

Original Article

Visual Inspection of Cervix with Acetic Acid (VIA) as a Screening Tool for Early Detection of Cervical Pre-Cancer & Cancer.

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Abstract:

Cervical cancer continues to be a major public health problem in Bangladesh in the absence of satisfactory and organized cervical screening programs. World Health Organization (WHO) considered cervical cancer as a preventable disease, as it can be identified in the pre-invasive stage. Visual inspection of the cervix with acetic acid (VIA) is an effective, inexpensive screening test that can be combined with simple treatment procedure for early cervical lesions, provided by trained health workers. To evaluate the value of visual inspection with acetic acid (VIA) for early detection of cervical pre-cancer and cancer in low resource country like Bangladesh, diluted acetic acid 5% was applied to the cervix and visual inspection was done. VIA tests were done for at least 3 years interval, in case of married woman, for cervical cancer screening. Women with positive results were sent for colposcopy. From January to December 2014, in Gynae OPD of the Faridpur Medical College Hospital, Faridpur, a total of 2000 women were screened by VIA test. Forty-one VIA positive cases were identified and referred for colposcopy. Out of 41 cases, 27 patients underwent colposcopic examination, among them CIN-1 was found in 21 cases, CIN-2 in 2 cases and CIN-3 in 2 cases. However, two cases were colposcopically negative. So even during gynecological practice, if we arrange a setup for cervical screening by VIA test, many women can be saved from future development of carcinoma cervix later in their lives.

Key words: Cervical Cancer, Screening, VIA.

Introduction:

More than 85% of the global burden occurs in developing countries, where it accounts for 13% of all female cancers^{1,2}. Cervical cancer is a public health problem in developing countries and has enormous social and economic impacts on the population since it often affects women who are within the reproductive age groups^{3,4}. It is the most common female genital cancer in many developing countries. The highest burden of the disease has been reported in Asian, Latin

American and African countries^{5,6}. Screening facilities in developing countries for cervical premalignant lesions are few and are mostly concentrated in the urban areas whereas majority of the population resides in the underserved rural areas. Even at the urban centers, there is an absence of high quality cytological services^{7,8}. Many studies now provide evidence of the feasibility and cost-effectiveness of screening and treatment approaches for cervical cancer prevention. These can be easily adopted for various settings⁹⁻¹⁵.

About 500,000 new cases are identified each year and at least 200,000 women die of this cancer each year. Eighty percent of new cases occur in developing countries, while this is declining in the developed world due to introduction of different screening tests¹⁶.

No reliable statistical data about cancer are available for Bangladesh and other developing countries. However cancer is one of the leading causes of morbidity and mortality in Bangladesh¹⁷. Most of the cervical cancers are diagnosed at the advanced stage, so mortality is really high. Based on the world health statistics, new cancer cases in Bangladesh have estimated at 167 per 100,000 populations. An epidemiological institute of cancer research in

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Bangladesh (1976-83) showed that the prevalence of cancer cervix is 26% amongst all types of cancers affecting female¹⁸. WHO considers cervical cancer as a preventable disease¹⁹. The decrease in cervical cancer prevalence in most of the developed countries is attributed to the success of cytology based screening program, but our country often lacks the necessary resource to use pap-smears as a screening tool for cervical abnormalities²⁰. As the incidence of cervical cancer is highest in low resource settings, alternative techniques have been sought. Recently, visual inspection with acetic acid (VIA) has gained popularity²¹. The main attractions of this technique are that, unlike conventional cytology, the results of the test are obtained almost immediately. It is relatively cheaper and most of the equipment can be sourced locally. It has been proposed, "To minimize the problems of compliance with the treatment, woman screened with VIA in developing countries should be offered treatment at the same clinic, termed as "see and treat" approach²².

WHO suggested an alternative, known as "down staging screening", to regular cytological screening as an experimental approach. It can be defined as the detection of the disease at an earlier stage by nurses and other non-medical health personnel using a simple speculum for visual inspection of the cervix²³. The aim of this study was to evaluate the clinical performance of visual inspection of acetic acid(VIA) as a simple test and if it is a suitable alternative to cytology for early detection of cervical pre-cancer and cancer.

