Volume 1 Issue 1 January, 2025

Maiden Edition

NIGERIAN JOURNAL OF ONCOLOGY

NJO

ARCON
Association of Radiation and Clinical Oncologists of Nigeria

w.w.w.ngjoncology.com

Printed by Ahmadu Bello University Press Ltd.,
P.M.B. 1094 Samaru, Zaria, Nigeria. Tel: 08065949711.
E-mail: abupress@abu.edu.ng, info@abupress.com.ng
Website: www.abupress.com.ng

AWARENESS AND KNOWLEDGE OF CERVICAL CANCER AND UTILISATION OF ITS SCREENING SERVICES AMONG FEMALE HEALTHCARE PROVIDERS IN PRIMARY HEALTH CARE CENTRES IN SOKOTO METROPOLIS

Bilkisu Gulma Abubakar[1], Aminu Umar Kaoje[1,2], Abdussamad Yargamji Garba[2], Kabir Mukhtar[2], Niimah Rabi'u Sarkin Bauchi[2], Zaharaddeen Shuaibu Babandi[3,4]

1- Department of Community Medicine, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Sokoto State, Nigeria.
2- Department of Community Health, Usmanu Danfodiyo University, Sokoto, Sokoto State, Nigeria.
3- Department of Community Medicine, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.
4- Department of Community Medicine, Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria.

Corresponding Author:
Dr. Bilkisu Gulma Abubakar, Department of Community Medicine, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Sokoto State, Nigeria, bilqise2@gmail.com, +2348036936384

Citation: Abubakar BG, Kaoje AM, Garba AY, Mukhtar K, Sarkin Bauchi RN, Babandi ZS. Awareness and Knowledge of Cervical Cancer and Utilisation of its Screening Services among Female Healthcare Providers in Primary Health Care Centres in Sokoto Metropolis. *Niger J Oncol* 2025;1(1) :12-29.

ABSTRACT

Introduction: Cervical cancer (CaCx) is the most common genital tract malignancy among women in Sokoto State. Lack of awareness about CaCx among health care workers is among the factors that contribute to the high burden in developing countries. This study assessed the awareness and knowledge of CaCx and the utilization of its screening services among female healthcare providers in primary healthcare centres (PHCs) in Sokoto metropolis.

Methods: A cross-sectional study was conducted among 170 female healthcare providers in PHCs in Sokoto Metropolis. A multistage sampling method was used to select the respondents. Data was collected using a 32-item interviewer-administered questionnaire and analyzed with the Statistical Package for Social Sciences version 25.0.

Results: More than half (95, 55.8%) of the respondents were aged at least 31 years with a mean of 34 ±8.4 years. The majority 159 (93.5%) of the respondents had heard of CaCx. The knowledge of CaCx 108 (63.5%) and its screening services 137 (80.6%) were poor. The uptake of CaCx screening services was very poor 7 (4.1%). Factors associated with uptake were age at first childbirth, years of work experience, recent attendance of training, knowledge of CaCx, awareness and knowledge of CaCx screening.

Conclusion: There was poor knowledge of CaCx and its screening services and very poor utilisation of CaCx screening services despite good awareness of CaCx. It is recommended that the Sokoto State Primary Health Care

Development Agency organizes seminars on CaCx and its screening to improve the knowledge and uptake of the services in primary healthcare providers.

KEYWORDS: Awareness, Knowledge, Utilisation, CaCx screening

INTRODUCTION

Cervical cancer (CaCx) is the second leading female cancer and the fourth leading cause of death in women globally.[1,2] It is the most common genital tract malignancy among women in Sokoto State.[3] It is preceded by a curable premalignant stage called cervical dysplasia caused by Human Papillomavirus (HPV) infection.[4,5] Globally, about 604,127 new cases and about 341,831 deaths occur annually and over 80% of these deaths occur in developing countries.[6] The high mortality and morbidity resulting from CaCx can easily be prevented by early diagnosis through screening.[6] In sub-Saharan Africa (sSA), most cases are diagnosed in the late stages of the disease.[7] About 80% of CaCx cases occur in developing countries and Nigeria contributes significantly to this burden with about 14,943 new cases and about 10,403 deaths annually making it the second leading cause of female cancer in the country.[8] It poses a serious financial burden on the affected individuals, families and the nation.[9]

Lack of awareness about CaCx among health care workers, people, and policymakers, lack of CaCx screening programs, and limited access to healthcare facilities are among the multiple factors that contribute to higher CaCx prevalence and mortality in developing regions of the world.[5] In a study of 2000 women in Ogun State, Southwest Nigeria, the awareness of CaCx and its screening were very low (6.5% and 4.8% respectively).[10] In Sokoto State, only 20 (12.1%) and 11 (6.7%) of the 165 female sex workers studied were aware of CaCx and its screening services respectively.[11] In a survey of 220 female health workers in a tertiary health facility in Sokoto, one of the reasons given for not accessing Pap smear screening services was a lack of awareness of the service.[12] Only 44% of women in low and middle-income countries have ever been screened for CaCx, with the lowest prevalence among women in sSA (median of 16.9%), compared with >60% in high-income countries.[6] A low prevalence of CaCx screening (10%) was reported among female health workers in a tertiary health facility in Sokoto State.[12]

