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Awareness, Attitude and Uptake of Cervical Cancer Screening Among Female Nurses in Northern Nigeria

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AWARENESS, ATTITUDE AND UPTAKE OF CERVICAL CANCER SCREENING AMONG FEMALE NURSES IN NORTHERN NIGERIA

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ABSTRACT

BACKGROUND: cervical cancer has remained a relentless public health challenge in Nigeria, despite this condition being preventable via screening which can help identify the pre-invasive stages. Nigeria has the highest number of incident cases and deaths from cervical cancer in Africa and it is one of the eight countries with the largest incident cases in the world. In Nigeria, there exists a regional disparity in the uptake of cervical cancer screening with Northern Nigeria accounting for the least uptake.

MATERIALS AND METHODS: this study was undertaken among female nurses in a secondary health facility, to assess their awareness, attitude and uptake of cervical cancer screening. A descriptive cross-sectional study was carried out from 1st August 2026 to 31st August 2026. A structured self-administered questionnaire was administered to 166 consenting nurses and there was 100% respond rate. Collected data was analyzed using Statistical Product and Service Solutions (SPSS) version 27, and a P value < 0.05 was considered statistically significant.

RESULTS: awareness of cervical cancer revealed that all the participants 166(100%) have heard of cervical cancer and 91.6% agreed that cervical cancer can be prevented. Attitude of respondents revealed that 155(93.4%) considered screening important and 151(91.0%) admitted that screening without symptoms is necessary. Uptake of cervical cancer screening revealed that less than a third of the respondents, 46(27.7%) had done cervical cancer screening.

CONCLUSION: uptake of cervical cancer screening significantly lagged the awareness and attitude of participants to cervical screening in this study.

Keywords: Awareness, Attitude, Cervical Cancer, Female nurses, Screening, Uptake, Northern Nigeria

1. BACKGROUND

Cervical cancer has remained a persistent public health challenge despite the cervix being an accessible organ, the pre-invasive stages of the cancer being identifiable and preventive vaccines for this condition readily available. Cervical cancer yet occurs world over with low- and middle-income countries bearing the greatest burden of the disease. According to the World Health Organization (WHO), globally, cervical cancer is the fourth most common cancer in women with 660,000 new cases estimated in 2022. In the same year, about 94% of the 350,000 deaths caused by cervical cancer occurred in low- and middle-income countries [1]. It is estimated that a woman dies every two minutes from cervical cancer [2] and cervical cancer disproportionately affects younger women and as a result 20% of children who lose their mother to cancer do so to cervical cancer [3] Indeed, this is a paradox because cervical cancer is preventable and curable [4]. The gravity of cervical cancer remains alarming as cervical cancer is the highest causative agent of death-related cancer in women globally, regardless of the advancement in diagnostic and medical procedure [5]. Nigeria has the highest number of incident cases and death from cervical cancer in Africa with 12,075 new cases and 7,968 deaths, making it one of the eight countries with the largest number of incident cases in the world [6]. In terms of risk of exposure, it is estimated that over 50.33million women aged 15years and above are at risk of developing the disease in Nigeria[7]. Evidently, cervical cancer is indeed an important public health challenge in Nigeria.

Human Papilloma Virus (HPV) infection causes nearly 99.7% of precancerous and malignant cervical lesions [8,9]. HPV is transmitted as a sexually transmitted infection. Barrier methods does not offer absolute protection as it can be acquired via direct genital contact. HPV is the commonest viral infection of the reproductive tract and is one of the most common causes of STIs worldwide [10]. HPV subtypes 16 and 18 accounts for approximately 70% of cervical cancer around the globe and are the most carcinogenic types [8]. Human Immunodeficient Virus (HIV) positive women have

higher risk of acquiring HPV, with risk inversely associated with CD_4 count [11]. Consequently, making HIV positive women at higher risk of coming down with cervical cancer. Other known risk factors for cervical cancer include cigarette smoking, multiple lifetime sexual partners, early age of sexual intercourse, smoking and in utero exposure to Diethylstiboesterol.

