

# Cervical Cancer Screening: An Experience from the Niger-Delta Region of Nigeria

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## Abstract

**Aim:** To report and analyze the results of a Pap Smear screening outreach programme organized in the Niger Delta region of Nigeria and compare these with other parts of the world.

**Methods:** A one-day cervical cancer screening programme was organized in the Niger Delta region of Nigeria. Cervical smears were collected from voluntary participants after a short interview and sent to the Niger Delta University Teaching Hospital for analysis. Statistical analysis was performed for differences in proportion using the Chi square by SPSS version 16.

**Results:** A total of 75 smears were collected and analyzed. The mean age of the participants was 35.99 years while the age range was 21-62 years. Three smears (4.0%) were unsatisfactory. Cervical smears were normal in 65 cases (86.7%) while 7 participants (9.4%) showed cervical squamous abnormalities with 2 cases (2.7%) diagnosed as ASCUS and 5 cases (6.7%) as LGSIL. Three (60.0%) participants with LGSIL were younger than 30 years old with the youngest being 21 years old. All cases of LGSIL showed evidence of the cytopathic effects of HPV.

**Conclusion:** Pre-invasive cervical lesions and HPV infections occur very early and at high frequencies in some Nigerian populations. Therefore, well-organised cervical cancer screening programmes need to be established in order to reduce cervical cancer incidence and mortality.

**Keywords:** Cervical Cancer, Outreach, Screening, Niger Delta Region

## Introduction

Cervical cancer is the second most common cancer occurring in women worldwide with approximately 500,000 new cases occurring

yearly and 230,000 women dying each year from the disease. The majority of incident cases and deaths, however, occur in the developing world, Nigeria inclusive<sup>1</sup>.

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Cervical cancer is usually preceded by a long phase of pre-invasive disease that lasts for about 10-15 years. This period is characterized by a spectrum of events progressing from cellular atypia through various stages of intraepithelial neoplasia before final progression to invasive cervical cancer occurs<sup>1</sup>. These pre-invasive cervical lesions can be detected by various methods including cervical cytopathological assessment (Papanicolaou smear test) which has been the main stay of cervical cancer screening for more than 50 years<sup>2</sup>. Cervical cancer is, therefore, largely a preventable disease as considerable reductions in cervical cancer incidence and deaths have been achieved mainly in developed countries that have adopted systematic and effective cervical cytological smear screening programmes<sup>3</sup>.

Interestingly, such properly instituted large scale screening programmes have not been well established in many developing countries because these countries lack the necessary resources and political will to embark on such large scale cervical cancer screening programmes even though the majority of afflicted women presently reside in these areas<sup>4</sup>. In Nigeria, screening programmes are grossly inadequate and mainly concentrated in tertiary health facilities to the exclusion of a vast majority of at-risk women to whom these facilities are not readily available<sup>5</sup>. Majority of women diagnosed with cervical cancer in developing countries present for the first time with advanced disease<sup>6</sup>. Most of these women are not only ignorant of the public health importance of cervical cancer in their environment but are also largely unaware of the risk factors for disease development, clinical features and, more importantly, the availability of effective disease screening programmes capable of altering the natural history of pre-invasive cervical lesions<sup>7,8</sup>.

It is with these thoughts in mind that the Niger Delta University Teaching Hospital, Bayelsa State, Nigeria organized a one-day Pap smear screening outreach programme for its women population as a preliminary step in the ongoing efforts to create awareness not only for

cervical cancer but also for the available screening facilities and opportunities.

### Materials and Methods

Bayelsa State, located in the south-south geopolitical zone of Nigeria, has a population of about 1,998,349 people according to the 1991 census. The population is mainly rural and engage in fishing on a subsistence and commercial level. Most of its communities are almost (and in some cases completely) surrounded by water, hence making them inaccessible by road.

