Print ISSN: 2321-6379
Online ISSN: 2321-595X
DOI: 10.17354/ijss/2018/223

Original Article

Knowledge of Cervical Cancer and Uptake of Pap Smear Test and Human Papillomavirus Vaccination among Gynecologic Clinic Attendees in Sokoto, Nigeria

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Abstract

Introduction: The burden of cervical cancer is disproportionately high in the less developed regions where it is the second most common cancer in women. The progressive decrease in the burden of cervical cancer in the developed regions has been attributed to interventions targeting the risk factors of the disease.

Objectives: This study aimed to assess the knowledge of cervical cancer and uptake of Pap smear test and human papillomavirus (HPV) vaccination among gynecologic clinic attendees in Sokoto, Nigeria.

Materials and Methods: This was a cross-sectional study among 270 women (selected by multistage sampling technique) attending the gynecologic clinic of Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. A structured interviewer-administered questionnaire was used to collect data on the research variables. Data were analyzed using IBM SPSS version 20 statistical computer software package.

Results: The mean age of the respondents was 32.8 ± 9.3 years. Majority of respondents were Muslims (74.8%) and married (74.4%). Less than a fifth of respondents had good knowledge of the risk factors (9.3%), symptoms and signs (14.8%), and prevention (16.7%) of cervical cancer. Uptake of Pap smear test was low (13.7%), while uptake of HPV vaccination was zero, and these were mainly attributed to lack of awareness.

Conclusion: The poor knowledge of cervical cancer and low uptake of Pap smear test and HPV vaccination among the respondents in this study underline the need for public health education through the mass media to create awareness about the disease. In addition, healthcare workers and other stakeholders should promote utilization of cervical cancer prevention services by women.

Key words: Cervical cancer, Human papillomavirus vaccination, Knowledge, Pap smear test, Uptake

INTRODUCTION

The burden of cervical cancer remains high worldwide with an estimated 528,000 cases and 266,000 deaths each year, and it is both the fourth most common cause of cancer and the fourth most common cause of death from cancer in women.[1,2] The most worrisome aspect is its disproportionately high burden in the less developed regions where it is the second most common cancer in women, with an estimated 445,000 new cases in 2012 (which accounts for 84% of the new cases worldwide), and with more than 85% of the estimated 270,00 deaths from the disease occurring in these countries.[3,4]

Among the less developed regions of the world, sub-Saharan African countries have the largest burden of cervical cancer, particularly Nigeria (with an estimated 50.33 million women at risk, 14,089 new cases, and

Access this article online

www.ijss-sn.com

Month of Submission : 06-2018
Month of Peer Review : 07-2018
Month of Acceptance : 08-2018
Month of Publishing : 08-2018

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8240 deaths per year), South Africa (with an estimated 19.8 million women at risk, 7735 new cases, and 4248 deaths per year), Sudan (with an estimated 12.02 million women at risk, 833 new cases, and 534 deaths per year), and Zimbabwe (with an estimated 4.68 million women at risk, 2270 new cases, and 1451 deaths per year). In addition, while the disease ranks as the first most frequent cancer among women in Zimbabwe, it ranks as the second most frequent cancer among women in the other countries.[5-8]

In Nigeria, the burden of cervical cancer is disproportionately high in the northern part of the country. A review of the gynecological malignancies seen at the Usmanu Danfodiyo University Teaching Hospital (UDUTH) Sokoto, Nigeria, between 2000 and 2009 showed that about two-thirds 274 (67.8%) of the 404 cases reported were cervical cancer.[9] Cervical cancer was also the most common gynecological malignancy reported (65.7%) in a study conducted in the neighboring city of Zaria, North-Western Nigeria, with most of the patients (78%) having advanced disease at presentation.[10]

The principal risk factors of cervical cancer include early marriage or early age at the first sexual intercourse, having sex with multiple male sexual partners, and with male sexual partners who themselves have had multiple sexual partners, and multiple pregnancies. These conditions increase exposure to persistent infection with high-risk human papillomavirus (HPV) types which are strongly associated with cervical cancer, with an estimated 75% of cases globally attributable to infection with HPV types 16 and 18.[11-14] An estimated 62.2–78.9% of the invasive cervical cancers in Nigeria, South Africa, Sudan, and Zimbabwe, respectively (countries with very high burden of the disease in sub-Saharan Africa), are attributable to HPVs type 16 or 18.[5-8]

