

## Age And Pattern Of Cervical Smear Cytology In Federal Medical Centre Asaba – A Five Year Review

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### ABSTRACT:

**Background:** Cancer of the cervix is a leading cause of cancer deaths among women in low and middle-income countries. Screening for premalignant lesions of the cervix using a cervical smear is preventive. The pattern of cytological findings varies with age; this pattern is not well known in our environment.

**Objective:** To assess the pattern of cervical smear cytology in the Federal Medical Centre, Asaba.

**Methods:** This was a retrospective descriptive study of all cervical smears received and processed at the histopathology department of the Federal Medical Centre (FMC), Asaba, between 1st January 2016 and 31st December 2020. Those with inadequate data were excluded from the study. The classification was by the 2014 Bethesda system. Data collected was analyzed using the SPSS (IBM version 20), and the results were presented in frequencies, percentages, and tables.

**Results:** A total of 1184 cervical smear samples were received in the histopathology department of FMC, Asaba, during the period of study. One thousand one hundred and fifty were satisfactory. The mean age was 43+/-10.58 and ranged between 19 and 76 years. The age group with the largest number of cervical smears was 41–50 years (412; 35.8%). About 807(70.2%) were normal smears while 343(29.8%) had abnormal results. Of the abnormal results, 173(15.0%) were negative for intraepithelial cell abnormalities, while 170(14.8%) had intraepithelial cell abnormalities. Of these were ASC-US (13; 1.1%),

LSIL (129; 11.2%), HSIL (28; 2.4%). The prevalence of HSIL increased with age; the highest was >60 years (35.7%). The reverse was the case for the lower grade lesions. There was a significant relationship between the ages of the patient and the pattern of cervical smear results ( $P < 0.01$ ).

**Conclusion:** Population screening programs should be encouraged for the inclusion of younger women in whom lower grade lesions are commoner to reduce the prevalence of cervical cancer in our population.

**Keywords:** Age, screening, cervical smear, cytology, cervical intra epithelial lesion, and cervical cancer.

### 1. Introduction

Cancer of the cervix is a potentially preventable disease.<sup>1</sup> Approximately 570 000 cases of cervical cancer and 311000 deaths from the disease occurred in 2018.<sup>2</sup> Cervical cancer was the fourth most common cancer in women, ranking after breast cancer (2.1 million cases), colorectal cancer (0.8 million) and lung cancer (0.7 million).<sup>2</sup> It is the commonest in developing countries, and it progresses slowly in the body.<sup>3</sup> Majority of the morbidities and mortalities from cervical cancer occur mainly in these developing countries; this can be largely as a result of late presentation when only palliative care is available.<sup>4, 5</sup> The goal of cervical cancer screening is to find pre-cancers early so they can be treated before they transform into cancer.<sup>6</sup>

<sup>7</sup> Although screening is a known cost-effective strategy used in reducing the burden of cervical cancer worldwide, its uptake, particularly in developing countries, is still abysmal.<sup>8,9</sup>

The Pap smear test results are reported using the 2014 Bethesda nomenclature.<sup>10</sup> According to this classification system, the adequacy of the specimen was properly assessed based on either being satisfactory or unsatisfactory or a general categorization of either being normal or abnormal. The abnormal result could further be divided into negative for intraepithelial lesion/malignancy, epithelial cell abnormality, which could either be of squamous cell or glandular origin and others.<sup>10</sup> The squamous cell type is further divided into atypical squamous cells (of undetermined significance ASC-US and cannot exclude HSIL – ASC-H), low grade squamous intraepithelial lesion (LSIL), high grade squamous intraepithelial lesion (HSIL) and squamous cell carcinoma.

The glandular cell type is further divided into Atypical glandular cells, endocervical adenocarcinoma in situ, adenocarcinoma, and others.

This study assesses the pattern of Pap smear results in FMC, Asaba, over five years.

## 2. Methodology

### Study Design

This was a retrospective study of all cervical smears received and processed at the Pathology department over 5 years (1<sup>st</sup> January 2016 – 31<sup>st</sup> December 2020) in Federal Medical Centre, Asaba.

### Setting

Federal Medical Centre Asaba is a tertiary health institution located in Oshimili South LGA of Delta State situated in the South-South Geopolitical zone of Nigeria. It provides primary, secondary and tertiary health services to the Delta populace. It also serves as a referral center for patients from neighbouring states like Anambra and Edo.

The Histopathology department provides services to the entire hospital as the need arises during working hours of weekdays. The department has two Consultants and other support staff that direct activities of the department. The cervical cytology smear testing is one of their services in conjunction with the Obstetrics and Gynaecology department where

the samples are collected before being sent for histopathology evaluation.

### Study Population

Cervical cytology smears performed at FMC Asaba between January 2016 and December 2020 were studied and analyzed.

