

## Papanicolaou Smear in Abuja Revisited

Isah AY<sup>1</sup>, Adaji JA<sup>1</sup>, Akaba GO<sup>1</sup>, Oluwole OP<sup>2</sup>

### ABSTRACT

**Background:** Papanicolaou smear has been established as a cost effective screening method for Carcinoma of the cervix and had been used with celebrated successes in developed societies. Its utilization has remained abysmally low in Africa with attendant alarming rate of overt advanced cancer among her female population. Recent government public outreach programs abound and there is need to evaluate the effectiveness of these campaigns on the outcome of smear results with a view of future adjustment in outreach strategy.

**Objectives:** To review the results of Pap smears conducted in University of Abuja Teaching Hospital with a view of documenting the prevalence of positive smears among the study population.

**Materials and Method:** A three year retrospective study of Pap smears that were carried out at the University of Abuja Teaching Hospital between January 1, 2010 and December 31, 2012. The records of the patients were retrieved from medical record Department and analysed for age of the patient, parity, educational status, marital status, findings on vaginal examination, indication for pap smear and Pap smear results. The results were presented and discussed using simple percentages.

**Results:** One thousand two hundred and seventy four (1274) women had cervical smears during the study period. Ninety eight percent of patients were having their cervical screening for the first time at the mean age of 39.13±9.7 years. Positive Pap smear result was obtained in 39.5% of symptomatic and 24.4% of asymptomatic patients while Negative smears were recorded in 63.8% of the patients. Human Papilloma Virus (HPV) changes occurred in 5.7%, while atypical cells of undetermined significance (ASCUS) were observed in 4.9% of the patients. Low grade squamous intraepithelial lesions (LSIL) were the commonest cervical smear abnormality observed in 9.6% of the patients.

**Conclusion:** The mean age at first screening remain high with corresponding high rate of abnormal smear in both symptomatic and asymptomatic patients. The provider initiated counseling and testing is encouraged for early identification and treatment of precancerous lesions

*of Carcinoma of Cervix. Development and strict adherence of a National guideline for free routine screening of all women of reproductive life may increase the uptake.*

**Key words:** Cervical cancer, Screening, Pap smear, Utilization.

### INTRODUCTION

Cervical cancer is one of the three most common cancers in women with more than 85% of the global burden due to the disease occurring in developing countries, where it accounts for 13% of all female cancers<sup>1,2</sup>. It is the second most common cancer in Nigerian women and the most common female genital cancer constituting a major cause of mortality among Nigerian females in their most productive years<sup>3</sup>. Incidence rates of 66.2%<sup>4</sup> and 63.1%<sup>5</sup> have been reported in Zaria and Ilorin respectively. Most cervical cancers occur in women who has either never been screened or who were not screened adequately. In 2010, it was estimated that every year, 493,243 women are newly diagnosed with cervical cancer with over 50% death from the disease<sup>2</sup>. In a recent report, it was revealed that over the past 30 years mortality from cervical cancer has dropped by more than 50% in developed countries<sup>6,7</sup>. This has been largely attributable to the wide spread awareness and use of Pap smear. Still, American Cancer Society estimates of more than 12,000 new cases and more than 4000 deaths from cervical cancer in 2013 highlight the need for continued screening<sup>8</sup>. In Africa the estimates indicate that every year 78,897 women are diagnosed and 61,671 die from the disease<sup>9</sup> owing to lack of dedicated policy regarding the creation of awareness and utilization of this golden opportunity of screening. The steady decline in incidence and mortality of the disease as a result of cervical screening programmes in developed society is overwhelming. In Canada, the disease occupies 11<sup>th</sup> position among the cancer cases due to Ontario guidelines which recommends screening with Papanicolaou smear or liquid-based cytology annually beginning after initiation of sexual activity<sup>10</sup>. A similar sharp decline is also reported in England where the incidence rates of cervical cancer has almost halved in the last 20 years (from 16.2 to 8.3 per 100,000 female population) and mortality rates dropped by almost two-thirds (from 6.4 to 2.2 per 100,000) following the establishment of the Cervical Screening Programme in 1988<sup>11</sup>. A brief description of the disease indicates that most HPV infections are transient and the body is able to clear them. It is persistence of HPV infections that lead to cervical cancer. HPV is most common in teens and in women in their 20s<sup>9</sup>. Most women, especially those under age 21, are able to clear the infection in 1-2

<sup>1</sup>Department of Obstetrics & Gynaecology

<sup>2</sup>Department of Pathology, University of Abuja Teaching Hospital, Abuja.

