

Cervical cytological patterns among staff of Delta State University, Abraka, Nigeria

ABSTRACT

Introduction: Cytological analysis has severally been demonstrated by many authors as a tool in the assessment of the uterine cervix. Indeed this inexpensive technique, developed by George Papanicolaou, is now widely accepted and used in achieving significant reduction in cervical lesions in several countries. Though the patterns of cervical cytology have been described in many developed (western world) countries, rural communities like Abraka have perhaps not benefited from this exercise.

Materials and Methods: The study is a cross sectional descriptive study, aimed at describing patterns of cervical cytology in Delta State University, Abraka with ethical approval from the ethics and research committee (ref: DELSU/CHS/ANA/68/19). The 255 females staff aged 20 – 70 years of this tertiary institution in the South-South region of Nigeria were screened, following adequate counseling and obtaining informed consent. Data from the study were analyzed using Chi Square of significance while the Kruskal Wallis test for nonparametric data showed that patterns were from the same sample area.

Result: The frequency of cervical squamous cell abnormalities in this study was 7.04%. They comprised ASC-US (3.14%), LSIL (3.53%) and HSIL (0.39%). The others had no intraepithelial cell lesion (normal, inflammatory and atrophic smears), with a few inadequate smears.

Conclusion: This study has established the patterns of cervical smears cytology among staff of Delta State University, Abraka where normal smears were seen in most of the participants in their 4th, 5th and 6th decade of life, while ASCUS, LSIL and HSIL were seen in the pre-menopausal and post-menopausal age. This will serves as a standard for further research in cervical cytology in selected population.

Keywords: Cytology, cervix, Papanicolaou, Smear

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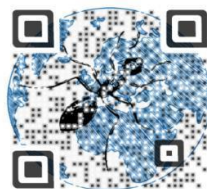
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INTRODUCTION

Cytological analysis has severally been demonstrated as a tool in the assessment of the uterine cervix.¹⁻⁵ This science involves interpretation of cells exfoliated from epithelial surfaces or removed from various tissues.⁶⁻⁸ Cytology, developed by George Papanicolaou in 1928, is now a widely accepted method for mass screening. Indeed, this inexpensive method has been accepted in several countries where a significant reduction in the incidence of cervical cancer has been achieved.^{5, 9} In Africa, where there is a high level of poverty, illiteracy, severe deaths of health awareness, poor medical infrastructures and paucity of personnel, the disease often presents at an advanced stage when surgical intervention and chemotherapy will be of no significant benefit.¹⁰

Saslow *et al.*,¹¹ described the uterine cervix as the lower region of the uterus. The cervix, which connects the body of the uterus to the vagina, has two parts separated by a transitional zone. The part of the cervix closest to the endometrial cavity of the uterus is called

the endocervix while the exocervix is closely related to the vagina.¹² There are two main types of cells covering the cervix; squamous cells on the exocervix and glandular or columnar cells on the endocervix. The point at which these cell types meet is the transformation zone, an area which changes with age and parity.^{13, 14}

Cancers of the cervix (cervical carcinoma and adenocarcinomas) are derived from its stratified squamous epithelium and the cells of the endocervix.⁴ Although it is observed fairly frequently, the mortality rate is decreasing rapidly worldwide because this carcinoma is now usually detected in its early stages by routine screening programs.^{15,16}

MATERIALS AND METHOD

This study was a prospective study, conducted between July 2016 and August 2016 in Delta State University Health Centre and cytology/histology laboratory of the Department of Human Anatomy. A voluntary screening programme was carried out after obtaining informed consent for the screening

exercise following adequate counselling. Two hundred and fifty five (255) female staff of the University were selected for this study. They consisted 176, 47 and 32 from Abraka, Asaba and Oleh campuses respectively.

Patient privacy and confidentiality was strictly observed. Each day prior to commencement of the screening programme the participants were given a short educational/counseling session by the principal investigator on the risk of cervical cancer, benefit of early detection, the aim of the study and procedure of the Pap smear in both English and Vernacular.

