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Prevalence and Awareness of Cervical Dysplasia among Women Attending Selected Clinics at the University of Port Harcourt Teaching Hospital, Rivers State

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ABSTRACT

Cervical dysplasia is a major reproductive health concern globally. It is a precancerous cervical change that can progress to invasive cervical cancer when it is not detected and managed early. In Rivers State, limited local information on point prevalence and awareness weakens prevention process and facility-based screening education. This study examined point prevalence of cervical dysplasia and awareness among women attending selected clinics at the University of Port Harcourt Teaching Hospital (UPTH), Rivers State, Nigeria, and was guided by three objectives. A descriptive cross-sectional survey design was employed. The population comprised of women aged 20 to 60 years who attended the selected clinics during the study period. A sample of 384 women was selected using Cochran's formula. Data were collected using a structured questionnaire and clinical screening procedures involving Papanicolaou test and Visual Inspection with Acetic Acid. The instrument was validated by experts in public health, while reliability was established through the test-retest method, resulting in a reliability coefficient of 0.79. Data were analysed using SPSS version 27. Frequencies, percentages, and chi-square test of association were used at a 0.05 level of significance. The study revealed a point prevalence of cervical dysplasia of 22.4% based on both Pap test and VIA findings. Among the 86 women who tested positive for cervical dysplasia, CIN 0 to 1 accounted for 66.3%, CIN 2 accounted for 24.4%, and CIN 3 accounted for 9.3%. Awareness was generally low, as 67.2% of the participants had low awareness of cervical dysplasia. Type of marriage ($p = .008$), educational level ($p < .001$), and ethnic group ($p = .026$) were significantly associated with awareness. The study concludes that cervical dysplasia is still a notable health concern among women. This study recommends stronger cervical dysplasia education, improved facility-based screening information, and targeted awareness programmes for women with lower educational attainment.

Keywords: Cervical dysplasia; point prevalence; awareness level; Pap smear; Visual Inspection with Acetic Acid; cervical cancer prevention; Rivers State.

INTRODUCTION

Cervical dysplasia is a significant public health concern. It is a precancerous alteration in the cervical epithelium which may progress to invasive cervical cancer if not detected or appropriately treated. Cervical dysplasia, also referred to as cervical intraepithelial neoplasia or cervical squamous intraepithelial lesion, which provides a crucial opportunity for early intervention prevention before malignant transformation occurs (National Cancer Institute, 2024). Globally, cervical cancer is the fourth most common cancer among women, with around 660,000 new cases and around 350,000 deaths recorded in 2022 (World Health Organization, 2025). The burden is disproportionately higher in sub-Saharan Africa, including Nigeria, where limited screening, delayed diagnosis, inadequate treatment pathways, and poor preventive service coverage collectively contribute to the avoidable rising cases of morbidity and mortality (Bruni et al., 2021; WHO, 2020, 2024).

Persistent infection with high-risk human papillomavirus (HPV), particularly types 16 and 18, is the primary cause of cervical dysplasia and cervical cancer (Chan et al., 2019; National Cancer Institute, 2024). Although cervical dysplasia is biologically linked to persistent high-risk HPV infection, its public health relevance also depends on whether women are aware of the condition and whether health systems are able to identify cervical abnormalities at the point of screening (Franco et al., 2021; Mosuro et al., 2015). Thus, cervical dysplasia is not merely a biomedical condition; it is also a preventive health concern that requires awareness of precancerous cervical changes and access to reliable screening services. Cervical cancer screening is essential in disease control, as methods such as Pap smears, visual inspection with acetic acid, HPV testing, and timely treatment of abnormal lesions can substantially reduce progression to invasive cancer (World Health Organization, 2021; WHO, 2020).