Corresponding Author: Isah AY, Tel: 08035047547. E-mail address: aliyuisah69@gmail.com

years<sup>9</sup>. In women over 30, however, HPV infections are more likely to be persistent and rates of high-grade lesions are increased. Most HPV-related lesions progress to cervical cancer slowly. It takes, on average, 3-7 years for severe dysplasia to progress to invasive cervical cancer<sup>6</sup>. Following this history, the new guideline of screening has been developed<sup>12</sup>.

The disease is caused by infection with persistent oncogenic human papilloma virus. Hence, timely vaccination with HPV vaccine is an effective primary prevention method<sup>11</sup>. The cost of this vaccine and its rare availability has however made it inaccessible in developing countries, thereby leaving secondary prevention through cervical cytology as the best alternative method of cervical cancer prevention for now. Knowledge and awareness of cervical cancer screening in Nigeria is gaining popularity but the absence of an organized screening program remains a great challenge<sup>15</sup>.

Awareness of cervical cancer screening program is variable in Nigeria, with women living in cities and female health and non-health professionals who work in health institutions showing higher levels of awareness than their rural counterpart<sup>14</sup>. Though, there exists varied screening tools for cervical cancer including cytology along with Human Papilloma Virus (HPV) testing, Visual screening methods [using acetic acid (VIA) or Lugol's iodine (VILI)], Pap smear remain the gold standard in low resource settings<sup>14</sup>. Paradoxically, however, the services of Pap smear are located in urban-based tertiary medical institutions<sup>5</sup> and other urban facilities.

Cervical epithelial cell abnormalities in the Pap smear represent a spectrum of intraepithelial lesions that lie along the pathway, from mild-to-severe dyskaryosis to invasive cancer. The utilization of cervical cytology smear has long been reported as extremely low in fast growing Nigerian's Capital, Abuja with high rate of invasive cancer over a decade ago<sup>16</sup>. Whether this low utilization has improved over time remained to be evaluated. University of Abuja Teaching Hospital as a tertiary institution receives patronage from surrounding rural communities and research findings often reflect the pattern of the disease in the neighbouring states. The aim of this study therefore is to determine the average age at first screening and document the pattern of epithelial cell abnormalities in the Pap smears carried out on patients that presented at the gynaecological and general outpatient department of the hospital over the 3 year period. This is expected to guide the policy makers on how to evaluate and appraise their current campaign strategy

in educating the populace on cervical cancer screening. The findings may also facilitate counseling of patients and the organization of a public health system for cervical cancer screening by Pap smear investigation in the institution and beyond.

## MATERIALS AND METHODS

This was a 3 year retrospective study of Pap smears carried out between January 1, 2010 and December 31, 2012 at University of Abuja Teaching Hospital, Abuja. The records of the patients were retrieved from the medical record department and analysed for age of the patient, parity, educational status, marital status, examination findings, indication for Pap smear and cervical cytology findings. The revised Bethesda system<sup>17</sup> is the reporting system adopted by the pathologists in the hospital.

The data was analyzed using simple percentages, and inferential statistics were obtained using the Statistical Package for the Social Sciences (SPSS) version 20.0. Formal approval from the ethics and research committee of the institution was obtained.

## RESULTS

A total of 1,274 cervical smears were conducted during the period but only the records of 1,256 could be retrieved and analysed. The mean age of the patients was 39.1 ±9.7 years (range 18-85 years). About 69% were 30-49 years old. Only 12.8% had five or more children and majority (91.8%) were married. One thousand two hundred and twenty four (97.5%) were having the smear for the first time yet, majority (64.9%) of the patients had at least secondary education. Other socio-demographic characteristics are as presented in table I.

Eight hundred and one (63.8%) of the smears were Negative (normal). Low grade squamous intraepithelial lesions were the commonest abnormal smear finding in 9.6% of cases. High grade squamous intraepithelial lesions and inflammatory smears accounted for 5.6% each. Table II shows findings at cervical cytology.

Majority (83.9%) of the abnormal smear results were recorded among women with Low parity (0-4) as shown in Table III

Parity of  $\geq 5$  accounted for 16.1% of the screened population

years<sup>9</sup>. In women over 30, however, HPV infections are more likely to be persistent and rates of high-grade lesions are increased. Most HPV-related lesions progress to cervical cancer slowly. It takes, on average, 3-7 years for severe dysplasia to progress to invasive cervical cancer<sup>9</sup>. Following this history, the new guideline of screening has been developed<sup>12</sup>.