Prevention and control of cervical cancer is only feasible when those at risk of the disease know its risk factors, as this would enable them avoid behaviors that increase their exposure to them. Furthermore, knowing the symptoms and signs of the disease would enable those at risk seek medical care in the early stages of the disease, rather than the prevalent late presentation in the less developed countries when only palliative care is possible. In many countries worldwide, use of screening tests for cervical cancer and treatment for preinvasive disease of the cervix has been found to be highly successful in preventing progression to cervical cancer.[15] The screening tests for cervical cancer include Papanicolaou (Pap) smear test, HPV DNA test, cytology, and visual inspection with acetic acid (particularly in low-resource settings); while preinvasive disease of the cervix is treated by ablative methods which include destruction of abnormal tissue by burning or freezing (cryotherapy) and surgical removal of abnormal tissue.[2] In the developed countries, the dramatic decrease in the rates of cervical cancer over the past decades has been attributed to the widespread use of cervical screening programs in these countries, thus facilitating early diagnosis and treatment at the preinvasive stage of the disease.[15,16]

The high burden of cervical cancer in the sub-Saharan African countries is believed to be due to the poor knowledge of the disease (i.e., the risk factors, symptoms and signs, and prevention), the high prevalence of its risk factors, and the abysmally low uptake of cervical cancer screening services by women across the continent. A study among rural women in Zimbabwe reported poor knowledge of the causes, prevention, and treatment of cervical cancer, and most of the women interviewed (95.78%) have never done cervical cancer screening test.[17] A similar study among Sudanese women reported poor knowledge of cervical cancer and its prevention, and only a few (15.8%) had undergone a Pap smear test, despite the fact that most of them (78.8%) were university degree holders, and almost all of them (97.2%) were resident in urban areas of Khartoum state, Sudan, where the services are available.[18]

In the absence of any virus-specific treatment for HPV infection and the high prevalence of HPV-associated risk behaviors in sub-Saharan Africa, prevention and control of the prevalent HPV infection and the cancers caused by the high-risk HPV types (particularly 16 and 18) across the continent are contingent on high coverage (>70%) of full immunization against HPV infection among boys and girls aged 9–14 years as recommended by the World Health Organization.[2]

Studies conducted across Nigeria generally showed poor knowledge of the risk factors, symptoms and signs, and prevention of cervical cancer, as well as abysmally low uptake of Pap smear test. A study among pregnant women in Enugu, South-Eastern Nigeria,[19] reported that only 8.1% of respondents knew that cervical cancer is caused by HPV, and only 2.8% have had a Pap smear test done. A study among female secondary school teachers in Osogbo, Southwest Nigeria,[20] also reported that less than half of respondents (44.5%) were aware of cervical cancer screening, and only 5.4% have had a Pap smear test done.

Despite the high burden of cervical cancer in North-Western Nigeria, and with most of the patients presenting with advanced disease, there is a dearth of literature on the knowledge and practices related to cervical cancer and its prevention among the women in the zone. A study among market women in Zaria, North-Western Nigeria,[21] found that less than half of respondents (43.5%) had good

knowledge of cervical cancer and its screening, and less than a fifth of them (15.4%) have had a Pap smear test done. Another study among female healthcare workers in Sokoto, Nigeria,[22] reported very low uptake (10.0%) of Pap smear test, even though almost all the respondents (98.0%) had good knowledge of cervical cancer. This study was conducted to assess the knowledge of cervical cancer and uptake of Pap smear test and HPV vaccination among gynecologic clinic attendees in Sokoto, Nigeria, with the view that the findings would provide evidence-based information that is useful for strategic interventions for reducing the high burden of cervical cancer among women in Nigeria.

MATERIALS AND METHODS

Study Design, Population, and Area

This cross-sectional study was carried out at UDUTH, Sokoto, Nigeria, in July and August 2014. The hospital serves the inhabitants of Sokoto state, neighboring Kebbi and Zamfara states, as well as people from the neighboring country (Niger Republic). The study population comprised women attending the gynecologic clinic of the hospital. Women presenting at the clinic and were not on treatment for cervical cancer were considered eligible and enrolled into the study.