Participants were selected on the basis of the guidelines for a cervical cytological screening.¹⁷ Bio data/consent forms were administered to consenting respondents after explaining the exercise. The questionnaire administered entails participant's age, place of origin, sexual experience, other information associated with risk factors such as; history of tobacco smoking, number of sexual partners, coitarche, menarche and contact bleeding were obtained. A disposable cuscus speculum and an Iris spatula were used for the collection of

individual smears which were disposed immediately after use. A standard operating procedure was followed.¹⁸

The Bethesda system for reporting cervical cytology was used for reporting all the cytological findings observed during examination and reporting. All data were analysed using SPSS software. All statistical tests were performed and a p-value of ≤ 0.05 was considered statistically significant.¹⁹ Descriptive statistical analyses were presented as simple frequency, proportions and percentages in form of tabulation. Chi Square statistical tool was used to test for statistical significance. A non-parametric analysis was carried out using Kruskal Wallis tests.

RESULTS

Two hundred and fifty five (255 i.e. 83.6%) participants who fulfilled the inclusion criteria had their smears collected and analysed. The distribution of the cervical cytological smear patterns and age is outlined in the table 1.0. Micrographs were taken for at least each of the

features seen and reported as shown in the plate

1.0- 6.0

There were 158 (62%) normal smears, 14 (5.5%) inflammatory smears (Cervicitis), 18 (7.1%) abnormal smears {this includes a break down into 9 (3.53%) as LSIL, 8 (3.14%) as ASCUS, and 1 (0.4%) HSIL}, another 58 (22.8%) was Atrophic smears and 7 (2.8%) were unsatisfactory smear.

Only one had a Pap smear result of HSIL, as shown in table 1.0. The p-value for normal was less than the critical value of 0.05 (0.001) but others were all greater than the critical value of 0.05. The Kruskal Wallis test for analyzing non parametric test showed that the samples collected were from the same population.

Table 1.0: Frequency table of cytology patterns and Age Distribution

s/n	Age	Patterns														TOTAL	
		NILM				SIL				Insufficient Smear						F	%
		Normal		Atrophic Smear		Cervicitis		LSIL		ASCUS		HSIL					
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	21 – 30	8	(5.06)	-	-	-	0.00	-	-	-	-	-	-	-	-	8	3.14
2	31- 40	32	20.25	-	-	2	14.29	-	-	-	-	-	-	-	-	34	13.33
3	41 – 50	80	50.63	12	20.69	8	57.14	6	66.67	3	37.5	-	-	3	42.86	112	43.92
4	51 – 60	38	24.05	37	63.79	3	21.43	3	33.33	5	62.5	1	100	4	57.14	91	35.69
5	61 – 70	-	-	9	15.52	1	7.14	-	-	-	-	-	-	-	-	10	3.92
	Total	158		58		14		9		8		1		7		255	
			61.96		22.75		5.49		3.53		3.14		0.39		2.75		100

Chi square analysis

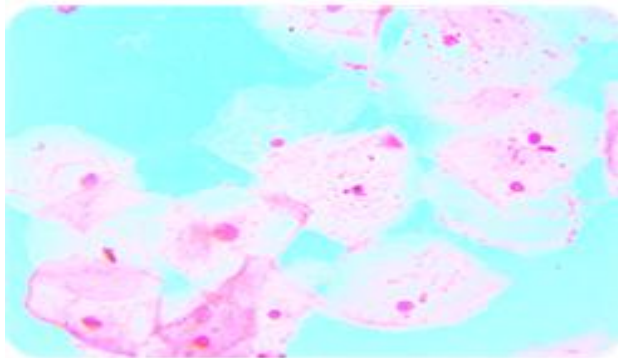
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F = frequency, NILM= no intraepithelial lesion for malignancy, SIL= squamous intraepithelial lesion

