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Cervical Cancer Screening Using Visual Inspection with Acetic Acid (Via): A Viable Intervention in A Resource Poor Setting in Benue State, North Central Nigeria

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ABSTRACT

Background: Cervical cancer is an enormous public health burden world-wide particularly in LMICs. The aim of this study is to assess the acceptability and outcome of VIA screening for cervical cancer among women at a rural health facility in North Central Nigeria. Materials and Methods: This was a community-based cross-sectional descriptive study that was conducted among 162 consecutively consenting women between the age of 20-65 years at a medical outreach in a rural community of Mkar in conjunction with NKST Hospital Mkar, Gboko Local Government Area, Benue State-Nigeria in June 2021. VIA was performed on each of the study participants who fulfilled the inclusion criteria. Women with a positive VIA results were offered thermal ablation. Data was collected using a structured questionnaire and analyzed with SPSS version 25. The results were presented in charts and tables. Results: Amongst the 162 women participants, 12 (7.4%) were screened positive while 150 (92.6%) were screened negative for premalignant lesions of the cervix with VIA. There was a significant association between Parity (X2 = 11.97, P-value = 0.003), a history of symptoms (dyspareunia and foul-smelling discharge) (X2 = 28.003, P-value = 0.001) and the outcome of the VIA test. Conclusion: This study has demonstrated the usefulness of VIA as a screening tool for secondary prevention of cervical cancer in LMICs and recommends the integration of VIA-based screening programs at the primary health care level to reduce the burden of cervical cancer in LIMCs.

Keywords: Cervical cancer, VIA, Screening, resource poor setting, Benue state

Keywords: Stevens-Johnson Syndrome, Lacrimal Drainage System, Epiphora, Dacryocystorhinostomy Silicone

INTRODUCTION

Cervical cancer is as a public health problem represented as the fourth most common cancer in women and the second most common female cancer in women aged 15-44 years old worldwide.[1,2] When detected early and managed effectively, cervical cancer is one of the most successfully treatable forms of cancer. Cancers diagnosed in late stages can also be controlled with appropriate treatment and palliative care[3].

The current global strategy is to accelerate the elimination of cervical cancer as a public health problem with recommendations that, 70% of women should be

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screened with high-performance tests by ages 35 and 45 years [3]. Screening aims to detect precancerous lesions, which are abnormal to the cervix, which, if left untreated, can develop into cervical cancer.[3]

Visual inspection with acetic acid (VIA) is naked-eye examination of the uterine cervix, after application of 5% acetic acid and interpreting the result after one minute. This is a simple and inexpensive test for the detection of cervical precancerous lesions and early invasive cancer. The results of VIA test are immediately available and do not require any laboratory support.[4,5]

The development of VIA as an effective, simple, inexpensive test with acceptable sensitivity and specificity for screening the cervix for early cervical lesions and as an alternative to cytology-based techniques has prospects for halting the rising burden of cervical cancer in Sub-Saharan Africa and other low-income countries of the world.[6-11]

The World Health Organization (WHO) recommends the "see and treat" VIA-based cervical cancer prevention method as an appropriate and effective alternative to the cytology-based prevention model for low-resource countries.[11-13]

High-income countries of the world have well-developed and well-implemented cervical cancer screening programs with cytology-based methods such as Papanicolaou (Pap) smear. Cytology-based methods are highly efficient and sensitive but cost-intensive, require a well-developed health-care system and infrastructure, and a well-educated female population.[14-16]

These attributes are inadequate in low- and middle-income countries (LMICs) of the Sub-Saharan Africa making the implementation of systematic cytology-based screening programmes skewed to social classes and levels of health awareness and enlightment.[17-19]

Health workers with adequate training as test providers can screen, identify at risk women by providing immediate results at testing sites to ensure the adoption of a "see and treat" approach suitable for a low-resource setting with low capacity for Pap test.[10,11,20]

In the "see and treat" model, women who test positive for VIA can be treated immediately at the same clinic visit with either cryotherapy, cold coagulation, or thermal ablation without any further confirmatory test.[12,13]

Researches have reported VIA as a good, simple screening, low cost and high sensitivity test, in comparison with Pap smear and recommended its use as an alternative screening modality for cervical cancer in low resource locations.[21]

There are also reports of a scaling up and inclusion of VIA-based programs into national programs in many low- and middle-income countries.[16-18]

Given the limited reports of VIA screening amongst the rural communities in our population, this study sought to assess the acceptability and outcome of VIA screening for cervical cancer among women at a rural health facility in north central Nigeria during an outreach program.

METHODOLOGY

This was a community-based cross-sectional descriptive study that was conducted at a medical outreach in a rural community of Mkar in conjunction with NKST Hospital Mkar, Gboko local government area, Benue State-Nigeria in June 2021.

A general health talk was delivered to all the participants on the planned outreach and thereafter, specific discussion on Cervical Cancer screening using VIA was undertaken for the women group present in the language best understood by the participants (Health education on cervical cancer was carried out in Tiv language and translated into English language for the non-natives).

