Cytomorphological Spectrum, Prevalence and Awareness of abnormal Cervical Smears in Sokoto State Metropolis

Abstract

Introduction: Cervical cancer is an important global health problem and, it is the fourth leading cause of cancer death among women worldwide. The distribution of cervical cancer differs across the world, with more than 85% of deaths occurring in developing regions. The incidence of cervical cancer in developing countries is approximately four to six times that of developed countries. Over 90% of the highest incidence rates of cervical cancer occur in sub-Saharan Africa. This high incidence is also related to the limited screening techniques and strategies used.
Aim: The aim of this research was to determine the cytomorphological spectrum, prevalence and awareness of abnormal cervical smears in Sokoto metropolis.
Methodology: A descriptive cross-sectional study was utilized and a convenience sampling technique was employed to enlist female participants aged between 15 and 98 years old. The total sample size was determined to be162 samples. The state was home to a variety of ethnic groups, including Hausa/Fulani, Gobirawa, Zabarmawa, Kabawa, Arawa, Nupe, Yoruba, IBO's, and others
Results: Out of 162 cervical smears screened**,** 128 (79.0%) were found to be normal, 24 (14.8%) were abnormal, 7 (4.3%) were inadequate, and 3 (1.9%) were classified as acellular cervical smears. The awareness level of abnormal cervical smears in Sokoto metropolis was found to be 77.9%.
Conclusion: The study established a low prevalence(14.8%) and high level of awareness (77.9%) of abnormal cervical smears in Sokoto metropolis..

Keywords: Cytomorphological Spectrum**,** Awareness and Abnormal Cervical Smears

1.0 INTRODUCTION

Cervical cancer is an important global health problem [1] and, it is the fourth leading cause of cancer death among women worldwide [2, 3]. The distribution of cervical cancer differs across the world, with more than 85% of deaths occurring in developing regions [4]. The incidence of cervical cancer in developing countries is approximately four to six times that of developed countries [5]. Over 90% of the highest incidence rates of cervical cancer occur in sub-Saharan Africa [5]. This high incidence is also related to the limited screening techniques and strategies used [6]. Over the past decade, wide implementation of cervical cancer screening in the developed countries has contributed to a remarkable reduction in the mortality rate [7]. HPV infection is a risk factor for malignancy of the uterine cervix as it has a pivotal role in carcinogenesis via the activation of its genomic products [8]. The role of persistent infections with certain oncogenictypes human papillomaviruses (HPV) in the pathogenesis of cervical cancer has led to the development of diagnostic applications for HPV testing as an adjunct to cytology. Presently, commonly used screening methods for cervical cancer screening includes cervical cytology tests, human papillomavirus (HPV) detection and immunocytochemical expression of biomarkers. The sensitivity of these methods is considerably low resulting in misdiagnosis [9]. Due to the low sensitivity of the conventional pap staining technique as a result of the presence of obscuring

materials in pap cytology test, a liquid-based cytology has recently become an alternative to conventional pap in detection of cervical cancer [10] [11]. The present study is aimed at determination of cytomorphological pattern and prevalence of abnormal cervical smears in Sokoto metropolis using a liquid based cytology preparation.

2.0 MATERIALS AND METHODS

2.1 STUDY AREA

The study was conducted at healthcare facilities in Sokoto metropolis, situated in the North-Western region of Nigeria, specifically at the General out Patient Department (GOPD) and Obstetrics & Gynecology (O&G) Department of Sokoto state specialist hospital, Maryam Abacha women and children hospital, and women and children welfare center. These hospitals provide healthcare services to Sokoto, Kebbi, and Zamfara states.

2.2 STUDY DESIGN

The study was a descriptive cross-sectional one, where a convenience sampling technique was employed to enlist female participants aged between 15 and 98 years old. The total sample size was determined to be162 samples. The state was home to a variety of ethnic groups, including Hausa/Fulani, Gobirawa, Zabarmawa, Kabawa, Adarawa, Arawa, Nupe, Yoruba, IBO's, and others. A structured questionnaire was then administered to those who had given their consent to collect the necessary data for the study.