Nigeria is facing a substantial burden of cervical cancer and its precursor conditions. The country records an estimated 12,075 new cases and 7,968 deaths annually, making cervical cancer the second most common cancer among Nigerian women, with an age-standardized incidence rate of 33.0 per 100,000 women (International Agency for Research on Cancer [IARC], 2021; Bruni et al., 2021). Despite the preventable nature of cervical cancer, awareness of cervical dysplasia remains limited among many Nigerian women, thereby reducing the likelihood that precancerous cervical changes will be recognised as a condition requiring early clinical attention (Omowhara et al., 2021; Agboeze et al., 2022; Ojimah & Maduka, 2017). Awareness is critical because women who do not recognise cervical dysplasia as a precancerous and preventable condition may fail to seek timely screening or follow-up care. In Rivers State, local data on the point prevalence of cervical dysplasia and women's awareness of the condition remain necessary for cervical cancer prevention processes, especially in facility-based populations where screening can directly identify existing cervical abnormalities

The challenge is that the point prevalence of cervical dysplasia and women's awareness of the condition remain insufficiently documented in Rivers State. This gap raises concern because cervical cancer prevention depends on early detection of precancerous lesions and informed health decision-making among women. When women have limited awareness of cervical dysplasia, precancerous cervical changes may not be recognised early enough to support timely clinical action. Consequently, this study determined the point prevalence of cervical dysplasia among women attending selected clinics at the University of Port Harcourt Teaching Hospital (UPTH), Rivers State, and assessed their level of awareness of the condition.

METHODOLOGY

Design and Area: This study adopted a descriptive cross-sectional survey design to determine the point prevalence of cervical dysplasia among women attending selected clinics at UPTH, and assessed their level of awareness of cervical dysplasia. The design was appropriate because it allowed quantitative data to be collected from eligible women at a single point in time, thereby enabling the study to estimate point prevalence and describe awareness level without manipulating the study variables. The study was conducted at selected clinics at UPTH - a major tertiary health facility that serves women from different social, economic, and residential backgrounds. The hospital was considered suitable because it provides antenatal, postnatal, family planning, and gynaecological services, which made it possible to reach women of reproductive age who required reproductive health counselling, cervical health assessment, and screening-related services. The facility also provide access to women who could complete the awareness questionnaire and undergo cervical assessment through Visual Inspection with Acetic Acid and Pap smear cytology.

Population and Sample Size: The population of the study comprised women aged 20 to 60 years who attended the selected clinics UPTH, during the study period. Eligible respondents were women aged 20 to 60 years who attended the selected clinics during the study period and gave informed consent. Women who declined consent, had previously been diagnosed with cervical cancer, had undergone hysterectomy, or were critically ill during data collection were excluded. A sample size of 384 women was determined using Cochran's formula at a 95% confidence level, 0.5 estimated proportion, and 0.05 margin of error. Simple random sampling was used to select eligible women from the clinic attendance lists of the selected clinics at UPTH, thereby reducing selection bias and improving sample representativeness.

Method of Collection: Data were collected using a structured questionnaire and clinical screening procedures. The questionnaire obtained information on the socio-demographic characteristics of the

respondents and their awareness of cervical dysplasia. The use of both questionnaire and clinical screening procedures enabled the researchers to combine self-reported awareness data with clinical assessment of cervical changes. Face and content validity of the instrument were established through review by experts in public health, who examined the clarity, relevance, coverage, and suitability of the questionnaire items and clinical procedures. A pilot test was carried out among women who shared similar characteristics with the main respondents but were not included in the final study. The reliability of the questionnaire was determined using the test-retest method, and the instrument yielded a reliability coefficient of 0.79, which was considered acceptable. Awareness was assessed using items on prior awareness of cervical cancer, awareness of cervical dysplasia, knowledge of risk factors, knowledge of screening methods, knowledge of screening interval, knowledge of screening location, and knowledge that early detection of cervical dysplasia can prevent cervical cancer. Correct awareness responses were scored 1, while incorrect or negative responses were scored 0; total scores were classified into low and high awareness based on the predetermined scoring criterion. Clinical data were obtained through Visual Inspection with Acetic Acid and Pap smear cytology conducted by trained healthcare professionals. Point prevalence was operationally defined as the proportion of screened women who had cervical dysplasia at the time of assessment, based on positive Pap smear cytology and Visual Inspection with Acetic Acid findings. For Visual Inspection with Acetic Acid, the cervix was visualized using sterile or high-level disinfected vaginal specula of appropriate sizes, adequate lighting, examination gloves, cotton swabs, waste containers, and 5% acetic acid. The acetic acid was applied to the cervix using a cotton swab, and findings were recorded after one minute based on the presence or absence of acetowhite change. For Pap smear cytology, cervical samples were collected using an Ayre spatula for ectocervical sampling, while an endocervical brush was used where the transformation zone could not be adequately sampled with the spatula alone. The smears were prepared on clean glass slides, labelled, immediately fixed in 95% ethanol, preserved appropriately, and transported to certified laboratories at the University of Port Harcourt Teaching Hospital for cytological examination. Data collection was conducted over six months after ethical approval and institutional permission were obtained. Respondents were approached respectfully, the purpose of the study was explained, informed consent was obtained, and questionnaires were administered through face-to-face interaction to support clarity and completeness. Thereafter, eligible respondents underwent the clinical screening procedures, and all questionnaire, clinical, and laboratory records were linked through coded identifiers to maintain confidentiality and ensure proper documentation of cervical dysplasia status

