



Visual Inspection with Acetic Acid (VIA) Screening; Six Months Study to Detect Cervical Cancers and Pre-Cancers in Semi Urban Kog East Population of Women in North Central Nigeria

Akogu Simon Peterside Onuche

Department of Obstetrics and Gynaecology, College of Health Sciences,
Prince Abubakar Audu University, Angyiba, Kogi State, Nigeria

Omotosho O. Dare

Department of Anatomy, College of Health Sciences,
Prince Abubakar Audu University, Angyiba, Kogi State, Nigeria

ABSTRACT

Cervical cancer is the commonest gynaecological cancer among Nigerian women, contributing to unaccepted morbidity and mortality. Data on cervical cancer in Kogi State is limited. Majority of the cases present late due to low level of awareness and screening uptake. **Aims and Objectives:** This study aims to determine the prevalence of cervical precancerous lesions using visual inspection with Acetic acid (VIA) among consenting women aged between 22 and 65 years. **Materials and Methods:** A prospective study conducted from February 2023 to July 2023 in 6 health facilities in Kogi East of Kogi State. 400 consenting women were recruited by a stratified or Random sampling method. The participants completed a semi-structured questionnaire and underwent VIA performed by trained health personnel. Data collected included demographics, life style characteristics and VIA results. This was input and analyzed using SPSS version 20. **Results:** The study showed a VIA positive rate of 33.8% using the low threshold diagnostic criteria and a 14.3% using the high threshold criteria. This shows a worrisome burden of cervical precancers. 77.5% of the respondents were married. 71% of the respondents had used contraceptives and 53.5% had an early sexually debut (before age 18 years). 11.8% of the respondents had cervicitis. **Conclusion:** There is urgent need for increased awareness and screening for precancers to promote early detection and reduce cervical cancer incidence. Authorities should demonstrate the W.H.O 90 - 70 - 90 initiative to improve prevention, screening and therapeutic services.

Keywords: Cervical cancer, precancers, screening, outcome, Kogi East.

INTRODUCTION

Cancer of the cervix is the commonest Gynecological cancer among Nigeria women causing very significant morbidity and mortality yearly. It is a major public health problem in Nigeria as it is globally^{1, 2,3,4,15,16}. In our clime most patients present very late due to poor awareness and utilization of its prevention strategies. While the incident of cancer of the cervix in developed countries shows a progressive reduction, this fit is yet to be achieved in developing countries and especially in Nigeria due to low awareness, knowledge and uptake of cervical cancer screening. In addition to this is low capacity for screening services like Visual Inspection with

Acetic Acid (VIA), Visual Inspection with Logol's Iodil (VIL), PAP smear, colposcopy and Human Papilloma Virus (HPV) screening [5,6,7,17].

The data on cancer incidence in Kogi State is scanty. In fact, the review of cancer in Nigeria 2011-2013 has no documentation of Gynecological cancers in Kogi State. This is at variance to field observations from our hospitals where cancer morbidity and mortality are frequent and are on the increase [8, 9].

The risk factors for development of cancer of the cervix include early onset of sexual intercourse, multiple sexual partners both of which are believed to be due to increased exposure to the Human Papilloma Virus (HPV)[24], the central driver whose infection is believed to be responsible for the development of 80% of precancerous lesions of the cervix and 99.7% of all invasive cancer of the cervix. Long term use of oral contraceptives pill is also associated with increased risk of cancer of the cervix just as HIV/AIDS infection [3,4]. Generally, smoking, tobacco use, alcohol use, unhealthy diet, physical inactivity still remains cancer risk factors globally [10, 14].

Screening for cervical cancer is aimed at downgrading the stage of presentation of a potentially incurable disease that could easily be cured if detected early. Unfortunately, there is poor awareness and uptake of the available screening services in many parts of Nigeria [11, 14,18,37,38].

This study is designed to screen women between the ages of 22 years and 65 years to determine the prevalence of premalignant conditions (precancers) of the cervix among a population of women in Kogi East, North central Nigeria.

STUDY OBJECTIVES

1. To determine the prevalence of premalignant lesion of the uterine cervix among women using Visual Inspection with Acetic Acid (VIA)
2. To determine the proportion of screened women with other cervical pathology

REVIEW OF LITERATURE

Over 61% of cancers in Nigeria occur in women while 39% occur in men. The standardized cancer incidence rate is 160/1000 women and 94/100,000men in Nigeria.

Cancer of the cervix (Ca Cervix) is the second most common cancer in Nigeria with an age standardized incidence rate of 31/100,000. It is the commonest cancer of the female genital tract in Nigeria [1,2,3,5,9,14].