The disease is caused by infection with persistent oncogenic human papilloma virus. Hence, timely vaccination with HPV vaccine is an effective primary prevention method<sup>11</sup>. The cost of this vaccine and its rare availability has however made it inaccessible in developing countries, thereby leaving secondary prevention through cervical cytology as the best alternative method of cervical cancer prevention for

**Table I: Socio-Demographic Characteristics of Patients**

Characteristics	Frequency(n)	Percentage(%)
<b>Age</b>		
<20	5	0.4
20-29	200	15.9
30-39	462	36.8
40-49	406	32.3
50-59	160	12.7
60-69	11	0.9
=70	12	1
<b>Total</b>	<b>1256</b>	<b>100</b>
<b>Parity</b>		
0	233	18.6
1-4	862	68.6
=5	161	12.8
<b>Total</b>	<b>1256</b>	<b>100</b>
<b>Marital status</b>		
Married	1149	91.5
Single	67	5.3
Separated/divorced	14	1.1
Widowed	26	2.1
<b>Total</b>	<b>1256</b>	<b>100</b>
<b>Educational status</b>		
Tertiary	370	29.5
Secondary	445	35.4
Primary	307	24.4
No formal education	134	10.7
<b>Total</b>	<b>1256</b>	<b>100</b>

**Table II .Findings at Cervical Cytology**

Finding	Frequency(n)	Percentage(%)
Negative	801	63.8
HPV changes	71	5.7
ASCUS	61	4.9
ASC-H	1	0.1
AGC	3	0.2
LSIL	121	9.6
HSIL	70	5.6
Malignant	2	0.2
Inflammatory	70	5.6
Inadequate	56	4.5
<b>Total</b>	<b>1256</b>	<b>100</b>

**KEY:**

ASCUS: Atypical squamous cells of undetermined significance

ASC-H: Atypical squamous cells -cannot exclude high grade squamous intraepithelial lesions

AGC: Atypical glandular cells

LSIL: Low grade squamous intraepithelial lesions

HSIL: High grade squamous intraepithelial lesions

**Table III: Parity of Women with Abnormal Pap Smear**

Parity	Number of patients with abnormal Pap smear	Percentage (%)
0	65	19.7
1-4	211	64.2
=5	53	16.1
<b>Total</b>	<b>329</b>	<b>100</b>

**Table IV Number of patients with epithelial cell abnormality in different age groups**

Age group(years)	HPV changes	ASCUS	ASC-H	AGC	LSIL	HSIL	Malignant	Total
<20	0	0	0	0	0	0	0	0
20-29	23	7	0	0	20	5	0	55
30-39	23	29	0	1	42	26	0	121
40-49	19	20	0	1	40	26	0	106
50-59	6	5	1	1	17	9	0	39
60-69	0	0	0	0	1	1	1	3
=70	0	0	0	0	1	3	1	5
<b>Total</b>	<b>71</b>	<b>61</b>	<b>1</b>	<b>3</b>	<b>121</b>	<b>70</b>	<b>2</b>	<b>329</b>

**Table V: Indications for the Pap smear and the results**

Indications	Cytology report										
	Normal	HPV	ASCUS	ASC-H	AGC	LSIL	HSIL	Malignant	Inflammatory	Inadequate	Total
Asymptomatic	764	55	56	1	2	114	43	0	28	46	1109
Symptomatic	37	16	5	0	1	7	27	2	42	10	147
Total	801	71	61	1	3	121	70	2	70	56	1256

**DISCUSSION**

One thousand two hundred and seventy four (1,274) patients had Pap smear test conducted in the hospital during the period under review. This was a relatively higher rate of utilization when compared with the previous work in the same facility 13 years earlier by Olaniyan et al<sup>16</sup> where in a similar 3 year review, only 118 patients were screened. This increased uptake may be attributable to more liberal counseling and subsequent testing of all Gynaecological patients that give consent in the hospital. The rising population of Nigeria's Federal capital and the upgrading of the hospital from the status of a specialist to a teaching hospital eight years ago may have also accounted for

the increase in number of patients patronizing the hospital.

The incidence of cytological abnormalities in the study was 26.2%. This is lower than the earlier reported incidence of 51%<sup>16</sup> in the same institution but higher than 4.1% reported from Lagos<sup>18</sup>. The reported lower incidence in the same institution over different periods may be explained by the difference in sampling population. Olaniyan et al<sup>16</sup> reviewed result from selected population of patients in whom there was underlying indications for cervical smear compared with the current opt in – opt out approach.