A study among female health workers in Nigeria highlighted cost of screening, fear of positive results, lack of test awareness, reluctance to screen, low-risk perception, and lack of time as the most predominant cultural barriers to cervical screening uptake.[13] Another study on the impact of health education intervention on knowledge and perception of cervical cancer and its screening among Ghanaian women reported statistically significant differences for knowledge of cervical cancer, knowledge of cervical cancer screening, perceived seriousness and benefits between intervention and control groups.[14]

Most of the previous researches on CaCx and the uptake of its screening tests in Nigeria and Sokoto in particular, were hospital-based focusing on female health workers in secondary and tertiary centers.[12, 15-17] Thus, there is limited insight into these aspects among female health workers in primary

health centers (PHCs). This is important as PHCs are designed to be the first point of contact to many Nigerians especially those residing in the rural areas. If the female staff in PHCs have good knowledge of CaCx, it is expected that they put it into practice by taking up the screening tests, and they will educate patients and clients about it. Thus, this study assessed the awareness and knowledge of CaCx and the utilization of its screening services among female healthcare providers in PHCs in Sokoto metropolis.

MATERIALS AND METHODS

Ethical considerations

Ethical approval (SKHREC/004/2022) was obtained from the Health Research Ethics Committee of the Sokoto State Ministry of Health. Informed consent was obtained from the study respondents after explaining the objectives of the study before the administration of the questionnaire. The interviews were conducted in places where privacy was ensured and they were assured of utmost confidentiality.

Study design

The study was cross-sectional in design and was carried out in Sokoto metropolis, Northwestern Nigeria in May 2022.

Study area

Sokoto metropolis is made up of four Local Government Areas (LGAs), namely; Sokoto South, Sokoto North, Wamakko and part of Dange-Shuni.[18] Sokoto North has 11 PHCs, Sokoto South has 13 PHCs, Wamakko has 12 PHCs and Dange-Shuni has 12 PHCs. There are 33 PHCs, 3 secondary healthcare centres and 1 tertiary healthcare centre, making 37 healthcare facilities within the metropolis,[19] out of which only the tertiary centre offers CaCx screening services.

Study population

The study population comprised of female healthcare providers in PHCs in Sokoto metropolis who were between the ages of 21-64 years and had worked for at least six months before the commencement of the study. Female healthcare providers without a cervix and those being treated for CaCx were excluded.

Sample size calculation

The minimum sample size for the study was determined using the estimator for a cross-sectional study, $n=\frac{z^2pq}{d2}$,[20] and the prevalence of utilization of CaCx screening from a previous study of 43%.[21] Where **n** = minimum sample desired, **z** = standard normal deviate 95% (confidence interval=1.96), **p** = prevalence of utilization of cervical cancer screening=43%=0.43, **q** = complementary probability of p=1-p= 1-0.43= 0.57**,** and **d** = tolerable alpha error or level of precision=5%=0.05.

After sample size adjustment for a finite population of less than 10,000 using $nf=\frac{n}{1+\frac{n}{N}}$,[20] and adjustment for a possible 10% non-response rate, a sample size of 170 was arrived at. Where **nf** = adjusted sample size when study population is less than 10,000, **n** = sample size when the population is more than 10,000, and **N** = estimate of the finite population.

Sampling technique

A multi-stage sampling technique consisting of three stages was used to select the respondents. In Stage 1, three LGAs were selected from the four LGAs in Sokoto metropolis using a simple

random sampling by balloting. In Stage 2, eight PHCs were selected out of the existing number of PHCs from each of the selected LGA by simple random sampling by balloting. Proportional allocation (PA) of the respondents to be enrolled in each of the PHCs was done using the calculated sample size as follows;

$$PA = \frac{Total\ population\ of\ female\ healthcare\ providers\ in\ 1\ PHC}{Total\ population\ of\ female\ healthcare\ providers\ in\ 24\ PHCs}\ X\ 170$$

In Stage 3, a systematic sampling technique was used to obtain the respondents for the study in each PHC. A list of female healthcare providers in each PHC was obtained and a sampling interval was generated as follows:

$$Sampling\ interval = \frac{Sample\ frame\ (total\ number\ of\ female\ healthcare\ providers)\ in\ a\ PHC}{Calculated\ sample\ size\ following\ proportionate\ allocation}$$

Using the balloting technique, the first respondent was randomly chosen between one and the value of the sampling interval and the subsequent respondents enrolled by adding the value of the sampling interval to the serial number of the previously enrolled respondent till the required sample units were enrolled.

Study instruments and research assistants

A 32-item interviewer-administered structured questionnaire was adapted from previous studies [12, 16, 22-25] to get the respondents' socio-demographic characteristics, awareness and knowledge of CaCx and its screening services and the utilisation of CaCx screening services. The questionnaire's content validity was assessed by Consultants/Researchers in the Department of Community Medicine, Usmanu Danfodiyo University Teaching Hospital, Sokoto. The questionnaire was built on the ona website (ona.io) and downloaded on the Open Data Kit (ODK) app of the Android phones of the research assistants. Six female research assistants (medical students), were recruited and trained for two hours daily for two days. Pre-testing was done among 17 female healthcare providers in a PHC in an LGA not selected for the study.