Kogi State is located in North Central Nigeria. The state population at the 2016 National census was above 3.3 Million. Its Capital City Lokoja is a landmark city with the Confluence of the Rivers Niger and Benue. Kogi was the administrative capital of Nigeria in the Colonial era [8,9,12].

The cervix is the lower part of the uterus that links the vaginal to the uterus. The cervix has an internal os that connects the uterine cavity and an external os that connect the vagina. The external os and portio vagina constitute the ectocervix, the part of the cervix that is seen from the vaginal up to the external os. From the external os to the internal os is the endocervix. The

ectocervix is lined by non-keratinizing stratified squamous epithelium while the endocervix is lined by simple columnar epithelium. The squamocolumnar junction is the junction between the squamous epithelium and the columnar epithelium. Its position is variable on the cervix. The ectocervix is often the location where cancer of the cervix begins. Therefore, visualization of the part can easily identify premalignant conditions that are curable [13, 18].

Cervical cancers mostly start from the change of these normal epithelial cells to precancerous cells. This change in the normal epithelia is called dysplasia and depending on the degree of change and involvement of the epithelial layers could be classified as Cervical intra epithelial neoplasia I (CIN1) or mild dysplasia where the change affects only the lower one third of the cervical epithelial lining, cervical intraepithelial neoplasia II (CIN II) or moderate dysplasia when the lower two third of the epithelial lining of the cervix is involved and cervical Intraepithelial neoplasia (CIN III) or severe dysplasia is when more than two third of the cervical epithelium is involved. Carcinoma in situ (CIS) represents full thickness dysplasia of the epithelium of the cervix. The precancerous stages of cervical dysplasia detectable by either Visual inspection, Pap smear, colposcopy or histology are treatable either by freezing (cryotherapy), burning (thermal ablation) and cutting or excision [13, 18, 19].

If undetected and unmanaged, some of these will progress to full blown cancer that will grow through stages I, II, III and IV where successful and complete treatment becomes difficult.

In Nigeria, the scanty or no data about pre-cancers and cervical cancer is traceable to inadequate surveillance, scanty screening programs, scanty skills for screening and poor awareness of availability of screening services. Late presentation and poor uptake of cervical cancer screening services have led to majority of the cases leading to death with little or no curative intervention. In our clime it is the scenario of too late, too little to do at late discovery and too little time for the patient to live. Screening will help to downgrade the stage of presentation, offer opportunity for cure and preserve life.

The world health Organization in May 2018 announced a global initiative to address the scourge of cervical cancer. The WHO called this initiative the 90-70-90 initiative, it is designed to achieve a low prevalence rate of cervical cancer of 4 per 100,000 women by ensuring that 90% of girls are fully vaccinated with the HPV vaccine by the age of 15, 70% of women are screened using a high-performance test by the age of 35, and again by the age of 45 and 90% of women with pre-cancers are treated and 90% of women with invasive cancer are properly and adequately managed. This intervention will further the effort to achieve these set goals in our immediate environment and contribute to the global aggregates of knowledge and efforts.

In this study, visual inspection with acetic acid (VIA) is used to detect precancers of the cervix. [21, 22, 23,24].

VIA competes favorably with other methods of detecting precancers. It has a very high sensitivity, but a less than 100% sensitivity. ^{12,13,14,15} It has been compared with pap smear, colposcopy, HPV testing and Histology. It has been validated as a simple test, suitable for resource limited setting for the early detection of precancers of cervix [13,20,23,25,26,27,28,29,30,31,32,33,34].

MATERIALS AND METHODS

Study Area

The study is a prospective study to conduct Visual Inspection with Acetic Acid (VIA) on the cervix of recruited and counseled consenting women among women in the population and determine the prevalence of premalignant lesions of the cervix.

This study was conducted in the following 6 randomly selected health facilities with recruitment from the 9 local governments in the Kogi East axis of Kogi state.

Study Sites

The Health facilities are Gynecology and Antenatal Clinics, Kogi State University Teaching Hospital, the comprehensive ART outpatient clinic, Kogi State University Teaching Hospital, the family planning clinic Kogi State University Teaching Hospital, Gynecology and Consulting clinic Neighbour Multicare Hospital and Women Welfare Centre Anyigba, Gynecology and outpatient clinic Holley Memorial Hospital Ochadamu in Ofu Local government and outpatient clinic and Maternity unit Cottage hospital Idah. The study base was the obstetrics and Gynecology department of Prince Abubakar Audu university and Prince Abubakar Audu university Teaching hospital Anyigba. Anyigba is a nexus town for Kogi East of Kogi State with a significant representation of the ethnic groups in the state in addition to many other Nigerian ethnic nationalities because of the presence of two institutions; the Prince Abubakar Audu University and the Prince Abubakar Audu University Teaching Hospital.

