**Journal of
Medicine
in the
Tropics**

Original Article

Utilization of visual inspection with acetic-acid in cervical cancer screening among health workers in secondary health care institutions of Kaduna state, Nigeria

Fatima Balarabe, Umar Musa[1], Mohammed Alfa Chado[1], Muhammad Awwal Ladan, Halima Musa Abdul, Dalhat Sani Khalid

Department of Nursing Sciences, Faculty of Medicine, Ahmadu Bello University, Zaria, [1]Department of Physical and Health Education, Faculty of Education, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

Abstract

Aims: The research was conducted to investigate the utilization of visual inspection with acetic-acid (VIA) in cervical cancer screening among health workers in secondary health care institutions of Kaduna-state.

Settings and Design: An Ex-post facto design was used for the study. The study population comprises all nurses, midwives, and nurse-midwives working in all the secondary healthcare institutions of Kaduna-state. The sample size used for the study was 300 using the Yamane, (1967) sample size selection formula.

Subjects and Methods: The technique involved were stratified sampling method whereby the three existing senatorial zones served as strata. Each of the stratums was clustered according to the existing local government areas. A purposive sampling was further used to select nine local governments, three from each senatorial zone that have secondary health care institutions. A proportionate sampling was used at the various selected secondary health care institutions to distribute the questionnaire to the health workers based on their total number. The instruments used for data collection were the four-point level likert scale questionnaire, which was structured. 300 questionnaire copies were administered out of which (297) were retrieved.

Statistical Analysis Used: The data collected were analyzed using one-way analysis of variance and two sample t-test at 0.05 level of confidence to answer the hypothesis. Significant difference exist in the demographic variables of age-group, sex, professional category, years of working experience and secondary health care institutions) in the utilization of VIA among health workers in secondary health care institutions of Kaduna-state ($P < 0.05$). A *post-hoc* Scheffe test was further used to determine where the differences were.

Results: However, the overall results reveals that health workers in secondary healthcare institutions of Kaduna-state are not utilizing VIA in cervical cancer screening with an aggregate mean score of (2.1625) and ($P < 0.05$).

Conclusions: It was concluded that health workers in secondary health care institutions of Kaduna-state are not utilizing VIA to screen for cervical cancer. It is therefore recommended that specialist VIA units should be created in the hospitals specifically for VIA screening services; this will go a long way in utilizing VIA to screen for cervical cancer by the health workers thereby reducing the high incidence of the disease.

Key words: Cervical screening, health workers, secondary health care institutions, utilization, visual inspection with acetic-acid

Access this article online	
Quick Response Code:	
	Website: www.jmedtropics.org
	DOI: 10.4103/2276-7096.162288

Introduction

Cervical cancer is a major health problem among women in most developing countries. It is the most common female genital tract malignancy and a major cause of morbidity and mortality among women in Nigeria and other sub-Saharan African countries. The morbidity and mortality arising from cervical cancer

Address for correspondence:
Mrs. Fatima Balarabe, Department of Nursing Sciences, Faculty of Medicine, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.
E-mail: fatimabalarabe68@gmail.com

can be minimized in Nigeria through effective screening practice. This will ensure that the diagnosis is made early enough for effective treatment as late presentation is one of the reasons why developing countries have a high mortality rates from the condition.[1] In developed parts of the world, there has been a steady decline in incidence and mortality of the disease as a result of cervical screening program. It has been possible to do this because cervical cancer is a slowly evolving disease that begins as a mild dysplasia and progresses over as many as 10 or more years to invasive carcinoma.[2]

Nigeria has a population of about 40.43 million women who are at risk of developing cervical cancer.[3] It is the most common gynecological malignancy, and current estimates indicate that every year, 9922 women are diagnosed with cervical cancer and 8030 die from it.[4] The main reason for the sharply higher cervical cancer incidence is the lack of effective screening programs aimed at detecting precancerous conditions and treating them before they progress to invasive cancer.[5] The current wisdom about cervical cancer control is the critical importance of early detection. Most women in Nigeria present with advanced disease when treatment (radiotherapy, hysterectomy) is of no benefit. Furthermore, it has been estimated that only 5% of women in Nigeria have been screened for cervical (dysplasia) cancer in the past 5 years compared to 40–50% seen in developed countries.[6] Nigeria has not had a great deal of success in implementing effective cervical cancer screening until date. Screening remains one of the best ways to prevent the catastrophe of cervical cancer; more effort needs to be in place to ensure that women have access to screening so as to reduce the burden the disease.[7]

