

Comparison of Uptake and Outcome of Opportunistic versus Routine Pap test in a Tertiary Hospital in Enugu, Nigeria

Chudi Igwe Obuba¹, Chinelo Adaobi Onwualu-Chigbo², Francis Ikechukwu Ukekwe³, Uchenna Anthony Umeh⁴, Cyril Chukwudi Dim⁴

Departments of ¹Obstetrics and Gynaecology and ²Radiation and Clinical Oncology, University of Nigeria Teaching Hospital, ³Departments of Morbid Anatomy and ⁴Obstetrics and Gynaecology, College of Medicine, University of Nigeria, Ituku-Ozalla, Enugu Nigeria

Abstract

Background: Cervical cancer is a common female cancer in sub-Saharan Africa and the second most common cancer affecting women in Nigeria. This study sought to access the trend and extent of uptake and outcomes of routine versus opportunistic cervical cancer screening at the pioneer teaching hospital in South-Eastern Nigeria. **Materials and Methods:** The study was a retrospective cross-sectional study of all the women that had Pap test at the cervical screening centre of the University of Nigeria Teaching Hospital (UNTH), Enugu, Nigeria, from January 1, 2013, to December 31, 2017. Data were obtained from records in the cervical screening unit/centre and morbid anatomy department. Data analysis was done using the Statistical Package for the Social Science (SPSS) version 20. **Results:** The mean age of women who had the Pap test was 45 ± 11.2 years (range = 16–86 years). Forty-five (3.5%) women had abnormal Pap test results. A majority (37.8%) of the abnormal Pap test result were low-grade squamous intraepithelial lesion (LSIL), whereas 15.6% were high-grade squamous intraepithelial lesions. In all, 20.0% of women had features suggestive of invasive carcinoma of the cervix. The Pap test indication was predominantly opportunistic (66.4%) than routine (33.6%). The prevalence of abnormal Pap tests was significantly higher in women whose screening was opportunistic than those whose screening was routine ($P = 0.024$). **Conclusion:** The prevalence of abnormal Pap tests at the UNTH, Enugu, was low, and the most common abnormality was LSIL. Pap test uptake at the hospital was predominantly opportunistic. The strengthening of the provider-initiated cervical cancer counselling and testing at the hospital will offer every eligible woman the opportunity for a cervical cancer screening in her lifetime.

Keywords: Cervical cancer, outcome, Pap test, uptake

INTRODUCTION

Cervical cancer remains a serious public health problem. It is a common female cancer in sub-Saharan Africa, and the second most common cancer affecting women in Nigeria.^[1] In 2020, 604,127 new cases and 341,831 deaths were attributed to cervical cancer globally; about 20% of the new cases and 23% of the deaths occurred in Africa.^[1] In the same year 2020, cervical cancer accounted for about 10% of all new cancer cases and deaths in Nigeria;^[1] this disease burden is huge for a disease that has a unique opportunity for prevention because it is caused by the persistent infection with oncogenic human papillomavirus (HPV).^[2,3] Its risk factors are well documented, likewise the effects of early diagnosis and curative therapy on mortality rate.^[4]

The secondary prevention of cervical cancer is based on routine population screening for early detection and appropriate

prompt management of the preinvasive lesions, which may manifest 10–15 years before the invasive disease.^[5] This long transition time from a premalignant lesion to frank cancer of the cervix affords ample time for early detection and nearly complete cure.^[6] This window for early detection has enabled developed countries to reduce the incidence of cancer of the cervix.^[6] In areas where such programs are well organised, funded, and effective, there has been about an 80% reduction in morbidity and mortality from invasive cancer of the cervix.^[7] In most developing countries, including Nigeria,

Address for correspondence: Dr. Chudi Igwe Obuba,
Department of Obstetrics and Gynaecology, University of Nigeria Teaching
Hospital, Enugu, Nigeria.
E-mail: chudiobuba@gmail.com

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How to cite this article: Obuba CI, Onwualu-Chigbo CA, Ukekwe FI, Umeh UA, Dim CC. Comparison of uptake and outcome of opportunistic versus routine Pap test in a tertiary hospital in Enugu, Nigeria. *Niger J Med* 2023;32:122-6.