Given the known pathway in the etiopathogenesis of cervical cancer, the WHO embarked on the elimination of cervical cancer and with this initiative, cervical cancer will become the only human cancer that will become eliminated. This initiative is guided by the global 90-70-90 targets: 90% of girls fully vaccinated with HPV vaccine by age 15, 70% of women screened by age 35 and 45, and 90% of women with pre-cancer or invasive cancer receiving appropriate treatment [4]. For these targets to be attained, appropriate awareness, attitude and uptake of cervical screening remain inevitable.

WHO recommends HPV based test as the preferred method of screening for cervical cancer and pre-invasive lesions of the cervix [12]. The American College of Obstetrics and Gynecology (ACOG) recommendation for screening: cervical cytology every 3 years for women aged 21-29years, for women aged 30-65years clinician-collected primary hrHPV every 5years or co-testing with hrHPV testing with cervical cytology every 5years when clinician-collected hrHPV is not available or patient-collected primary hrHPV screening every 3years. Women older than 65years routine screening not clinically indicated with adequate prior screening [13]. In explicit language, the recommended screening methods are HPV testing, Papanicola (Pap) smear or cytology and visual inspection with acetic acid (VIA) [14].

These are established secondary preventive modalities against cervical cancer as screening is essential for early detection of pre-cancerous lesions and timely prevention of invasive cancer, particularly in low-income countries that present with higher incidence and mortality rate [15].

To undertake screening, awareness of cervical cancer remains a sine qua non as awareness will result in uptake of screening; given that awareness literally implies adequate information. Lack of adequate information about cervical cancer is a significant hindrance to screening; this factor is strongly associated with the numerous misconceptions and negative perception [16]. Cervical cancer awareness and uptake among female health care providers is imperative for accelerated community involvement in the objective of cervical cancer elimination. Hence, increasing participation in cervical cancer screening among healthcare professionals is important as Health Care Professionals (HCPs) can serve as role models and may increase uptake of cervical cancer screening within the wider community [17]. A survey among female HCPs by Ncane et al concluded that academic qualification is closely linked to knowledge and attitude regarding cervical cancer screening among nurses [18]. It is important to assess the awareness, attitude and uptake of cervical screening among HCPs as this may mirror what the larger society perceive and by extension the probability of attaining the WHO elimination vision for cervical cancer. To the best of our knowledge, no prior studies in Plateau state Specialist hospital or in Jos, Plateau state has assessed the awareness, attitude and uptake of cervical cancer screening among nurses.

2. MATERIALS AND METHODS

2.1 STUDY AREA

This study was undertaken in Plateau state Specialist Hospital. This hospital is a secondary health facility located in an urban area, within Jos, the state capital of Plateau state. Plateau state is in the North Central Geopolitical zone of Nigeria and shares boundary with Bauchi state, Kaduna state, Nasarawa state and Taraba state. The facility attends to patients within Jos North Local Government Area (LGA) and receives referral from all the hospitals within Jos North LGA and beyond. The hospital has all cadre of Nurses in the various departments of the hospital.

2.2 STUDY DESIGN

A descriptive cross-sectional study was adopted to evaluate the awareness, attitude and factors influencing the uptake of cervical cancer screening among consenting female nurses in Plateau state Specialist Hospital, located in Jos North LGA, Plateau state.

2.3 STUDY POPULATION

This study was undertaken among consenting female nurses of the Plateau state Specialist Hospital. According to the Human Resource Unit of the hospital, there are a total of 492 Nurses distributed in the following departments: General Nursing department, Anaesthetic Nurses, Per-operative Nurses, Ophthalmic Nurses, Public Health Nurses, Midwifes, Psychiatric Nurses and Intensive Care Unit Nurses.