### Data collection methods

A register of all women who had a cervical cytology smear done at the histopathology department is maintained electronically. This register was used to identify cervical cytology smear results done between 1<sup>st</sup> January 2016 and 31<sup>st</sup> December 2020. Relevant data retrieved included the age, cervical cytology smear pattern and the amount of cervical cytology smears done annually. A proforma was designed and used to extract these data.

## 3. Data Analysis

Data collected was entered into and analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0 (IBM SPSS). The results were presented in statements, frequency distribution tables, and charts. The test of significance was by the chi-square test and Fisher's exact test. The level of significance was considered if the p-value was < 0.05

### Ethical Approval

Approval for the study was granted by the Research and Ethics Committee of Federal Medical Centre Asaba.

## 4. Results

The total number of pap smears received was 1184. Thirty-four (2.9%) were unsatisfactory and, therefore, not included in the study. One thousand one hundred and fifty (1150) smears were analyzed. The age range of the women screened was between 19 and 76 years. The largest number of smears was between ages 41-50 years (412 = 35.8%) and 31-40 years (366 = 31.8%) while (177 = 15.4%) was for age bracket 51-60 years, (119 = 10.3%) for 21-30 years and (75 = 6.5%) for ages above 61 years. Only 0.1% was found in the 20-year age group below. (Table 1)

The year 2019 had the highest amount of cervical cytology tests done, with 299 (26.0%) smear results. This was followed by 275 (23.9%) for 2017, 232 (20.2%) for 2016 and 216 (18.8%) for 2018. The year 2020 (128 = 11%) witnessed the lowest amount of Pap smears done in the last

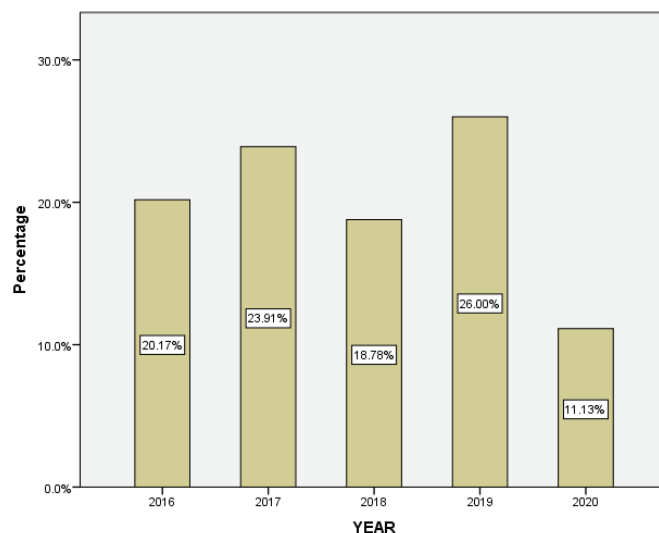
five years, as shown in Figure 1.

Majority of the smears 807(70.2%) were in the category of normal while 343(29.8%) had an abnormal Pap smear result. Of the abnormal results, 173(15.0%) were negative for intraepithelial lesion whereas 170(14.8%) were positive. These positive smear results were made of ASC-US 13(1.1%), LSIL 129(11.2%) and HSIL 28(2.4%). There was no invasive carcinoma found as shown in Figure 2.

Smears that revealed an HSIL occurred more in the 51-60 years age group and were closely followed by the 41- 50 years age group, while smears that revealed an LSIL occurred more in the 41-50 years age group and were followed by the 31-40 years age group. Cervical smears with ASCUS also occurred more in the 41-50 years age group. There appeared to be a significant relationship between the age of the patients examined under the period and their cervical cytology results, as the P-value was < 0.05. See Table 4

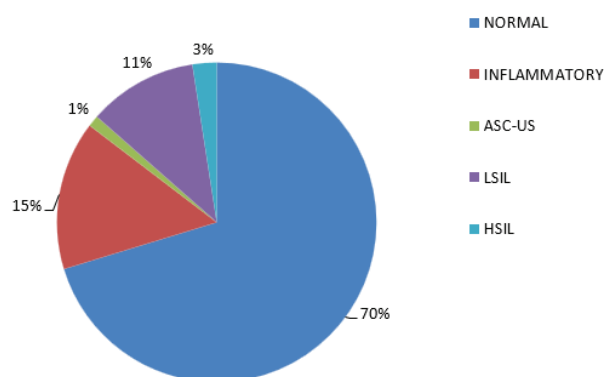
**Table 1. Age distribution of the cervical smears**

Age	Frequency	Percentage(%)
<20	1	.1
21-30	119	10.3
31-40	366	31.8
41-50	412	35.8
51-60	177	15.4
>61	75	6.5
Total	1150	100.0



**Figure 1. The yearly trend of uptake of cervical cytology smears.**

### RESULT OF PAP SMEAR CYTOLOGY



**Figure 2 Pie Chart showing the pattern of distribution of the cervical smear**

Using the chi-square test and Fisher's exact test for correction, as more than 20% of the cells have an expected count of less than 5.