Submitted: 10-Feb-2023

Revised: 22-Mar-2023

Accepted: 31-Mar-2023

Published: 14-Jul-2023

Access this article online

Quick Response Code:



Website:
<http://journals.lww.com/NJOM>

DOI:
10.4103/NJM.NJM_15_23

there are no organised population-based routine cervical cancer screening services, despite the huge burden of the disease and its predisposing factors. Currently, opportunistic screening offers the only hope of preventing cervical cancer in such settings but has severe limitations in its uptake, scope of coverage, follow-up, and evaluations of its impact on reducing cervical cancer.^[5] Unfortunately, it has been shown that there is a low level of screening of patients for cervical cancer by gynaecologists in Nigeria, despite the availability of screening services in many hospitals.^[8] The observed low level of cervical cancer screening justifies the repeated call for the routine incorporation of this opportunistic screening in outpatient clinics referred to as the provider-initiated cervical cancer counselling and testing (PICCT) strategy.^[9-11]

Therefore, it was necessary to determine the extent of uptake and outcome of routine and opportunistic cervical screening at the pioneer teaching hospital in South-Eastern Nigeria.

MATERIALS AND METHODS

Study design

This was a retrospective cross-sectional study of all women who had Pap test at the cervical cancer screening centre of the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu, Nigeria, over a five-year period of January 2013 to December 2017.

Study site

The UNTH, Enugu, offers both primary and specialised health-care services to the residents of Enugu State and its environs. The obstetrics and gynaecology department of the hospital administers the gynaecology clinics and other women-centred clinics (family planning, antenatal clinic, and postnatal clinics) every weekday. It has a cervical cancer screening centre where Pap tests/colposcopy are offered to women referred to the centre. The Pap tests and associated cytology are processed and reported by the histopathologists at the hospital's morbid anatomy department, where duplicate copies of all the results are archived. Records of all women who had Pap test at the hospital within the study period were retrieved from the Pap test registers at the cervical cancer screening centre and morbid anatomy department. One thousand three hundred and ninety-one Pap test results were collated.

Ethical clearance

Approval was obtained from the Health Research Ethics Committee (HREC) of UNTH, Enugu, with Ethical clearance number: NHREC/05/01/2008B-FWA00002458-1 RB00002323.

Data collection

Data on the women's age, year of Pap test, indication, and Pap test results were retrieved using a pro forma designed for the study. The indications for cervical cancer screening were classified as either routine or opportunistic. For this study, routine screening referred to screening on asymptomatic women who were aware of cervical cancer screening who

voluntarily presented to the hospital for Pap test, irrespective of their prior history of Pap testing, while opportunistic screening referred to those women who presented to the hospital for other health reasons and were counselled on cervical cancer prevention, and subsequently referred for screening in line with PICCT.^[9-11]

Abnormal Pap test result was classified according to the Bethesda system 2001 thus: Low-grade squamous intraepithelial lesion (LSIL), high-grade squamous intraepithelial lesions (HSIL), atypical squamous cells, squamous cell carcinoma (SCC), and atypical glandular cells (AGC).^[12]

Data analysis

Data were analysed using IBM Corp. Released 2011. (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY). Descriptive and inferential (Chi-square) statistics were conducted. A $P < 0.05$ was considered statistically significant.

