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ORIGINAL ARTICLE

Utilization of Cervical Cancer Screening Services and its Predictors among Health Workers in Hospitals in the Federal Capital Territory, Nigeria

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Keywords

Cervical Cancer,

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ABSTRACT

Background: Cervical cancer (CC) ranks second as the leading cause of cancer morbidity and mortality in Nigeria, despite being preventable through screening. Female health workers (HCWs) are expected to be role models to motivate society towards Cervical Cancer Screening Service (CCSS)uptake. This study assesses the utilization of CCSS and associated factors among HCWs in three area councils of Abuja, Nigeria.

Method: A cross-sectional design aimed at assessing the utilization of CCSS by HCWs in 13 health facilities across 3 area councils in Abuja. Study participants were selected using a multi-stage sampling technique. The outcome variable was "ever used CCSS" dichotomized into a "Yes" or "No" response. Factors associated with participants' utilization of CCSS were examined using a binary logistic regression at $p<0.05$ level of statistical significance.

Results: Data from 350 participants (90.6%) were analyzed. Most were married women, 290 (82.9%), between the ages of 21 to 30 years, 275 (78.6%). About two-thirds of the participants, (237) reported ever being screened for cervical cancer. Factors associated with CCSS utilization at the bivariate level included marital status, duration of practice, and a negative perception regarding access to cervical cancer services. Perceived access barrier to CCSS was the only strong predictor for CCSS utilization after controlling confounders [Adjusted Odd Ratio: 0.01, 95%CI: 0.01 – 0.03].

Conclusion: The perceived access barrier is a strong determinant of the CCSS utilization rate among HCWs in our study site Efforts should be made to ensure access and create awareness about service availability and accessibility among HCWs in the Federal Capital Territory.

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INTRODUCTION

The effectiveness of cervical cancer prevention strategies using human papillomavirus (HPV) vaccination and cervical cancer screening has been well documented.[1-3] A recent study that assessed the cost-effectiveness of prevention interventions for cervical cancer among sexually active women in India showed a significant reduction in the lifetime occurrence of cervical cancer caused, by HPV 16/18 and cervical cancer death as a result of early screening for cervical cancer among the sexually active women.[3] These benefits are heightened when population screening is combined with HPV vaccination.[2] Despite this proven prevention effectiveness, cervical cancer still ranks behind breast cancer as the foremost cause of cancer burden in Nigeria.[4]

Current estimates indicate that every year 12,075 women are diagnosed with cervical cancer and 7,968 die from the disease.[4] This translates to a crude annual incidence rate of 11.9/1000 and a mortality rate of 7.84/1000 women.[4] Nigeria contributes about 20 percent of annual cases of invasive cervical cancer in Sub-Saharan Africa.[5] According to the WHO International Agency for Research on Cancer Report (IARC) 2023, about 3.5% of women in the general Nigerian population are estimated to have cervical HPV-16/18 infection at any given time with an estimated cumulative risk of developing cervical cancer of 1.86 between ages 0-74.[4] In developing countries, including Nigeria, a large proportion of cervical cancers are diagnosed in advanced stages, resulting in poor survival rates.[6, 7]

There is a significant gap in the utilization of cervical cancer screening and treatment services in Nigeria. WHO IARC in 2023 reported an estimated screening coverage for cervical cancer in Nigeria of 14 percent for ever screened and 11 and 8 percent for screened in the past 5 years and 3 years respectively.[4] Most cervical cancer screening services in Nigeria are opportunistic during outreach services and awareness campaigns or through paid services in some public or private health facilities.[8] Nigeria has no recognized organized screening program for cervical cancer.[8]

In 2015, Nigeria launched its National Strategic Plan on Prevention and Control of Cervical Cancer 2017-2021. The policy has an overall goal of achieving 90 percent vaccination coverage for girls in Nigeria before the age of 15 years, 70 percent screening coverage for eligible women, 90 percent treatment of precancerous lesions, and management of 90 percent of women having invasive cancer lesions. However, the policy implementation is still at a rudimentary phase.[9]

Beyond cervical cancer service availability, previous studies reported factors such as older age, married status, and higher level of female education as significant factors associated with CCSS utilization both in the general population and among female health workers.[10,11] Other factors acting as barriers to cervical cancer service utilization among the general women population include lack of awareness about service availability, poor knowledge about the disease, low-risk perception of the disease, fear

of having positive results, nonchalant attitude, and financial constraints.[10-14]

Health workers serve as role models in community-based behavioral change communication programs within health initiatives aimed at shaping clients' attitudes and behaviors.[15] Health workers' beliefs, attitudes, and practices could influence patients' decision-making and willingness to receive health care.