The Niger Delta University Teaching Hospital, located in one of the many rural communities in the state, organised a one-day ad-hoc cervical cancer screening outreach programme as a means to create awareness for cervical cancer and the Papanicolaou screening test. Attendance at this outreach was voluntary after necessary awareness had been created for it through advertisement in the print and electronic media.

Approval was obtained from the Ethics and research committee of the Niger Delta University Teaching Hospital, Okolobiri, Bayelsa State, Nigeria. All participants gave informed consent.

At the outreach, patient biodata and other relevant information were obtained from the participants through a short interview.

All the smears were collected by specially trained staff. Three smears were made for each patient. The cervix was exposed with a bivalve speculum and an Ayre's spatula was introduced into the cervix so that the squamo-columnar junction could be scrapped through a 360° motion in one sweep. The smear was then applied onto appropriately labeled glass slides and quickly fixed in 95% alcohol for 15 minutes. The fixed smears were then sent to the histopathology laboratory of the Department of Anatomical Pathology of the Niger Delta University Teaching Hospital,

Okolobiri, Bayelsa State, Nigeria for staining and reporting. The slides were stained using Haematoxylin and Eosin, Giemsa and Papanicolaou stains respectively for each patient. The smears were interpreted according to the 2001 Bethesda System protocol for reporting cervical cytology<sup>9</sup>.

The results of the screening programme were statistically analyzed for differences in proportion using the Chi square ( $p$  is significant at 0.05) by SPSS version 16. The mean and standard deviation were also calculated where necessary.

### Results

A total of 75 smears were collected and analyzed during the outreach. The mean age of the participants was  $35.99 \pm 8.26$  years while the age range was 21 years to 62 years. None of the participants had ever had a Papanicolaou smear done before the outreach.

than 60 years old. Overall 57 women (76.0%) were 40 years old and younger while 18 women (24%) were older than 40 years of age.

Three smears (4.0%) were adjudged to be unsatisfactory (Table 1) because of insufficient squamous cell component in one of the smears due to extensive cell lysis resulting from poor fixation and in the case of the other two smears, obscuring elements covering more than 75% of the slide.

Squamous intra-epithelial lesions were absent in 65 smears representing 86.7% of all the participants (Table 1). On the other hand, 7 participants (9.4%) showed evidence of cervical squamous abnormalities with 2 cases (2.7%) diagnosed as atypical squamous cell of undetermined significance (ASCUS) and 5 cases (6.7%) diagnosed as low grade squamous intra-epithelial lesion (LGSIL). There were 3 cases of LGSIL in the 21-30 year age group and one case each in the 31-40 year and the 51-60 year age groups. The mean age of participants with LGSIL was 33.2 years. Three (60.0%) of