2.3 SAMPLE SIZE DETERMINATION

The prevalence rate used by Nnadini*et al*, [12] was employed to calculate the sample size using the sample size formula. The formula used was $N=Z^2$ pq $/d^2$, where "p" represents the prevalence of abnormal cervical lesions (12%), Z=1.96, q=0.88, and d=0.05. Consequently, the total sample size was determined to be162samples.

2.4 ETHICAL CONSIDERATION

The study sorted ethical approval from the ethical and research committee of Sokoto State ministry of health. All participants who agreed to take part were informed about the research objectives and the significance of cervical smear screening in preventing and controlling cervical cancer. Prior to participating, informed consent was obtained from each participant.

2.5 SAMPLES AND DATA COLLECTIONS

The samples for this research involved collecting samples from patients who consented to participate and attended the Obstetrics and Gynecology and General Out Patients Department of selected hospitals in Sokoto metropolis. The liquid based pap smear smples preparation were collected with the aids of disposable plastic speculum and cytobrush. The cytobrush was inserted into the cervix through the vaginal speculum and rotated at 180 degree to collect the cervical smear sample. The structured questionnaires were used to collected the relevance data from the partispants.

2.6 SAMPLE PROCESSING

The cyto-brush's bristle was removed from the stem and placed in a vial with preservative. Then an approximately 3ml of cleaning solution was added to the specimen to remove the obscuring materials. The mixture was subsequently centrifuged for 10 minutes at 800 revolutions per minute, and the supernatant was discarded. To form a homogeneous mixture, approximately 1.5ml of cellulose base solution was added and the mixture was thoroughly mixed. Finally, roughly 50 micro liters of the suspension were placed on a clean glass slide in a circular fashion to create a smear. The slide was air-dried and stained with a pap stain.

2.7 PAP SMEAR STAINING PROCEDURE

The slides were first hydrated with the descending grades of alcohol (95%, 70% and water) for one minute each. Then treated with Harris haematoxylin for approximately three minutes, followed by rinsing with tap water for one to minute. Acid alcohol was then used to decolorize the smears for a few seconds. Next, the smears were dipped in Scott's tap water containing 1.5% sodium bicarbonate, rinsed in water, and transferred to 70% and then to 95% alcohol for a few seconds each. Orange G solution was applied for two minutes, followed by rinsing in two changes of 95% alcohol. Finally, Eosin-Azure 50 was used to stain the smears for two minutes until the desired colour intensity was achieved. The smears were rinsed in two changes of 95% alcohol for a few seconds each, dehydrated in alcohol, cleared in xylene, and mounted in a neutral synthetic resin medium. After preparation, the slides were analyzed and classified according to the findings: normal smear and abnormal smears (inflammatory smear, atypical squamous cells of undetermined significance (ASCUS), low-grade squamous intraepithelial lesion (LSIL), high-grade squamous intraepithelial lesion (HSIL), and malignancy)[13. 14]

3.0 RESULTS

The liquid-based Pap method of preparation was used to process 162 cervical smear samples. Of these, 128 (79.0%) were found to be normal, 24 (14.8%) were abnormal, 7 (4.3%) were inadequate, and 3 (1.9%) were classified as acellular cervical smears**(table 3.1)**.Out of 162 women who participated in the screening, 126 (77.8%) heard about cervical cancer while 36 (22.2%) have never heard about cervical cancer. Of 126 (77.8%)women who have heard, 49 (38.9%) heard it from radio station, 17 (13.3%) from television station, 32 (25.4%) from friends and 28(22.2%) from other sources**(table 3.2).**