2.4 SELECTION CRITERIA:

INCLUSION CRITERIA

All female nurses of the Plateau state Specialist Hospital who were willing and able to give informed consent.

EXCLUSION CRITERIA

All other nurses not working in the Plateau state Specialist Hospital. Male nurses working in the Plateau state Specialist Hospital.

2.5 SAMPLE SIZE DETERMINATION

The sample size was determined using the formular:

$N= (Z^2pq/d^2)$ [19]

Z = 1.96, the standard normal deviate for the desired confidence level. 1.96 for a 95% confidence interval

P= 10.9% [20] prevalence of uptake from a previous study.

q= 1-p (1-0.109)

d= 5% (desired precision or margin of error)

$$n= \frac{1.96 \times 1.96 \times 0.109 \times 0.891}{0.0025}$$

= 149.23

Therefore, a minimum of 149 participants will be required for this study. However, a provision of 10% attrition will be made. The total sample for this study will become -

$$= \frac{149}{1\text{-}10\%}$$

$$\frac{149}{0.9}$$

n= 165.5

Total sample: 166

A total of 166 participants were recruited for this study.

2.6 SAMPLING TECHNIQUE:

A systemic random sampling technique was employed to distribute self-administered questionnaires to the Nurses in all the various departments of the hospital. To ensure anonymity, questionnaires were pre-numbered, and these were distributed-by the research assistants- to one in three Nurses after obtaining written informed consent from the prospective participant.

Questionnaires distribution was spread intermittently over a three-day period to allow for Nurses running different shifts and for Nurses who might have been off duty at the commencement of distribution.

2.7 DATA HANDLING:

The questionnaire that was used for this Research, was adopted from similar prior studies and was pre-tested among Nurses in a General hospital in Plateau South Local Government Area to ensure standardization. The questionnaire consisted of four sections: Socio-demographic characteristics, Awareness of cervical cancer, Attitude towards cervical cancer screening and Uptake of cervical cancer screening. Following collection of the filled-out questionnaires, it was retained in the possession of the lead author to ensure appropriate data privacy before being transferred to the statistician for onward data analysis.

2.8 DATA ANALYSIS

The collected Data were numbered, coded and analyzed using IBM Statistical Product and Service Solutions (SPSS) version 27. Categorical variables were presented as frequencies and percentages while continuous variables presented as mean and standard deviation. Chi square was used to determine test of association between categorical values while the student t test was used to test for association between continuous variables. A P value of < 0.05 was considered as statistically significant.

2.9 ETHICAL CONSIDERATIONS

Institutional ethical clearance to conduct this Research was sought and obtained from the Ethical and Research Committee of the Plateau state Specialist Hospital with reference number PSSH/ADM/ETH.CO/2026/0098 before the commencement of the study in conformity with the Helsinki Declaration with emphasis on the core principles of Autonomy, Beneficence, non-maleficence and justice. Informed consent was obtained from all the study participants.

3.0 RESULTS

The study enrolled 166 consenting participants and 100% of the participants returned correctly filled questionnaires. The age distribution of the participants revealed that 37(22.3%) of the participants were aged 25-29years and the academic qualifications showed that Registered Nurses and bachelor's in nursing science were the most participants, both at 47(28.3%) respectively. The cadre of Nurses revealed that Nursing Officers II were the most participants with 61(36.7%). In the marital status, the largest number of the participants were married 95(57.2%) while Christians were the most participants making up 126(75.9%). Ethnicity revealed that Hausas were the most participants, making up 42(25.3%).

