

■ Original Research Article

Determinants of Uptake of Pap Smear Screening among Postnatal Women:
A Multi-centre Cross-Sectional Study in Benin City

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Abstract

Objective: To determine the knowledge, uptake and uptake barriers to Pap smear in Postnatal women in Benin City. **Method:** A cross-sectional analytical multi-centre study was conducted among postnatal women in Benin City, Nigeria. Data was collected by interviewer-administered questionnaire method. Data analysis was done using chi-square analysis and Logistic regression and a p-value < 0.05 was considered significant. **Result:** There were 522 respondents with a mean age group of 28.87 ± 7.0 . Only 47.7% were aware of the pap smear. Among the respondents who were aware of pap smears, only 25.7% had done it in the past with 1.6% having abnormal results. About 49.8% recommend a pap smear to be done at 6 weeks postpartum. The level of education of respondents (OR: 0.253, 95% CI: 0.080–0.796, $p=0.019$) was a predictor of knowledge as those with primary level of education were less likely to know about pap smears. Uptake was higher amongst the aged 40 and above and married women which were statistically significant (0.002 and 0.048 respectively). The reason for refusal was mainly inadequate information (67.6%). Others are cultural beliefs (11.9%), religious beliefs (10.3%), fear of bleeding (4.3%), fear of infections (4.3%) and lack of funds (1.6%). **Conclusion:** This study showed low uptake of pap smear among the respondents largely due to lack of information. We recommend pap smears be integrated into antenatal health education and reinforced at the postnatal clinic to improve public awareness and acceptance as an approach to reducing cervical cancer burden.

Keywords: Postnatal, Pap smear, Uptake, Barriers

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INTRODUCTION

Cancer of the cervix is a preventable and curable disease when detected and treated early, especially in its premalignant stage. Cervical cancer is one of the most common cancers worldwide with 662,301 new cases diagnosed in 2022 and 19% of new cases were reported from Africa.¹ Cervical cancer remains a global burden. In 2022 the World Health Organization reported mortality of 23.1% from cervical cancer accounting for 80,614 deaths in that year from Africa alone.¹ This highlights the

significant burden posed by cancer of the cervix in Africa.¹ In Nigeria, a report in 2022 showed that every year 12075 women are diagnosed with cervical cancer and 7968 die from the disease.² Cervical cancer is the second most frequent cancer among women in Nigeria after breast cancer and the most common cancer of the genital tract.¹

The Papanicolaou (Pap) smear is the most successful screening test for carcinoma in the history of medicine.³ Since its introduction in the early 1930s, the national death rate from cervical cancer has dropped by at least 70%.³ This is due to its low cost, and low false-

negative rate.³ The Pap smear test mainly assists in the early detection of precancerous lesions. The American College of Obstetricians & Gynaecologists (ACOG) recommends that women at the age of 21 should start screening for cervical cancer via Pap smear, regardless of the period at first sexual intercourse, contrary to previous guidelines.⁴ The Society of Obstetricians and Gynaecologists of Nigeria (SOGON) also recommends the same.⁵ Other screening methods available are VIA, VILI and HPV DNA.⁵ Human Papillomavirus (HPV) testing has the highest sensitivity for detection of cervical cancer.⁵ However, in low-income countries, where HPV testing is not available, alternative screening methods including VIA/VILI and cytology (pap smear) are recommended.⁵ The Pap smears are preferred in low and middle-income countries because they are cheaper, more easily affordable and the skill for the procedure is more readily available. The pap smear helps to detect early-stage cancer of the cervix, although it is not as specific and sensitive as HPV DNA testing or other screening modalities, it can help detect some cases of cervical cancer thereby leading to prompt treatment and reduction in morbidity and mortality associated with advanced stage of cervical cancer.