The delivery of cervical cancer screening in Nigeria is usually conducted in an opportunistic manner, whereby screening depends on the initiative of the healthcare provider. This may lead to inappropriate screening utilization and inadequate follow-up of abnormal results. There is currently no mass screening program for the detection of cervical cancer in Nigeria. Services are only available in teaching hospitals and are not adequately utilized.[8]

A population-based study of visual inspection with acetic acid (VIA) for cervical screening in rural Nigeria, stated that 7 health workers who had been screening women with (VIA) for approximately 2 years at local government health centers in rural Nigeria were retrained in a 2-week program, the health workers used the local available acetic acid (vinegar) to screen for cervical cancer.[6] VIA screening is performed by nurses, provided in the community and is free of charge for clients. Doctors provide support to the nurses carrying out the screening procedures through distance consultation, monitoring

and evaluation through a weekly review of all clinical cases and continuing medical education in UK.[9]

Studies in UK shows that VIA can be effective and acceptable method of cervical screening in low-resource settings.[10] They found a 25% reduction in cervical cancer incidence and a 35% reduction in mortality rate because of the utilization of the service by health workers. Moreover, in a cluster sampling-based randomized controlled trial conducted in Tamil Nadu to assess the efficacy of VIA screening in reducing cervical cancer incidence and associated mortality has demonstrated that the test is highly effective in low-resource settings because the health workers are utilizing it effectively.[3] VIA had been utilized by nurses and hospital physicians, with regular clinical feedback for quality evaluation. The test is inexpensive and it's performed with minimal infrastructure, which may be done even in health facilities by the auxiliary health workers, and the results are made available immediately, thereby reducing multiple visits to the hospital health facility.[11]

Globally, decrease uptake of cervical cancer screening is predominantly a problem of developing countries, due to limited access to screening facilities, thereby leading to the high increased in the number of women who come up with cervical cancer. The extent to which the number of women diagnosed with cervical cancer keep on increasing has remained a matter of grave concern to the present researcher that a study on utilization of VIA by health workers in secondary health care institutions of Kaduna-state is therefore considered desirable with a view to increase the deliverance of screening programs and subsequently the decline of cervical cancer.

Hypothesis

There are no significant differences among the healthcare workers demographic variables of (age-group, sex, profession category, years of working experience, and secondary healthcare institutions) in the utilization of VIA cervical cancer screening in Kaduna-state.

Subjects and Methods

The research design adopted in this study is an ex-post facto design. The research population comprises of all Nurses working in secondary healthcare institutions of Kaduna state. The Nurses Population were 1081. The sample size employed was 300 health workers using Yamane, (1967) sample size formula; $n = N/1+N^{(e)2}$. A stratified sampling technique was employed in the study. As such, the existing senatorial zones of Kaduna-state were stratified into northern, central and southern zones. Each stratum of the senatorial zone served as a clustered according to the present existing local government areas. A purposive sampling was used to select 9 local government

Balarabe, *et al*.: Utilization of visual inspection with acetic-acid in cervical cancer screening in Kaduna State, Nigeria

73

areas (Kaduna-South, Kaduna-North, Birnin-Gwari, Ikara, Zaria, Sabon-Gari, Kauru, Jama'a, and Kachi'a) that have secondary healthcare institutions. The purposely selected secondary healthcare institutions which were (Barau Dikko specialist hospital, Yusuf Dantsoho memorial hospital, Jibril mai-gwari memorial hospital, General hospital Ikara, Gambo-Sawaba memorial hospital Zaria, Major Ibrahim memorial hospital Sabon-Gari, General hospital Kachia) served as the sampling frame from which the sample of 300 nurses was drawn. More over a proportionate sampling was used at the secondary healthcare institutions to distribute the questionnaire to the health workers based on their number in each hospital. The health workers available were given copies of the questionnaire to fill at the selected secondary healthcare institutions; this was employed because the researchers can easily reach out to the respondents at their various work locations. Questionnaire designed by the researchers was the instrument used for data collection. Section A of the questionnaire sought for sociodemographic information of the respondents while Section B focused on the utilization of VIA by the health workers in cervical cancer screening. The responses to the items of the questionnaire were measured on a four-interval scale. The scale was patterned along Likert format of strongly agree (SA) = 4, Agree (A) = 3, disagree (D) = 2, and strongly disagree (SD) = 1. The filled questionnaire copies were retrieved from the health workers at the various selected secondary healthcare institutions by the researchers. The data collected were analyzed using descriptive statistics of frequencies and percentage for the analysis of the respondents' demographic characteristics. For the analysis of variables relating to utilization of VIA by health workers, means, and standard deviations was used. In the test of hypotheses, one-way analysis of variance, at 0.05 level of confidence and *t*-test was used. A *post-hoc* Scheffe test was done to identify where significances are.