FIGURE 1: AGE DISTRIBUTION OF WOMEN SCREENED

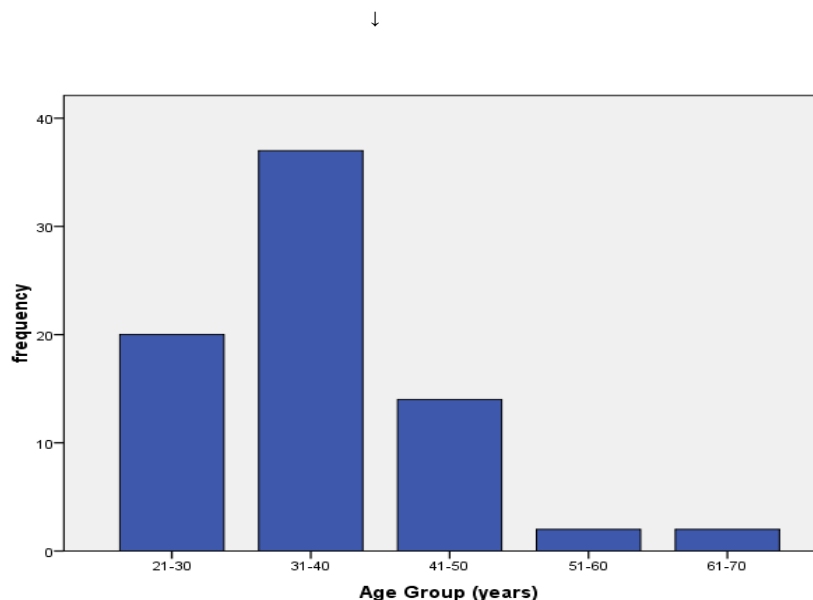


Figure 1 shows the age distribution of the participants. The peak age frequency was in the 31-40 year age-group with 37 participants (49.3%). Only 2 participants (2.7%) were older than 60 years old. Overall 57 women (76.0%) were 40 years old and younger while 18 women (24%) were older than 40 years of age.

the participants with LGSIL were younger than 30 years old with the youngest being 21 years old. All cases of LGSIL showed evidence of the cytopathic effects of HPV. One case each of

ASCUS occurred in the 21-30 and 31-40 year age group. The mean age for patients with frequency of 64.7% in the 31-40 year age group. Similarly, the frequency of inflammatory

**Table 1:** Cytologic diagnosis stratified by age

Diagnosis	Age Group (years)					Total (%)
	21-30	31-40	41-50	51-60	61-70	
Unsatisfactory	0(0.0)	2(66.7)	1(33.3)	0(0.0)	0(0.0)	3(4.0)
Negative	17(26.2)	32(49.2)	13(20.0)	1(1.5)	2(3.1)	65(86.7)
ASCUS	1(50.0)	1(50.0)	0(0.0)	0(0.0)	0(0.0)	2(2.7)
LGSIL	3(60.0)	1(20.0)	0(0.0)	1(20.0)	0(0.0)	5(6.7)
<b>TOTAL (%)</b>	21(28.0)	36(48.0)	14(18.7)	2(2.7)	2(2.7)	75(100.0)

ASCUS was 31 years. There were no high grade squamous intra-epithelial lesions (HGSIL) neither were there any invasive lesions nor glandular epithelial abnormalities seen in any of the cases.

smears (seen only within the reproductive age group) was seen to decrease with advancing age. The highest frequency of inflammatory smears was seen in the 21-30 year age group and this represented 40.0% of cases.

Table 2 further characterizes the 65 smears that were negative for any squamous intra-epithelial lesion. Thirty of these (46.2%) showed no other abnormality, 15 (23.1%) were classified as

### Discussion

Results from this report show that squamous intra-epithelial abnormalities of the cervix can

**Table 2:** Differential diagnosis of smears diagnosed as negative for epithelial lesions

Diagnosis	Age-Group(Years)					Total (%)
	21-30	31-40	41-50	51-60	61-70	
Normal	7(23.3)	16(53.3)	6(20.0)	1(3.3)	0(0.0)	30(46.2)
Inflammatory smear	6(40.0)	5(33.3)	4(26.7)	0(0.0)	0(0.0)	15(23.1)
Bacterial Vaginosis	4(23.5)	11(64.7)	2(11.8)	0(0.0)	0(0.0)	17(26.2)
Endometrial cells (> 40 years)	0(0.0)	0(0.0)	1(100.0)	0(0.0)	0(0.0)	1(1.5)
Atrophic smear	0(0.0)	0(0.0)	0(0.0)	0(0.0)	2(100.0)	2(3.1)
<b>TOTAL (%)</b>	17(26.2)	32(49.2)	13(20.0)	1(1.5)	2(3.1)	65(100.0)

inflammatory smears while 17 (26.2%) were further classified as bacterial vaginosis. Only one case (1.5%) showed endometrial cells in a woman older than 40 years old and this was in the 41-50 year age group. Two atrophic smears (3.1%) were seen in women in the 61-70 year age group. Interestingly, all cases of bacterial vaginosis were seen in participants still within the reproductive age with the highest