Data collection and management plan

Data was collected over two weeks. The independent variables were the socio-demographic variables, awareness of CaCx and its screening services, and knowledge of CaCx and its screening services. The dependent variable was the utilisation of the CaCx screening test. Knowledge of CaCx was graded on a scale ranging from 0 to 29. Each correct response was scored '1', while wrong and no responses were scored '0'. Scores ≥14.5 were categorized as good, while scores <14.5 were categorized as poor knowledge of CaCx.[16] Knowledge of CaCx screening was graded on a scale ranging from 0 to 16. Each correct response was scored '1' while wrong and no responses were scored '0'. Scores ≥8 were categorized as good, while scores <8 were categorized as poor knowledge of CaCx screening.[16] Data was downloaded from the ODK server in Statistical Package for Social Sciences (SPSS) format and was analyzed using the data using IBM® SPSS version 25. Univariate, bivariate and multivariate analyses were done and the level of significance (α) was set at 0.05.

Data availability

The authors are willing to share the data supporting the published results on request.

RESULTS

A total of 170 questionnaires were administered using ODK and all were valid for analysis giving a response rate of 100%.

Socio-demographic characteristics of respondents

More than half (95, 55.8%) of the respondents were aged at least 31 years with a mean of 34 ±8.4 years. The majority of the respondents had ever been married (140, 82.4%) and had ever delivered a baby (123, 72.4%) out of which 59 (48%) of them had delivered at least four children. Seventy-seven (45.3%) were community health extension workers. More than half of the respondents (89, 53.4%) had been working for more than five years and the majority (148, 87%) had not had a recent training on CaCx [see Table 1].

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency (n= 170), n(%)
Age	
21-25	24 (14.1)
26-30	51(30.0)
31-35	33 (19.4)
36-40	30 (17.6)
41 and above	32 (18.8)
Marital status	
Married	124 (72.9)
Never married	30 (17.6)
Divorced	3 (1.8)
Widowed	4 (2.4)
Separated	9 (5.3)
Number of children ever delivered	n= 123
1-3	64 (52.0)
4-6	43 (35.0)
7 and above	16 (13.0)
Age at first child birth	n= 123
17-22	57 (46.3)
23-28	51 (41.5)
29-34	11 (8.9)
35 and above	4 (3.3)
Religion	
Islam	159 (93.5)
Christianity	11 (6.5)
Tribe	
Hausa	141 (82.9)
Yoruba	10 (5.9)
Ibo	5 (2.9)
Fulani	10 (5.9)
Other e.g. Adari, Nupe	4 (2.4)

Cadre	
CHO	4 (2.4)
SCHEW	23 (13.5)
CHEW	54 (31.8)
HIM	22 (12.9)
Nurse/ Midwife	29 (17.0)
Environmental Health Assistant/ Technician	9 (5.3)
Laboratory scientist	26 (15.3)
Other e.g. Microbiologist	3 (1.8)
Years of working experience	
1-5	81 (47.6)
6-10	46 (27.1)
11 and above	43 (25.3)
Recently attended any seminar/training on CaCx	
Yes	22 (13.0)
No	148 (87.0)
If yes, how long ago (months)	n= 22
1-5	5 (22.7)
6-10	6 (27.3)
11 and above	11 (50.0)

Awareness and knowledge of CaCx

One hundred and fifty-nine (93.5%) respondents had heard of CaCx. Forty-two (24.7%) knew HPV to be a cause of CaCx. Fifty-eight (34.1%) knew early coitarche was a risk factor for CaCx [see Table 2]. One hundred and eight (63.5%) had poor knowledge of CaCx [see Figure 1].

Table 2: Awareness and knowledge of CaCx

Variable	Frequency (n= 170), n (%)
Ever heard of CaCx	
Yes	159 (93.5)
No	11 (6.5)
Source of information*	
Radio/Television	71 (41.8)
School	57 (33.5)
Hospital	110 (64.7)
Relatives and friends	52 (30.6)
Social media	35 (20.6)
Others e.g. internet	8 (4.7)
Knowledge of causative organism of CaCx	
Human immunodeficiency virus (HIV)	9 (5.3)
Hepatitis B virus (HBV)	1 (0.6)
Human Papilloma Virus (HPV)	42 (24.7)
Other (specify) e.g. Malaria	17 (10.0)
I don't know	101 (59.4)
Knowledge of prevention of CaCx*	
Avoid early sexual intercourse	35 (20.6)
HPV vaccination	39 (22.9)
Cessation of cigarette smoking	13 (7.6)
Consistent use of condom	34 (20.0)
Being faithful to one's partner	37 (21.8)
Screening	62 (36.5)
Other e.g. Herbs	13 (7.6)
I don't know	49 (28.8)
CaCx is a sexually transmitted infection	
Yes	89 (52.4)
No	81 (47.6)
Organ(s) of a woman's body affected by CaCx*	
Ovary	74 (43.5)
Cervix	145 (85.3)
Vagina	115 (67.6)
Breast	82 (48.2)
Neck	45 (26.5)
CaCx can be cured in its earliest stages	
Yes	144 (84.7)
No	26 (15.3)
Risk factors of CaCx*	
Having multiple sexual partners	85(50.0)
Human Papilloma virus	51(30.0)