Results

Table 1, reveals that 11.4% of the respondents fall within the age range of 20–24 years. 21.9% are within the range of 25–29 years. Another 21.9% falls within the age range of 30–34 years. Respondents with 35.39 years have a percentage of 23.6%. While those from 40 years and above accounted for 21.2%. Among the respondents, males accounted for 21.9% while females accounted for 78.1%. Subjects with 0–5 years of working experience were 26.6%, followed by subject with 6–10 years of working experience 32.3%. Those with 11–15 years of working experience were 16.8% while those with 16–20 years of working experience accounted for 9.8%. Subjects with 21 years and above working experience were 13.8 while those that did not respond to the question were 0.7%. The table also indicated that 33.3% of the respondents were in Bara'u Dikko Specialist Hospital Kaduna, 26.9%

were in Yusuf Dan tsoho Memorial Hospital Kaduna, 5.4% were in Jibril Mai-gwari Memorial Hospital, Birinin Gwari. Those in Hajia Gambo Sawaba Memorial Hospital Zaria were 8.8%, subjects in Major Ibrahim B. Abdullahi Memorial Hospital Saon-Gari were 3.7% while those in General Hospital Ikara were 3.0%. The percentage score of those working in General Hospital Kafanchan were 11.1%, those in General Hospital Kauru were 2.7% while those in General Hospital Kachia accounted for 5.1%. Concerning the professional category of the respondents, the table revealed that 27.9% were registered Nurses, 9.8% were registered Midwives while majority of the respondents had double qualification of Nurse-Midwife were 98.3%. Table 2 shows a significant difference among the age-groups, professional category, years of working experience and secondary health care institutions in the utilization of VIA in cervical cancer screening in Kaduna state. The significance level (*P*) obtained in the test is lower than the fixed level of 0.05 (*P* < 0.05). Table 3, reveals a significant difference as observed within the mean scores

Table 1: Distribution of respondent demographic variables

Variables	Variable option	Frequency	Percentage
Age	20-24 years	34	11.4
	25-29 years	65	21.9
	30-34 years	65	21.9
	35-39 years	70	23.6
	40 years and above	63	21.2
	Total	297	100.0
Sex	Male	65	21.9
	Female	232	78.1
	Total	297	100.0
Years of working experience	0-5 years	79	26.6
	6-10 years	96	32.3
	11-15 years	50	16.8
	16-20 years	29	9.8
	21 years and above	41	13.8
	Total	295	99.3
	No response	2	0.7
	Grand total	297	100.0
Secondary healthcare institution	Bara'u Dikko Specialist Hospital Kaduna	99	33.3
	Yusuf Dantsoho Memorial Hospital Kaduna	80	26.9
	Jibrin Mai-Gwari Memorial Hospital Birnin-Gwari	16	5.4
	Hajia Gambo Sawaba Memorial Hospital Zaria	26	8.8
	Major Ibrahim B. Abdullahi Memorial Hospital Sabon-Gari	11	3.7
	General Hospital Ikara	9	3.0
	General Hospital Kafanchan	33	11.1
	General Hospital Kauru	8	2.7
	General Hospital Kachia	15	5.1
	Total	297	100.0
Professional category	Nurse	83	27.9
	Midwife	29	9.8
	Nurse-midwife	180	60.6
	Total	292	98.3
	No response	5	1.7
	Total	297	100.0

of ages 35–39 years and within 40 years above. Concerning the years of working experience, significant differences was observed within 11–15 and 16 years of working experience. A significant difference was established in the mean score of nurses, midwives, and nurse-midwives. It also revealed a significant difference as observed in the mean scores of all the secondary healthcare institutions on the utilization of VIA to screen for cervical cancer.

The mean scores for the male and female subjects in Table 4 showed there is a significant difference. The observed *t*-value for the test (2.210) is greater than the *t*-critical of (1.645), indicated at the bottom of the table. The observed significant level for the test is (0.028) ($P < 0.05$). This means that there is a significant difference between male and female subjects in the utilization of VIA in cervical cancer screening in Kaduna-state. From the mean scores presented in Table 4 above, an aggregate mean of 2.1625 was established which indicate the conclusion that health workers in secondary healthcare institutions of Kaduna state are not utilizing VIA in cervical cancer screening.