The awareness of cervical cancer among the participants revealed that all the participants 166(100%) have heard of cervical cancer and 120(31,7%), 33(8.7%), 68(18.0%),103(27.2%) all were correct on the risk factors of cervical cancer. Also, 157(94.6%) have heard of cervical cancer vaccine. 149(89.8%) were correct that the use of cervical cancer vaccine can prevent cervical cancer. Also, 157(94.6%) have heard of cervical cancer screening methods. 143(66.5%), 53(24.7%), 6(2.8%) and 4(1.9%) were all correct on the screening methods for cervical cancer. Concerning symptoms of cervical cancer 118(28.6%) abnormal vaginal bleeding, abnormal

vaginal discharge 85(20.6%), 43(10.4%) post coital bleeding and asymptomatic 18(4.4%) were all correct symptoms of cervical cancer.

The awareness of cervical cancer prevention revealed that 152(91.6%) of participants acknowledged that cervical cancer can be prevented and 108(33.9%), 95(29.8%), 73(22.9%) and 29 (9.1%) were all correct on the methods of prevention. 155(93.4%) are aware of Pap smear and 137(82.5%) were correct on the use of Pap smear. Concerning the age of commencement of screening 120(72.3%) of the participants were correct and regarding the frequency of screening 69(41.6%) and 38(22.9%) were correct on the timing.

Regarding the sources of information regarding cervical cancer, this showed that 120(37%) got information about cervical cancer from the mass media and 117(36%) got information concerning cervical cancer from the hospital seminars. 48(15%) got information from friends.

Assessing the attitudes of respondents to cervical cancer, 155(93.4%) considered screening important and 132(79.5%) felt it is necessary to undertake Pap smear. Half of the respondents 83(50%) agreed that they are at risk of cervical cancer while 151(91.0%) considered that screening without symptom is necessary. 161(97.0%) agreed that if screening prevents cervical cancer, they will screen and 164(98.8%), confirmed that they will encourage friends and family members to screen.

Uptake of cervical cancer screening among respondents revealed that less than one third, 46(27.7%) of them had undertaken cervical cancer screening, though 161(97.0%) were willing to undertake the cervical cancer screening. And of those that had undertaken the screening, 29(63.0%) of them undertook the screening in a public facility. 70(25.8%) of the respondents, indicated that the commonest reason for non-uptake of cervical cancer screening was finance.

71(26.2%) were of the notion that lack of access to health facility will prevent uptake of cervical cancer screening. Only 31(18.7%) had received the vaccine against cervical cancer and of these, 25(80.6%) had received only one dose.

Statistical relationship between uptake of cervical cancer screening and the sociodemographic characteristics of the respondents revealed a statistically significant relationship between uptake and the educational qualifications of the participants. Other socio-demographic characteristics were not statistically significant.

Table 1: Sociodemographic characteristics of the respondents

Variables	Frequency (n=166)	Percentages (%)
Age group		
20 – 24	22	13.3
25 – 29	37	22.3
30 – 34	27	16.3
35 – 39	27	16.3
40 – 44	24	14.5
45 – 49	10	6.0
≥ 50	19	11.4
Level of education		
Registered nurse	47	28.3
Registered midwife	19	11.4
Registered nurse/midwife	45	27.1
B. NSc	47	28.3
MSc	7	4.2
PhD	1	0.6
Cadre		
Nursing officer II	61	36.7
Nursing officer I	44	26.5
Senior nursing officer	25	15.1
Principal nursing officer	9	5.4
≥ Assistant chief nursing officer	27	16.3
Marital status		
Single	59	35.5
Married	95	57.2
Divorced	2	1.2
Widowed	10	6.0
Religion		
Christianity	126	75.9
Islam	39	23.5
Traditional	1	0.6
Ethnicity		
Hausa	42	25.3
Yoruba	40	24.1
Igbo	39	23.5
Berom	26	15.7
Others	19	11.4