Women aged 20 to 65 years who were not pregnant, with an intact uterus, and had no previous history of cervical cancer and who were willing to undergo screening after a complete explanation of the test and treatment procedures who gave their informed consent to participate in the study were included. Additionally, the study protocol was reviewed and approved by the Institutional Health Ethics and Research Committee of NKST Hospital Mkar.

An identification numbers were given to the study

participnats and general information was collected for each woman using a structured provider-administered questionnaire. One hundred and sixty-two women aged 20-65 years who met the inclusion criteria were screened for pre-malignant lesions and early cervical cancer.

Procedure for Visual Inspection with Acetic Acid

The VIA cervical screening test was performed by trained female health workers. The training was on preparation of 100ml of 5% Acetic Acid, procedure for VIA testing and reporting of outcome of VIA testing. The training of the female health workers was necessary to allow for full participation and cooperation of the recruited subjects who were mainly of rural settings and were more comfortable with the females performing the procedure. The procedure was closely supervised by the researcher.

After insertion of a sterile disposable Cusco's self-retaining vaginal speculum, the health worker performed a VIA test by applying freshly prepared 5% acetic acid to the cervix. The results were recorded after 1 minute using a halogen lamp to provide good illumination.

The test was reported as either positive if well-defined dense acetowhite area with regular margins was seen in the transformation zone and negative if no change was observed. It was reported as suspicious for invasive cancer if growth or ulcerative lesion was observed and women in this category were referred tertiary health institutions for further specialist review and treatment. Women with positive VIA results were offered thermal ablation (see and treat model). The screening and treatment were offered completely free of charge.

The IBM Statistical Package for Social Sciences (SPSS) version 25.0 was used for statistical analysis. Results were presented in tables and charts. The descriptive statistics, of means, standard deviation, and percentages was carried out with statistically significant relationship as $p \leq 0.05$.

RESULTS

A total of 569 women aged 15 to 87 years registered for the outreach and 397 aged 20 to 65 years of them met the inclusion criteria by age. However, only 162(40.80%) of women who

met the inclusion criteria gave consent for participation in the study.

Amongst the one hundred and sixty (162) women participants in the study; 12 (7.4%) were screened positive while 150 (92.6%) were screened negative

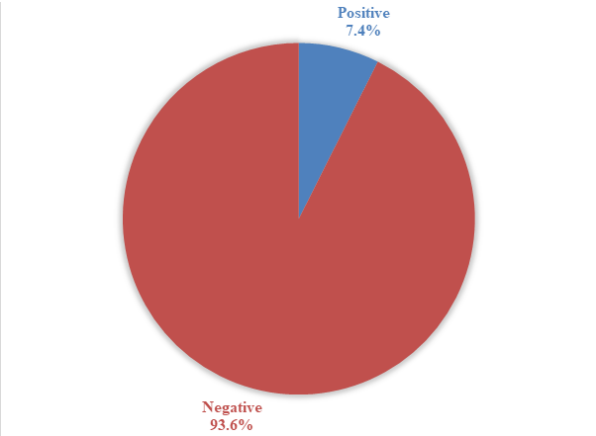

Figure 1 shows the prevalence of abnormal VIA test (Premalignant lesions of the cervix)

The table 1 shows the relationship between sociodemographic characteristics of study participants and VIA test outcome. The mean age was 39.3±11.0 years with 30-39 years (39.5%) as the predominant group. Most (97.4%) of the women that presented for screening were married, while the majority (84.0%) were unemployed. Thirty women (18.5%) attained primary school as their highest level of education, 78 (48.1%) had secondary, and 54 (33.3) had tertiary education. The socio-demographic characteristics of the women showed no significant association with the outcome of the VIA test. (Table 1)

Table 1 shows the relationship between sociodemographic characteristics of study participants and VIA test outocme

Variables		Total (%)	VIA Positive N (%)	VIA Negative N (%)	X^2	P-value
Age	20-29	26 (16.0)	0 (0.0)	26 (100.0)	3.964	0.411
	30-39	64 (39.5)	6 (9.4)	58 (90.6)		
	40-49	36 (22.2)	4 (11.1)	32 (88.9)		
	50-59	26 (16.0)	2 (7.7)	24 (92.3)		
	≥60	10 (6.2)	0 (0.0)	10 (100.0)		
Marital status	Married	138 (85.2)	10 (7.2)	128 (92.8)	2.465	0.292
	Single	12 (7.4)	2 (16.7)	10 (83.3)		
	Divorced	12 (7.4)	0 (0.0)	12 (100.0)		
Level of Education	Primary	30 (18.5)	4 (13.3)	26 (86.7)	2.625	0.269
	Secondary	78 (48.1)	6 (7.7)	72 (92.3)		
	Tertiary	54 (33.3)	2 (3.7)	52 (96.3)		
Employment Status	Employed	26 (16.0)	0 (0.0)	26 (100.0)	2.478	0.115
	Unemployed	136 (84.0)	12 (8.8)	124 (91.2)		

Table 2 shows the relationship between clinical characteristics of the women and VIA test outcome. Twenty-eight (17.3%) were nulliparous, 92 (56.8%) had between one to four children while 42 (25.9) had five or more children. About three-quarters of women (77.8%) were pre-menopausal. Sixteen (9.9%) agreed to have multiple sexual partners and 28 (17.3%) were found to be positive for the human immunodeficiency virus (HIV).