Data Analysis: Data were coded and analysed using SPSS version 27. Frequencies and percentages were used to summarise respondents' socio-demographic characteristics, point prevalence of cervical dysplasia, CIN grade distribution, awareness indicators, and overall awareness level. Means and standard deviations were used where continuous variables required summary. The point prevalence of cervical dysplasia was calculated by dividing the number of women who tested positive for cervical dysplasia by the total number of women screened, and multiplying the result by 100. Awareness level was summarised using frequencies and percentages, while respondents were classified into low and high awareness categories according to the awareness scoring criterion. The chi-square test of association was used to examine the association between selected socio-demographic characteristics and awareness level of cervical dysplasia. The socio-demographic variables tested were age, marital status, type of marriage, educational level, religion, ethnic group, and occupation. All statistical decisions were made at level of significance set at 0.05. Ethical approval for the study was obtained from the Research Ethics Committee of the University of Port Harcourt Teaching Hospital, and permission was obtained from the relevant clinic authorities. Participation was voluntary, informed consent was obtained, confidentiality was maintained, and anonymity was ensured through coded questionnaires and unique identifiers.

RESULTS

Demographic Characteristics of participants

Table 1 reveals the demographic distribution of the respondents. The sample was dominated by women who are aged 41 to 50 years (160, 41.7%) and 31 to 40 years (148, 38.5%), while those aged 51 to 60 years were few (8, 2.1%). Most respondents were married (227, 59.1%), and monogamy was the major marriage type among the respondents (69.3%). Secondary education was the highest educational attainment of the respondents (173, 45.1%), followed by tertiary education (104, 27.1%). Christianity

was the religion of the most respondents (74.5%), while business was the major occupation (235, 61.2%). The respondents were largely reproductive-aged and economically active.

Table 1: Demographic Characteristics of Respondents (N = 384)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	20 to 30	68	17.7
	31 to 40	148	38.5
	41 to 50	160	41.7
	51 to 60	8	2.1
Marital status	Single	85	22.1
	Married	227	59.1
	Divorced	38	9.9
	Widow	34	8.9
Type of marriage	Monogamous	266	69.3
	Polygamous	118	30.7
Level of education	None	34	8.9
	Primary	73	19.0
	Secondary	173	45.1
	Tertiary	104	27.1
Religion	Christianity	286	74.5
	Islam	46	12.0
	Others	52	13.5
Ethnicity	Yoruba	42	10.9
	Igbo	155	40.4
	Hausa	7	1.8
	Others	180	46.9
Occupation	Housewife	19	4.9
	Civil servant	61	15.9
	Business	235	61.2
	Farming	46	12.0
	Artisan	23	6.0

Note: Percentages were calculated from N = 384 and rounded to one decimal place.

Objective 1: What is the prevalence level of cervical dysplasia among women in Rivers State.