Early sexual intercourse	58(34.1)
Prolonged use of oral contraceptive pills	60(35.3)
Excessive alcohol intake	50(29.4)
Unprotected sex	79(46.5)
Family history of CaCx	107(62.9)
Cigarette smoking	48(28.2)
Human immunodeficiency virus	51(30.0)
Giving birth to many children	36(21.2)
Signs and symptoms of CaCx*	
Foul smelling vaginal discharge	88(51.8)
Irregular vaginal bleeding	127 (74.7)
Painful menstruation	90(52.9)
Post-coital bleeding	78(45.9)
Excessive menstrual flow	85(50.0)
Bleeding after menopause	109(64.1)
Treatment options of CaCx*	
Surgery	133(78.2)
Chemotherapy	144(84.7)
Radiotherapy	62(36.5)

*- multiple responses

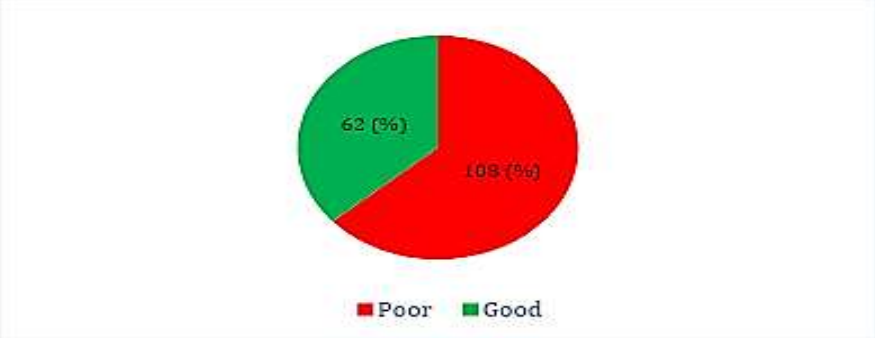

Figure 1: Respondents' knowledge grade of CaCx

Awareness and knowledge of CaCx screening

One hundred and six respondents (62.4%) had heard of CaCx screening. Half of the respondents (n=85, 50%) said screening should be done for every sexually active woman. Most respondents knew CaCx can be detected early through screening 126 (75%). Most of the respondents did not know that Pap smear (109, 63.7%), HPV DNA (139, 76.6%), Visual inspection with Lugol's Iodine 136 (164, 96.4%), Visual inspection with acetic acid (151, 88.8%) and Liquid Based cytology (162, 95.5%) were CaCx screening tests [see Table 3]. The majority (137, 80.6%) had poor knowledge of CaCx screening [see Figure 2].

Table 3: Awareness and knowledge of CaCx screening

Variable	Frequency (n=170), n (%)
Ever heard of CaCx screening test	
Yes	106 (62.4)
No	64 (37.6)
Source of information*	
Radio/Television	44 (25.9)
School	26 (15.3)
Hospital	81 (47.6)
Relatives and friends	31 (18.2)
Social media	22 (12.9)
Others e.g. Internet, YouTube	9 (5.3)
Frequency of cervical screening	
Every year	77 (45.3)
Every 2 years	4 (2.4)
Every 3 years	18 (10.6)
Every 4 years	1 (0.6)
Every 5 years	11 (6.5)
Other	1 (0.6)
I don't know	58 (34.1)
Eligible women for CaCx screening	
Sexually active women	85 (50.0)
Women with features suggestive of CaCx	31 (18.2)
Women with promiscuous lifestyle	19 (11.2)
I don't know	35 (20.6)
CaCx can be detected early through screening	
Yes	126(74.1)
No	44 (25.9)
Mortality rate of CaCx can be reduced by early detection through screening	
Yes	121(71.2)
No	49 (28.8)
Tests used to screen for CaCx*	
Pap smear	61(35.9)
Full blood count	19(11.2)
HPV DNA	39(22.9)
Urinalysis	25(14.7)
High vaginal swab mcs	38(22.4)
Visual inspection with Lugol's Iodine	6(3.5)
Ultrasound scan	42(24.7)
Visual inspection with acetic acid	29(17.1)
Urine mcs	22(12.9)
Colposcopy	16(9.4)
Liquid Based cytology	8(4.7)