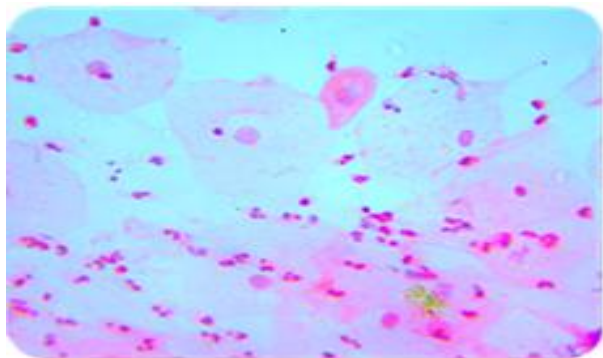
*** = p>0.05 (not significant) and ** = p< 0.05 (significant)**



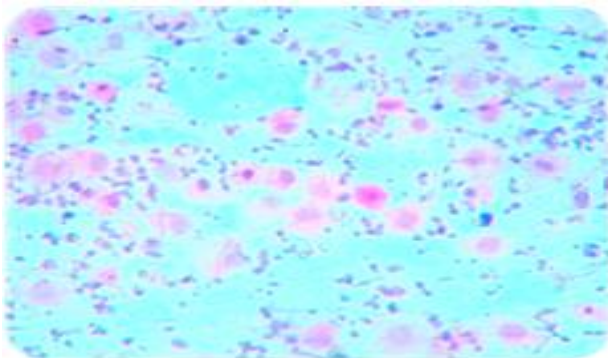
Pap Smear patterns



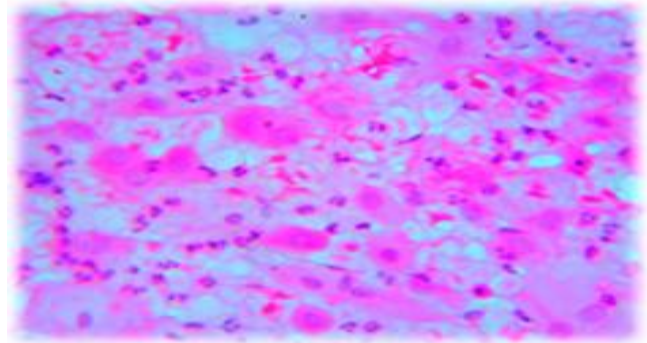
Normal smear



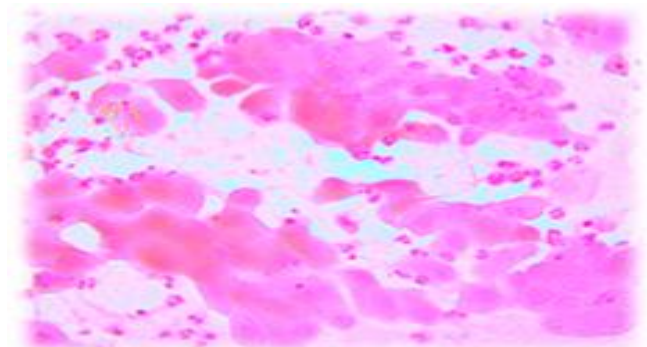
Inflammatory smear



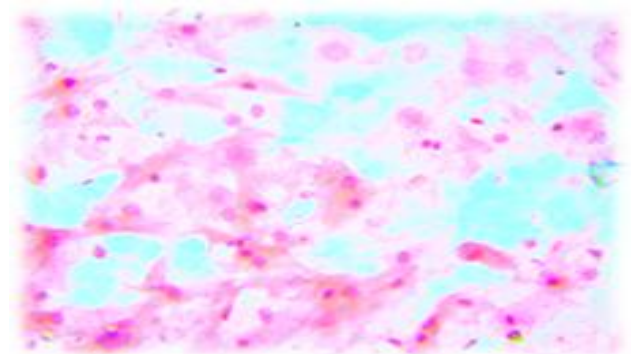
Atrophic smear



LSIL



HSIL



ASCUS

- A. Normal smear Pap 40X
- B. Inflammatory smear Pap 40X
- C. Atrophic smear Pap 40X
- D. LSIL Pap 40X
- E. HSIL Pap40X
- F. ASCUS Pap 40X