Table 2: Prevalence of Cervical Dysplasia Using Pap and VIA Tests (N = 384)

Screening method	Positive n (%)	Negative n (%)	Total
Pap test	86 (22.4)	298 (77.6)	384
VIA test	86 (22.4)	298 (77.6)	384

To address Research Question One on prevalence, cervical dysplasia was estimated using two screening approaches, namely the Pap test and visual inspection with acetic acid (VIA), as presented in Table 2. The use of both methods was justified because each technique contributes a distinct and complementary form of evidence for identifying cervical abnormalities. The Pap test generated cytological evidence by enabling microscopic assessment of cervical cells for changes consistent with dysplasia, whereas VIA provided an immediate visual appraisal of the cervix after acetic acid application, which supports timely, and point of care clinical decision making. Table 2 indicated that the Pap test identified 86 positive cases out of 384 women that participated in the study, giving a prevalence of 22.4%, while 298 women representing 77.6% were confirmed to be negative. The VIA test produced the same prevalence estimate, with 86 women positive, 22.4%, and 298 women negative, 77.6%. This indicated that, within this sample, both screening methods yielded an identical prevalence level, suggesting on approximate, that one in every five women screened was identified as having cervical dysplasia.

Table 3: Distribution of CIN Grades among Women Diagnosed with Dysplasia (N = 86)

CIN grade	Frequency (n)	Percentage (%)
CIN 0 to 1	57	66.3
CIN 2	21	24.4
CIN 3	8	9.3
Total	86	100.0

The results shown in Table 3 indicate that most cases of dysplasia fell within CIN 0 to 1 and accounted for 66.3% of women diagnosed with dysplasia, while CIN 2 accounted for 24.4%, and CIN 3 accounted for 9.3%. This distribution implied that the majority of detected lesions were in the lower grade risk category, which was consistent with a screening context in which many abnormalities were identified before they progressed to severe precancerous change. Among the 385 women screened, 33.7% were classified as CIN 2 or CIN 3, indicating that roughly one third of the study population already had moderate or severe lesions.

Objective 2. To assess the level of awareness of cervical dysplasia among women in Rivers State.

Table 4: Summary of awareness of cervical dysplasia among women in Rivers State (n = 384)

S/N	Awareness indicator	Response category	Frequency	Percentage (%)
1	Heard of cervical cancer	Yes	300	78.1
		No	84	21.9
2	Heard of cervical dysplasia	Yes	140	36.5
		No	244	63.5
3	Knew at least one correct risk factor	Yes	118	30.7
		No	266	69.3
4	Knew at least one correct screening method	Yes	104	27.1
		No	280	72.9
5	Knew the correct screening interval	Correct	72	18.8
		Incorrect	312	81.2
6	Knew at least one correct screening location	Yes	126	32.8
		No	258	67.2
7	Knew that early detection of cervical dysplasia can prevent cervical cancer	Yes	135	35.2
		No	249	64.8

Table 4 presents the summary of awareness of cervical dysplasia among women in Rivers State. The table shows that 300 respondents, representing 78.1%, had heard of cervical cancer, while 84 respondents, representing 21.9%, had not. However, only 140 respondents, representing 36.5%, reported that they had heard of cervical dysplasia, whereas 244 respondents, representing 63.5%, had not heard of it. In relation to specific awareness areas, 118 respondents, representing 30.7%, were aware of at least one correct risk factor, while 266 respondents, representing 69.3%, were not. Also, 104 respondents, representing 27.1%, were aware of at least one correct screening method, whereas 280 respondents, representing 72.9%, were not. With respect to the correct screening interval, only 72 respondents, representing 18.8%, answered correctly, while 312 respondents, representing 81.2%, answered incorrectly. Furthermore, 126 respondents, representing 32.8%, were aware of at least one correct screening location, whereas 258 respondents, representing 67.2%, were not. Lastly, 135 respondents, representing 35.2%, were aware of that early detection of cervical dysplasia can help patients to take action to prevent cervical cancer, while 249 respondents, representing 64.8%, were not aware. The table therefore indicates that awareness of cervical dysplasia among women in Rivers State is generally low.