Table 2: Awareness of cervical cancer

Variables	Frequency	Percentage (%)
Ever heard of cervical cancer		
Yes	166	100.0
No	0	0.0
Risk factors for cervical cancer		
Multiple sexual partners	120	31.7
Smoking	33	8.7
Alcohol	12	3.2
Early age at sexual intercourse	68	18.0
Hereditary	42	11.1
HPV	103	27.2
Ever heard of vaccine for cervical cancer		
Yes	157	94.6
No	9	5.4
Use of cervical cancer vaccine		
Preventing cervical cancer	149	89.8
Don't know	9	5.4
Not sure	8	4.8
Ever heard of cervical cancer screening methods?		
Yes	157	94.6
No	9	5.4
Cervical cancer screening methods		
Pap smear	143	66.5
HPV screening	53	24.7
VIA	6	2.8
Colposcopy	4	1.9
Blood test	8	3.7
Urine	1	0.5
Symptoms of cervical cancer		
Waist pain	63	15.3
Pain during sex	85	20.6
No symptoms	18	4.4
Abnormal vaginal bleeding	118	28.6
Abnormal vaginal discharge	85	20.6
Post-coital bleeding	43	10.4

Table 3: Awareness of respondents about cervical cancer prevention

Variable	Frequency	Percentages (%)
Can cervical cancer be prevented		
Yes	152	91.6
No	7	4.2
Not sure	7	4.2
If yes to the above, through:		
Avoid alcohol	14	4.4
Avoid smoking tobacco	29	9.1
Regular screening	108	33.9
Vaccination	95	29.8
Reduce number of sexual partners	73	22.9
Knowledge of pap smear		
Yes	155	93.4
No	6	3.6
Not sure	5	3.0
Use of pap smear		
Screening for cervical cancer	137	82.5
Detect infection	21	12.7
Treating cervical cancer	1	0.6
Unsure	7	4.2
Age to start pap smear (years)		
18 – 20	21	12.7
21 – 30	120	72.3
31 – 40	9	5.4
41 – 50	11	6.6
>50	5	3.0
Regularity of doing pap smear		
Yearly	29	17.5
Biannually	9	5.4
Every 3 years	69	41.6
Every 5 years	38	22.9
Unsure	21	12.7

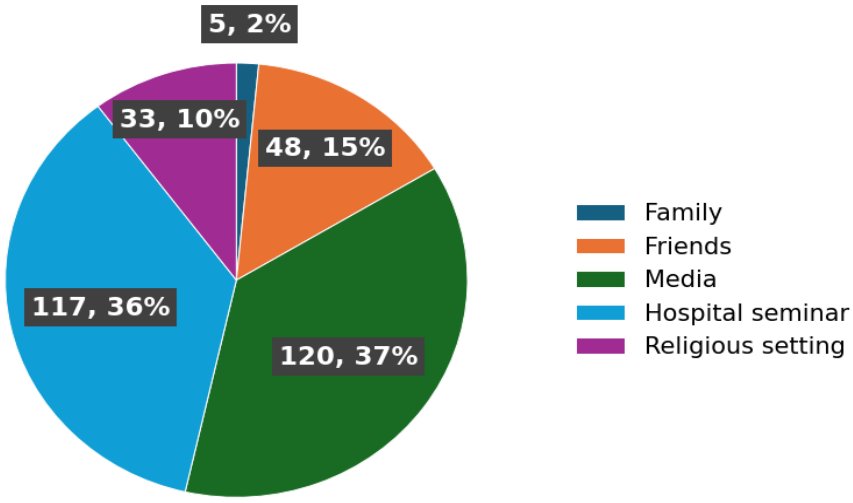


Fig. 1: Respondents' sources of information about cervical cancer

Table 4: Attitude of respondents towards cervical cancer screening

Variable	Frequency	Percentages (%)
How important should a woman screen for cervical cancer		
Very important	155	93.4
Important	5	3.0
Not sure	6	3.6
Feeling about doing a pap smear		
Very necessary	132	79.5
Necessary	28	16.9
Unnecessary	1	0.6
Not sure	5	3.0
Do you think you are at risk of cervical cancer		
Yes	83	50.0
No	52	31.3
Unsure	31	18.7
Is screening necessary without symptoms		
Yes	151	91.0
No	9	5.4
Unsure	6	3.6
If screening will prevent cervical cancer, will you screen?		
Yes	161	97.0
No	5	3.0
Will encourage family members/friends to screen		
Yes	164	98.8
No	1	0.6
Unsure	1	0.6