RESULTS

A total of 1391 Pap tests were carried out in the study centre over the five-year study period, translating to a cervical cancer screening rate of 279 Pap tests per annum. The highest number of Pap test was recorded in 2013 ($n = 454$), whereas the least was in 2017 ($n = 150$). Out of the 1391 test results, 1292 (92.9%) were reported as adequate and, therefore, analysed for this study. The women who had the Pap test were 16–86 years (mean = 45 ± 11.3 years). The highest number of Pap test occurred within the 25–49-year age group. The Pap test indications were routine in 434 (33.6%, 434/1292) women and opportunistic in 858 (66.4%, 858/1292) women. This pattern was consistent throughout the period under review as shown in [Table 1]. The distribution of Pap test across the period reviewed is shown in Figure 1.

The prevalence of abnormal Pap test was 3.5% (45/1292). The most common abnormality was LSIL (37.8%, 17/45), whereas the least common was AGC (6.7%, 3/45). HSIL was reported in 7 (15.6%, 7/45) results, whereas cytology suggestive of SCC was seen in 20.0% (9/45) of the women with abnormal Pap tests. The highest frequency of abnormal Pap test occurred within the 25–49 years age category (55.6%, 25/45), whereas the least was in women <25 years of age (2.2%, 1/45).

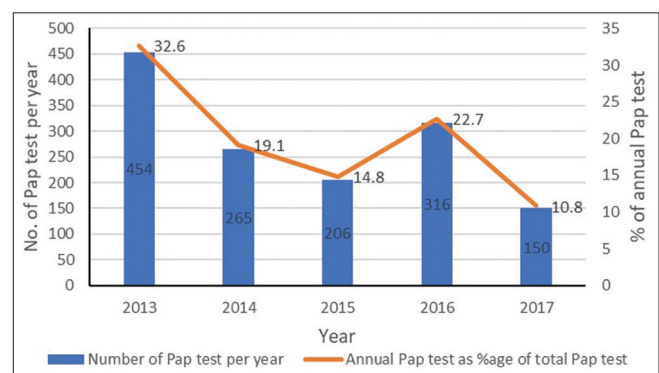


Figure 1: Distribution of Pap test by year of Pap test

Women who had opportunistic screening (4.3%, 37/858) were significantly more likely to have abnormal Pap results when compared to those that had routine Pap test (1.8%, 8/434) (odds ratio = 2.4; confidence interval 95%: 1.11–5.20; $P = 0.024$). Details of the relationship between the indication of Pap test and age, results, and Pap test pattern are shown in Table 2.

Table 3 shows that the highest frequency of cytology suggestive of frank cancer occurred in the 25–49-year age group (77.8%, 7/9). The LSIL also follows the same pattern with peak age incidence of 25–49 years, but HSIL was more predominant in women aged 50–65 years (42.9%, 3/7).

Table 1: Distribution of Pap test result by age and indication of Pap test

Characteristic	Subgroup	Frequency (%)
Age (years) (mean: 45±11.3)	<25	35 (2.5)
	25-49	862 (62.0)
	50-65	443 (31.8)
	>65	51 (3.7)
Indication for Pap test	Opportunistic	858 (66.4)
	Routine	434 (33.6)

Table 2: Relationship between of Pap test and age, Pap test result and pattern

Characteristic	Subgroup	Frequency (%)		P
		Opportunistic	Routine	
Age (years)	<25	25 (2.7)	10 (2.2)	0.475
	25–49	587 (62.9)	275 (60)	
	50–65	285 (27.7)	158 (34.5)	
	>65	36 (3.9)	15 (3.3)	
Pap test result	Abnormal	37 (4.3)	8 (1.8)	0.024**
	Normal	821 (95.7)	426 (98.2)	
Pap test abnormalities	ASCUS	6 (0.7)	3 (0.7)	
	LSIL	14 (1.6)	3 (0.7)	
	HSIL	7 (0.8)	0	
	AGC	2 (0.2)	1 (0.2)	
	SCC	8 (0.9)	1 (0.2)	

**OR=2.4, CI 95%: 1.11–5.20. LSIL: Low-grade squamous intraepithelial lesion, HSIL: High-grade squamous intraepithelial lesions, AGC: Atypical glandular cells, SCC: Squamous cell carcinoma, OR: Odds ratio, CI: Confidence interval, ASCUS: Atypical squamous cells of undetermined significance