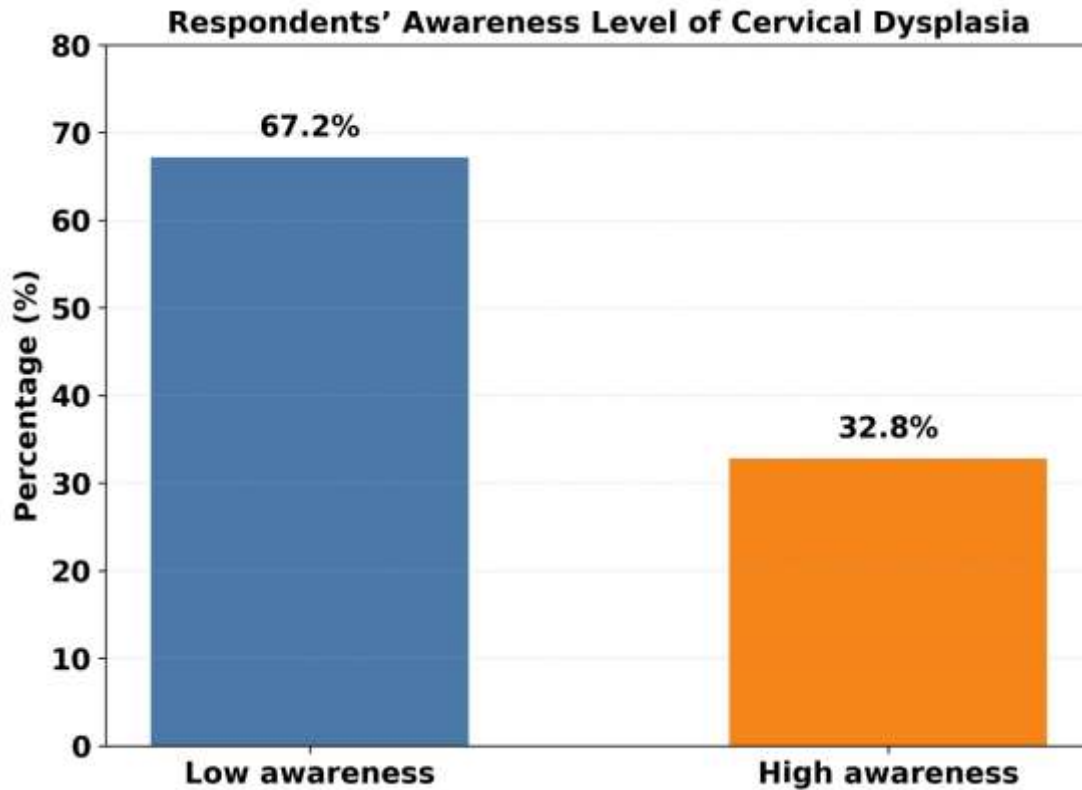


Figure 1: Distribution of respondents by awareness level of cervical dysplasia

Figure 1 shows that most respondents had low awareness of cervical dysplasia, as 258 women, representing 67.2%, fell within this category, while only 126 women, representing 32.8%, demonstrated high awareness, indicating a generally limited awareness of level of cervical dysplasia among women in Rivers State.

Objective 3. To examine the association between selected socio-demographic characteristics and awareness level of cervical dysplasia among women in Rivers State.

Table 5: Chi-square Test of Association between Selected Socio-demographic Characteristics and Awareness Level of Cervical Dysplasia among Respondents (n = 384)