Currently, in Nigeria there is no coordinated screening program for cervical cancer and this may explain the possible high cases of cancer of the cervix in Nigeria.⁵ Most of the pap smears done are by chance or when the patient presents for other gynaecological issues or postnatal clinic. The postnatal clinic is assumed to have a better chance to meet well women and screen them for a pap smear, yet uptake is low despite postnatal counselling. Lack of knowledge and misinformation were found to be the main barriers to accessing screening by Coleridge et al⁶ and when educational resources for pregnant women and midwives were introduced, the screening rate improved by 8%.⁶

A study by Daru et al in Jos Nigeria on cervical cancer screening showed that 9 (7.1%) had atypical dysplasia, 901(5.7%) were Low-grade squamous intra-epithelial lesions (LGSIL), and 332(2.1%) were high-grade intra-epithelial lesions (HGSIL).⁷ A similar study by Ago et al in postnatal women showed that 3% of the women had positive pap smears.⁸ This Pap smear screening program in women especially in the postpartum period may be the only opportunity for screening these women, especially in low-income countries due to poor health-seeking behaviour. Therefore, not maximizing this opportunity of screening these women can contribute to missing a great opportunity that can help in reducing the burden of cancer of the cervix. In Zimbabwe, a Pap smear is offered as part of the postnatal visit evaluation guideline aimed at reducing morbidity and mortality from cervical cancer.^{9,10,11} However, limitations in resources, infrastructure, manpower, delays in treatment and patient

knowledge play have been the barrier to the uptake of pap smears leading to a high morbidity and mortality of cervical cancer in Zimbabwe.^{10,11} In Nigeria, no such guideline exists.

A study comparing pap smear results in pregnancy and at 6 weeks postnatal showed that although the prevalence of abnormal pap smear was low in the study population, there was a high remission rate at 6 weeks postpartum.¹² Despite the low prevalence reported in postnatal women, it is desirable to perform cervical screening as it provides an opportunity for no screening at all. Thus, this study aims to evaluate the acceptance and uptake barriers of Pap smears in postnatal women. Despite the pap smear being offered at the postnatal clinic and being an affordable and effective screening method, the uptake is low, hence the increasing morbidity and mortality from cervical cancer. This study aims to evaluate the acceptance and determinants of uptake of pap smears among postnatal women. This will help in strategizing and re-evaluation of policies and factors associated with cervical cancer screening. In other to reduce the burden of cervical cancer.

Therefore, this study was carried out to determine the acceptance rate and determinants prevalence of the knowledge, acceptance, and uptake barriers of Pap smear in post-natal women in Benin City

METHODS

Study Area

The study was carried out amongst all postnatal women in the University of Benin Teaching Hospital (UBTH) and St Philomena Catholic Hospital, Benin City, Edo State, Nigeria. The University of Benin Teaching Hospital (UBTH) is a tertiary health facility located in Benin City, Edo State, South-south region of Nigeria. It is a major referral point, attracting patients from at least the three neighbouring states of Delta, Kogi and Ondo. St Philomena Catholic Hospital is a foremost Secondary Health Facility Located in Benin City, a missionary hospital which serves as one of the leading private health facilities. These 2 centres were selected because of their high number of obstetrics and gynaecological patients representing the public and private health facilities in Benin City (Figure. 1). The monthly delivery in UBTH is about 250 while St Philomena is about 150 deliveries monthly.

Study Design/ Duration

The study was a cross-sectional analytical multi-centre study over 6 months from 1st March 2024 to August 31st, 2024.

Study Population

All postnatal women who presented at the 6 weeks postnatal clinic and gave written consent were included in the study, while those who were too ill or with incomplete data were excluded from the study.

Sample Size

A total of 522 clients were consecutively recruited for this study which covered the minimum sample size required using a 22.9% uptake rate of pap smear in Lagos by Okunowo et al¹⁴ in 2018,¹³ using the Cochrane formula.

Sampling Technique

A consecutive sampling of all consenting women who presented for the postnatal clinic at 6 weeks postpartum.