Several studies conducted among female health workers on CCSS in Nigeria showed higher knowledge of CC disease entity and service availability among HCWs compared to the general women population.[13,14,16] This was attributed to the formal health training received by HCWs compared to the general population. However, the studies still reported poor CCSS utilization among the Female HCWs sub-population in the country. This study aims to assess cervical cancer service utilization by healthcare workers in selected secondary and tertiary health facilities in Abuja, Nigeria's federal capital territory, and its associated contextual factors.

METHODOLOGY

Study Design

A descriptive cross-sectional design aimed at assessing the uptake of cervical cancer screening services by healthcare workers in selected public secondary and tertiary health facilities in three Area Councils in Abuja, Nigeria's federal capital territory.

Study Location

The study was conducted in three area councils in Abuja Nigeria: Gwagwalada, Abuja Municipal Area Council (AMAC), and Bwari area councils. Abuja is a metropolitan city in Nigeria with a projected population of 3,839,646 and an annual growth rate of 5.15% as of 2023.[17] It is the administrative and political capital of Nigeria. [17] Abuja has six area councils seated on a land mass of 8000 km^2.[18] According to the National Census 2006, 47.9% of Abuja's population are females, with approximately 50% of them being within the reproductive age group.[19] The prevalence of sexually transmitted diseases in Abuja is 6.7%.[20]

Gwagwalada is one of the fastest-growing urban centers in the federal capital territory. It has an estimated population of 507,000 and an annual growth rate of 6.74% as of 2022.[21] It has 35 public health facilities: 33 Primary Health Facilities (PHFs), 1 Secondary Health Facilities (SHFs), and 1 Tertiary Health Facility (THF).[22] Bwari seats on a land mass of 914.5 km2. It has an estimated population of 500,100 as of 2022, with 49.6% being females.[23] The LGA has 55 public health facilities; 53 PHFs and 2 SHFs.[22] The third area council, AMAC, has an estimated population of 1,693,400 as of 2022,[24] with 95 public health facilities; 77 PHFs, 16 SHFs, and 2 THFs.[21]

Table 1: Socio-Demographic Characteristics of Respondents

Sociodemographic Characteristics	Frequency (no.)	(%)
Age		
21-30	275	78.6
31-40	48	13.7
41-50	26	7.4
51-60	1	0.3
Total	**350**	**100**
Marital Status		
Single	60	17.1
Married	290	82.9
Total	**350**	**100**
Ethnicity		
Igbo	107	30.6
Yoruba	221	63.1
Hausa	14	4.0
Others	8	2.3
Total	**350**	**100**
Religion		
Christian	160	45.7
Islam	189	54.0
Traditional	1	0.3
Total	**350**	**100**
Duration Of Practice (Years)		
< 5	243	69.4
5-10	91	26.0
>10	16	4.6
Total	**350**	**100**

Table 2: Participants' Behavioural Ideation about Cervical Cancer Screening Services

Prevention methods	Frequency	%
Knowledge About Cervical Cancer Disease		
Good	213	60.9
Poor	137	39.1
Total	350	100.0
Risk Perception of Cervical Cancer Disease		
At risk	344	98.3
No risk	6	1.7
Total	350	100.0
Perceived Benefits of Cervical Cancer Screening		
High	273	78.0
Low	77	22.0
Total	350	100.0
Perceived Access Barriers to Cervical Cancer Screening Services		
Yes	121	34.6
No	229	65.4
Total	350	100.0
Fear Of Screening Result		
Yes	9	2.6
No	341	97.4
Total	350	100.0

Sampling Technique and Study Participants Recruitment

A total of 350 healthcare workers between the ages of 18 to 60 years were studied across three selected area councils. The sample size was calculated using Cochran's sample size formula for a single proportion with a normal standard deviation of 1.96 for a 95% confidence interval, a margin error of 0.05, and a CCSS utilization rate of 75.3% among healthcare workers in a similar study in Nigeria.[25] Participants were selected using a multistage sampling technique. Three area councils were selected using simple random sampling from a sampling frame consisting of all area councils in Abuja. A list of SHFs and THFs in each of the area councils was generated and 50% of facilities in each facility category were randomly selected in each of the area councils by balloting. Facilities without cervical cancer screening services were replaced with another facility in the area council. Overall, 13 facilities were selected across the three area councils (11 SHFs and 2 THFs).