Study Design/Population

This prospective study was done between February 2023 and July 2023. The population of Kogi state projected in 2016 using the 2006 national census by the National Population Commission and the National Bureau of statistics is 4,473,490. There are 1,395,788 people within the ages 20 to 69 years in the population and the female to male ratio is 49.5: 50.5. The population of the 9 local councils is Kogi East based on that projection is 1,996,700. The female to male population ratio in the entire Kogi population is 49.5:50.5 therefore the population of females in Kogi East is 988,366. The sample population, (ages 20 to 69 years) is 31 % of the total female population of Kogi East. That sample population is 306,393. Women aged 22 to 65 years were sampled.

Sample Size Determination

Record from the cancer registry of the federal medical Centre Lokoja available in the publication of Onoja et al showed that the prevalence of cancer of the cervix in Kogi state is 1.8. The sample size therefore using Sloven's formula: $n = N / (1 + N(e^2))$ n = Sample size, N = Target population, e = margin of error at 95% confidence level. Therefore: $N = 306,393 / (1 + 306,393 \times (.05 \times .05)) = 306,393 / 759 = 399.7 = 400$. A total of 400 participants were recruited for the prospective study.

Sampling

Stratified and random samplings were used to pick 5 out of 9 local governments. Within these local governments, 6 facilities were randomly picked out of listed health facilities with high volume of women attendees for various health services. In these facilities women from the general population. There were counseled and referred for screening. Flyers with phone numbers were also distributed in health facilities and public places and addresses of place to

go for screening. The first 400 females to arrive who met the inclusion criteria were scheduled and screened after filling a self administered semi structured questionnaire with provision to capture VIA test results and other findings. Interpreters who were trained data collector worked with trained health workers and did interpretations for respondents not vast in English language.

Data Tools/Instrument

A semi structured questionnaire was administered to every woman to be screened. The questionnaire has provision to capture demographics, lifestyle characteristics, VIA results and other findings at examination.

Tool Validation/Pretesting

The tool was pretested at the central Primary Health Centre, Anyigba, another facility with enough client traffic that did not participate in the main study.

VIA Methods

The client is counseled and procedure explained. Relevant biodata is collected from all eligible clients using a prepared data collection tool. The client assumes a dorsal recumbent position on the couch, under aseptic technique, a sterile disposable Cusco speculum lubricated with sterile water is passed, blades opened and locked to expose the cervix under good light source. Vaginal wall, cervix and external os are inspected, any secretion is cleaned off and 5%Acetic acid is applied to the cervix and observed within one minute. Aceto-white appearance is documented as positive VIA for premalignant lesion of the cervix in the data collection tool. Experienced, previously trained and validated health personnel performed this procedure in addition to the investigators. 10 data collectors trained on the data tool who administered the questionnaire to the eligible respondents worked with the testers to collect the data on the VIA outcome across the designated sites.

Data Collection

Completed data tools were retrieved by the trained data collectors for data processing and analysis.

Data Analysis

This will be done by descriptive statistics using the statistical package for social sciences SPSS (SPSS Inc: 2001) for windows version 20.

Study Limitation

The relatively small sample size of this study may limit generalization to the larger population.

Ethical Consideration

Ethical clearance for this study was obtained from the Research ethics committee of the Prince Abubakar Audu university Teaching Hospital Anyigba, the tertiary institution in this jurisdiction that permit entrance and approval by the heads of the health facilities for VIA test whose staff have been trained for the study at the units where the participants access health services. A similar consent is obtained from eligible participants who gave consent; then the questionnaires are administered and VIA performed.