Table 5: Uptake of cervical cancer screening

Variables	Frequency	Percentages
Ever done a cervical screening?		
Yes	46	27.7
No	120	72.3
If yes to the above, where was the screening done?		
Public facility	29	63.0
Private facility	12	26.1
NGO outreach	4	8.7
Community Outreach	1	2.2
Last time screening was done (years)		
<1	11	23.9
1 – 2	18	39.1
3 – 5	14	30.4
>5	3	6.5
Willingness to do cervical cancer screening		
Yes	161	97.0
No	5	3.0
Have you received HPV vaccine		
Yes	31	18.7
No	129	77.7
Not sure	6	3.6
How many doses of HPV vaccine have you received		
1	25	80.6
2	3	9.7
3	1	3.2
Not sure	2	6.5
Factors that might prevent cervical cancer screening		
Lack of finance	70	25.8
Fear of the test	38	14.0
Fear of the result	41	15.1
Lack of time	35	12.9
Lack of access to health facility	71	26.2
Cultural/religious inhibition	16	5.9

Table 6: Relationship between uptake of cervical cancer screening and the sociodemographic characteristics of the respondents

Variable/category	Screened: Yes, n (%)	Screened: No, n (%)	χ^2 (df)	p-value	Interpretation
Age group			**0.116 (6)**	**1.000**	**Not statistically significant**
20–24 years	10 (45.5%)	12 (54.5%)			
25–29 years	17 (45.9%)	20 (54.1%)			
30–34 years	13 (48.1%)	14 (51.9%)			
35–39 years	13 (48.1%)	14 (51.9%)			
40–44 years	11 (45.8%)	13 (54.2%)			
45–49 years	5 (50.0%)	5 (50.0%)			
≥50 years	9 (47.4%)	10 (52.6%)			
Level of education			**20.518 (5)**	**<0.001**	**Statistically significant**
Registered nurse	10 (25.0%)	30 (75.0%)			
Registered midwife	5 (33.3%)	10 (66.7%)			
Registered nurse/midwife	14 (43.8%)	18 (56.2%)			
BNSc	28 (53.8%)	24 (46.2%)			
MSc	15 (75.0%)	5 (25.0%)			
PhD	6 (85.7%)	1 (14.3%)			
Professional cadre			**0.245 (4)**	**0.993**	**Not statistically significant**
Nursing officer II	29 (47.5%)	32 (52.5%)			
Nursing officer I	29 (47.5%)	32 (52.5%)			
Senior nursing officer	12 (48.0%)	13 (52.0%)			
Principal nursing officer	4 (44.4%)	5 (55.6%)			
Assistant chief nursing officer	4 (40.0%)	6 (60.0%)			
Marital status			**0.214 (3)**	**0.975**	**Not statistically significant**
Single	28 (47.5%)	31 (52.5%)			
Married	45 (47.4%)	50 (52.6%)			
Divorced	1 (50.0%)	1 (50.0%)			
Widowed	4 (40.0%)	6 (60.0%)			