DISCUSSION

This study clearly indicated that normal smear patterns were detected in most of the participants. It is most likely that educational status and job description (university staff) would have influenced this finding. In a similar study in Bayelsa in the Niger Delta University Teaching Hospital, normal smear findings were similar to our study.²⁰ Again another observation in Owerri, reported similar findings. Findings in Calabar were lower²¹ while those observed in Nnewi were even far lower.²² It is important to note that educational status can possibly influence the occurrence of disease.

The age distribution of normal smears in this study, were observed to be predominately in the 5th decade of life however, normal smear were seen across the age groups screened. The atrophic smear was observed to be higher among women of postmenopausal age. This becomes evident in the 7th decade in which most patterns were mainly atrophic smear this was observed in (90%) out of the ten women in this age group.

This could be owing to the Hormonal changes at this age. There is usually a decline at menopause which in turn has effect on the morphology of the uterine cervix. Thus, Abati, *et al.*,²³ observed in their study, that cervico-vagina smear which displayed uniform enlargements in the squamous cell and the nuclei enlargement associated with atrophy resolves with local application of oestrogen.

There were a few inflammatory smears of the total number screened. Studies in Abakiliki by Ajah, *et al.*,²⁴ and Bayelsa by Sabageh, *et al.*,²⁰ had higher frequency of inflammatory smears. It was the most occurring smear pattern in the study by Sunita, *et al.*,²⁵ in India. These inflammatory smears though observed more in the 5th decade of life, were also seen to be present in the 4th through the 7th decades. However, only a smear was seen in the 7th decade.

Results of this study showed that 61.96% had normal smear while 5.49% had inflammatory smear. In comparison, a study by Haider *et al.*,²⁶ showed that 18.34% had normal smear while

75.33% had inflammatory smear. A study in Karachi by Nausheen and Karim²⁷ reported 30.55% normal smear and 60.44% inflammatory smear. Another study conducted by Khan, *et al.*,²⁸ revealed that 22.7% women had normal smear while 55.3% had inflammatory smear.

Study revealed 7.1% of abnormal smear patterns.

Khan *et al.*, (28) reported that 3.12% women had dysplastic smear. Ahmed *et al.*, (29) noted that 2.47% women had mild dyskaryosis. The abnormal smears observed in this study were less than a 10th of the total participants. The preponderant lesion was LSIL, followed by ASCUS meanwhile only a case of HSIL was detected in this study. This study clearly displayed that the abnormal lesion detected were benign lesion as there was no malignant lesions observed. In studies elsewhere in Calabar,²¹ HSIL was higher in frequency when compared to LSIL and ASCUS.

A few LSIL was observed among the women in the 5th and 6th decade of life. This is similar to the age group who had LSIL in a study in Calabar,²¹

Benin³⁰ and in Enugu³¹ however, the frequency in those studies was higher. In a specialized institution (Teaching Hospital in India) the values of abnormal smears were more than the normal smear.³² Reason for this could be that most participants were those with symptoms and had only presented for diagnosis and treatment.

It was also observed in this study that there was only a smear with HSIL pattern and this was from a woman in her sixties. In a study in India, it was only 2 smears that were observed with similar percentage frequency to the finding in this study,²⁵ but majority of the other studies in Abakiliki, Owerri, Calabar, Benin had high frequency of cervical smear patterns with HSIL^{21,22,30} This again is not far from the aforementioned fact that education, job description play a role in the occurrence of disease. However, the study in Abakiliki, Owerri, Calabar and Benin were hospital based.

