature of the school (public versus private or single sex versus co-educational) have an association with knowledge of cervical cancer (Table 3).

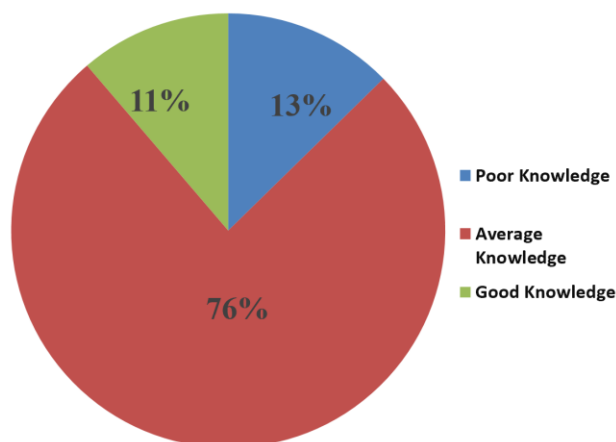


Figure 1:
Distribution of Respondents by their Knowledge of Cervical Cancer

Table 2:
Distribution of Responses Relating to Known Risk Factors for Cervical Cancer

Variable	n	%
Does Cervical Cancer occur in children	Yes	148 52.1
	No	112 39.4
	No Response	24 8.4
Which occurs more in Nigeria	Breast Cancer	226 79.6
	Cervical Cancer	51 18.0
Sex at a young age is a risk factor for Cervical Cancer	No Response	7 2.4
	Yes	148 52.1
Multiple sexual partners is a risk factor for Cervical Cancer	No	50 17.6
	Don't Know	86 30.3
	Yes	144 50.7
Early age at first birth is a risk factor for Cervical Cancer	No	46 16.2
	Don't Know	94 33.1
	Yes	78 27.5
	No	112 39.4
Smoking is a risk factor for cervical cancer	Don't Know	94 33.1
	Yes	132 46.5
	No	79 27.8
	Don't Know	79 25.7
Long term use of contraceptives is a risk factor for Cervical Cancer	No Response	4 1.0
	Yes	73 25.7
	No	56 19.7
HIV is a risk factor for Cervical Cancer	Don't Know	155 54.6
	Yes	72 25.4
	No	87 30.6
A family history of Cervical Cancer is a risk factor for Cervical Cancer	Don't Know	125 44.0
	Yes	99 34.9
	No	76 26.8
Do you know anyone who has suffered from Cancer of the Cervix?	Don't Know	109 38.4
	Yes	21 7.4
	No	263 92.6

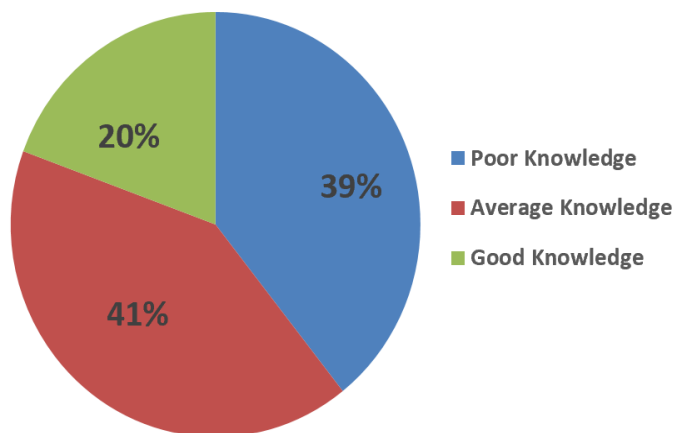


Figure 2:
Distribution of Respondents by their Knowledge of Prevention Cervical Cancer

Table 3:
Demographic Factors Affecting Knowledge of Cervical Cancer

Demographic Factors	Knowledge of Cervical Cancer Screening			p	
	Poor Knowledge	Average Knowledge	Good Knowledge		
Mother's Level of Education	None	1 (2.8)	3 (1.4)	2 (6.3)	0.757
	Primary	6 (16.7)	30 (14.3)	4 (12.5)	
	Secondary	12 (33.3)	71 (33.8)	11 (34.4)	
	Tertiary	17 (47.2)	106 (50.5)	15 (46.9)	
Father's Level of Education	None	1 (2.8)	6 (2.9)	2 (6.3)	0.940
	Primary	3 (8.3)	19 (9.2)	2 (6.3)	
	Secondary	10 (27.8)	60 (29.1)	11 (34.4)	
	Tertiary	22 (61.1)	121 (58.7)	17 (53.1)	
Proprietorship of School	Public Secondary School	31 (86.1)	160 (74.1)	22 (68.8)	0.208
	Private Secondary School	5 (13.9)	56 (25.9)	10 (31.3)	
Nature of School	Single Sex Secondary	23 (63.9)	115 (53.2)	17 (53.1)	0.486
	Mixed Secondary School	13 (36.1)	101 (46.8)	15 (46.9)	