RESULTS**Table 1 shows socio – demographic characteristics of the respondents.**

Variable	Number (n)	Percent (%)
Age of respondents		
22-31	130	32.5
32-41	188	47.0
42-51	60	15.0
52-61	17	4.3
Greater Than 61	5	1.3
Total	400	100.0
Marital status of respondents		
Single	45	11.3
Married	310	77.5
Divorced	19	4.8
Widowed	26	6.5
Total	400	100
Educational status of respondents		
Non-Formal	31	7.8
Primary	96	24.0
Secondary	172	43.0
Tertiary Graduate	95	23.8
Post Graduate	6	1.5
Total	400	100.0
Type of Marital Relationship		
Monogamy	259	64.8
Polygamy	96	24.0
Not married	45	11.2
Total	400	100
Manager	6	1.5
Elementary/Aid Staff (WORKER)	24	6.0
Armed Forces/Security Personnel	1	.3
Student	19	4.8
Unemployed	25	6.3
Non-Health Professional	14	3.5
Health Professional	17	4.3
Technician	13	3.3
Clerical/Support worker	53	13.3
Services/Sales worker	27	6.8
Skilled Agricultural Worker	13	3.3
Crafts/Trading	186	46.5
Plants/machine worker	2	.5
Total	400	100.0

Table 2A: Social characteristics of respondents

	Score		
	N (%)	N (%)	Total
Variable	Yes	No	

Smoking	2 (0.5)	396 (99.5)	400 (100)
Alcohol Intake	23 (5.8)	377 (94.2)	400(100)
Protected sex WITH CONDOM	156 (39.1)	244 (61.0)	400 (100)
Use or Used contraceptive	144 (28.5)	286 (71.0)	400 (100)

Table 2B: Gynecology and Obstetrics characteristics of respondents

Variable	N	Percent
Age at sexual debut		
<18 years	214	53.5
18 years or more	185	46.3
Not yet sexually active	1	0.2
Total	400	100
Sex Partners Ever had		
Only 1	198	49.5
Two or more	202	50.5
Total	400	100
Parity		
Nulliparous	38	9.5
LESS THAN 5	274	68.5
Five or more	88	22.0
Total	400	100

Table 3: Visual Inspection with Acetic Acid (VIA) result

Variable	Diagnostic threshold	Frequency	Percent
Positive	Low	78	19.5
Positive (precancerous)	High	50	12.5
Positive (suspected Cancer)	High	7	1.8
Negative (Normal cervix)		265	66.3
Total		400	100

Table 4: Other Incidental Findings

Cervical polyp	2	0.5
Nabothian cyst	1	0.3
Cervicitis	56	11.8

DISCUSSION

As shown in table 1, Forty seven percent (47%) of the respondents are within the age bracket of 32 – 41 years. 77.5% of them are married and only 7.8% had no formal education. 24% of the respondents are in a polygamous relationship, 11.2% are not married while 64.8% are in a monogamous relationship. The respondents are fairly distributed across vocations.

Table 2A and 2B show the social, lifestyle, gynecological/Obstetrics characteristics of the respondents. Over 90% of the respondents are non-smoking, non-alcoholics. 61.0% had used condom before and 71.0% use or have used contraceptives before. 535% had sexual intercourse before the age of 18 years and 50.5% have more than one sex partners so far in their lives as at the time of interview; only one respondent has not had sexual exposure. 22.0%

of the respondents are grand multiparous while 68.5% are multiparous women; 9.5% are multiparous.

In the evaluation of VIA positive rate in the sampled population, 2 diagnostic thresholds/criteria were used. This is taking cognisance of the high sensitivity of the VIA test and the possibility of false positive.

The low threshold classifies every aceto while ethelia and suspicious epithelium on VIA as positive. This revealed a VIA positive rate of 33.8% in this study [31]. The high threshold evaluation, a more conservative assessment classifies as positive acetowhite epithelia that looked like precancers or suspected cancer. This revealed a VIA positive rate of 14.3% in the studied population as show in table 3.

Table 4 shows other incidental finding among the participants at Visual Inspection of the cervix in the studied population. Cervicitis occurred in 11.8% of the population sampled, nabothian cyst in 0.3% and cervical polyp in 0.5%.

Our findings are similar to that of Wesley R et al in their study using the low and high threshold criteria where they obtained 45% VIA positive rate with the low threshold and 6.3% positive rate with the high threshold. In their study, Dim CC et al in 2011 found a lower positive rate of 10.75% in Enugu south East Nigeria, a picture not too distant from our findings using the high threshold evaluation criteria. In a similar study, Usha Rani et al also obtained a positive rate of 10.75% for VIA, O.I Akinola et al obtained a positive rate of 16.2% in their study a finding also in tandern with our findings using the high threshold evaluation criteria [18,31,32,33].

CONCLUSION

The VIA positive rate for precancers of the cervix obtained in this study is worrisomely high and not acceptable. More effort is required to increase awareness and improve the health seeking behavior of the people to embrace screening, early detection and downgrade the presentation of cancer of the cervix. With this, and more determination for improved strategies, a cervical cancer free generation is possible.

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