Variable	Category	Low awareness n (%)	High awareness n (%)	Total n	χ^2 (df)	P-value
Age in years	20 to 30	48 (70.6)	20 (29.4)	68	5.89 (3)	0.117
	31 to 40	90 (60.8)	58 (39.2)	148		
	41 to 50	88 (55.0)	72 (45.0)	160		
	51 to 60	4 (50.0)	4 (50.0)	8		
Marital status	Single	64 (75.3)	21 (24.7)	85	5.743 (3)	0.125
	Married	151 (66.5)	76 (33.5)	227		
	Divorced	25 (65.8)	13 (34.2)	38		
	Widow	18 (52.9)	16 (47.1)	34		
Type of marriage	Monogamous	190 (71.4)	76 (28.6)	266	7.062 (1)	0.008*
	Polygamous	68 (57.6)	50 (42.4)	118		
Educational level	None	30 (88.2)	4 (11.8)	34	134.65 (3)	< 0.001
	Primary	55 (75.3)	18 (24.7)	73		

Variable	Category	Low awareness n (%)	High awareness n (%)	Total n	χ^2 (df)	p-value
Religion	Secondary	150 (86.7)	23 (13.3)	173	1.697 (2)	0.428
	Tertiary	23 (22.1)	81 (77.9)	104		
	Christianity	192 (67.1)	94 (32.9)	286		
	Islam	34 (73.9)	12 (26.1)	46		
	Others	32 (61.5)	20 (38.5)	52		
Ethnic group	Yoruba	29 (69.0)	13 (31.0)	42	9.244 (3)	0.026*
	Igbo	93 (60.0)	62 (40.0)	155		
	Hausa	3 (42.9)	4 (57.1)	7		
	Others	133 (73.9)	47 (26.1)	180		
	Occupation	Housewife	15 (78.9)	4 (21.1)		
Civil servant	38 (62.3)	23 (37.7)	61			
Business	161 (68.5)	74 (31.5)	235			
Farming	30 (65.2)	16 (34.8)	46			
Artisan	14 (60.9)	9 (39.1)	23			

Table 5 reveals that awareness level of cervical dysplasia varied across the socio-demographic characteristics of the respondents, although not all differences attained statistical significance. Awareness was higher among older respondents, particularly those aged 41 to 50 years and 51 to 60 years, than among those aged 20 to 30 years, but the association between age and awareness was not significant, ($p = 0.117$). Marital status followed a similar direction, as widows recorded the highest proportion of high awareness, while single respondents recorded the lowest, yet this difference was not significant, ($p = 0.125$). Type of marriage showed a significant association with awareness, ($p = 0.008$), as respondents in polygamous unions had a higher proportion of high awareness than those in monogamous unions. Educational level also had a very strong association with awareness, ($p < 0.001$), with tertiary educated respondents showing markedly higher awareness. Ethnic group was significantly associated with awareness, ($p = 0.026$), whereas religion and occupation were not, ($p = 0.428$) and ($p = 0.638$). Overall, education is the strongest factor linked to awareness.

DISCUSSION OF FINDINGS

The point prevalence of cervical dysplasia among women attending the selected health facility in Rivers State was 22.4%, as both Papanicolaou test and Visual Inspection with Acetic Acid produced the same prevalence estimate. This indicates a notable facility-based burden of cervical abnormality, as approximately one in every five women screened had evidence of cervical dysplasia. The lesion-grade distribution further showed that most detected cases were within CIN 0 to 1, while CIN 2 and CIN 3 accounted for a smaller but clinically meaningful proportion of the cases. The predominance of lower-grade lesions indicates that many abnormalities were identified before progression to severe precancerous change, while the presence of CIN 2 and CIN 3 confirms the need for timely follow-up and clinical management. The prevalence obtained in this study was higher than the 13.9% reported by Mosuro et al. (2015) among women who attended a primary care clinic in Ibadan, the 11.0% VIA-detected prevalence reported by Thay et al. (2019) among women in Cambodia, and the 0.32% confirmed dysplasia cases reported by Vashist et al. (2018) among women screened in Ghaziabad.