Data Collection/Analysis

A semi-structured interviewer-administered questionnaire was used for data collection. The questionnaire contained information on sociodemographic characteristics, acceptance, uptake and uptake barriers of pap smears. A research assistant who was unaware of the outcome was used for data collection to prevent bias. Data was analysed using SPSS version 25.0, Chi-square test was used for categorical data, and p-value ≤ 0.05 was considered statistically significant at a 95% confidence interval. Logistic regression analysis was used to determine factors associated with the knowledge of pap smears.

RESULTS

The sample (Table 1) consisted of 522 individuals with a mean age of 28.87 ± 7.0 years. The respondents consisted of 338 respondents from UBTH and 184 from St Philomena Hospitals, Benin City, Nigeria (Figure 1). In this study, 244 (46.7%) were primiparas, 139 (26.6%) had two children, 72 (13.8%) had three children, and 67 (12.8%) had four or more children. In terms of religion, 483 (92.5%) were Christians, 36 (6.9%) were Muslims, and 3 (0.6%) followed traditional religions. Also, 64 (12.3%) were single, while 458 (87.7%) were married. Most of the respondents, 505 (96.7%), lived in urban areas, while 17 (3.3%) resided in rural areas. Regarding clients' occupations, 69 (13.2%) were housewives, 234 (44.8%) were traders, 59 (11.3%) were students, 72 (13.8%) were civil servants, and 88 (16.9%) were engaged in other occupations.

In this study, 249 (47.7%) were aware of the Pap smear, while 273 (52.3%) were not (Table 2). Among the 249 respondents who had heard of it, 140 (56.2%) were told by healthcare professionals (Table 2). The majority of 193 (77.5%) participants agreed that Pap smear plays a role in the screening of cervical cancer (Table 2). This response is largely because they were counselled by healthcare professionals.

Table 1: Sociodemographic Characteristics of Respondents

Variable	Frequency (n = 522)	Percent (%)
Age group (years)		
<20	48	9.2
21-30	298	57.1
31-40	149	28.5
>40	27	5.2
Mean $\pm$ SD	28.87 $\pm$ 7.0	
Parity		
1	244	46.7
2	139	26.6
3	72	13.8
≥ 4	67	12.8
Religion		
Christian	483	92.5
Islam	36	6.9
Traditional	3	0.6
Marital Status		
Single	64	12.3
Married	458	87.7
Residence		
Urban	505	96.7
Rural	17	3.3
Marriage Type		
Monogamous	500	95.8
Polygamous	22	4.2
Clients LOE		
Primary	29	5.6
Secondary	483	92.5
Tertiary		
Clients Occupation		
Housewife	69	13.2
Trader	234	44.8
Student	59	11.3
Civil Servant	72	13.8
Others	105	16.9

In Table 3, clients' level of education revealed that respondents with primary education had a significantly lower likelihood of knowledge (OR: 0.253, 95% CI: 0.080–0.796, $p=0.019$) than those with secondary education that had an OR of 0.997 (95% CI: 0.239–4.165, $p=0.997$). Tertiary education served as the reference category.

In Table 4, among the respondents, 64 (25.7%) had done, while 185 (74.3%) had not. Of those who had done a Pap smear, the majority, 44 (68.8%), had done it

once, 16 (25.0%) had done it twice, and 4 (6.3%) had done it three times. Regarding the reasons for undergoing

Table 2: Knowledge of Pap Smear among Respondents

Variable	Frequency (n = 522)	Percent
Heard of Pap Smear		
Yes	249	47.7
No	273	52.3
Source of Knowledge (n=249)		
Healthcare Professionals	140	56.2
Internet	28	11.2
School	21	8.4
Friends	19	7.6
Books	14	5.6
Tv/Radio	14	5.6
Newspaper	5	2.0
Parents	4	1.6
Others	4	1.6
Pap smear has a role in the screening for cervical cancer (n=249)		
Yes	193	77.5
No	9	3.6
Unsure	47	18.9

