

Awareness and Knowledge of Cervical Cancer and Uptake of Cervical Cancer Screening among Women in Rayfield Ward, Jos South, Plateau State

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ABSTRACT

About 85% of cervical cancer deaths globally occur in developing or underdeveloped nations, and the death rate is 18 times greater in low- and middle-income nations compared to affluent nations. The introduction of effective screening programs has led to a significant reduction in cervical cancer incidence and mortality rates. Hence, Background: The majority of cervical cancer deaths worldwide occur in low- and middle-income countries, with mortality rates significantly higher than in high-income settings. Effective screening programs have reduced incidence and mortality in developed countries. This study assessed awareness, knowledge, and uptake of cervical cancer screening services among women in Rayfield Ward, Jos South LGA, Plateau State, Nigeria, using the Health Belief Model and Anderson's Behavioural Model as frameworks.

A descriptive cross-sectional survey was conducted among 530 women, with 493 valid responses analysed. Data were collected via structured, interviewer-administered questionnaires covering sociodemographics, awareness, knowledge, and screening practices. Descriptive and inferential statistics were used for analysis.

Awareness of cervical cancer and screening services was high, but knowledge gaps and misconceptions persisted. Only 28.6% of respondents reported ever undergoing screening. Sociology-demographic variables, including education and income, were not significantly associated with screening uptake ($p > 0.05$ for all variables). Many respondents expressed willingness to be screened in future.

While awareness and knowledge levels were moderate to high, screening uptake was low. Barriers included cost, fear, and gender preference for female health workers. Strengthened education, subsidised programs, and gender-sensitive service provision are recommended to improve uptake.

Keywords: Cervical cancer, awareness, screening uptake, knowledge, barriers, Nigeria

Objectives General and Specific Objectives focus on assessing awareness, knowledge, screening uptake, and identifying factors influencing uptake. The study hypothesizes no significant associations between sociology-demographic factors or awareness and screening uptake.

Research Methodology A descriptive cross-sectional design was used, with 530 women sampled and 493 valid responses. Multistage sampling ensured representatives. Data were collected via standardized questionnaires covering demographically, awareness, knowledge, and screening practices. Statistical analyses included descriptive statistics and chi-square tests.

Ethical Considerations

Ethical approval for this study was sought from the Health Research Ethics Committee of Jos University Teaching Hospital (JUTH), which was subsequently approved with the reference number: JUTH/DCS/IREC/127/XXXI/3090.

Limitations

This study was limited by its cross-sectional design, which restricted the ability to establish causal relationships between variables.

RESULTS

Questionnaire Administration

A total of 530 questionnaires were administered to respondents, out of which 493 were correctly completed and returned, giving a response rate of 93.0%.

Analysis And Interpretation

Section A: Demographic Data of Respondent

The majority of respondents (N = 493) were women of reproductive age, particularly 25–34 years old. Most were married and had attained at least secondary education, with many completing tertiary studies. Civil servants and traders were most common, and about one-third reported monthly incomes of ₦100,000 or more. Christianity was the predominant religion, with Berom as the largest ethnic group. Over half had resided in Rayfield Ward for more than five years, reflecting stable community ties.

Section B: Awareness of Cervical Cancer and Screening Services

Table 2.1: Respondent's Awareness of Cervical Cancer and Screening Services

Items	Yes (%)	No (%)
Awareness of cervical cancer	445 (90.3)	48 (9.7)
Awareness of cervical cancer screening	407 (82.6)	86 (17.4)
Awareness of the HPV vaccine	316 (64.1)	177 (35.9)
Attended a health talk or seminar on cervical cancer	173 (35.1)	320 (64.9)
Screening services are available in the community?	293 (59.4)	200 (40.6)

Table 2.2 presents the awareness of cervical cancer and screening services among respondents. The results indicate that 90.3% had heard of cervical cancer, while 9.7% had not. Similarly, 82.6% reported awareness of cervical cancer screening, compared to 17.4% who had not heard of it. Awareness of the HPV vaccine was lower, with 64.1% stating they had heard of it and 35.9% indicating they had not. In terms of health education exposure, 35.1% of the respondents had attended a health talk or seminar on cervical cancer, while a larger proportion of 64.9% had not. Knowledge of the availability of screening services in their community was reported by 59.4% of the respondents, whereas 40.6% did not know of such services.