*- multiple responses, mcs- microscopy, culture and sensitivity

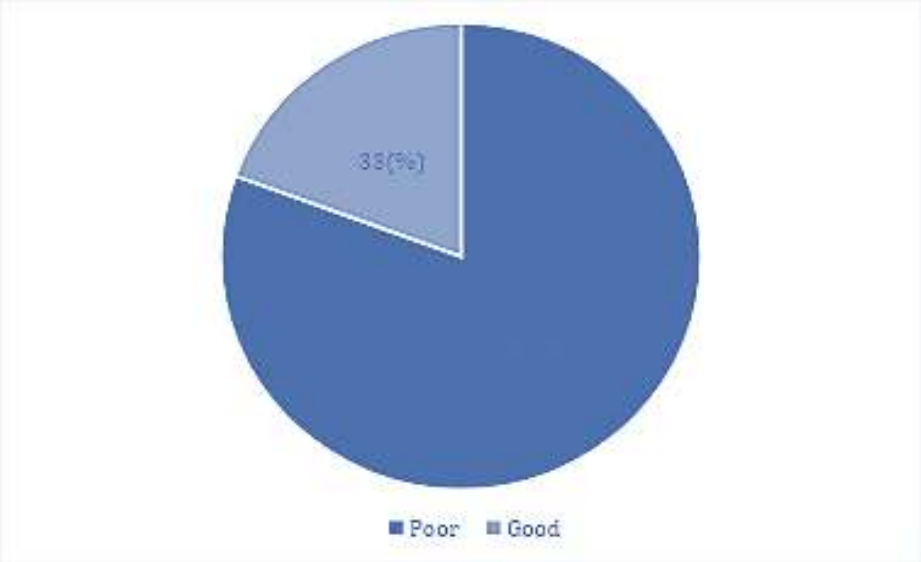

Figure 2: Respondents' knowledge of CaCx screening

Utilisation of the screening services

Only 7 (4.1%) women had ever utilized a CaCx screening test. Most of those who have never done the screening attributed it to lack of awareness 69 (42.3%), no reason 30(18.4%), no interest 25 (15.3%) or felt it was not important/necessary 21 (12.8%). Among the seven women who had the screening test done, most (6, 85.7%) had Pap smear/ Liquid Based Cytology [see Table 4].

Table 4: Utilisation of CaCx screening services

Variable	Frequency (n= 170), n (%)
Ever done a CaCx screening test	
Yes	7 (4.1)
No	163 (95.9)
Reason(s) for not ever having done any CaCx screening test*	
I do not know about it	69 (40.6)
I do not know where it is done	16 (9.4)
I do not have time	13 (7.6)
I do not have interest	25 (14.7)
I am afraid of the outcome of the test	2 (1.2)
I am afraid of the discomfort/pain from the procedure	6 (3.5)
It is not important/necessary	21 (12.4)
The doctor did not request for it	2 (1.2)
I do not want a male doctor to do the test	6 (3.5)
Screening procedure is embarrassing	12 (7.1)
I do not like the approach of some health workers	2 (1.2)
It is meant for those with cancer	8 (4.7)
I do not have any reason	30 (17.6)
I can never have cancer	5 (2.9)
Type of test done	
Pap smear/ Liquid Based Cytology	6 (85.7)
I do not know the type	1 (14.3)
Reasons for doing the test	
Follow up on abnormal or inconclusive results	1 (14.3)
It was recommended by a health-care provider	2 (28.5)
It was recommended by other source	3 (42.9)
I was experiencing a symptom	1 (14.3)
Outcome of the test	
Normal	7 (100)

*- multiple responses

Factors influencing the utilisation of a CaCx screening test among the respondents

Age at first delivery, years of work experience, attendance of a recent seminar/training on CaCx, knowledge of CaCx, awareness and knowledge of CaCx screening were found to influence the utilisation of a CaCx screening test. The proportion of respondents who have ever done a CaCx screening test was significantly higher among women who had their first delivery at 35 years of age or more (50.0%) as compared to women who had their first delivery between the ages of 17-22 years (0.0%), 23-28 years (3.9%) and 29-34 years (18.2%), those who had at least 11 years of work experience (9.3%) as compared to those with 6-10 years (6.5%) and 1-5 years (0.0%) of work experience respectively [see Table 5a].

Table 5a: Factors influencing the utilisation of a CaCx screening test among the respondents

Variable	Uptake of a CaCx screening test n (%)		Test statistics (*P* value)
	Yes	No	
Age group (years)			
21-25	0(0.0)	24(100.0)	Fisher's Exact (0.358)
26-30	1(2.0)	50(98.0)	
31-35	1(3.0)	32(97.0)	
36-40	2(6.9)	27(93.1)	
41 and above	3(10.0)	30(90.0)	
Religion			
Islam	5 (3.1)	154 (96.9)	Fisher's Exact (0.067)
Christianity	2 (18.2)	9 (81.8)	
Tribe			
Hausa	5(3.5)	136(96.5)	Fisher's Exact (0.195)
Yoruba	1(10.0)	9(90.0)	
Ibo	0(0.0)	5(100.0)	
Fulani	0(0.0)	10(100.0)	
Other	1(25.0)	3(75.0)	
Marital status			
Married	7(5.6)	117(94.4)	Fisher's Exact (0.608)
Never married	0(0.0)	30(100.0)	
Divorced	0(0.0)	3(100.0)	
Widowed	0(0.0)	4(100.0)	
Separated	0(0.0)	9(100.0)	
No of babies ever delivered			
1-3	2(3.1)	62(96.9)	Fisher's Exact (0.670)
4-6	3(7.0)	40(93.0)	
7 and above	1(6.3)	15(93.8)	
Age at first delivery (years)			
17-22	0(0.0)	57(100.0)	Fisher's Exact (<0.001)*
23-28	2(3.9)	49(96.1)	
29-34	2(18.2)	9(81.8)	
35 and above	2(50.0)	2(50.0)	
Years of work experience			

1-5	0(0.0)	8(100.0)	Fisher's Exact (0.029)*
6-10	3(6.5)	43(93.5)	
11 and above	4(9.3)	39(90.7)	

* - significant

The proportion of respondents who have ever done a CaCx screening test was significantly higher among those who recently attended a seminar/training on CaCx (13.6%) compared to those who did not (2.7%), those who had good knowledge of CaCx (9.7%) compared to those who did not (0.9%), those who had good knowledge of CaCx screening (15.2%) compared to those who did not (1.5%) [see Table 5b].