Sample sizes were apportioned to each facility using proportionate allocation to size, considering the population of female health workers in each of the facilities.

Lastly, a systematic sampling technique was used to select study participants in each of the facilities, with the apportioned sample size for the facility as the denominator and the total number of female health workers in each facility as the numerator for computation of the varied kth interval across the selected facilities. Healthcare workers in this study include the fixed-term medical and non-medical who have direct contact with patients, the temporary staff on clinical placement such as residents in training and interns, and other healthcare professionals such as health information officers.

Assessment Tools and Data Collection Procedure

Data were collected using a pre-tested self-administered, semi-structured questionnaire. The questionnaire had 3 parts: the first part elicited information on the sociodemographic characteristics of the participants, the second part elicited information on the ideation factors that affect participants' perception and behavior towards cervical screening services, and the third part assessed cervical cancer screening service availability and participants' utilization of cervical cancer screening services.

The behavioral ideation constructs assessed were participants' knowledge of cervical cancer prevention methods, risk perception about the disease, cervical cancer screening benefits, and individual cervical cancer service barriers. Knowledge of prevention services was assessed using 13-item questions across four domains: 1 correct response for primary cause of cervical cancer, 4 correct responses for risk factors, 4 correct responses for cervical cancer symptoms, and 4 correct responses for correct prevention methods. Each correct response in each domain was assigned a score of 1. The weighted average was computed for each domain by dividing the participant score in each domain by

the expected total score. This is done to ensure each domain has equal weight. The maximum obtainable score for an individual in the knowledge construct is 4. The mean knowledge score was computed and the participant's knowledge level was dichotomized using the mean knowledge score into poor knowledge (Knowledge score < mean score), and good knowledge (Knowledge score ≥ mean score).

Similarly, risk perception was computed using the 1-item question "Do you consider yourself at risk of contracting cervical cancer" with dichotomous responses of "No and "Yes". Similarly, perceived benefits were measured using 3-item questions, perceived access barriers to service using 4-item on service availability, affordability, clinician prescription and perceived fear of test results. The data collection period was between January to February 2023.

Data cleaning and analysis were done using Statistical Package for Social Sciences (SPSS) IBM version 23. Descriptive findings were presented using charts and tables. The outcome variable for this study was participants' utilization of cervical cancer screening services, dichotomized into a "Yes" or "No" response. Factors associated with participants' utilization of cervical cancer screening services were examined at the bivariate and multivariate levels using a binary logistic regression at $p<0.05$ level of statistical significance.

Ethical Consideration

Informed consent was obtained from all patients who participated in the study, evidenced by signed consent forms. Ethical approval for the study was obtained from the Bingham University Ethical Board (NHREC/21/05/2005/00931). In addition, the study complied with the Declaration of Helsinki on conducting research among human subjects.

RESULTS

A total of 350 healthcare workers between the ages of 18 to 60 years were sampled. A larger proportion of the female healthcare workers interviewed were married (290; 82.9%), of the Yoruba tribe, (221; 63.1%) and between the ages of 21 to 30 years (275; 78.6%). About two-thirds (69.4%) of the respondents had less than 5 years' experience as health professionals. (Table 1)

A larger proportion of the interviewed respondents had good knowledge (213; 60.9%) about cervical cancer disease risk factors and prevention measures, had at-risk perception (344; 98.3%) of contracting cervical cancer disease and high perception (273; 78.0%) of cervical cancer screening service benefits. Only a small proportion; 34.6% and 2.6% reported access barriers to screening services and fear of receiving positive screening results respectively. (Table 2)

The most reported known risk factors and preventive measures for cervical cancer disease were a positive history of human papillomavirus infection (294; 84.0%) and a history of multiple sexual partners (289; 82.6%). (Table 3)