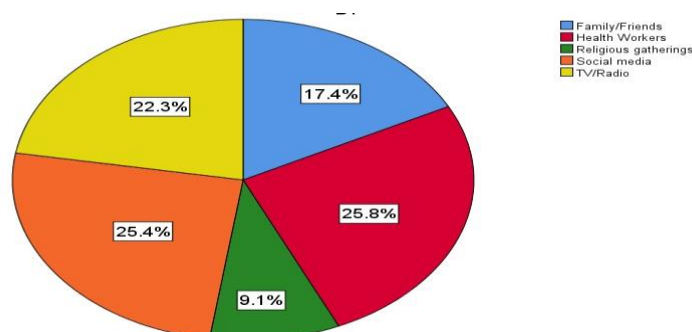


Figure 4.1: What are your sources of information?

Figure 2..1 shows the pie chart illustrating the distribution of respondents' sources of information on cervical cancer. Health workers accounted for the largest proportion at 25.8%, followed closely by social media at 25.4%. Television and radio were also significant sources, representing 22.3% of responses. Family and friends contributed 17.4% of the reported sources, while religious gatherings were the least reported, making up 9.1% of the total.

Section C: Knowledge of Cervical Cancer and Screening

Table 2.3a: Knowledge of Cervical Cancer and Screening

Response Option	Frequency (n)	Percentage (%)
Cause of cervical cancer		
Bacterial infection	49	9.9
Viral infection (HPV)	330	66.9
Family inheritance	20	4.1
I don't know	94	19.1
Risk factor for cervical cancer		
Having multiple sexual partners	278	56.4
Drinking alcohol	62	12.6
Eating spicy food	25	5.1
I don't know	128	26.0
Increase Risks of Cervical Cancer		
Smoking	288	58.4
Exercising regularly	47	9.5
Eating fruits	24	4.9
I don't know	134	27.2
Detection of Cervical Cancer Through Screening		
Yes	396	80.3
No	30	6.1
I don't Know	67	13.6
Screening Method of Cervical Cancer		
Pap smear	351	71.2
Blood pressure check	58	11.8

Diabetes test	34	6.9
I don't know	50	10.1
Screening Age		
At age 10	32	6.5
At age 21	292	59.2
After menopause	65	13.2
I don't know	104	21.1
Curability of Cervical Cancer		
Yes	368	74.6
No	25	5.1
I don't Know	100	20.3

Table 2.3a shows that most respondents had some knowledge of cervical cancer and its prevention. The majority correctly identified HPV as the main cause and recognized smoking and multiple sexual partners as risk factors, though a notable proportion still reported uncertainty. Many were also aware that cervical cancer can be detected early through screening and identified Pap smear as the correct method, but some confusion remained as a few mentioned unrelated tests. Knowledge of the appropriate age to begin screening and the possibility of cure if detected early was generally high, although gaps in understanding persisted.

Table 2.3b: Correct Responses by Knowledge Item

Knowledge Item	Correct Responses (n)	Percentage (%)
Main cause of cervical cancer (HPV)	330	66.9
Risk factor (Multiple sexual partners)	278	56.4
Increases risk (Smoking)	288	58.4
Detected early through screening (Yes)	396	80.3
Screening method (Pap smear)	351	71.2
Age to start screening (21 years)	292	59.2
Curable if detected early (Yes)	368	74.6

Table 2.3b presents the distribution of correct responses to specific knowledge items on cervical cancer and screening. The highest proportion of correct responses was observed for the item on early detection through screening, where 396 respondents (80.3%) correctly identified that cervical cancer can be detected early. Similarly, 351 respondents (71.2%) recognized Pap smear as a screening method, while 368 respondents (74.6%) were aware that cervical cancer is curable if detected early. On the other hand, fewer respondents answered correctly on risk factors, with 278 (56.4%) identifying multiple sexual partners and 288 (58.4%) identifying smoking as risks. In addition, 292 respondents (59.2%) knew that screening should begin at age 21, while 330 (66.9%) correctly associated the disease with a viral cause, specifically HPV.