The prevalence observed in this study is consistent with prior research documenting a moderate to high burden of cervical lesions among facility-based and clinically vulnerable populations. For instance, Worku et al. (2024) reported a 24.48% VIA positivity rate among HIV-infected women in Ethiopia, which closely parallels the 22.4% prevalence recorded here. Jolly et al. (2017) also documented elevated cervical lesion burden among HIV-positive women in Swaziland, while Ali-Risasi et al. (2015) found that low-grade squamous intraepithelial lesions or worse were more common among HIV-positive women than HIV-negative women in Kinshasa. Although these studies were conducted in populations that differed from the present sample, they however show that cervical abnormalities remain detectable at meaningful levels in health facility settings. The convergence between Pap test and

VIA findings in the present study strengthens the credibility of the prevalence estimate because the two procedures provided complementary clinical information. Pap test offered cytological assessment of cervical cells, while VIA provided immediate visual identification of acetowhite changes. In this light, the identical prevalence estimate from both methods supports the value of combining screening approaches for more dependable identification of cervical abnormalities in low-resource clinical settings.

Awareness of cervical dysplasia among women in Rivers State was generally low. In overall, 67.2% of respondents had low awareness, while only 32.8% had high awareness. The item-level findings showed a clear gap between general awareness of cervical cancer and specific awareness of cervical dysplasia. Although 78.1% of respondents had heard of cervical cancer, only 36.5% had heard of cervical dysplasia. Knowledge of preventive and practical screening details was also weak, as only 30.7% knew at least one correct risk factor, 27.1% knew at least one correct screening method, 18.8% knew the correct screening interval, 32.8% knew at least one screening location, and 35.2% knew that early detection of cervical dysplasia can prevent cervical cancer. These findings show that many women had surface-level awareness of cervical cancer, but lacked the specific knowledge needed to recognise cervical dysplasia as a preventable precancerous condition.

This awareness finding is consistent with Abugu and Nwagu (2021), who found that although many respondents were aware of cervical cancer and screening, knowledge of specific aspects were poor. Adenaya et al. (2025) similarly reported limited awareness of cervical cancer screening among women in Ogun State. The present study also established that awareness level was significantly associated with type of marriage, educational level, and ethnic group, whereas age, marital status, religion, and occupation were not significantly associated. Educational level was the strongest differentiating factor, as tertiary educated respondents recorded markedly higher awareness than those with lower educational attainment. Consequently, the findings indicate that awareness of cervical dysplasia in Rivers State is shaped mainly by access to health information, educational exposure, and the capacity to understand preventive health messages. The findings underscore the need for enhanced health education that goes beyond general cervical cancer messaging to provision of clear explanations of cervical dysplasia, its risk factors, recommended screening methods, appropriate screening intervals, and specific service locations where women can access screening and follow-up care.

Limitations of the Study

This study has provided evidence that cervical dysplasia remains a notable reproductive health concern among women attending selected health facilities in Rivers State. Awareness was measured through self-reported questionnaire responses, which may have been affected by recall bias or respondents' willingness to disclose their actual knowledge. In addition, the cross-sectional design measured prevalence and awareness at one point in time, so this study did not establish changes over time.

CONCLUSION

This study has provided evidence that cervical dysplasia remains a notable reproductive health concern among women attending selected clinics at UPTH. The point prevalence of cervical dysplasia was 22.4%, indicating that a considerable proportion of the screened women had cervical abnormalities requiring timely follow-up and preventive attention. The study also established that awareness of cervical dysplasia was generally low, despite higher general awareness of cervical cancer. Based on this, the study concludes that cervical cancer prevention in Rivers State requires stronger awareness creation, improved screening education, and sustained facility-based interventions that promote early detection and informed health decisions.

RECOMMENDATIONS

Based on the findings, the following recommendations were made.

1. The University of Port Harcourt Teaching Hospital should integrate regular cervical dysplasia education into antenatal, postnatal, family planning, and gynaecological clinics. These sessions should highlight risk factors, recommended screening methods, appropriate screening intervals, and the locations where screening services are available.
2. Cervical screening should be made more visible and easily accessible within the selected clinics at the University of Port Harcourt Teaching Hospital. Women attending reproductive health

clinics should receive timely information, counselling, and screening, with clear referral pathways for abnormal findings.

- Public health educators and reproductive health workers should design tailored awareness initiatives for women with lower educational attainment, as the study revealed significant disparities in cervical dysplasia awareness based on education level.

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