Sample Size Estimation and Sampling Technique

The sample size was estimated at 263 using the formula for proportion,[23] a 22.0% uptake of Pap smear test in a previous study,[24] and a precision level of 5%. Two hundred and eighty eligible study participants were enrolled into the study in anticipation of a 95% response rate, and they were selected by systematic sampling technique. One of three patients presenting consecutively at the clinic was enrolled into the study over a 10 clinic day period until the required sample size was obtained.

Data Collection and Analysis

A structured interviewer-administered questionnaire was developed after a thorough review of relevant literature and used to obtain information on the sociodemographic characteristics of the study participants and their knowledge of the risk factors, symptoms and signs, and prevention of cervical cancer, as well as the uptake of Pap smear test and HPV vaccination by them. It was reviewed by researchers in the Department of Community Health, Usmanu Danfodiyo University, Sokoto, Nigeria. Corrections were made based on their inputs on content validity. The questionnaire was pretested on 20 women attending the Gynecologic Clinic of Specialist Hospital, Sokoto, Nigeria. The necessary modifications were made based on the observations made during the pretesting. Five resident doctors assisted in questionnaire administration after pretraining on conduct of survey research, the objectives of the study, selection of study subjects, and questionnaire administration.

Data were analyzed using the IBM SPSS version 20 computer statistical software package. Respondents' knowledge of the risk factors of cervical cancer was scored and graded on a 9-point scale. One point was awarded for a correct response, while a wrong response or I do not know received no points. This gives a minimum score of "0" and a maximum score of "9" points. Those that scored ≥6 of 9 points were considered as having "good" knowledge, while those that scored <6 of 9 points were graded as having "poor" knowledge. Respondents' knowledge of the symptoms and signs of cervical cancer was scored and graded on a 6-point scale. One point was awarded for a correct response, while a wrong response or I do not know received no points. This gives a minimum score of "0" and a maximum score of "6" points. Those that scored ≥4 of 6 points were considered as having "good" knowledge, while those that scored <4 of 6 points were graded as having "poor" knowledge.

Respondents' knowledge of cervical cancer prevention was scored and graded on a 9-point scale. One point was awarded for a correct response, while a wrong response or I do not know received no points. This gives a minimum score of "0" and a maximum score of "9" points. Those that scored ≥6 of 9 points were considered as having "good" knowledge, while those that scored <6 of 9 points were graded as having "poor" knowledge. Frequency distribution tables were constructed, and cross-tabulations were done to examine the relationship between categorical variables. The Chi-square test was used for bivariate analysis involving categorical variables, while multivariate logistic regression analysis was used to seek for the predictors of good knowledge of cervical cancer. All levels of statistical significance were set at $P < 0.05$.

Ethical Consideration

Institutional ethical clearance was obtained from the Ethical Committee of UDUTH, Sokoto, Nigeria. Permission to conduct the study was obtained from the management of the hospital and head of the Department of Obstetrics and Gynaecology; informed written consent was also obtained from the participants before data collection.

RESULTS

Sociodemographic Characteristics of Respondents

Of the 280 questionnaires administered, 270 were adequately completed and found suitable for analysis,

giving a response rate of 96.4%. The respondents ages ranged from 17 to 64 years (mean = 32.80 ± 9.30), and majority, 201 (74.5%) of the 270 respondents were aged 20–39 years. Most of them were married (74.4%) and practiced Islam as religion (74.8%). Majority of respondents (71.9%) had secondary and tertiary education [Table 1].

Awareness of Cervical Cancer by Respondents

Less than half, 118 (43.7%) of the 270 respondents had heard of cervical cancer. Majority, 63 (53.4%) of the 118 respondents that had heard of cervical cancer reported health workers as their source of information, while 30 (25.4%) and 22 (18.6%) reported friends/relatives and radio/television as their sources of information, respectively [Table 2].

Respondents' Knowledge of Cervical Cancer

Very few, 25 (9.3%) of the 270 respondents had good knowledge of the risk factors, only 40 (14.8%) had good knowledge of the symptoms and signs, and less than a fifth, 45 (16.7%) had good knowledge of the prevention of cervical cancer [Figure 1].