Table 2.3c: Overall Knowledge Levels (n = 493)

Level	Frequency (n)	Percentage (%)
Poor Knowledge (0–2 correct)	102	20.7
Moderate Knowledge (3–5)	189	38.3
Good Knowledge (6–7)	202	41.0

Table 2.3c shows the overall knowledge levels of respondents about cervical cancer and its screening. Out of 493 participants, 102 (20.7%) demonstrated poor knowledge, correctly answering between 0 and 2 questions. A total of 189 respondents (38.3%) fell into the moderate knowledge category, answering 3 to 5 items correctly. The highest proportion, 202 respondents (41.0%), displayed good knowledge, providing 6 or 7 correct responses. This distribution indicates that while a notable segment of the study population still has low levels of knowledge, the majority of respondents exhibited either moderate or good understanding of cervical cancer and its screening.

Section D: Uptake of Cervical Cancer Screening

Table 2.4: Uptake of Cervical Cancer Screening

Items	Frequency (n)	Percentage (%)
History of Cervical Screening n = 493		
Yes	141	28.6
No	352	71.4
Type of Cervical Screening n = 141		
Pap Smear	64	13.0
VIA	30	6.1
Not Sure	27	5.5
No Response	20	4.1
Number of times screened n = 141		
Once	50	10.1
Twice	28	5.7
More than twice	37	7.5
No Response	26	5.3
Last screening n = 141		
Less than One Year Ago	40	8.1
1 – 3 Years Ago	31	6.3

More than 3 Years ago	47	9.5
No Response	23	4.6
Willingness to screen		
Yes	295	59.8
No	68	13.8
Not Sure	130	26.4

Table 2.4 presents findings on the uptake of cervical cancer screening among the respondents. Out of the total participants, 141 women (28.6%) reported having undergone cervical cancer screening, while the majority, 352 women (71.4%), indicated they had never been screened. Among those who had been screened, 64 respondents (13.0%) had a Pap smear, 30 (6.1%) reported undergoing VIA, and 27 (5.5%) were unsure of the type of screening they had done. A large proportion, 372 (75.5%), were not applicable to this question as they had never been screened.

The data further show the frequency and recency of screening among participants. Fifty respondents (10.1%) had been screened once, 28 (5.7%) twice, and 37 (7.5%) more than twice, while 378 (76.7%) were not applicable. In terms of timing, 40 women (8.1%) had undergone screening within the past year, 31 (6.3%) within 1–3 years, and 47 (9.5%) more than 3 years ago. A large number, 375 women (76.1%), reported never having been screened. Looking ahead, 295 respondents (59.8%) expressed an intention to get screened in the future, while 68 (13.8%) said they did not, and 130 (26.4%) were unsure.

Section E: Health Belief Model Construct

Table 2.5: Health Belief Model Construct

Health Belief Model Construct	X	S.D
I believe I am at risk of developing cervical cancer.	3.58	1.167
I worry that the screening process will be painful	3.19	1.234
Cervical cancer is a serious disease that can cause death.	4.39	0.924
Cervical cancer may cause infertility or complications in childbirth.	3.88	1.198
Regular screening reduces the chance of dying from cervical cancer.	4.21	0.964
If I receive a message or reminder from a clinic, I will go for screening.	3.90	1.111

Abbreviations in the tables

- X = Mean
- S. D = Standard Deviation

Table 2.5 presents respondents' views based on the Health Belief Model. On personal risk, the mean score was 3.58 (SD = 1.17). In total, 291 women (59.0%) either strongly agreed or agreed that they were at risk of developing cervical cancer, while 100 (20.3%) disagreed. Concerns about pain during screening had a mean of 3.19 (SD = 1.23). A total of 207 respondents (42.0%) agreed that the screening process might be painful, compared to 159 (32.3%) who disagreed. The belief that cervical cancer is a serious disease recorded a mean of

4.39 (SD = 0.92), with 418 women (84.8%) agreeing and 23 (4.7%) disagreeing. The perception that cervical cancer may cause infertility or complications in childbirth had a mean of 3.88 (SD = 1.20), with 344 respondents (69.8%) agreeing and 78 (15.8%) disagreeing. Preventive benefits were reflected in the statement that regular screening reduces the chance of dying from cervical cancer, which had a mean of 4.21 (SD = 0.96). Here, 393 women (79.7%) agreed, while 26 (5.3%) disagreed. Finally, willingness to attend screening if reminded by a clinic yielded a mean of 3.90 (SD = 1.11), with 355 respondents (72.0%) agreeing and 66 (13.4%) disagreeing.