Table 3: Distribution of abnormal Pap test by age

Characteristic	Subgroup	Frequency (%)				
		ASCUS	LSIL	HSIL	AGC	SCC
Age (years)	<25	0	0	0	1 (33.3)	0
	25–49	4 (44.4)	11 (64.7)	2 (28.6)	1 (33.3)	7 (77.8)
	50–65	3 (33.3)	5 (29.4)	3 (42.8)	1 (33.3)	1 (11.1)
	>65	2 (22.2)	1 (5.9)	2 (28.6)	0	1 (11.1)
Total		9 (100)	17 (100)	7 (100)	3 (100)	9 (100)

LSIL: Low-grade squamous intraepithelial lesion, HSIL: High-grade squamous intraepithelial lesions, AGC: Atypical glandular cells, SCC: Squamous cell carcinoma, ASCUS: Atypical squamous cells of undetermined significance

DISCUSSION

In the absence of a structured cervical cancer screening program in Nigeria, opportunistic screening is beneficial, even once in a lifetime.^[13] Hence, this study reviewed the uptake of Pap test among opportunistic and routine users of this secondary cervical cancer prevention tool. Interestingly, the average age of women who had Pap test in the study falls within the World Health Organisation’s (WHO) priority age of 30–49 years for opportunistic cervical cancer screening for the general population.^[13]

The prevalence of abnormal Pap test of 3.5% in this study was low compared to the findings of related studies from Enugu (12.2%),^[14] Abakaliki (11.2%),^[15] Lagos (10.9%)^[16] and Benin (16.2%).^[17] However, it appeared similar to prevalence rates in Kaduna (6.2%)^[17] and Calabar (7.0%),^[18] South Africa (4.96%),^[19] Bangkok (4.7%),^[20] and the United States of America (5.0%).^[21] Cervical cancer is prevalent in Enugu, Nigeria.^[22] Hence, the explanation for the low prevalence of abnormal Pap test in this study is not clear; however, the higher socioeconomic status of most female clients at the study centre might have contributed.^[23] It is known that the low socioeconomic status of women is associated with the prevalence of cervical cancer and its premalignant condition.^[24] It is also very likely that implementing the provider-initiated counselling and testing for cervical cancer with the opt-out option at the outpatient clinics recommended at the study centre in 2009,^[9] might have contributed to the reduced population of women with abnormal Pap test in this study.

As expected, the most common Pap test abnormality in this study was LSIL, which was the usual pattern in related studies,^[5,7,25,26] except the report from Abakaliki, Nigeria, where HSIL was the dominant abnormality.^[15] Women in the 25–49-year age category had the highest prevalence of Pap test abnormalities and LSIL, which may be explained by the expected increased sexual exposure in this age group and the associated risk of oncogenic HPV infection. Furthermore, the prevalence of SCC was highest in the 25–49 year age category, which may not be unexpected because the cervical cancer incidence rate peaks at 30–40 years.^[27] This high prevalence of cervical cancer in the 25–49-year age category may reflect the lack of effective cervical cancer screening programs and its consequent high incidence of cervical cancer in sub-Saharan Africa.

The study found that the Pap test uptake showed a progressive decline from 2013 to 2015, rising again in 2016; afterward, it declined to its lowest in 2017 [Figure 1]. This uptake pattern may likely be due to the incessant strike by health workers, especially in 2017. It is a concern that a majority of Pap tests in the study were opportunistic compared to routine screening, which is a far cry from studies in developed countries where cervical cancer screening is routine with rates up to 88%–93%.^[28,29] This disparity calls for an urgent need for an organised cervical cancer control program in Nigeria that will implement the WHO 90-70-90 global cervical cancer prevention strategies to eliminate cervical cancer by the year 2030.^[30]

It may not be surprising that the odds of having an abnormal Pap test in the opportunistic subset was significantly higher (about three times) than in the routine group because it was likely that women in the routine group had Pap test in the past. Unfortunately, the retrospective nature of the study limited the ability to acquire such history. Similarly, the study could not assess the effects of cervical cancer's known risk factors such as parity, age of coitarche, multiple sexual partners, and immunosuppression on abnormal Pap test. Thus, a prospective study with emphasis on the effect of risk factors on Pap tests is recommended.