**Table 4. Relationship between the age of the patient and their cervical cytology result.**

NORMAL		RESULT					Total	X <sup>2</sup>	P value
		INFLAMMATORY	ASC-US	LSIL	HSIL				
AGE	<20	1	0	0	0	0	1	79.854	0.000
	21-30	92	17	2	8	0	119		
	31-40	268	62	1	32	3	366		
	41-50	301	53	5	46	7	412		
	51-60	111	28	4	26	8	177		
	>61	34	13	1	17	10	75		
Total		807	173	13	129	28	1150		

From the table above, there is a significant relationship between age and cervical cytology results of patients. The p value is  $<0.05$ .

## 5. Discussion

Cervical cytology smears are usually taken for screening of cervical cancers as this disease may be prevented by early detection alongside appropriate management of precursor lesions.<sup>2</sup>

<sup>11</sup> The low rates of cancer of the cervix in more developed climes are probably the result of successful cytological screening. This is possible because of the routine against opportunistic and institution-based screening in low- and middle-income countries; the latter is erratic and does not cover all the relevant groups. These screening programs have counteracted the increased exposure to risk factors among generations born after 1945, as established from age-period-cohort analyses.<sup>2</sup>

Of the 1150 smears analyzed, 807(70.2%) were normal smears, while 343(29.8%) had abnormal Pap smear results. The abnormal Pap smear result obtained in this study was similar to the results in Imo<sup>12</sup> and Zaria<sup>13</sup> but was higher than the results obtained in Calabar,<sup>14</sup> Enugu<sup>15</sup>, and Saudi Arabia.<sup>16</sup> It was, however, lower than the results obtained in Osun,<sup>17</sup> Gombe<sup>7</sup>, and India.<sup>18</sup> Of the abnormal results, 173(15.0%) were negative for intraepithelial lesions whereas 170(14.8%) were positive for intraepithelial lesions. Inflammatory lesions (15%), such as acute and chronic cervicitis, accounted for the smears that were negative for intraepithelial lesions. This was similar to the 14.6% published by Obaseki et al. in Benin<sup>19</sup> and 13% in Zaria,<sup>13</sup> but lower than 52.5% in Gombe,<sup>7</sup> 29.9% in Ile-Ife<sup>17</sup>, and 50.2% in India.<sup>18</sup> Inflammatory lesions obtained in our study were higher than the 5.2% obtained in Saudi Arabia.<sup>16</sup>

The LSIL 129(11.2%) was the commonest intraepithelial lesion seen in this study and was similar to the findings in Zaria,<sup>13</sup> Ile-Ife<sup>17</sup>, and Benin.<sup>19</sup> This was followed by HSIL 28(2.4%) and ASC-US 13(1.1%). However, Duru et al. in Imo reported HSIL(36.8%) to be the commonest intraepithelial lesion, followed by squamous cell carcinoma(35.1%) and LSIL(14.0%)<sup>12</sup> while Samar et al.<sup>20</sup> and Elhakeem et al.<sup>21</sup> reported ASCUS to be the commonest intraepithelial lesion in Saudi Arabia. The varying pattern could be due to the

differences in the population and method of screening.

The year 2019 had the highest number of cervical smears done over the five-year review of our study, while 2020(11.1%) had the lowest amount of Pap smears done. This was probably due to the effect of the Covid-19 pandemic on the reproductive health of women.

The oldest patient with a positive smear result in this series was 76 years old, supporting the facts by some authors that there should be no upper age limit for the first smear.<sup>15</sup> The majority of the women who had a pap smear were between the 41- 50 years age group 412(35.8%). This was followed by the 31-40 years age group, 366(31.8%). This was comparable with similar studies in Imo,<sup>12</sup> Zaria,<sup>13</sup> Calabar,<sup>14</sup> Ile-Ife,<sup>17</sup> Benin,<sup>19</sup> India<sup>18</sup> and Saudi Arabia.<sup>21</sup> The majority of the ASC-US and LSIL cases also occurred in this 41-50-year-old age group, while a higher proportion of pap smear results with HSIL occurred in the 51-60-year-old age group. This was in contrast with findings in Benin<sup>19</sup> and Saudi Arabia<sup>20</sup>, where LSIL occurred more in the 50-59-year-old group while HSIL occurred more in the 40-49-year-old age group.<sup>20</sup>

This study showed a significant relationship between age and the pattern of cervical smear results, as the p-value was  $< 0.05$ . It also showed that the number of abnormal lesions in the different age brackets increased with age. This emphasizes the fact that there are more women affected by increasing age, hence the importance of organized screening.

## 6. Conclusion

Screening for cancer of the cervix has been proven to be an effective tool in the detection of pre-invasive stages of cervical cancer. Population based screening should be encouraged for adequate inclusion of all relevant age groups, especially the younger ones in whom the lower grade lesions are commoner. Hence, all tiers of government and the organized private sector should devise a strategy for effective cervical smear uptake with follow-up and referrals to specialist clinics for treatment when abnormal smears are found.



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