Table 3: Predictors of Knowledge of Pap Smear among Respondents

Predictors	B (Regression co- efficient)	Odds Ratio	95% CI for OR		p- value
			Lower	Upper	
Age (years)	-0.002	0.998	0.967	1.030	0.884
Parity					
1	0.183	1.201	0.617	2.336	0.590
2	-0.022	0.979	0.496	1.931	0.950
3	-0.250	0.779	0.410	2.212	0.933
≥4*		1			
Marital Status					
Single	-0.250	0.779	0.410	1.479	0.445
Married*		1			
Residence					
Urban	0.366	1.214	0.309	6.545	0.538
Rural*		1			
Clients LOE					
Primary	-1.376	0.253	0.080	0.796	0.019
Secondary	-0.003	0.997	0.239	4.165	0.997
Tertiary		1			

* Reference Category, ** Statistically significant, $R^2 = 3.7 - 5.1\%$
CI= Confidence Interval, OR=Odds Ratio

the Pap smear, 37 (57.8%) reported doing it based on healthcare worker recommendations, 12 (18.8%) due to advice from family members, and 7 (10.9%) said they did

it due to advice from friends. Furthermore, 63 (98.4%) of the respondents who had undergone the test reported receiving normal results, while 1 (1.6%) received an abnormal result.

Table 4: Uptake of Pap Smear and Its Determinants

Variable	Frequency (n = 249)	Per cent
Have you done pap smear before		
Yes	64	25.7
No	185	74.3
How many times (n=64)		
Once	44	68.8
Twice	16	25.0
Thrice	4	6.3
Reason for doing pap smear (n=64)		
Healthcare worker recommendation	37	57.8
Advice from family	12	18.8
Advice from a friend	7	10.9
Fear of developing cervical cancer	4	6.3
As routine check- up	1	1.6
Result of Pap smear (n=64)		
Normal	63	98.4

In Table 5, The association between the uptake of Pap smear and the sociodemographics of respondents revealed significant findings. Among the 64 respondents who had ever done a Pap smear, 6 (21.4%) were under 20 years of age, while 22 (78.6%) of that age group had not undergone the test. In the age group of 21-30 years, 37 (24.8%) had done the test, while 112 (75.2%) had not. For those aged 31-40, 11 (19.3%) had undergone a Pap smear compared to 46 (80.7%) who had not. Notably, in the age group over 40 years, 10 (66.7%) had done the test, while only 5 (33.3%) had not, ($\chi^2 = 14.732$, $p = 0.002$), indicating a statistically significant relationship. Marital status presented more compelling results, with only 4 (11.4%) single respondents having done a Pap smear compared to 31 (88.6%) who had not. In contrast, among married respondents, 60 (28.0%) had undergone the test, and 154 (72.0%) had not, ($\chi^2 = 4.345$, $p = 0.048$), indicating a significant association.

In Table 6, among the respondents, 213 (85.6%) indicated that they would undergo a Pap smear if it were offered free of charge, 84 (33.7%) preferred general hospitals, 55 (22.1%) opted for tertiary hospitals, while both private clinics and primary healthcare centres received equal support from 49 (19.7%) of the

respondents. About 124 (49.8%) of respondents recommend pap smear should be done at 6 weeks postpartum. Furthermore, in terms of recommending a Pap smear to friends, 235 (94.4%) expressed they would, whereas 8 (3.2%) would not.