CONCLUSION

The prevalence of abnormal Pap test among women at the UNTH, Enugu, Nigeria, was low, and the most common abnormality was the LSIL. Most of the Pap test screenings were opportunistic. The prevalence of abnormal Pap test was significantly higher in women with opportunistic tests than in the routine Pap test groups. As we wait for the implementation of the WHO's cervical cancer elimination strategies through a structured cervical cancer prevention program in Nigeria, we encourage the strengthening of the PICCT strategy at the study centre and other women-centred health-care facilities so as to offer every eligible woman the opportunity for a cervical cancer screening in her lifetime.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, *et al.* Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer; 2020. Available from: <https://gco.iarc.fr/today>. [Last accessed on 2021 Feb 02].
2. Mbachu C, Dim C, Ezeoke U. Effects of peer health education on perception and practice of screening for cervical cancer among urban residential women in South-East Nigeria: A before and after study. *BMC Womens Health* 2017;17:41.
3. Dim CC. Towards improving cervical cancer screening in Nigeria: A review of the basics of cervical neoplasm and cytology. *Niger J Clin Pract* 2012;15:247-52.
4. Madong BM, Madaka AK, Mannaseh AN. Malignant diseases in Jos: A follow up. *Ann Afr Med* 2003;2:49-53.
5. Odusolu PO, Omotoso AJ, Nnoli M, Agan TU, Ekanem IA, Ekanem AD. Pattern of cervical smear cytology in Calabar, Nigeria. *IOSR J VLSI Signal Process* 2013;2:37-41.
6. Ezem BU. Awareness and uptake of cervical cancer screening in Owerri, South-Eastern Nigeria. *Ann Afr Med* 2007;6:94-8.
7. Obaseki DE, Nwafor CC. Cervical cancer screening in Benin City, South – South Nigeria. *IOSR JDMS* 2013;5:16-9.
8. Onah HE, Ezeugwu FO, Eze JN. Cervical cancer screening: A survey of current practice amongst Nigerian gynaecologists. *Trop J Obstet Gynaecol* 2001;18:78-81.
9. Dim CC, Nwagha UI, Ezeuwui HU, Dim RN. The need to incorporate routine cervical cancer counselling and screening in the management of women at the outpatient clinics in Nigeria. *J ObstetGynecol* 2009;29:754-6.
10. Dim CC, Onyedum CC, Dim NR, Chukwuka JC. Cervical cancer screening among HIV-positive women in Nigeria: An assessment of use and willingness to pay in the absence of donor support. *J Int Assoc Provid AIDS Care* 2015;14:241-4.
11. Dim CC. "Not My Portion" Syndrome: The Bane of Cervical Cancer Prevention and Women's Health Promotion in Nigeria. 152nd Inaugural Lecture: University of Nigeria; Lecture Given; 2019. Available from: https://drive.google.com/file/d/16x6gpaxPNEm7_2b57m_FWZJ_4z-MtMah/view?usp=sharing. [Last accessed on 2020 Feb 26].
12. Solomon D, Davey D, Kurman R, Moriarty A, O'Connor D, Prey M, *et al.* The 2001 Bethesda system: Terminology for reporting results of cervical cytology. *JAMA* 2002;287:2114-9.
13. WHO Guidelines for Screening and Treatment of Precancerous Lesions for Cervical Cancer Prevention; 2013. Available from: https://apps.who.int/iris/bitstream/handle/10665/94830/9789241548694_eng.pdf?sequence=1. [Last accessed on 2021 Feb 04].