Section F: Factors Associated with Screening Uptake

Table 2.6: Factors Associated with Screening Uptake

Factors Associated with Screening Uptake	X	S.D
I do not know where to go for screening	2.49	1.250
Screening is too expensive.	3.44	1.290
I am afraid of the result of the screening.	3.25	1.294
My religious beliefs discourage me from undergoing such procedures.	2.61	1.247
I feel ashamed being screened by a male doctor.	3.23	1.352
I will be more likely to screen if a female health worker is involved	3.67	1.262
More awareness programs would encourage me to go for screening.	3.98	1.103
I would go for screening if it were free or subsidized.	4.03	1.210

Table 2.6 presents respondents' views on factors associated with cervical cancer screening uptake. Lack of knowledge on where to go for screening had a mean score of 2.49 (SD = 1.25). A total of 115 women (23.3%) agreed with this statement, while 294 (59.6%) disagreed. Cost concerns recorded a mean of 3.44 (SD = 1.29), with 274 respondents (55.5%) agreeing that screening is too expensive, compared with 120 (24.3%) who disagreed. Fear of test results yielded a mean of 3.25 (SD = 1.29), with 242 respondents (49.1%) agreeing and 160 (32.5%) disagreeing. Religious beliefs were less frequently reported as a barrier, with a mean of 2.61 (SD = 1.25); 123 respondents (25.0%) agreed, while 275 (55.8%) disagreed. Gender sensitivity showed higher levels of agreement. Feeling ashamed being screened by a male doctor had a mean of 3.23 (SD = 1.35), with 248 respondents (50.3%) agreeing and 164 (33.3%) disagreeing. Preference for a female health worker recorded a mean of 3.67 (SD = 1.26), with 320 respondents (64.9%) agreeing. Awareness and affordability factors showed the highest levels of agreement. The statement that more awareness programs would encourage screening had a mean of 3.98 (SD = 1.10), with 362 respondents (73.5%) agreeing. Similarly, the statement that respondents would go for screening if services were free or subsidized recorded the highest mean, 4.03 (SD = 1.21), with 361 respondents (73.2%) agreeing.

Test for Hypotheses

Hypothesis 1: There is no significant association between women's socio-demographics and uptake of screening services in Rayfield Ward.

Table 2.7: Test for association between women's socio-demographics and uptake of screening.

Variable	Chi-square (df)	p-value
Age group	3.98 (4)	0.408

Marital status	2.95 (3)	0.399
Education	6.07 (4)	0.194
Occupation	2.01 (5)	0.848
Monthly income	8.08 (4)	0.089
Religion	0.14 (3)	0.987
Ethnic group	2.06 (4)	0.725
Children	3.26 (3)	0.353
Length of residence	0.40 (2)	0.820

In Table 2.7, the analysis of the association between women's sociology-demographic characteristics and the uptake of cervical cancer screening services in Rayfield Ward revealed no statistically significant relationship. All the variables showed p-values greater than the 0.05 threshold for statistical significance. This implies that none of these sociology-demographic factors had a meaningful influence on whether women had undergone cervical cancer screening. Even though monthly income ($p = 0.089$) appeared relatively closer to significance compared to other variables, it still did not meet the conventional cutoff point. Therefore, the null hypothesis is retained, leading to the conclusion that women's sociology-demographic profiles do not significantly determine their uptake of cervical cancer screening services in Rayfield Ward.

Hypothesis 2: There is no significant association between women's level of awareness of cervical cancer and their uptake of screening services in Rayfield Ward.

Table 2.8: Test for association between women's level of awareness of cervical cancer and their uptake of screening services.