The photomicrograph showed the presence of squamous cells with normal cytoplasmic and nuclear outline**(plate1A).**Thephotomicrograph showed the squamous cells with enlarged nuclei and inflammatory cells background**(plate 1 B).**The photomicrograph showed the squamous cells with enlarged nuclei, nuclear pallor and inflammatory cells **(plate 1C).**The photomicrograph showed very scanty squamous cells **(plate 1 D)**.The photomicrograph showed absence of squamous cells **(pate 1E).**

Table 3.1: Frequency and Percentage Distribution of Normal and Abnormal Smears

S/N	**Type of Smear**	**Frequency (N)**	**Percentage (**%)
1	Normal smears	128	79.0
2	Abnormal smears	24	14.8
3	Inadequate smears	7	4.3
4	Acellular smears	3	1.9
Total		**162**	**100**

Table 3.2: Frequency and Percentage of Cervical Awareness in Sokoto Metropolis.

Cervical Cancer Awareness	**Frequency (N)**	**Percentage (%)**
Have you heard about cervical cancer:		
Yes		
No	126	77.8
	36	22.2

Total	**162**	**100**
How did you hear about cervical cancer:		
Radio	49	38.9
Television	17	13.5
Friend	32	25.4
Other	28	22.2
Al	**126**	100

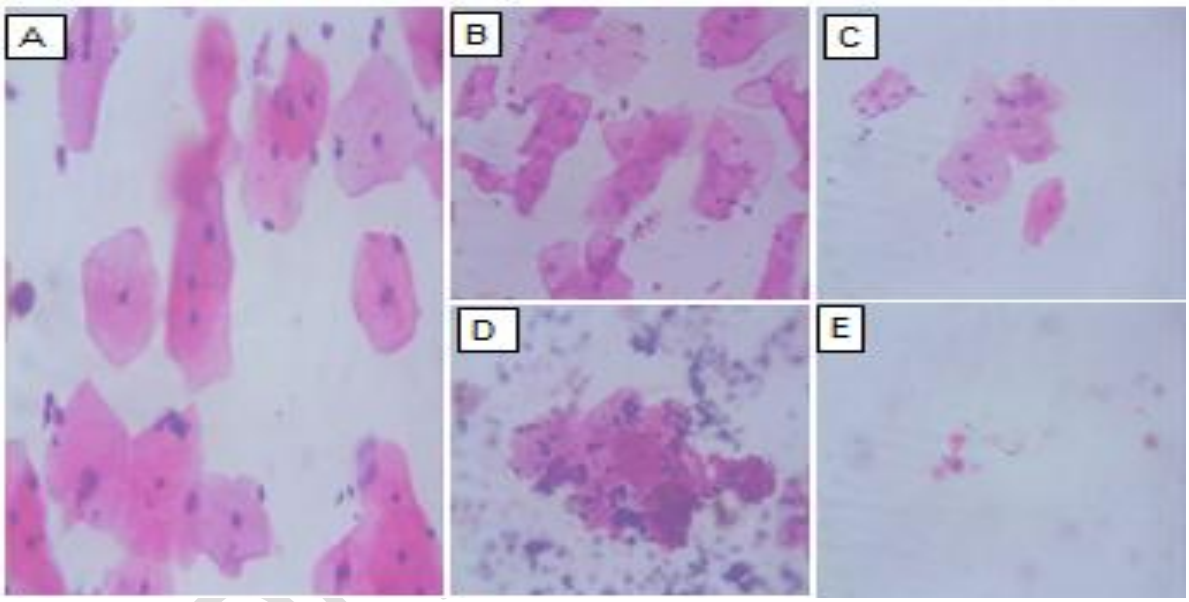

Plate 1: (A) A Normal cervical smear.(B): Ascus cervical smear.(C): Low grade cervical smear. (D): Inadequate cervical smear. (E): Acellular cervical smear. Pap X 400.