Table 5b: Factors influencing the utilisation of a CaCx screening test among the respondents

Variable	**Uptake of a CaCx screening test n (%)**		**Test statistics (*P* value)**
	Yes	**No**	
Cadre			
CHO	0(0.0)	4(100.0)	Fisher's Exact (0.841)
SCHEW	2(8.7)	21(91.3)	
CHEW	2(3.7)	52(96.3)	
HIM	0(0.0)	22(100.0)	
Nurse/ Midwife	2(6.9)	27(93.1)	
Environmental Health Assistant/ Technician	0(0.0)	9(100.0)	
Laboratory scientist	1(3.8)	25(96.2)	
Other	0(0.0)	3(100.0)	
Attendance of recent seminar/ training on CaCx			
Yes	3 (13.6)	19 (86.4)	Fisher's Exact (0.048)*
No	4 (2.7)	143 (97.3)	
Awareness of CaCx			
Yes	7 (4.4)	152 (95.6)	Fisher's Exact (0.477)
No	0 (0.0)	11 (100.0)	
Knowledge of CaCx			
Poor	1 (0.9)	107 (99.1)	Fisher's Exact (0.010)*
Good	6 (9.7)	56 (90.3)	

Awareness of CaCx screening			
Yes	7 (6.6)	99 (93.4)	Fisher's Exact (0.046)*
No	0 (0.0)	64 (100.0)	
Knowledge of CaCx screening			
Poor	2 (1.5)	135(98.5)	Fisher's Exact (0.003)*
Good	5(15.2)	28(84.8)	

CHO- community health officer SCHEW- senior community health extension worker CHEW- community health extension worker HIM- health information management officer *- significant

When these factors were put into a binary logistic regression model, no factor was found to predict the uptake of a CaCx screening test.

DISCUSSION

This study assessed the awareness and knowledge of CaCx and the utilisation of its screening services among female health care providers in PHCs in Sokoto metropolis, Nigeria.

The study found that awareness of CaCx was high among the respondents 93.5% (as shown in Table 2), which is similar to the findings from a study conducted in Sokoto on CaCx screening, knowledge, attitude and practices among female health workers, where the level of awareness was 98.6%.[12] The study found poor knowledge of CaCx and its screening in 63.5% and 80.6% of the respondents respectively. The low level of knowledge is of concern because healthcare workers are expected to be knowledgeable enough to educate patients on CaCx and its screening and serve as role models to patients. In contrast, findings from a study on the uptake of CaCx screening services and its determinants in Ibadan, South-Western Nigeria showed that 98.4% of female health workers had good knowledge of CaCx.[16] The difference observed could be because the respondents in Ibadan had an advanced level of education, with the majority of them attaining post-basic training and their level of exposure was higher as a result of working in a Teaching Hospital as opposed to the respondents in this study with the majority having only basic training and working in PHC facilities.

Looking at the different components of knowledge, it was found that only 34.1% of the respondents in this study knew that early coitarche is a risk factor for the disease as depicted in Table 2. This is comparable to the findings of a study done in Ethiopia among undergraduate female students where only 16.9% knew that early coitarche was a risk factor.[24] It is expected that health workers in this study should have a higher level of knowledge (on coitarche as a risk factor for CaCx) than the respondents in the previous studies who are non-health workers. Thus, many of the respondents in this study may not health-educate adolescents and young people on delaying coitarche. As such, many young women who would have benefitted from this preventive measure may develop CaCx thereby increasing its prevalence.

Also, it was found that 24.7% (see Table 2) of the respondents were aware of HPV as a causative agent of CaCx. This is lower than the figure reported in a study done in Sokoto among female health workers where 85.5% knew that HPV is a causative agent of CaCx.[12]

The difference in this finding might be because the respondents in the previous study had a higher level of education and worked in a tertiary hospital where there are many opportunities for seminars and knowledge sharing on CaCx.

Interestingly, Table 3 illustrates that less than two-thirds (62.4%) of the respondents have heard of CaCx screening which is lower than expected for health workers. A study done among nurses in a Teaching Hospital in Zaria reported that 97.4% of their respondents were aware of CaCx screening.[15] The less-than-optimum level of awareness of CaCx screening in this study may likely influence the number of female health workers availing themselves of the screening (if the screening services are made available), which may lead to late presentation with CaCx and poor prognosis.