Knowledge of Cervical Cancer Screening: Of the 361 respondents, 305 (84.5%) had never heard of the “Pap-smear” test. Only 20% of the respondents had good knowledge about the screening methods for cervical cancer while 39% had poor knowledge (Figure 2). Parents’ level of education had no association with knowledge of cervical cancer screening but students attending private schools had more knowledge about screening as 43.7% of pupils in public schools had poor knowledge compared with 23.7% of those in private schools ($p < 0.001$ - Table 4).

DISCUSSION

Only about one-in-ten of the respondents had good knowledge about cervical cancer and only about one-in-five had good knowledge of how to prevent the disease. Remarkably, more than half of the respondents thought that cervical cancer could occur in children, yet more than half believed that early onset of sexual activity is a risk factor for getting the disease. The pupils attending the private school, who were presumably from families that could afford to pay the high tuition fees, were more likely to have a good knowledge of cervical cancer screening.

Overall proportion of respondents who had good knowledge about cervical cancer is markedly lower than the 42% reported from South-eastern Nigeria (Ifediora *et al*, 2018). It is also much lower than what had been observed among medical students in Lagos where more than half of the respondents had good knowledge about cervical cancer (Adejuyigbe *et al*, 2015), and medical students in Sokoto where nearly four-in-five had good knowledge about the disease (Amin *et al*, 2020). While it will be expected that students in medical schools will have much more knowledge about cervical cancer than those in secondary schools, the pupils in Ibadan seem to have worse knowledge than their secondary school counterparts from South-eastern Nigeria. This suggests that the latter group of pupils were exposed to better information about the disease. This proportion with

good knowledge among the Ibadan pupils is however similar to that among pupils in Bangladesh where only 12% had good knowledge about cervical cancer. (Ferdous *et al*, 2014)

Regarding risk factors for cervical cancer, the proportion of the students in this study who knew that early onset of coital activity was a risk factor for cervical cancer is also predictably lower than what was found among university students in Nigeria (Ayinde *et al*, 2004; Oladepo *et al*, 2009; Adejuyigbe *et al*, 2015) but contrasted with findings from South Africa where only one-in-four of 389 female university students were aware that early sexual debut was a risk factor for cervical cancer. (Hoque and Hoque, 2009).

The low proportion of the participants in this study that had ever heard about the Pap smear agrees with findings among secondary school teachers in another city in South-western Nigeria where only 12.8% of female secondary school teachers were aware of the Pap smear or tests to screen for cervical cancer (Adekanle *et al*, 2011). This is also comparable to the findings among market women in Ibadan where only 19.7% were aware of screening methods (Ayinde *et al*, 2005). If the teachers and the parents do not know about screening for cervical cancer and preventing the disease, it is unlikely that their pupils or their daughter would know about such things. This situation contrasts sharply with what obtains in Nairobi Kenya where 75% of secondary school teachers knew about the Pap smear (Ombech *et al*, 2012). Making secondary school teachers aware of risk factors and screening methods for cervical cancer could therefore bring about an improvement in what the pupils they are teaching will know about the disease.

Although the level of education of the parents had no significant association with knowledge of cervical cancer or cervical cancer screening in this study population, the pupils in the private school had better knowledge of cervical screening. This may be related to their socio-economic circumstances. It had been reported (Agam *et al*, 2015) that with a higher *per capita* income and a higher level of education, there was likely to be better knowledge about cervical cancer and screening for the disease. The pupils in the private school here were those who had sponsors who could

pay the fees, so they may be from higher income families, an attribute that was not explored in this study. The quality of education provided in the private school may also contribute to their pupils knowing more about screening methods than those in public schools.

A limitation of the study is the fact that the schools where the information was gathered were purposively selected and the pupils were given the option of choosing to participate or not. The schools however have a composition that largely reflects the population of the city in which they are situated. The public schools had a larger number of those in the lower socio-economic strata of society while the private school consisted largely of those from the higher socio-economic groups who could afford the fees. Majority of the pupils willingly participated and very few chose not to, so the views expressed are likely to be representative of the population.

In conclusion, there is widespread poor knowledge about cervical cancer and the screening methods for the disease among secondary pupils in this large metropolis in South-western Nigeria. This suggests a need for better properly planned awareness campaigns about cervical cancer and cancer screening, especially among this segment of the population. Inclusion of information about this in school curricula could improve awareness among the teachers and lead to better knowledge among the pupils

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