Materials and Methods:

An observational study was done in gynaecology outpatient department in Faridpur Medical College Hospital, Faridpur during the period of January 2014 to December 2014. Total 2000 women were selected randomly. All asymptomatic women between age group 18-60, who were married for at least 3 years, were included in this study. Women with unhealthy suspicious looking cervix or with any cervical growth were excluded from the study. 5% acetic acid was applied for 1 minute to the cervix during routine gynecological examination. Any change of colour (aceto white) was observed. Written informed consents were taken prior to their examination. Women with positive results were referred to higher center for colposcopic evaluation. Information of the patients was collected by data collection sheet.

Results:

Figure 1, 2 and 3 show the characteristics of the study population. Figure 1 shows, among total 2000 patients, 12 women were less than 20 years of age, 816 were between 21 and 35 years of age and 1188 were more than 35 years of age.

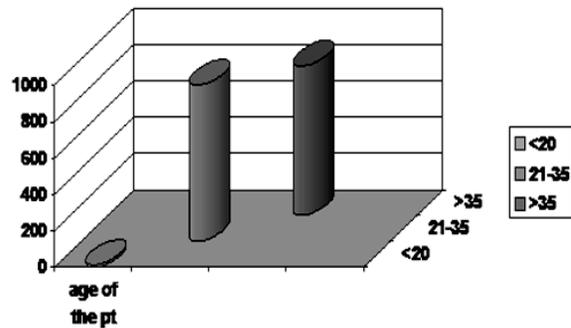


Figure 1: Age distribution of patients

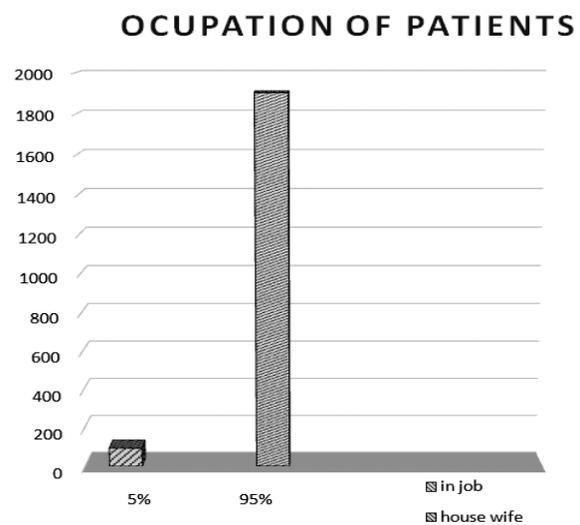


Figure 2: shows that among 2000 women, 1840 were housewives, whereas only 160 women were in different jobs.

Age during marriage

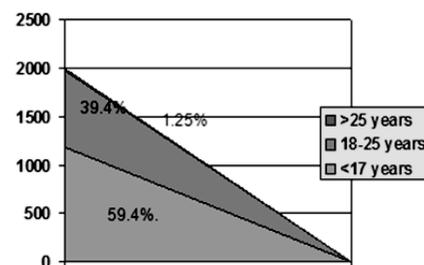


Figure 3: shows that only 1.25% women were above 25 years during their marriage, 39.4% were between 18 and 25 years and most of the women (59.4%) were below 18 years during their marriage.

Table I: Parity of the patient

Parity of the patient	Number	Percentage
Nulliparous or History of MR or abortion	76	3.8%
<2	1458	72.9%
>3	460	23%

Table I: shows that among all women, who were screened, 3.8% were nulliparous, 72.9% had parity below 2 (1458 no. of patients) and 23% had more than 3 parity.

Table II: Age at first delivery

<19 years	1032	51.6%
>19	932	46.6%

Table II shows-51.6% (1032 women) were <19 years during their 1st delivery, whereas 46.6% (932 women) were >19 at the time of their 1st delivery.

Total 41 women were found VIA positive who were referred to the higher center for colposcopy and further evaluation. Among them, 14 women denied to go higher center. Remaining 27 women reported to higher center and underwent colposcopy.

Table III: VIA test result

27 VIA positive cases attended in higher center.	
CIN I	21 cases
CIN II	2
CIN III	2
Colposcopically -ve	2

Table III shows among 27 patients who underwent colposcopy, 21 were diagnosed as CIN I, 2 cases were CIN II, 2 cases were CIN III and 2 were colposcopically negative.

Discussion:

This study reports the experiences of implementing VIA-based cervical screening method in areas where medical facilities are limited. VIA is a simple and affordable screening test with acceptable sensitivity (50-88.6%) and specificity (66.7-89.7%)²⁴.