This study found that a high proportion of the respondents do not know the tests used to screen for CaCx. Only 35.9% knew that a Pap smear is a method of CaCx screening (as shown in Table 3). This is in contrast to the studies carried out in Sokoto and Zaria among female health workers and nurses respectively where 90.5% and 100% of the respondents were aware that CaCx can be screened with a Pap smear test.[12, 15] This disparity could be attributed to the higher level of education and working in tertiary health facilities by the respondents in the previous studies. The lack of knowledge on the different screening options of the respondents in this study may contribute to factors deterring the uptake of CaCx screening as women are less likely to entertain screening options they do not know about.

Table 4 depicts that uptake of CaCx screening was abysmally low in this study as only 4.1% of the respondents had done CaCx screening before with 69(40.6%) saying they do not know about the reason for not ever having been screened. Similar findings of low uptake were observed in many studies in Nigerian health workers: Sokoto (10%),[12] Zaria (15%),[15] Ibadan (23.2%),[16] and Ekiti (24.2%).[22] Higher rates of screening were reported from studies conducted among non-health workers in Switzerland (76.2%),[27] Belgium (79%)[27] and the United States (93.6%).[28] This disparity may be due to better awareness, knowledge, availability and accessibility of CaCx screening services, in addition to favorable government policies in these countries in the form routine of organized CaCx screening programs. The poor uptake of CaCx has been contributing to high prevalence and mortality due to the disease in Nigeria,[6] because many women who developed CaCx would have otherwise been earlier detected through screening.

Statistically significant associations were found between age at first delivery, years of work experience, attendance of a recent seminar/training on CaCx, and the utilisation of a CaCx screening test in this study. The proportion of respondents who have ever done a CaCx screening test was significantly higher among women who had at least 11 years of work experience compared to those with 6-10 years and 1-5 years of work experience (as illustrated in Table 5a). A plausible explanation for this might be because exposure and experience generally improve with years of professional practice and this may enhance the utilisation of CaCx screening services. This finding is corroborated by the survey done among nurses in Ekiti where a significant

association was found between years of professional practice and uptake of CaCx screening (p=0.003).[22]

There was a statistically significant association between uptake of a CaCx screening test and knowledge of CaCx, awareness and knowledge of CaCx screening. The proportion of respondents who have ever done a CaCx screening test was significantly higher among those who had good knowledge of CaCx and its screening test compared to those who had poor knowledge. Ideally, it is expected that having a good knowledge of CaCx should translate to the utilisation of its screening tests.

These results build on the existing evidence that uptake of CaCx screening is generally poor in the North-western region, Nigeria and Sub-Saharan Africa at large. [4, 12, 15, 16, 24, 29] But it further sheds light on the gravity of the lack of knowledge of CaCx as well as its screening services among female health care providers in PHCs in Sokoto metropolis, given the great burden it poses on individuals, families and the nation.

It is imperative to note that the data used in this research was small and limited to only three LGAs in Sokoto State. Therefore, these results may be limited to use in making conclusions for the entire State or other places elsewhere.

It recommended that the management of Sokoto State Primary Healthcare Development Agency (SPHCDA) should organise seminars on CaCx and its screening to improve the knowledge and uptake of the services in primary healthcare providers. There is a need for SPHCDA in collaboration with Usmanu Danfodiyo University Teaching Hospital and other relevant stakeholders to provide a free screening program or to subsidize the costs of the screening services and make it available at the disposal of the primary healthcare providers. More holistic research by researchers sponsored by SPHCDA and Non-Governmental Organizations engaged in the fight against CaCx that capture the whole State should be done on similar study participants.

ACKNOWLEDGMENT

We acknowledge the healthcare workers that participated in this study.

REFERENCES

1. National Cancer Institute, Schiffman MH. Human Papilloma Virus Epidemiology in Nigeria. 2020. Available from: https://clinicaltrials.gov/ct2/show/NCT00804466 [Accessed 28 November, 2021].
2. Sigfrid L, Murphy G, Haldane V, Chuah FLH, Ong SE, Cervero-Liceras F, et al. Integrating cervical cancer with HIV healthcare services: A systematic review. PLoS One. 2017; 12(7): 1-26.
3. Nnadi DC, Singh S, Ahmed Y, Siddique S, Bilal S. Histo-pathological Features of Genital Tract Malignancies as Seen in a Tertiary Health Center in North-Western Nigeria: A 10-year Review. Ann Med Health Sci Res. 2014; 4(Suppl 3): S213-7.
4. Onowhakpor AO, Omuemu VO, Osagie OL, Odili CG. Human Papilloma virus vaccination: knowledge, Attitude and uptake among female medical and dental students in a tertiary institution in Benin City, Nigeria. Journal of Community Medicine and Primary Healthcare. 2016; 28(2): 101-8.
5. Baloch Z, Yasmeen N, Li Y, Zhang W, Lu H, Wu X, et al. Knowledge and Awareness of Cervical Cancer, Human Papillomavirus (HPV), and HPV Vaccine Among HPV-