There was no association between good knowledge of the risk factors of cervical cancer and any of the sociodemographic variables of respondents. Good knowledge of the symptoms and signs of cervical cancer was associated with the respondents' level of education. The proportion of respondents with good knowledge of the symptoms and signs of cervical cancer was significantly ($P < 0.05$) higher among the respondents that had secondary or tertiary education (17.5%) as compared to those that had primary education and below (7.9%) as shown in Table 3. Multivariate logistic regression analysis did not show any predictor of good knowledge of the symptoms and signs of cervical cancer.

Good knowledge of cervical cancer prevention was associated with the respondents' religion and level of education. The proportion of respondents with good knowledge of cervical cancer prevention was significantly ($P < 0.05$) higher among Christians and those that belong to other religion (26.5%) as compared to Muslims (13.4%), and those with secondary or tertiary education (19.6%) as compared to those with primary education and below (9.2%) as shown in Table 3. Multivariate logistic regression analysis did not show any predictor of good knowledge of cervical cancer prevention.

Uptake of Pap Smear Test by Respondents

Only a few, 37 (13.7%) of the 270 respondents have ever had a Pap smear test done. Most, 31 (83.8%) of the 37 respondents that have ever done the test did it based on doctor's request, while 6 (16.2%) did the test voluntarily. Lack of awareness of Pap smear test was cited as the main reason for non-uptake of the test by majority, 188 (80.7%) of the 233 respondents that have never done the test [Table 4].

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency (%) *n*=270
Age group (years)	
<20	8 (3.0)
20–29	105 (39.3)
30–39	95 (35.2)
40–49	43 (15.9)
50–59	15 (5.6)
≥60	3 (1.1)
Marital status	
Single	46 (17.0)
Married	201 (74.4)
Separated	4 (1.5)
Divorced	11 (4.1)
Widowed	8 (3.0)
Religion	
Islam	202 (74.8)
Christianity	65 (24.1)
Others	3 (1.1)
Level of education	
Primary and below	76 (28.1)
Secondary and tertiary	194 (71.9)

Table 2: Awareness of cervical cancer by respondents

Variables	Frequency (%)
Ever heard of cervical cancer (*n*=270)	
Yes	118 (43.7)
No	152 (56.3)
Source of information (*n*=118)	
Radio/television	22 (18.6)
Newspaper/magazine	2 (1.7)
Friends/relatives	30 (25.4)
Health worker	63 (53.4)
Church/mosque	1 (0.8)

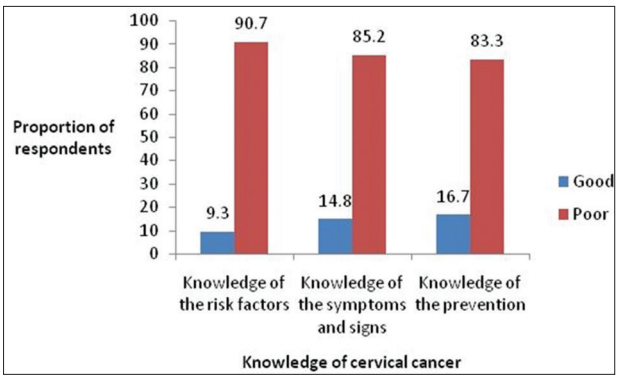

Figure 1: Respondents' knowledge of cervical cancer

Table 3: Distribution of respondents' knowledge of cervical cancer by their sociodemographic characteristics