4.0 DISCUSSION

This study was undertaken among female nurses in a secondary health facility, in Jos, Plateau state, North Central Nigeria from 1st August 2026 to 31st August 2026. The study was to determine the Awareness, Attitude and Uptake of cervical cancer screening among the participants. According to the World Health Organization (WHO), too many women worldwide- particularly the poorest women- continue to die from cervical cancer; a disease which is both preventable and treatable [21]. The results from this study revealed that all the participants 100% have heard of cervical cancer and 85% were all correct on the risk factors for cervical cancer. Again 94.6% of the study participants have heard of cervical cancer vaccine and 89.8% were correct that the use of the vaccine can prevent the cancer. Also, 94.6% are aware of cervical cancer screening methods. It is explicit that the results from this survey revealed that the participants are aware of cervical cancer including methods of preventing the cancer. These findings are similar to findings in Jos University Teaching Hospital, JUTH, Plateau state [22] and another study among female health workers in Nigeria [23] wherein the authors of both studies concluded high awareness of cervical cancer amongst the study participants. Other studies among female nurses in Enugu state [24,25] and Nnewi [26] both in south-eastern Nigeria and another study in Lagos state, South-western Nigeria [27] all had comparable conclusions – that there was high awareness and high knowledge of female nurses concerning cervical cancer. In Uganda, East Africa, a study among medical workers revealed good knowledge of cervical cancer [28]. The likely explanation for these comparable findings may be related to the exposure of these nurses to real life cases of cervical cancers in the hospital environment, also through hospital seminars and academic workshops and in addition to professional interactions among them. It may not be correct to conclude that all Nurses are fully aware of cervical cancer and have good knowledge thereof. In a study among staff nurses at primary and secondary health centers in Western India, the overall knowledge of cervical cancer

was poor [29]. This uncommon finding may be due to the area of practice (in a primary health centre), the number of patients seen or even the extent of cervical cancer in the country of the study.

Completely different findings have been noted in some other studies; in a study conducted among residents in urban slum in Lagos state, south-western Nigeria, the authors concluded that awareness among the women was poor [30] and another study among a faith-based organization in Nigeria, the authors also concluded that there was generally poor knowledge of cervical cancer and its screening practices among the study participants [31]. Again, a study among women attending a gynaecological clinic in southeastern Nigeria also concluded that the knowledge of cervical cancer among the women was low [32]. And in two West African countries using data from Demographic and Health Surveys in Benin (2017-2018) and Cameroon (2018), awareness of cervical cancer was low among women, with women in Cameroon 46.1% and very low in Benin, 9.5% [33] .These findings may not be unconnected to the study participants not being within the health care sector, as such real lifetime cases may abstract to them and information concerning cervical cancer lacking to them.

The attitude of the respondents to cervical cancer revealed that 93.4% considered screening important, 79.5% also felt it necessary to undertake screening, 91,0% considered that screening was necessary in asymptomatic women and 97.0% agreed that screening prevent cervical cancer, while 98.8% indicated they will encourage friends and family members to screen for cervical cancer. These findings affirm that respondents have a positive attitude towards cervical cancer. This finding is akin to findings among nurses in University of Benin Teaching Hospital (UBTH), in Benin, Edo state, Nigeria [34], among health care workers in Lagos state, Nigeria [35], in Mansoura, Egypt [37], among Nurses in a tertiary hospital in India [36], among outpatients in Bhopal, India [38], and in Erbil, Iraqi [39], where positive attitude towards cervical cancer were noted among these study

participants. These findings are not ubiquitous. In a study among nurses in Lagos University Teaching Hospital (LUTH), Lagos state, Nigeria, the findings revealed poor attitude towards cervical cancer [27], in University of Port Harcourt Teaching Hospital (UPTH), Rivers state, Nigeria, findings among female health care workers also revealed poor attitude [40] and among female health care professionals in University of Ilorin Teaching Hospital, Kwara state, Nigeria, findings also concluded poor attitude towards cervical cancer screening [41]. This was also in keeping with findings in Uganda where despite good knowledge of the gravity of cervical cancer, the attitudes of the medical workers were negative [28]. These diversity in findings may reflect the location of practice, the number of cervical cancer cases presenting at the health facilities or even the professional exposures of the healthcare workers.