14. Chukwuali LI, Onuigbo WB, Mgbor NC. Cervical cancer screening in Enugu, Nigeria. *Trop J ObstetGynaecol* 2003;20:109-12.
15. Ajah LO, Ezeonu PO, Ozonu NC, Iyoke CA, Nkwo PO, Ajah MI. A five-year review of cervical cytology in Abakaliki, Nigeria. *Am J Cancer Prev* 2015;3:23-6.
16. Anorlu RI, Igwilo CI, Akanmu AS, Banjo AA, Odunukwe NN, Okany CC, *et al.* Prevalence of abnormal cervical smears among patients with HIV in Lagos, Nigeria. *West Afr J Med* 2007;26:143-7.
17. Magaji SJ, Aminu M, Inabo HI, Oguntayo AO, Ahmed SA, Yaro JD, *et al.* Prevalence of squamous intraepithelial lesions among women in Kaduna State, Nigeria. *Ann Trop Pathol* 2017;8:94-8.
18. Omotoso A, Odusolu P, Irabor G, Oshatuyi O, Wilson N. Cervical smear analysis of women in Cross River State, Nigeria. *J Adv Biol Biotechnol* 2017;16:1-5.
19. Fonn S, Bloch B, Mabina M, Carpenter S, Cronje H, Maise C, *et al.* Prevalence of pre-cancerous lesions and cervical cancer in South Africa – A multicentre study. *S Afr Med J* 2002;92:148-56.
20. Kingnate C, Tangjittgamol S, Khunnarong J, Manusirivithaya S. Abnormal uterine cervical cytology in a large tertiary hospital in Bangkok metropolis: Prevalence, management, and outcomes. *Indian J Cancer* 2016;53:67-73.
21. Insinga RP, Glass AG, Rush BB. Diagnoses and outcomes in cervical cancer screening: a population-based study. *Am J Obstet Gynecol* 2004;191:105-13.
22. Okeke T, Onah N, Ikeako L, Ezenyeaku C. The frequency and pattern of female genital tract malignancies at the University of Nigeria teaching hospital, Enugu, Nigeria. *Ann Med Health Sci Res* 2013;3:345-8.
23. Ajah LO, Dim CC, Ezeuwui HU, Iyoke CA, Ugwu EO. Male partner involvement in female contraceptive choices in Nigeria. *J Obstet Gynaecol* 2015;35:628-31.
24. Adewuyi SA, Shittu SO, Rafindadi AH. Sociodemographic and clinicopathologic characterization of cervical cancers in Northern Nigeria. *Eur J Gynaecol Oncol* 2008;29:61-4.
25. Ahmed SA, Ayuba HU, Maiangwa A, Vakkai VI, Dashe DR, Joel R, *et al.* Prevalence of squamous intraepithelial lesions in Jalingo, Nigeria. *Afr J Cellular Pathol* 2013;1:19-22.
26. Atilgan R, Celik A, Boztosun A, Ilter E, Yalta T, Ozercan R. Evaluation of cervical cytological abnormalities in Turkish population. *Indian J*

- Pathol Microbiol 2012;55:52-5.
27. International Agency for Research on Cancer. Fact Stats, Section of Cancer Information. Available from: <http://globocan.iarc.fr/Default.aspx>. [Last accessed on 2018 Oct 20].
 28. Canfell K, Sitas F, Beral V. Cervical cancer in Australia and the United Kingdom: Comparison of screening policy and uptake, and cancer incidence and mortality. *Med J Aust* 2006;185:482-6.
 29. Sirovich BE, Welch HG. The frequency of Pap smear screening in the United States. *J Gen Intern Med* 2004;19:243-50.
 30. World Health Organization. Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem. Geneva: World Health Organization; 2020. Available from: <https://www.who.int/publications/i/item/9789240014107>. [Last accessed on 2020 Feb 03].