Sociodemographic variables	Knowledge of cervical cancer					
	Knowledge of the risk factors, *n*=270		Knowledge of the symptoms and signs, *n*=270		Knowledge of the prevention, *n*=270	
	Good No (%)	Poor No (%)	Good No (%)	Poor No (%)	Good No (%)	Poor No (%)
Age (years)						
<40	21 (10.0)	188 (90.0)	31 (14.8)	178 (85.2)	37 (17.7)	172 (82.3)
40 and above	4 (6.6)	57 (93.4)	9 (14.8)	52 (85.2)	8 (13.1)	53 (86.9)
	χ^2=0.685, *P*=0.408		χ^2=0.000, *P*=0.988		χ^2=0.716, *P*=0.398	
Marital status						
Single, separated, widowed	4 (5.8)	65 (94.2)	8 (11.6)	61 (88.4)	11 (15.9)	58 (84.1)
Married	21 (10.4)	180 (89.6)	32 (15.9)	169 (84.1)	34 (16.9)	167 (83.1)
	χ^2=1.322, *P*=0.250		χ^2=0.762, *P*=0.383		χ^2=0.035, *P*=0.852	
Religion						
Islam	20 (9.9)	182 (90.1)	27 (13.4)	175 (86.6)	27 (13.4)	175 (86.6)
Christianity and others	5 (7.4)	63 (92.6)	13 (19.1)	55 (80.9)	18 (26.5)*	50 (73.5)
	χ^2=0.393, *P*=0.531		χ^2=1.333, *P*=0.248		χ^2=6.290, *P*=0.012	
Education						
Primary and below	4 (5.3)	72 (94.7)	6 (7.9)	70 (92.1)	7 (9.2)	69 (90.8)
Secondary and tertiary	21 (10.8)	173 (89.2)	34 (17.5)*	160 (82.5)	38 (19.6)*	156 (80.4)
	χ^2=2.010, *P*=0.156		χ^2=4.014, *P*=0.045		χ^2=4.234, *P*=0.040	

*Statistically significant

Table 4: Uptake of Pap smear test by respondents

Variables	Frequency (%)
Ever had a Pap smear test done (*n*=270)	
Yes	37 (13.7)
No	233 (86.3)
Indication for Pap smear test (*n*=37)	
Based on doctors' request	31 (83.8)
Did it voluntarily	6 (16.2)
Main reason for non-uptake of Pap smear test (*n*=233)	
Not aware of the test	188 (80.7)
No felt need for the test	18 (7.7)
Feels shy exposing the body	6 (2.6)
Fear of the outcome of the test	21 (9.0)

Table 5: Uptake of HPV vaccination by respondents

Variables	Frequency (%) (*n*=270)
Ever had HPV vaccine administered	
Yes	0 (0)
No	270 (100)
Main reason for non-uptake of HPV vaccination	
Not aware of the vaccine	230 (85.2)
I do not need it	20 (7.4)
Vaccine is not available	14 (5.2)
I am too old to take the vaccine	5 (1.8)
I do not believe in its efficacy	1 (0.4)

HPV: Human papillomavirus

Uptake of HPV Vaccination by respondents

None (0%) of the respondents have ever had HPV vaccine administered to them. Lack of awareness of the vaccine was cited as the main reason for non-uptake of the vaccination by most 230 (85.2%) of the 270 respondents. Other reasons cited for non-uptake of the vaccination are as shown in Table 5.

Respondents' Attitude to Pap Smear Test and HPV Vaccination

Most of the respondents demonstrated positive attitude toward Pap smear test and HPV vaccination. Majority, 249 (92.2%) of the 270 respondents would voluntarily undergo Pap smear test periodically if it will protect them from developing cervical cancer. Similarly, majority, 255 (94.4%) of the 270 respondents would have HPV vaccine administered to them or their daughters if it will protect them from developing cervical cancer [Figure 2].

DISCUSSION

This study assessed the knowledge of cervical cancer and uptake of Pap smear test and HPV vaccination among gynecologic clinic attendees in Sokoto, Nigeria. The low level of awareness of cervical cancer among the respondents in this study (43.7%), and the fact that only about a fifth of them (20.3%) obtained information about the disease through the mass media, indicates poor mass public enlightenment about the disease in Sokoto, Nigeria, and the need to scale-up education of the public about the disease through the mass media. This is supported by the finding in a study conducted among reproductive health clients at the University of Science and Technology Hospital, Sana'a Yemen, which reported a high level of awareness of cervical cancer (80.6%) with the mass media being the major source of information about the disease