About one-quarter (22.2%) of women admitted to a positive history of symptoms such as dyspareunia and persistent foul-smelling vaginal discharge. (Table 2)

Parity was significantly related to the outcome of the VIA test (X^2 = 11.97, P-value = 0.003) such that a higher proportion of women are positive with increasing parity. Likewise, a history of symptoms such as dyspareunia and persistent foul-smelling vaginal discharge was significantly associated with the outcome of the VIA test (X^2 = 28.003, P-value = 0.001). History of multiple sexual partners, menopausal, and HIV status showed no significant association with the outcome of the VIA test.

Table 2 shows the relationship between dinical characteristics of the women and VIA test outcome (N=162)

Variables		Total (%)	VIA Positive N (%)	VIA Negative N (%)	X^2	P-value
Parity	Nulliparous	28 (17.3)	2 (7.1)	26 (92.9)	11.974	0.003
	1-4	92 (56.8)	2 (2.2)	90 (97.8)		
	≥5	42 (25.9)	8 (19.0)	34 (81.0)		
Menopausal status	Premenopausal	126 (77.8)	10 (7.9)	116 (92.1)	0.231	0.630
	Menopausal	36 (22.2)	2 (5.6)	34 (94.4)		
HIV status	Positive	134 (82.7)	10 (7.5)	124 (92.5)	0.003	0.953
	Negative	28 (17.3)	2 (7.1)	26 (92.9)		
History of multiple sexual partners	Yes	16 (9.9)	2 (12.5)	14 (87.5)	1.772	0.412
	No	146 (90.1)	10 (6.8)	136 (93.2)		
History of symptoms e.g. Dyspareunia and foul - smelling vaginal discharge	Yes	36 (22.2)	10 (27.8)	26 (72.2)	28.003	0.001
	No	126 (77.8)	2 (1.6)	124 (98.4)		

DISCUSSION

Cervical cancer has continued to be a major public health problem in low- and middle -income countries (LMICs) particularly in Sub-African nations[1,2]. The VIA is a simple and affordable screening test with acceptable sensitivity and specificity in the range 50-88.6% and 66.7-89.7%, respectively, in a research setting [4-6]. The analysis from this study showed that 7.4% of the participants were positive using VIA for cervical screening. This is comparable with other research studies on VIA where positivity ranged from 6.6% to 27.4% were reported[4]. Other studies of similar design have quoted findings ranges from 9% to 33% [5,6]. This result was lower but closer to 11% found in Enugu/Imo by Chigu et al and a study in Ethiopia by Hailemariam et al where 9% were positive [9,16]. A study done by Isikhuemen et al in Abakiliki, Ebonyi state rather found a higher percentage of VIA positive cases (33%) and 22.6% in a study by Tomen et al in Lafia, Nassarawa state [14,15]. The rather low prevalence of positive cases recorded in our study may be explained by the smaller sample size.

From our study, there was a significant association between parity and positivity of the VIA test ($X^2 = 11.97$, P-value = 0.003) such that a higher proportion of women were positive with increasing parity. This finding is corroborated by studies that also demonstrated an association between a high number of deliveries and the incidence of premalignant lesions and cervical cancer[16,19]. This could be because of the increased risk of exposure to the HPV virus in this group of women. Likewise, a history of symptoms such as dyspareunia and persistent foul-smelling vaginal discharge was significantly associated with the outcome of the VIA test ($X^2 = 11.97$, P-value = 0.003) in our study. This is not surprising as these are well-established symptoms of cervical cancer.[6] Parity and history of these symptoms could be used to triage patients for cervical screening in a low-resource setting to increase the chances of finding positive cases and also conserve scarce resources. Multiple sexual partners and Human Immunodeficiency Virus (HIV) infection are also risk factors for cervical cancer.[6] HIV infection lowers immunity thereby increasing the virulence and aggressiveness of HPV in the malignant transformation of the endocervical epithelial cells.[19] However, these were not shown to be a significant association with VIA test positivity in this index study.

All the positive cases in our study were treated immediately using thermal ablation. The advantages of this "see and treat" model include the elimination of the need for repeat visits for follow-up and the attendant loss to follow-up which is an established impediment to cervical cancer prevention in Africa.[8] Although the challenges of screening with VIA are myriad, it remains a very useful and recommended preventive modality for cervical screening in resource-poor settings.

CONCLUSION

This study has demonstrated the usefulness of VIA as a screening tool for secondary preventive measures for cervical cancer in LMICs. Furthermore, in low-resource areas like ours, VIA can be better than cytology for its ease of use and low cost. From our findings, parity and history of symptoms such as dyspareunia can be used to triage women to increase the chances of case finding and also further conserve scarce resources. This study therefore, recommends the integration of VIA-based screening programs at the primary health care level, to reduce the burden of cervical cancer in our country.

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Conflict of Interest: Nil

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