Smear pattern with ASCUS was the second most occurring abnormal lesion in this study. A study in India,²⁵ ASCUS was lower than what was



observed in our study. In other studies in Owerri, Nigeria by Duru, *et al.*,³¹ findings observed were similar to ours. While in Abakiliki values were far lower than our study.²⁴

In a screening exercise like this, it is usual to find some inadequate smears and in this study, such smears were observed among women in their 5th and 6th decade of life, but they were only about 2.7%. Other authors with inadequate smears include Ajah *et al.*,²⁴ with 1.3% which is lower than our observation and Obaseki and Nwafor³⁰ with 7.7% which is higher than the one observed in this study.

CONCLUSION

This study highlighted the various cervical cytological patterns in Delta State University and the trend observed among the staff and the distribution across the various age groups. Cervical cytological patterns are seen as described cytologically with the conventional Papanicolaou smear or staining technique. Patterns described are synonymous as recorded in the Bethesda system of classification. This

study has given a documented clue of the patterns seen among staff of Delta State University. While reviewing all the results, it is concluded that premalignant and malignant lesions of the cervix are not uncommon in our set up. Cervical cytology (Pap smear) is cheap, simple, safe and effective method to detect premalignant and malignant lesions of the cervix at an early stage, and thus help the clinicians in early and more efficient management of patients.

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REFERENCE

1. Chan MK, Wong FW. 1990. The Papanicolaou test-Its Current Status. Hong Kong Practitioner 12. Available from:<http://sunzi1.lib.hku.hk/hkjo/article.js> *p?book=23&issue=230141*



2. Edmund SC. 2002. Cervical and Vagina Cytology Manuals. Oxford. 2638-01. 11:42, 2, 3.
3. Azodi M, Roy W. 2003. Premalignant lesions of the lower genital tract In Okonofua F, Odunsi K, 2003 editors. Contemporary Obstetrics and Gynaecology in Developing Countries. Benin City: Women's Health and Action Research Center. 255-88.
4. Kumar, Vinay, Abbas, Abul KK, Fausto N, Mitchell RN. 2007. Robbins Basic Pathology (8th Ed.). Saunders. Elsevier. 718- 721.
5. Leonard OA, Ezeonu PO, Ozonu NC, Ogonna LA, Olisaemeka PE, Chukwudi NO, Chukwuemeka AI, Onubiwe PN, Iheoma MA. 2015. A Five year Review of Cervical Cytology in Abakaliki, Nigeria. American Journal of Cancer Prevention. 3(2) 23-26.
6. Papanicolaou GN. 1954. Atlas of Exfoliative Cytology. Cambridge. Harvard University Press.
7. Ekanem IA, Ekanem AD. 2013. Pattern of Cervical Smear Cytology in Calabar, Nigeria. Journal of VLSI and Signal Processing. 2 (6), 37-41.
8. Nambiar S, Hegde V, Yadav N, Hallikeri K. 2016. Improvization of conventional cytology by centrifuged liquid-based cytology in oral exfoliative cytology specimen. Journal of Cytology / Indian Academy of Cytologists. 33(3), 115–119.
9. Laara E, Day NE, Hakama M. 1987. Trends in mortality from cervical cancer in the Nordic countries: association with organised screening programmes. Lancet. 1:1247-9.
10. Eddy DM. 1990. Screening for Cervical Cancer. Annals of International Medicine. 113: 214-226