Table 3: Knowledge about risk factor for cervical cancer risk factors

Risk Factors	Frequency (N)	(%)
History of HPV Infection		
Yes	294	84.0
No	56	16.0
Total	**350**	**100**
Early sexual Debut		
Yes	234	66.9
No	116	33.1
Total	**350**	**100**
Multiple Sexual Partners		
Yes	289	82.6
No	61	17.4
Total	**350**	**100**
Smoking		
Yes	298	85.1
No	52	14.9
Total	**350**	**100**
Use of IUCD		
Yes	296	84.6
No	54	15.4
Total	**350**	**100**
Impaired Immunity		
Yes	295	84.3
No	55	15.7
Total	**350**	**100**

Table 4: Knowledge about preventive measures for cervical cancer disease

Prevention methods	Frequency	%
Regular Cervical Cancer Screening		
Yes	327	93.4
No	23	6.6
Total	350	100
Consistent Condom Use		
Yes	317	90.6
No	33	9.4
Total	350	100
Treatment of STI's		
Yes	319	91.1
No	31	8.9
Total	350	100
Reduction of Sexual Partners		
Yes	318	90.9
No	32	9.1
Total	350	100
HPV Vaccination		
Yes	236	67.4
No	114	32.6
Total	350	100.0

The majority (326; 93.4%) of the health workers reported regular cervical screening, consistent use of condoms and reduction of sexual partners as preventive measures for cervical cancer disease. About two-thirds (67.4%) reported HPV vaccination as a preventive measure for cervical cancer disease **Table 4**.

About two-thirds of the participants, (237) reported having ever been screened for cervical cancer, with the majority, 181 (76.4%) having pap smears and cytology tests (**Table 5)**.

Factors predicting ever used CCSS at bivariate level were marital status, with lower likelihood of utilization in married compared to single [Crude Odd Ratio (COR): 0.47, 95% CI: 0.24 – 0.92]; duration of practice, with increasing probability of utilizing CCA screening services with increased duration of practice and lastly negative perception about access barrier to cervical cancer services [COR:0.01, 95%CI: 0.01 – 0.03]. Perceived access barrier to cervical cancer services was the only strong predictor for CCA screening service utilization after controlling confounders [Adjusted Odd Ratio (AOR): 0.01, 95%CI: 0.01 – 0.03] (**Table 6)**.

Table 5: Utilization of Cervical Cancer Screening Services

Variable	Frequency	%
Ever Screened for Cervical Cancer		
Yes	237	67.7
No	113	32.3
Total	**350**	**100**
Type of screening services		
Pap Cytology	181	76.4
Don't know	56	23.6
Total	237	100

DISCUSSION

This study aimed to assess cervical cancer screening services utilization and its predictors among female health workers (HCWs) in hospitals in FCT, Abuja. The utilization rate of cervical cancer screening services in this study was 67.7%. This is comparable to the high cervical cancer screening utilization rate of 72.9% and 75.3%, reported in two studies conducted among healthcare workers in a teaching hospital in Osogbo, Nigeria,[25, 26] and significantly higher than the utilization rate reported in similar studies among healthcare workers in Ibadan, Nigeria (32.6%), Abakaliki, Nigeria (20.6%) and Ethiopia (19.6%).[27-29]

The relatively high cervical cancer screening service utilization rate among HCWs in this study has good implications for cervical cancer screening awareness in the general populace since health workers are used as role models in community behavioral change communication programs for health service adoption.[14] Health workers' beliefs, attitudes, and practices could influence patient's decision-making and

willingness to receive health care services. Of note is that the majority of our study respondents had less than 5 years of work experience, similar to the mean year of work experience in the two studies that also reported high utilization rate.[25, 26] Furthermore, exploration of behavioral ideation constructs for cervical cancer disease and screening services in this study, showed that a high proportion of participants had good knowledge scores on cervical cancer disease risk factors and causes, prevention measures and clinical manifestation (60.9%), high cervical disease risk perception (98.3%) and high perception about the CC screening benefits (78.0%). These might have informed the behavioral change toward the relatively high CC screening utilization by the study participants.