Variable	Chi-square (df)	p-value
Heard of cervical cancer	0.01 (1)	0.939
Heard of screening	0.06 (1)	0.812
Heard of HPV vaccine	0.19 (1)	0.659
Attended seminar	0.05 (1)	0.831
Know where services are available	0.74 (2)	0.691
Cause of cervical cancer	3.15 (3)	0.370
Risk factor	2.05 (3)	0.562
Increases risk	1.38 (3)	0.710
Early detection through screening	0.71 (2)	0.702
Curable if detected early	4.06 (2)	0.131

In Table 2.8, the analysis examining the relationship between women's awareness of cervical cancer and the uptake of screening services in Rayfield Ward also showed no statistically significant associations. All the

variables showed p-values greater than the 0.05 threshold for statistical significance. This implies that none of these variables on awareness of cervical cancer had a meaningful influence on whether women had undergone cervical cancer screening. Based on these findings, the null hypothesis is retained, suggesting that women's awareness and knowledge about cervical cancer and its prevention do not significantly determine their likelihood of undergoing screening in Rayfield Ward.

DISCUSSION

The findings demonstrate that awareness of cervical cancer among women in Rayfield Ward was generally high, yet the depth and consistency of this awareness varied. While many women had heard of the disease and screening services, fewer were familiar with the HPV vaccine or had ever participated in structured health education sessions. Patterns in sources of information also reflect a wider trend. Health workers and social media accounted for the majority of reported sources, while television, radio, and interpersonal channels such as family, friends, and religious gatherings played smaller roles. This balance between formal and informal sources has been observed in other Nigerian studies (Dung et al., 2024; Owolabi & Jegede, 2024), where women often relied on fragmented information rather than systematic health campaigns. Similarly, Moshi et al. (2019) in Tanzania found that although awareness levels were promising, dependence on informal sources limited the accuracy of women's understanding.

The prominence of health workers as the leading source is consistent with findings from Osuchukwu et al. (2025), who identified provider communication as central to shaping women's awareness. At the same time, the strong role of social media aligns with the growing body of evidence showing its potential as a tool for health education. Sodipo et al. (2025), for example, demonstrated in Jos that WhatsApp-based interventions significantly enhanced women's awareness within a short period, pointing to the possibility of using digital platforms to strengthen existing efforts.

In regards to knowledge of Cervical Cancer, the findings indicate that while many women demonstrated a good level of knowledge, important misconceptions remain. A majority correctly identified HPV as the main cause and recognized Pap smear as the primary screening method, yet uncertainty was notable in areas such as risk factors and the appropriate age to begin screening. These knowledge gaps echo the pattern seen in several African contexts, where partial or inaccurate understanding continues to limit effective prevention (Moshi et al., 2019; Owolabi & Jegede, 2024). The relatively high proportion of women who understood that cervical cancer can be detected early and cured if treated promptly aligns with results from Desta et al. (2023) in Ethiopia, where early detection was also widely recognized. However, the persistence of alternative explanations—such as family inheritance or lifestyle factors like diet—suggests that myths continue to compete with biomedical explanations, a challenge also reported by Feldstein et al. (2023) and Gamde et al. (2024).

Overall knowledge distribution further highlights these contrasts. While more than two-fifths of respondents fell into the “good knowledge” category, a considerable proportion demonstrated only moderate or poor knowledge. This mirrors the findings of Olubodun et al. (2025) in Ogun State, where structured health education was inconsistently delivered, resulting in uneven knowledge levels across communities.

Despite widespread awareness and moderate-to-good knowledge, actual participation in screening remained low, with less than one-third of women ever undergoing a test. This gap between knowledge and practice has been widely documented across Nigeria and other sub-Saharan African countries (Moshi et al., 2019; Asogun et al., 2024; Danladi et al., 2024). In many of these studies, willingness to be screened was higher than actual uptake, highlighting a consistent disconnect between intention and behaviour. Among women who had screened, most reported doing so only once, with fewer having repeated the process. This irregular pattern limits the protective value of screening, as sustained participation is critical. Elton (2021) emphasized that one-off screening cannot offer lasting protection, and the absence of structured reminder or follow-up systems contributes to this inconsistency. Rwanda, where organized call-and-recall systems exist, has shown much higher participation levels (Gafaranga et al., 2022), thereby explaining the importance of systemic reinforcement.

Timing of the last screening also revealed long intervals, with many women screened more than three years ago. Similar trends were observed in the meta-analysis by Mantula et al. (2024), which reported delayed or infrequent

screening as a recurring challenge across sub-Saharan Africa. Fear of results, discomfort with the procedure, and financial constraints were often cited as barriers in those contexts, and these factors were also reflected in the present study. Interestingly, while actual screening uptake was low, a majority of respondents expressed willingness to undergo screening in the future. Perkins et al. (2020) highlight that willingness represents an important intermediate step, which can be strengthened through supportive interventions such as healthcare provider encouragement.