occur in women as young as 21 years of age, and possibly earlier in certain cases. Reid also reported that pre-invasive lesions were found in patients in their mid-20s<sup>1</sup>. This has great implications on cervical screening protocols. Until recently, screening for pre-invasive cervical lesions was restricted to women who were older than 30 years of age and, therefore, considered to be at higher risk for cervical

cancer development than the general population. During the early 1950's cervical dysplasia was rarely seen in women who were younger than the age of 25 years. Moreover, invasive cancer was considered to be rare in women younger than 40 years of age<sup>2</sup>. Recent evidence (as in this report) has, however, refuted these beliefs and cervical cancer screening protocols have been redefined since it is now well known that pre-invasive cervical abnormalities may occur in much younger women. It is now recommended that all women begin cervical cancer screening about 3 years after they begin having vaginal intercourse, but no later than 21 years old. Screening should be done every year with the conventional Pap test or every 2 years using the newer liquid-based Pap test.

The prevalence rate of 9.4% for pre-invasive cervical epithelial lesions from this study is comparable to rates reported from other parts of the country. Konje *et al* and Ayinde *et al* in Ibadan, Nigeria reported prevalence rates of 8.4% and 11.8% respectively in the general population they studied<sup>3,4</sup>. Grace *et al* in Ghana, West Africa also reported similar rates of 9.9%<sup>4</sup>. On the contrary, lower rates have been reported in different parts of the world. Briggs *et al* reported a rate of 2.0% in the general population, 5.9% among patients seen at the Planned Parenthood Centre clinic and 11.4% in patients seen at a sexually transmitted disease clinic all in the United States of America<sup>5</sup>. Muller *et al* found a rate of 2.25% in the general Venezuelan population<sup>15</sup> while Mansoor also reported a prevalence of 1.66% in the Western region of Saudi Arabia<sup>7</sup>. Even though the prevalence rates of pre-invasive and invasive lesions of the cervix are known to vary between places the world over, the relatively high rate of pre-invasive lesions found in this report seems to re-emphasize the need for a well organized screening programme in Nigeria, and indeed, all countries where this is not currently the case.

Cervical cancer is a well recognized (though rare) outcome of the common sexually

transmitted infection, the human papilloma virus (HPV) with approximately 75-95% of high grade intra epithelial lesions and more than 95% of cervical cancer being HPV positive<sup>1</sup>. From this study 6.7% of cases showed cytological evidence of HPV infection and all (100.0%) were diagnosed as LGSIL. The HPV prevalence in Nigerian women with normal cervical histology is estimated at 23.7% (21.1-26.4% confidence interval)<sup>17</sup>. This is higher than that for the rest of Africa (23.4%), the Americas (12.8%) and Europe (8.2%)<sup>8</sup>. The peak incidence for HPV infection usually occurs around the age of 20-24 years, then declines up to about the age of 40-45 years, rising slowly in later decades<sup>1</sup>. This seems to be the case in this report with 3 of the 5 HPV cases occurring in the 21-30 year age group, one case each in the 31-40 and 51-60 year age group and none in the 41-50 year age group. Although most HPV infections are only transient (with only 10-20% persisting and predisposing to atypia and cancer), the early introduction of HPV vaccination as an adjunct to proper screening programmes could effectively alter the natural history of pre-cancerous lesions and reduce the burden of cervical cancer in the coming decades if properly implemented in addition to other preventive health care strategies<sup>9</sup>.

The results obtained from this report seem to suggest that HPV infection as well as pre-invasive cervical lesions occur early in Nigerian women and the prevalence rates for these are high compared with other countries. While cervical cancer still remains a major health problem in Nigeria, it is instructive to know that there is presently no data on the coverage of cervical cancer screening in the country<sup>18</sup>. It therefore becomes imperative to ensure that well-organised cervical cancer screening programmes or at least widespread good quality cytology at all health care levels be established across the country as this would go a long way to drastically reduce cervical cancer incidence and mortality.

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