Reported reasons for the CC screening non-utilization among those who did not utilize the CC screening services include fear of receiving positive screening results and issues related to non-availability and non-accessibility of the screening services. The results were consistent with a systematic review conducted by Okolie et al. This review suggested that many healthcare workers reported fear of positive results as a significant barrier. Meanwhile, in the general female population, inadequate knowledge about cervical cancer and where to access care were identified as key obstacles.[14]

Notable factors associated with cervical cancer screening utilization in this study on bivariate analysis include marital status, years of participant work experience, and participant's perception of access barriers to cervical cancer services. The lower probability of CCSS utilization among married compared to the unmarried in our study is in contrast to previous studies that reported a higher utilization rate in married healthcare workers.[28,29] Contrary to previous studies that consistently reported age as an independent predictor of CC screening utilization among HCWs.[28,30], this study did not find any relationship between participant's age and CCSS utilization both at the bivariate and multivariate level. This might be due to the age distribution in our study, as a larger percentage (78.6%) of our study participants are between the ages of 21 – 30 years. Other age groups might not have sufficient sample size and study power to reflect the relationship.

Furthermore, a higher likelihood of CC screening utilization was observed with an increase in participants' years of work experience. Jemal et al reported a similar finding in a study among female HCWs in Ethiopia, which demonstrated a 2 times higher likelihood of CC screening service utilization by participants with 3 or more years of working experience compared to those with 2 years or less.[29] On the contrary, two studies in Southwest and Southeast East Nigeria reported an inverse relationship between years of experience and CC screening utilization, with a reduction in CC screening utilization rate as years of work experience increased.[25, 28] Lastly, participants who reported perceived access barriers to CC screening services had a lower likelihood of utilizing CC screening services. This factor has also been demonstrated in many pieces of

literature as key factors in improving CC screening utilization.[25-27]

Table 6: Predictors of Cervical Cancer Screening Service Utilization at Univariate and Multivariate level

Sociodemographic Characteristics	Crude OR (95% CI)	Adjusted OR (95% CI)
Age		
21-30	1	
31-40	1.42 (0.72 – 2.81)	
41-50	2.22 (0.81 – 6.07)	
51-60	0.00	
Marital Status		
Single	1	1
Married	***0.47 (0.24 – 0.92)**	0.53 (0.19 – 1.50)
Ethnicity		
Igbo	1	
Yoruba	0.83 (0.50 – 1.37)	
Hausa	1.56 (0.41 – 5.99)	
Others	0.71 (0.16 – 3.16)	
Religion		
Christian	1	
Islam	1.18 (0.76 – 1.85)	
Traditional	0.00	
Duration of Practice (Years)		
< 5	1	1
5-10	***1.81 (1.05 – 3.13)**	1.95 (0.80 – 4.73)
>10	***4.05 (1.01 – 18.21)**	1.81 (0.23 – 14.07)
Knowledge About Cervical Cancer		
Good	0.67 (0.42 – 1.07)	
Poor	1	
Perceived Benefits Of Cervical Cancer Screening		
High	1.26 (0.74 – 2.15)	
Low	1	
Perceived Access Barriers To Cervical Cancer Screening Services		
Yes	***0.01 (0.01 – 0.03)**	***0.01 (0.01 – 0.03)**
No	1	1
Fear of Screening Result		
Yes	0.00	
No	1	

*statistically significant at p-value < 0.05.

Perceived access barrier to cervical cancer services was the only strong predictor for CCSS utilization after controlling for confounding effects. Perceived access barrier to service in our study was measured using 4 items; service availability, affordability, clinician prescription, and lastly perceived fear of test results. These barriers were also reported by Oyekale et al in their two studies in Osun and Oyo States of Nigeria, where they demonstrated a significantly lower likelihood of CCSS utilization among study participants who reported fear of negative screening results, high cost of CC screening and non-availability of screening facilities as barriers to CCSS uptake. [25,31]

In conclusion, although the CC screening service utilization rate in our study is relatively high, it is still sub-optimal when compared to the 70 percent screening target set by the National program on cervical cancer prevention and control in Nigeria.[32] Access barrier was the only independent predictor of CC screening utilization observed in this study. Public health efforts should be geared towards educating health workers on the benefits of early CC screening and treatment to alleviate their fears. The government should also reduce the cost of CC screening and possibly make it free for healthcare workers to encourage their uptake of the service.

Our study though informative, has some limitations. The cross-sectional approach utilized in this study limits causal inferences and assessment of temporality between exposure variables and the study outcomes. Information on some other third variables that could influence the study outcomes i.e. such as household structure, partner support, community health-seeking norms and so on, were not elicited.

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