Table 5: Association Between Uptake of Pap Smear and Sociodemographics of Respondents

Variables	Ever done pap smear		χ^2	p-value
	Yes (n = 64) n (%)	No (n = 183) n (%)		
Age group (years)				
<20	6 (21.4)	22 (78.6)	14.732	0.002*
21-30	37 (24.8)	112 (75.2)		
31-40	11 (19.3)	46 (80.7)		
>40	10 (66.7)	5 (33.3)		
Parity				
1	28 (22.8)	95 (77.2)	1.348	0.725
2	18 (29.0)	44 (71.0)		
3	9 (25.7)	26 (74.3)		
≥4	9 (31.0)	20 (69.0)		
Religion				
Christianity	57 (24.9)	172 (75.1)	1.839	0.463
Islam	7 (36.8)	12 (63.2)		
Traditional	0 (0.0)	1 (100.0)		
Marital Status				
Single	4 (11.4)	31 (88.6)	4.345	0.048*
Married	60 (28.0)	154 (72.0)		
Marriage type				
Monogamous	63 (25.7)	182 (74.3)	0.001	>0.999
Polygamous	1 (25.0)	3 (75.0)		
Residence				
Urban	62 (25.7)	179 (74.3)	0.002	>0.999
Rural	2 (25.0)	6 (75.0)		
Clients LOE				
Primary	1 (25.0)	3 (75.0)	2.314	0.279
Secondary	0 (0.0)	7 (100.0)		
Tertiary	63 (26.7)	173 (73.3)		

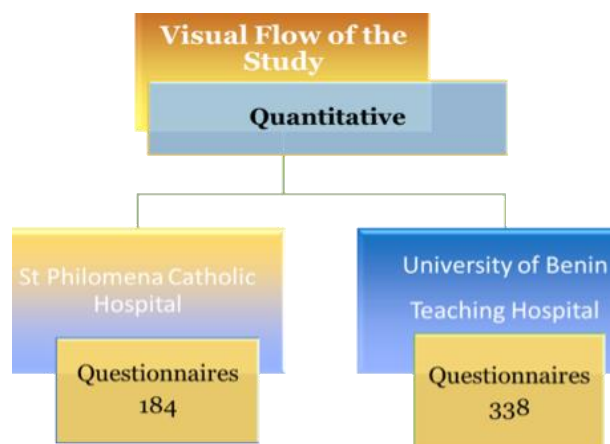


Figure. 1 Flowchart of the study recruitment.

Table 6: Factors Affecting Uptake and Recommendations on Pap Smear amongst Knowledgeable Respondents

Variable	Frequency (n = 249)	Per cent
Would you do pap smear if it were free		
Yes	213	85.6
No	18	7.2
Unsure	18	7.2
Likely place to do a pap smear if it were free		
General Hospital	84	33.7
Tertiary Hospital	55	22.1
Private clinic	49	19.7
Primary Healthcare	49	19.7
School Clinic	12	4.8
Should pap smear be done at 6 weeks post delivery		
Yes	124	49.8
No	20	8.0
Unsure	105	42.2
Would you recommend a pap smear for your friends		
Yes	235	94.4
No	8	3.2
Unsure	6	2.4

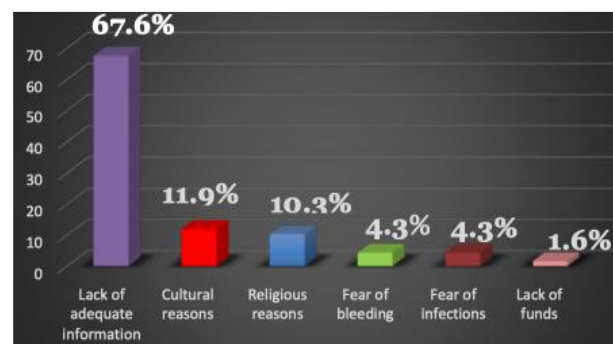


Figure 2: Uptake Barriers of Pap Smear

In Figure 2, among the 185 respondents who had not undergone a Pap smear, the primary reason cited for not doing so was a lack of adequate information, reported by 125 (67.6%). Cultural reasons were mentioned by 22 (11.9%), while 19 (10.3%) indicated religious reasons. Additionally, 8 (4.3%) cited fear of bleeding, another 8 (4.3%) mentioned fear of infections, and 3 (1.6%) noted

a lack of funds as reasons for not participating in the screening.