Infected Chinese Women. Med Sci Monit. 2017; 4(23): 4269-74.
6. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021; 0(0): 1-41.
7. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jamal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018; 68(6): 394-424.
8. Bruni L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, et al. Human Papillomavirus and Related Diseases in Nigeria: Summary Report 2019. Spain: ICO/IARC Information Centre on HPV and Cancer; 2019.
9. Akinfenwa AT, Monsur TA. Burden of cervical cancer in Northern Nigeria. Tropical Journal of Obstetrics and Gynaecology. 2018; 35(1): 25-8.
10. Abiodun OA, Fatungase OK, Olu-Abiodun OO, Idowu-Ajiboye BA, Awosile JO. An assessment of women's awareness and knowledge about cervical cancer and screening and the barriers to cervical screening in Ogun State, Nigeria. IOSR Journal of Dental and Medical Sciences. 2013; 10(3): 52-8.
11. Abubakar BG. Awareness of cervical cancer screening services and uptake of free liquid-based cytology test among brothel-based female sex workers in Sokoto State, Nigeria. International Journal of Medicine and Medical Sciences. 2023; 15(1): 1-12.
12. Oche MO, Kaoje UM, Gana G, Ango JT. Cancer of the cervix and cervical screening: Current knowledge, attitude and practices of female health workers in Sokoto, Nigeria. International Journal of Medicine and Medical Sciences. 2013; 5(3): 106-9.
13. Okolie EA, Barker D, Nnyanzi LA, Anjorin S, Aluga D, Nwadike BI. Factors influencing cervical cancer screening practice among female health workers in Nigeria: A systematic review. Cancer Rep (Hoboken). 2022; 5(5): e1514.
14. Ebu NI, Amissah-Essel S, Asiedu C, Akaba S, Pereko KA. Impact of health education intervention on knowledge and perception of cervical cancer and screening for women in Ghana. BMC Public Health. 2019; 19(1): 1505.
15. Anyebe EE, Opaluwa SA, Muktar HM, Philip F. Knowledge and practice of cervical cancer screening amongst nurses in Ahmadu Bello University Teaching Hospital Zaria. Research on Humanities and Social Sciences. 2014; 27(4): 33-41.
16. Odenusi AO, Oladoyin VO, Asuzu MC. Uptake of cervical cancer screening services and its determinants between health and non-health workers in Ibadan, south-Western Nigeria. Afr J Med Sci. 2020; 49: 11.
17. Nnadi DC, Nwobodo EI, Ekele BA, Sahabi SM. Screening for Cervical Cancer: A review of outcome among infertile women in a tertiary hospital in North-West Nigeria. Annals of Medical and Health Sciences Research. 2014; 4(3): 383-7.
18. Abubakar BG, Oche MO, Isah BA, Raji IA, Ango JT, Okafoagu NC, et al. Predictors of Knowledge and Perception of Family Planning Among Men in Urban Areas in Northwest Nigeria. Nigerian Journal of Medicine. 2021; 30(3): 237-46.
19. Na'uzo AM, Tukur D, Sufiyan MB, Stephen AA, Ajayi I, Bamgboye E, et al.

Adherence to malaria rapid diagnostic test result among healthcare workers in Sokoto metropolis, Nigeria. Malaria journal. 2020; 19(2): 1-9.
20. Ibrahim T. Research Methodology and Dissertation Writing for Health & Allied Health Professionals. 1st ed. Abuja, Nigeria. Cress Global Link Limited. 2009: 2.
21. Omotunde OI, Ademola AM. Knowledge, perception and cervical cancer screening practices among female nurses working in healthcare facilities in Lagos State, Nigeria. International Journal of Public Health and Pharmacology. 2021; 1(1): 74-92.
22. Owolabi BA, Adejumo PO. Utilization of Cervical Cancer Screening Service Among Nurses in Ekiti State, Nigeria. Cancer Research Journal. 2021; 9(1): 71-7.
23. Ezeama MC, Enwereji, E.E. Awareness of Cervical Cancer Screening Tests Among Women of Child Bearing age in the Rural Area of Awo-Omamma, Imo State, Nigeria. International Journal of Health Statistics. 2020; 1(1): 1-6.
24. Getaneh A, Tegene B, Belachew T. Knowledge attitude and practices on cervical cancer screening among undergraduate female students in university of Gondar, Northwest Ethiopia. BMC Public Health. 2021; 21(775): 1-9.
25. Hassan M, Awosan JK. Knowledge of human Papilloma virus infection and vaccination and practices regarding human Papilloma virus vaccination among female healthcare professionals in Sokoto, Nigeria. International journal of sceintific study. 2018; 6(5): 62-9.
26. Ezeome IV, Ezugworie J. Male acceptance of HPV vaccine for familiy members in Enugu, South Eastern Nigeria. Journal of vaccine and vaccination. 2021; 19(10): 7215-21.
27. De Prez V, Jolidon V, Willems B, Cullati S, Burton-Jegros C, Bracke P. Cervical cancer screening in Belgium and Switzerland: Trends and social inequalities. European Journal of Public healthh. 2020; 30(3): 1093-102.
28. ICO/IARC Information Centre on HPV and Cancer. United States of America Human Papillomavirus and Related Cancers: 2021 Fact Sheet 2021.
29. Asante KS, Mohammed AG, Delle AA, Mumuni AN. Cervical cancer knowledge and screening among schooling and uneducated females within Tamale, Ghana. Journal of advances in medicine and medical research. 2019; 29(1): 1-15.