4.0 DISCUSION

Cervical cancer is one of the causes of morbidity amongst women globally, especially in the developing countries of world, with many of them dying at their prime age. In the present study, the prevalence of abnormal smears in Sokoto metropolis, Sokoto state was found to be about 14.9% while that of epithelial cells abnormalities was 4.4%. This was comparable to 15% as reported by Omeke *et al.*,[15] in female patients attending various clinics of Enugu state University Teaching Hospital. However, this prevalence was higher compared to other studies conducted in other part of Nigeria and Asia. In a study conducted in Abakaliki by Ekwedigwe *et al.*,[16] to determine the prevalence of abnormal smears in pregnant women was 6.3%. In another study conducted by Bahtash *et al.*,[17] to detect the prevalence

of abnormal smears in women attending antenatal clinic at Ahmadu Bello University Teaching Hospital, Zaria was 6%. A research conducted at University Teaching Hospital Calabar amongst the pregnant women was 3% [18]. In another study conducted by Nnadi *et al.,* [19] to detect the abnormal smears in infertile women attending Usmanu Danfodiyo University Teaching Hospital Sokoto was 11.3%. Another lower prevalence (7.6%) of abnormal smears was also detected by Thormal et al., [20]. However a higher prevalence (33.5%) of cervical abnormal smears was also reported by Khakwani *et al.,* [21] at the O & G department of Nishtar Hospital Multan, Pakistan. Generally, these differences in the prevalence rate across the different centers may not be unconnected to the variation in the study populations such as pregnant women and women with infertility.

The current study revealed that women in Sokoto metropolis have a very high level of knowledge, awareness, and access to information about cervical cancer and its screening. The primary source of information for them is the media, particularly radio. These findings are consistent with a similar study conducted by Ahmed*et al.*,[22] among medical students in the College of Health Sciences at Usmanu Danfodiyo University, Sokoto. That study also found a high level of awareness about cervical cancer and its screening. However, there was a slight variation in the sources of information, possibly due to differences in the study population. This variation may be attributed to the fact that routine lectures were the main source of information in the previous study. Our findings are supported by Oche *et al.*,[23]who conducted a study among female health workers in Sokoto and reported a high awareness rate and adequate knowledge of cervical cancer and its screening, with schools being the primary source of information. Other studies, such as Bakari *et al.*,[24]conducted among healthcare workers in Maiduguri and Biobaku *et al.,* [25]conducted among female nurses in Southwest Nigeria, also reported similar findings of good awareness and knowledge of cervical cancer and its screening, with hospital sources and formal lectures being the main sources of information, respectively. Aga *et al.,* [26]conducted a study on cervical cancer and its screening to assess the knowledge, awareness, and perception among health and allied students. The study found a good level of awareness regarding cervical cancer and its screening. However, the knowledge level was considered fair, and the primary source of information was the curriculum. On the other hand, other studies yielded different results. For instance, Maanongun *et al.*,[27]investigated the awareness and attitude towards cervical cancer screening among female undergraduates in Makurdi, North central Nigeria. Their research established a high awareness rate for cervical cancer but revealed poor knowledge and screening utilization, with mass media being the main source of information. Yahaya and Mande [28] conducted a qualitative assessment of cervical cancer awareness among women attending primary healthcare centers in Zaria, North-western, Nigeria. They found a high awareness rate of cervical cancer but noted a low level of awareness regarding cervical cancer screening programs and limited knowledge. Zakari [29]explored the knowledge, attitude, and practice of Papanicolaou smears among antenatal patients in Kano. The study indicated poor knowledge, attitude, and practice of pap smear among the respondents, with hospital workers being the most common source of information about screening. Lastly, Gana *et al.*,[30]investigated the awareness and utilization of cervical cancer and pap smear

services among market women in north-central Nigeria. The study revealed a low awareness level for cervical cancer and pap smear screening among the respondents, with health workers being the primary source of information. These variations in findings may be attributed to differences in the target populations of the respective research studies.

CONCLUSION

The study established a low prevalence(14.8%) and high level of awareness (77.9%) of abnormal cervical smears in Sokoto metropolis.

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