Discussion

The researchers examined the utilization of VIA among health workers in secondary healthcare institutions of Kaduna State. Table 1 revealed the demographic variables of the respondents. The table shows the ages of the subjects that cut across various age groups with more concentration in 35–39 years age-range. The percentage score for the range 35–39 years is 23.6% of the total number of subjects involved in the study. The remaining subjects could be said to be fairly distributed as indicated in the table. The fairly distribution of subjects that cut across the various age-group could be attributed to the fact that there is social awareness on the importance of people to join the medical services because of the increase demand of healthcare by the community members. There is a high discrepancy between the proportion of male and female subjects. The males accounts for 21.9% while the females accounts for 78.1%. This difference could be related to the fact that nursing is a profession dominated by females. On the years of working experience of the subjects, the table shows that those with 6–10 years of experience equivalent to (32.3%) have the highest percentage score among the respondents. This reflects the policy of the state government in some medical/nursing schools to absorbed the students into the general hospitals immediately they graduate from their respective schools. They usually worked in the general hospitals for a specified period of time. Health workers who are working in Barau Dikko specialist hospital Kaduna have the highest percentage score of 33.3% of the total respondents. The large number of subjects from this particular institution could be due to location of the hospital as it is situated in Kaduna metropolis, created during the northern region, and it was being converted to a teaching hospital. The proportion of health workers in other secondary healthcare institutions were fairly distributed and could therefore be expected to give valid information about the activities in the centers, concerning the professional category of the respondents, (Nurse-Midwife) that is subjects that have double qualification of Nursing and Midwifery have the highest percentage score of (60.6%). By this distribution, all the categories of health workers in the secondary healthcare institutions, that is nurses and midwives could be said to be fairly distributed.

On the utilization of VIA to screen for cervical cancer in the secondary healthcare institutions within the

Table 2: Summary of ANOVA of age, professional category, years of working experience and secondary health care institutions on utilization of VIA

Source	Sum of square	Df	Mean square	F	Significant
Age-group					
Between groups	22.781	8	2.848	9.486	0.000
Within group	86.458	288	0.300		
Total	109.239	294			
Professional category					
Between groups	9.260	8	1.157	5.092	0.000
Within groups	65.463	288	0.227		
Total	74.723	296			
Years of working experience					
Between groups	10.620	8	1.328	5.516	0.000
Within groups	66.907	278	0.24		
Total	77.527	286			
Secondary health care institutions					
Between groups	25.344	8	3.168	10.092	0.000
Within groups	88.839	283	0.314		
Total	114.182	291			

F-critical=1.94, *P*<0.05. ANOVA - Analysis of variance, VIA - Visual inspection with acetic acid, df - Degree of freedom

Table 3: *Post-hoc* test (Scheffe) of age-group, professional category, and secondary healthcare institutions in the utilization of VIA

Dependent variable	Mean difference	SE	Significant
Age			
40 years above	−0.01635*	0.13243	0.000*
20-24 years	0.01635*	0.13243	0.000*
Professional category			
Nurse-midwife	0.35436*	0.08027	0.000*
Nurse	35436*	0.08027	0.000*
Midwife	−0.34279*	0.12082	0.019
Professional organization			
Kafanchan	−0.71364*	0.11592	0.000*
Barau Dikko	0.63205*	0.12580	0.002*
Dantsoho	0.82535*	0.12838	0.000*
M.I.B.A	0.87325*	20272	0.020*
Gambo Sawaba	−0.87325*	0.20272	0.020*
Dantsoho	0.71364*	0.11592	0.000*
Birnin-Gwari	−0.62073*	0.16341	0.041*

*The mean is significant at 0.05 level where (*P* < 0.05). VIA - Visual inspection with acetic acid, SE - Standard error

Table 4: Mean score of subjects on utilization of VIA

Utilization of VIA	Mean	SD
The hospital management encourage the use of VIA in cervical cancer screening	2.1176	0.88585
VIA screening to clients in need is available to all	1.9689	0.74237
The VIA screening test is done to women as part of routine check-up whenever they visit the hospital	1.9758	0.78358
Different categories of health workers (nurses, midwife, nurse-midwife) use VIA to screen cervical cancer in the hospitals	2.0759	0.79152
The simple technology involves in VIA makes the staff to use it in cervical screening	2.1608	0.84314
Length of time taken to do the screening is a contributing factor toward its usage	2.2324	0.87901
VIA screening is done in the hospitals under strict aseptic technique	2.3531	0.95391
The VIA is being used because it is effective in cervical screening	2.3519	0.89571
The use of VIA in cervical cancer screening is done because most women patronize the general hospital	2.1503	0.84715
VIA is done to women because it has less side effects	2.2927	0.83919
Utilization of VIA among health workers		
Male	2.3129	0.64433
Female	2.1194	0.61587