Majority of the women were having their maiden Pap smear with majority of women between the ages of 30-49 years constituting 69.1%. This is in sharp contrast to the new guideline where women are expected to initiate their screening at 21 year old<sup>12</sup>. Our finding is however similar to the report by Anorlu et al<sup>17</sup> and Chukwali et al<sup>19</sup> in Lagos and Enugu respectively. The implication of this finding may be that women whose abnormal cytology may have been detected earlier and so managed effectively are thus presenting late with higher degree lesions when little or no curative success may be expected. The new American College of Obstetricians and Gynecologists (ACOG) guideline recommendation that screening for cervical cancer precursors be initiated as early as 21 years irrespective of HPV vaccination status<sup>12</sup> is corroborated by our finding that as much as 16% of the abnormal smears were recorded among patients aged 20 – 29 years. Human papilloma viral changes were the commonest finding in women between 20-29 years in the study. This is comparable to the mean age of 28.3 years for HPV changes in the earlier study in the center<sup>16</sup>. This is however expected to have no or very deleterious effects as the vast majority of HPV infections acquired at adolescence and early 20s spontaneously clear within 2 years after infection and are of little long-term clinical significance<sup>12</sup>. Only 16.1% of the abnormal smears in this study were found in women of high parity ( $\geq 5$ ). This was not unexpected as most of the smears were carried out on Gynaecological out patients' clinic where the bulk of the patients had come for infertility work up. It may be likely that women of high parity that are considered high risk group for cervical cancer may have been probably left out of the opportunistic screening at the centre. This is similar to the finding by Anorlu et al<sup>18</sup> in Lagos where only 27% of the screened populations were women of high parity. A community centered screening programme using a well laid out protocol may be more ideal for all women.

Majority of the women (91.8%) were married. This is similar to a previous observation<sup>16</sup>. This finding may be related to the source of population under review and African societal believes where unmarried single women are least expected to present in Gynaecological clinic for complaints such as infertility.

About 65% of the patients had at least secondary education, yet majorities were having the smear for the first time. A similar finding was reported by Eke et

al<sup>20</sup> in South East Nigeria, where educational level did not significantly influence the uptake and practice of cervical cancer screening. It may therefore be inferred that a National policy of dissemination of the awareness and need for voluntary screening is highly needed.

Low grade squamous intraepithelial lesion was the commonest abnormality observed. This is similar to the finding from Lagos<sup>18</sup>. This may be in keeping with reports from United States of America where a rising incidence of LSIL have been reported<sup>21</sup>. HSIL was seen in 5.6% of patients with 3 cases in those aged  $\geq 70$  years. This observation corroborate the new ACOG guideline that screening should be continued above 65 years when an earlier result indicate high grade intra epithelial lesion of CIN 2 or 3<sup>12</sup>. The guideline however added that screening beyond 65 years in the presence of 3 previous consecutive normal smears is unnecessary. Out of the 5 cases of suspicious looking cervix, 3 had cervical smear abnormalities and none of the women with HSIL had a suspicious looking cervix. This re-echoes the fact that cervical cancer screening, based only on clinical impression and visual examination may be quite unpredictable and further analysis may be required<sup>22</sup>. Inflammatory changes observed in 5.6% of the cases were much lower than the 31% reported by Olaniyan et al<sup>16</sup> and 53.3% by Anorlu<sup>18</sup> in previous reports. It is probable that the prior treatment of patients with reproductive tract infection before Pap smears were conducted may have been the responsible factor. Inflammatory changes on Pap smear are considered relatively benign. It is however cautioned that report of inflammation on Pap smear should not be treated in isolation and ignored as being absolutely insignificant<sup>23</sup>.

A small percentage (4.5%) of the smears was reported as inadequate. This is comparable to 4.9% reported in Lagos, Nigeria<sup>18</sup>. It has been observed that inadequate smears have tendencies to increase false – negative smears and improve specimen collection techniques have been employed to minimize unsatisfactory specimen in the United States<sup>24</sup>.

## CONCLUSION

The high prevalence of abnormal cervical smears in symptomatic women as well as those who were otherwise asymptomatic in this study remains a subject of great concern. The fact that 97.7% of the women of whom majority were above 30 years were having their first screening in this study is unacceptable for safe Gynaecological practice and move towards a cervical cancer free generation. Factors that may likely improve the uptake of the screening in public health facilities may include but not limited to a provider initiated

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