Multiple factors emerged as important influences on whether women chose to undergo cervical cancer screening. Financial cost stood out strongly, with many participants indicating that screening was too expensive or that they would be more willing to participate if services were free or subsidized. This is consistent with findings from Olubodun et al. (2025) and Onubogu et al. (2025), who reported significantly higher participation when financial barriers were removed.

Gender sensitivity was another key factor. A considerable proportion of women reported feeling ashamed being screened by a male doctor, while many expressed greater willingness to undergo the procedure if a female health worker were involved. Similar patterns have been observed in studies from Tanzania (Moshi et al., 2019) and Nigeria (Dung et al., 2024; Owolabi & Jegede, 2024), where cultural expectations and gender norms shaped women's healthcare preferences. Mantula et al. (2024), in a meta-analysis, also described cultural taboos and norms around modesty as major deterrents to screening across sub-Saharan Africa. Awareness and availability of services were equally important. More than half of the respondents indicated that they would be encouraged to undergo screening if there were stronger awareness campaigns. Comparable results were reported by Sodipo et al. (2025) in Jos, where digital health education through WhatsApp groups significantly improved knowledge and screening attitudes. Similarly, Kayode et al. (2020) found that targeted community education in Osun State improved both willingness and participation.

Fear of results was also a notable factor. Almost half of the respondents indicated being afraid of what the screening outcome might reveal. This fear has been consistently documented in the literature (Owolabi & Jegede, 2024; Omowhara et al., 2023), often leading to delays or avoidance of screening. Religious beliefs and spousal influence were less prominent in this study but remain relevant, as earlier research in Lafia (Dung et al., 2024) and Oyo State (Owolabi & Jegede, 2024) found that disapproval from husbands or association of screening with promiscuity discouraged participation.

Statistical tests of association in the present study indicated no significant relationship between socio-demographic factors such as age, marital status, education, occupation, income, religion, ethnicity, number of children, or length of residence and screening uptake. This contrasts with the findings of Moshi et al. (2019) and Olubodun et al. (2025), who reported higher education and income as predictors of screening. The lack of significant associations here suggests that structural and perceptual barriers may be more influential than background characteristics in determining screening behaviour within this population.

CONCLUSION

This study assessed awareness, knowledge, and uptake of cervical cancer screening services among women in Rayfield Ward, Jos South LGA, Plateau State. With regard to awareness, the findings revealed that the majority of women had heard of cervical cancer and its screening services, though fewer were aware of the HPV vaccine and less than half had ever attended a health talk on the subject. Knowledge levels were generally moderate to good, with many respondents correctly identifying HPV as the main cause, Pap smear as the screening method, and early detection as critical. Nonetheless, misconceptions persisted, particularly around risk factors and age of initiation. Screening uptake remained low, with fewer than one-third of women ever screened, and most of them reporting only a single test. Willingness to undergo future screening was higher than actual participation, pointing to an important gap between intention and behaviour. Factors influencing screening included cost, fear of results, gender of the healthcare provider, and level of awareness. Although these barriers were prominent, statistical analysis showed no significant associations between socio-demographic variables and screening uptake. In essence, the study concludes that while awareness and knowledge are relatively high, misconceptions, financial and cultural barriers, and weak follow-up systems continue to limit effective participation. Progress

will require interventions that not only provide information but also make screening services more affordable, accessible, and acceptable within the community.

RECOMMENDATIONS

1. The Ministry of Health should make cervical cancer education part of routine maternal and child health services so that women are consistently informed during their regular visits.
2. Health authorities need to provide affordable or subsidized screening in primary health centers to reduce the financial barrier women currently face.
3. It is important that religious leaders also be involved in awareness efforts, as their influence can help dispel myths and encourage women to take preventive action.
4. Health facilities should make sure that female health workers are available for screening, since this will reduce the hesitation some women feel about being examined by male providers.
5. Non-governmental organizations should take advantage of digital platforms and local radio to spread clear and reliable information about cervical cancer and its prevention.
6. Health authorities should set up reminder systems to encourage women to return for regular screening rather than seeing it as a one-time activity.

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