t value on utilization of VIA among health workers=2.210. VIA - Visual inspection with acetic acid, SD - Standard deviation

state, the aggregate mean score of 2.1625 as indicated in Table 5 shows that majority of the respondents do not utilized VIA to screen for cervical cancer. Nigeria has not had a great deal of success in implementing effective cervical cancer until date.[12] The delivery of cervical cancer screening in Nigeria is usually conducted in an opportunistic manner, whereby screening depends on the initiative of the healthcare provider. These invariably lead to inappropriate screening utilization and inadequate follow-up of abnormal results. There is currently no mass screening program for the detection of cervical cancer in Nigeria. Services are only available in teaching hospitals and are not adequately utilized.[6]

In the test of the hypothesis which stated that there are no significant differences among the health workers demographic variables of (age-group, sex, professional category, years of working experience and secondary healthcare institutions) in the utilization of VIA in cervical cancer screening in Kaduna State, the null hypothesis was rejected because a significant difference was observed during the course of the study among all the variables.

Conclusion

Health workers in secondary health care institutions of Kaduna-state, are not utilizing VIA to screen for cervical cancer, this makes the incidence of the disease to be high among women of child-bearing age. Therefore, it is recommended that specialist VIA units should be created in the hospitals specifically for VIA screening service, this will go along way in ensuring that the health workers are fully utilizing the VIA to screen for cervical cancer thereby reducing the high incidence of the disease.

References

1. Ajenifuja KO, Gage JC, Adepiti AC, Wentzensen N, Eklund C, Reilly M, *et al*. A population-based study of visual inspection with acetic acid (VIA) for cervical screening in rural Nigeria. Int J Gynecol Cancer 2013;23:507-12.
2. Evaluation of Cervical Cancer in Nigeria. Oxbridge Writers, Brand of all Answers Ltd. No 4964706.VAT No: 842417633; 2013. Available from: http://www.oxbridgewriters.Com/essays/health/evaluation-of-cervical-cancer-in-nigeria. [Last Retrieved on 2013 Mar 06].
3. World Health Organization. Cervical Cancer Screening in Developing Countries. Report of a WHO Consultation; 2010.
4. Ijaiye MA, Aboyeji MO, Buhari A. Cervical cancer staging. West Afr J Midwifery 2004;23:105-10.
5. Moon TD, Silva-Matos C, Cordoso A, Baptista AJ, Sidat M, Vermund SH. Implementation of cervical cancer screening using visual inspection with acetic acid in rural Mozambique: Successes and challenges using HIV care and treatment programme investments in Zambézia Province. J Int AIDS Soc 2012;15:17406.
6. National Cervical Cancer Coalition. Evaluation of cervical cancer in Nigeria. Bida, Nigeria: Evans publishers; 2008.
7. Daru PH, Pam IC, Musa J, Daniyan MG, Silas OI, Adesina OA, *et al*. Cervical epithelial changes in a tertiary hospital in Northern Nigeria. Trop J Obstet Gynaecol 2013;30:109-14.
8. Mustafa MM, Jindal AK, Singh PM. Visual inspection using acetic acid for cervical cancer in low resource settings. Med J Armed Forces India 2010;66:40-6.
9. Sankaranarayanan R, Esmy PO, Rajkumar R, Muwonge R, Swaminathan R, Shanthakumari S, *et al*. Effect of visual screening on cervical cancer incidence and mortality in Tamil Nadu, India: A cluster-randomised trial. Lancet 2007;370:398-406.
10. Sule ST, Shehu MS. Cervical cancer management in Zari. Nigeria. Afr J Health Sci 2007 2013;14:149-53.
11. World Health Organization. Prevention of cervical cancer through screening using visual inspection with acetic acid (VIA) and treatment with cryotherapy; A demonstration project in six African countries; (Malawi, Madagascar, Nigeria, Uganda, the United Republic of Tanzania, and Zambia). ISBN 978 924 150 3860 (NLM Classification; WP 480). Geneva, Switzerland: WHO Document Production Services; 2012.
12. Yamane T. Statistics; an Introductory Analysis. New York: Harper and Row; 1967.