11. Saslow D, Solomon D, Lawson HW, *et al.*, 2014. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer. *Journal of Lower Genital Tract Disease*. 16 (3):175-204.
12. Miller-Keane 2017. Encyclopedia and Dictionary of Medicine Nursing and Allied Health, Seventh Edition Retrieved June 14, 2017 from <http://medical-dictionary.thefreedictionary.com/Female+womb>.
13. Moore KL, Dalley AF, Agur AMR. 2014. Clinically Oriented Anatomy, (7th Edn.) Lippincott Williams & Wilkins: Baltimore.
14. Ellis H. 2006. Clinical Anatomy A revision and applied anatomy for clinical students, (11th edition). Blackwell publishing. ISBN 13: 978-4051-3804-8. Pg: 84-6.
15. Mescher A. 2009. Junqueira's Basic Histology: text and atlas, 12th ed. Pg 497-499 ISBN 13: 978-0071630207
16. Young B. 2013. Wheaters's functional histology 6th ed pg 508. ISBN 13: 978-0071630207
17. Solomon D, Nayar R (eds). 2004. The Bethesda System for Reporting Cervical Cytology: Definitions, Criteria, and Explanatory Notes, 2nd ed. New York, Springer.
18. Drury and Wallington. 1967. Carleton's Histological Technique, -4th ed. Toronto. Oxford University Press New York. 24:381-382.
19. Andy IJ. 1992. Fundamental Statistics for Education and the Behavioural Science: Kraft books limited, Nigeria.
20. Sabageh D, Sabageh AO and Oboma YI. 2012. Cervical cancer screening; an experience from the Niger Delta region of

- Nigeria. *Annals of tropical pathology*. 3(1) 41-46.
21. Omotoso A, Odusolu P, Nnoli M. 2015. Abnormal Cervical Smear in a Tertiary Hospital in Nigeria Sch. *Journal Applied Medical Science*. 3(2A):589-594
22. Mbamara SU, Ukah CO, Onyiaorah IV, Ikpeze O, Okonkwo J. 2014. The Pattern of Cervical Cytology in Women Attending Various Clinics at a Tertiary Hospital in Anambra Southeast, Nigeria. *British Journal of Medicine & Medical Research*. 4(33): 5218-5228.
23. Abati A, Jaffurs W, Wilder AM. 1998. Squamous Atypia in the Atrophic Cervico-Vagina Smear. *American Cancer Society*. 84(4): 218-25.
24. Ajah LO, Ezeonu PO, Ozonu NC, Iyoke AC, Nkwo PO, Ajah MI. 2015. "A Five Year Review of Cervical Cytology in Abakaliki, Nigeria." *American Journal of Cancer Prevention*. 3(2): 23-26.
25. Sunita A, Bamanikar, Dadaso S, Baravkar, Shirish S, Chandanwale P, Dapkekar DY, Patil V, Pimpri P. 2014. Study of cervical pap smears in a tertiary hospital. *Indian Medical Gazette*. pg 250
26. Haider G, Parveen Z, Anjum F, Munir A. 2013. Pap smear, an important screening tool to detect precancerous stage of carcinoma of cervix. *Journal of Ayub Medical College Abbottabad*. 25(1-2)
27. Nausheen A, Karim SA. 2004. The screening for cervical cancer by Pap smear in hospital based population. *Annals of Abbasi Shaheed Hosp Karachi Medical Dental College*. 9:544-7.
28. Khan MS, Raja FY, Ishfaq G, Tahir F, Subhan F, Birjees MK *et al.*, 2005. Pap smear screening for precancerous conditions of the cervical cancer. *Pakistan Journal of medical Research*. 44:111-3.
29. Ahmed N, Mehboob R. 2002. Cervical intraepithelial neoplasia recent trends in

- diagnosis and management. Pakistan Journal of Medical Research. 41:43-5.
30. Obaseki DE, and Nwafor CC. 2013. Cervical Cancer Screening In Benin City, South-South Nigeria. Journal of Dental and Medical Sciences. 5(1), 16-19.
31. Duru CB, Oluoha RU, Uwakwe KA, Diwe KC, Merenu IA, Emerole CA, Ndukwu EU, Iwu CA. 2015. Pattern of PAP smear test results among Nigerian women attending clinics in a teaching hospital. International Journal of current Microbiological Applied Sciences. 4(4): 986-998.
32. Atla BL, Uma P, Shamili M, Kumar SS. 2015. Cytological patterns of cervical pap smears with histopathological correlation. International Journal of Research in Medical Sciences. 3(8):1911-1916

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