DISCUSSION

Pap smear is undoubtedly an important screening tool in the fight against cervical cancer especially in a low-resource setting like Nigeria with a high burden of the disease. This study revealed that more than half of the respondents (52.3%) had never heard of Pap smear screening. This is comparable to the study by Okunowo et al, in Lagos where they found an awareness rate of Pap smear of 55.1%,¹³ and a study by Padingani also revealed Table 6: Factors Affecting Uptake and Recommendations on Pap Smear amongst Knowledgeable Respondents similar poor knowledge of cervical cancer screening even in Zimbabwe.¹⁰ This underscores the importance of counselling and educating all female clients about pap smear screening for cervical cancer.

The relationship between the level of education and knowledge of Pap smears among respondents was statistically significant as patients with a primary level of education were less likely to know about pap smears. This underscores the need to use diverse channels of communication taking cognisance of local language for ease of understanding. explain based on patients' level of education for ease of understanding. Also, there is a need for the inclusion of knowledge about pap smear screening in most institutions' postnatal guidelines as it provides a good opportunity to interact with women of reproductive age group. This was similarly highlighted in the study done in Lagos, Nigeria by Okunowo et al¹³ where a tertiary level of education was observed to increase the awareness of Pap smear among the respondents significantly. This underscores the need to use illustrations in addition to the local language during public awareness campaigns to drive home messages on pap smear screening.

Interactions with the healthcare workers should include emphasis on having a Pap smear done especially during the post-natal clinic. Regarding this, majority of the respondents (49.8%) also agreed that a Pap smear should be done at 6 weeks post-delivery. Compared to the study by Ago BU et al.,⁸ in 2022 where only 15.56% had ever had a Pap smear screening, our study showed that 25.7% had once undergone a Pap smear based on mainly recommendation from a health care worker with 1.6% receiving an abnormal result. Our study revealed that few patients have had routine Pap smear checks because of poor health-seeking behaviour and the only opportunity they may have had to interact with the healthcare workers after a normal delivery was at the six-weeks post-natal clinic appointment.

It is encouraging from the results of our study that most of our respondents (85.6%) are willing to accept a Pap smear and even recommend it to friends especially if

it is offered free of charge. This was even more than the finding by Ago BU et al., and Okunowo et al, where only 52.2% and 67.1% respectively of their respondents who had never done a Pap smear were willing to have one done.^{8,13} Unfortunately, a few patients (7.2%) were still unwilling to do a pap smear and even though the majority (67.6%) cited lack of adequate information as their reason for refusal; cultural, religious reasons; fear of bleeding and infection and lack of funds were other reasons cited. This seems to be better than the data obtained by Ago BU et al.,⁸ in Calabar where almost half of their respondents (47.78%) rejected the offer of Pap smear screening, though the reasons for their refusal were not explored. All these fears can be allayed with proper counselling in the antenatal and gynaecological clinics.

This study has shown that women are ready and willing to accept pap smear screening at the six-week postnatal clinic visit, especially with proper counselling. It is recommended that a guideline for routine pap smear screening at the post-natal clinics should be set up and implemented for the early detection of cervical cancer in Nigeria.

CONCLUSION

This study has shown that awareness and uptake of Pap smears are still low at 47.7% and 25.7% respectively, despite sensitization to cervical cancer screening. The good thing is that many women are ready and willing to accept pap smear screening at the six-week postnatal clinic especially if made free. The role of health education and counselling on Pap smears from healthcare givers is very paramount in the acceptance and uptake of Pap smears. Hence, a need to integrate counselling into the antenatal health talk. Therefore, we recommend that routine pap smear screening should be integrated into post-natal clinics. These would help for early detection and prevention of cervical cancer.

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