Regarding uptake of cervical cancer screening among study participants, results from this study reveals an inverse relationship between awareness and attitude versus the uptake. As only 46(27.7%) of study participants – less than one third- had undertaken any cervical cancer screening. This finding is synonymous to several other findings in Nigeria; in Asaba Delta state South-South, Nigeria [42], in Benin, Edo state, South-South Nigeria [34], in Enugu state, South-East Nigeria [24], in Lagos state, South-West Nigeria [27,35], in Ibadan Oyo state, South-West Nigeria [43] and Augie et al concluded low uptake among the study participants in Birnin-Kebbi, Kebbi state, Northen Nigeria [44]. Generally, uptake of cervical cancer screening in Nigeria remains suboptimal and as a survey revealed that cervical cancer screening among women aged 30-49years in Nigeria was 5%, ranging from 3.3% in the North East and 10.8% in the South West [45] and this regional disparity in uptake of screening was also re-echoed by Okolie et al as their publication revealed that urban and southern region (such as south-west, reaching approximately 10%-11%) report higher uptake than rural or Northern region, where rates can drop below 1% to 3.3% [46]. Invariably,

these results point to a pattern in a large scale within Nigeria- uptake of cervical screening is generally low among the populace. This low uptake may in no small way contribute to Nigeria having the highest number of incident cases and death from cervical cancer in Africa with 12,075 new cases and 7,968 deaths, making it one of the eight countries with the largest number of incident cases in the world [6]. Albeit it is worthwhile to mention that low uptake is not an isolated finding in Nigeria as low uptake has also been reported among Nurses in Uganda, East Africa [28], Eastern Cape Province, South Africa [47] and in India [38] also in a systemic review and meta-analysis in Ethiopia, it concluded a low uptake [48]. It may not be inaccurate to ascribe low uptake to low resource countries, hence this may contribute to morbidity and mortality associated with cervical cancer being worse in low-and-middle-income countries.

This study revealed a statistically significant relationship between uptake of cervical cancer screening and the level of education with a P value of < 0.001. This finding was analogous to the finding in a tertiary health facility in Asaba, Delta state, Nigeria [42], and in Olubulun et al [49]. This finding reflects the impact of education on health of women and may serve as an avenue to exploit in the campaign of uptake for cervical cancer screening.

CONCLUSION

Results from this study established that the study participants had good level of awareness and equally good attitude towards cervical cancer screening. However, uptake of cervical screening fell disproportionately short compared to the level of awareness and attitude.

RECOMMENDATIONS

It will be pertinent on policy makers to increase and implement programs that will result to expanded uptake of cervical cancer screening. Such programs to include making cervical cancer

screening available, accessible and at a government subsidized cost in all health care facilities (primary health care centres included) in Plateau state and possibly, Nigeria. Active involvement of women healthcare workers as advocates in cervical cancer screening procedure (possibly as sole sample collectors for cervical cancer screening) in all health facilities in Plateau state and possibly all over Nigeria; this practicality will enhance their uptake and expand uptake in the general population. Again, deliberate government policies geared towards improvement in population of educated women and women empowerment may contribute to uptake of cervical cancer screening.

LIMITATIONS

This is questionnaire-based research and as such, we acknowledge that one of the limitations is recall bias from participants, which can result in inaccurate responses. Another limitation is social desirability bias. Also, since this was a cross-sectional study, the outcome of this study did not refer causality. In addition, this study was undertaken in a single centre and as such results should be interpreted with caution with regards to the general population.

COMPETING INTERESTS

The authors declare no competing interests.

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CLINICAL TRIAL NUMBER:

Not applicable.

DECLARATION

Ethics approval: Ethical approval was obtained from the Research and Ethics Committee of the Plateau state specialist hospital jos plateau State, Nigeria, with reference number NHREC/09/23/2010b before the commencement of the study in conformity with the national code for health research ethics and the Helsinki declaration, with emphasis on the core ethical principles of autonomy, beneficence, non-maleficence and justice.

Consent to participate: Informed consent was obtained from all study participants.

Consent to publish: This was obtained from all study participants.

Competing interests: The authors declare no competing interests.

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Data Availability: Data and materials are available.

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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