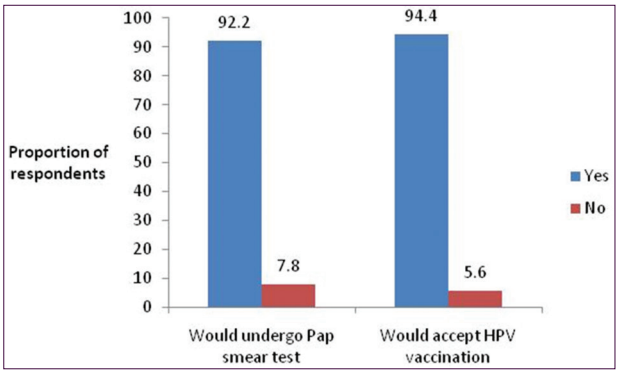

Figure 2: Respondents' attitude to Pap smear test and human papillomavirus vaccination

(54.3%).[25] Another study among women in Uganda[26] also reported a high level of awareness of cervical cancer (88.2%) with majority of respondents (70.2%) obtaining information about the disease through the radio.

The poor knowledge of cervical cancer among the respondents in this study with only 9.3, 14.8, and 16.7% of respondents having good knowledge of its risk factors, symptoms and signs, and prevention, respectively, correlates with the low level of awareness of the disease by them. This finding is in consonance with the finding in a study conducted in Elmina, Southern Ghana,[27] which reported that 68.4% of respondents had never heard of cervical cancer, 93.6% had no knowledge of its risk factors, and 92.0% did not know about the treatment or prevention of the disease. The gap in the knowledge of cervical cancer among women in sub-Saharan Africa is further highlighted by the generally poor knowledge of the disease reported in studies conducted across Nigeria including Zaria,[21] Nnewi,[28] and Okada community[29] and in other sub-Saharan African countries including Burkina Faso,[30] Ethiopia,[31] and Tanzania.[32] These findings underscore the need for the governments of the respective countries across the continent to give education of the populace about the disease top priority in their national cancer control programs.

Noticeably, the poor utilization of cervical cancer prevention services among the respondents in this study with only 13.7% ever having a Pap smear test done, and with zero (0%) uptake of HPV vaccination, essentially mirror the poor knowledge of cervical cancer prevention by them.

Most, 31 (83.8%) of the 37 respondents that have ever had a Pap smear test done in this study did so based on physicians' request, and lack of awareness was the main reason cited by most 188 (80.7%) of the 233 respondents that have never done the test. This is of serious concern as it brings to the fore the insufficient attention given to primary prevention of cervical cancer in Nigeria despite its high burden in the country. This is corroborated by the findings in a study conducted in Nnewi, Nigeria,[28] which reported that only 12.6% of the respondents were aware of Pap smear test, and none of them (0%) was aware of HPV vaccination. In addition, most 15 (60.0%) of the 25 respondents that were aware of Pap smear test in the Nnewi study had it done, and all of them did the test based on physicians' request.[28] It is, therefore, imperative that healthcare workers promote primary prevention of cervical cancer among all the "at risk" women accessing health-care services in their respective facilities, irrespective of the disease condition they presented with; as the women are more likely to utilize the cervical cancer prevention services if they are adequately counseled by their health-care providers.

The positive attitude shown by most of the respondents in this study to Pap smear test (92.2%) and HPV vaccination (94.4%) is not surprising, considering the fact that the low uptake of Pap smear test and the zero uptake of HPV vaccination by them were mainly due to lack of awareness. This is inspiring as it implies that periodic and sustained sensitization of women on cervical cancer and its prevention would improve the uptake of Pap smear test and HPV vaccination by them.

CONCLUSION

The poor knowledge of cervical cancer and low uptake of Pap smear test and HPV vaccination among the respondents in this study underline the need for public health education through the mass media to create awareness about the disease. In addition, healthcare workers and other stakeholders should promote utilization of cervical cancer prevention services by women.

ACKNOWLEDGMENTS

The authors appreciate the Management of UDUTH, Sokoto, Nigeria, the Head of Department of Obstetrics and Gynecology, and all the patients that participated in the study for their cooperation.

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How to cite this article: Awosan KJ, Hassan M, Ibrahim BM. Knowledge of Cervical Cancer and Uptake of Pap Smear Test and Human Papillomavirus Vaccination among Gynecologic Clinic Attendees in Sokoto, Nigeria. Int J Sci Stud 2018;6(5):52-58.

Source of Support: Nil, **Conflict of Interest:** None declared.