The results show that well-trained health workers can effectively perform cervical screening, cryotherapy and follow up even with low resources, under medical supervision. In our study, the screen positivity was 2.05%. Previous studies on VIA had the positivity ranged from 6.6% to 27.4%^{14,25}. The average sensitivity of VIA in various studies from low resource settings is 50% (range 14-95) with a specificity of 85% (range 14-98). This wide range is due to variation in the women, type of provider and their training²⁴⁻²⁶.

In this study, about two-third of the cases aged more than 35 years which is comparable with other studies^{27,28}. Those studies indicate CIN is more prevalent in sexually active women^{27,28}. World Health Organization also emphasized on screening the woman aged between 35 and 45 years²⁹. However, most of the cases were housewives in this study.

In our study, 72.9% women had less than two children. Highest percentage had experienced menarche at the age of 13 years. Regarding the age of first coitus, 59.4% experienced it before 18 years in our study, whereas Kamrun Nessa et al found 76.5% of their study sample having it before 18 years³⁰. Similarly, Sayeeda found that more than 80% experienced first coitus before 19 years of age²⁷. Early age of marriage and early first delivery are important demographic factors in development of carcinoma cervix. In this study, age of women during first delivery was less than 19 years in 51.6% cases. This study found that 92.59% had CIN lesions and 7.4% had normal findings which are comparable with other studies^{30,31}. Colposcopically directed punch biopsy revealed 81.48% cases with positive lesions and 18.52% with no lesions in this study which is consistent with a previous study³⁰.

Conclusion:

Screening for precancerous and cancerous cervical lesions using VIA is simple, which requires minimal infrastructure and low cost. VIA is an effective alternative to cytological and HPV DNA testing. Direct visualization with acetic acid (VIA) has been proven, in many clinical trials, as an alternative to Pap-smear in developing countries. If we can approach "See and treat" policy, more women can be saved from development of cancer cervix.

References :

1. Ferlay J, Shin HR, Bray F, et al. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer* 2010; 127:2893-2917.
2. Sankaranarayanan R, Ferlay J. Worldwide burden of gynaecological cancer: The size of the problem. *Best Pract & Res Clin Obstet Gynaecol.* 2006; 20:207-22.
3. Safaean S, Solomon S, Castle PE. Cervical cancer prevention - cervical screening: science in evolution. *Obstet Gynecol Clin N Am.* 2007; 34:739-760.
4. Pisani P, Parkin DM, Bray F, et al. Estimates of the worldwide mortality from 25 cancers in 1990. *Int J Cancer.* 1999; 83:18-29.
5. Chokunonga E, Levy LM, Basset MT, et al. Cancer incidence in the African population of Harare, Zimbabwe: Second results from the Cancer Registry 1993-1995. *Int J Cancer.* 2000; 85:54-55.
6. Koulibaby M, Kabba IS, Cisse A, et al. Cancer incidence in Conakry Guinea: First results from the Cancer Registry 1992-1995. *Int J Cancer.* 1997; 6:39-45.
7. Lazcano-Ponce EC, Moss S, Alonso de Ruiz P, et al. Cervical screening in developing countries: why is it ineffective? The case of Mexico. *Arch Med Res.* 1999; 30:240-50.
8. PATH. Planning Appropriate Cervical Cancer Prevention Programs. 2. Seattle: PATH; 2000.
9. Shastri SS, Dinshaw K, Amin G, Goswami S, Patil S, Chinoy R, et al. Concurrent evaluation of visual, cytological and HPV testing as screening methods for the early detection of cervical neoplasia in Mumbai, India. *Bull World Health Organ.* 2005; 83:186-94.
10. Sankaranarayanan R, Wesley R, Thara S, Dhakad N, Chandralekha B, Sebastian P, et al. Test characteristics of visual inspection with 4% acetic acid (VIA) and Lugol's iodine (VILI) in cervical cancer screening in Kerala, India. *Int J Cancer.* 2003; 106:404-8.
11. Bhatla N, Gulati A, Mathur SR, Rani S, Anand K, Muwonge R, et al. Evaluation of cervical screening in rural North India. *Int J Gynaecol Obstet.* 2009; 105:145-9.
12. Sankaranarayanan R, Nessa A, Esmey PO, Dangou JM. Visual inspection methods for cervical cancer prevention. *Best Pract Res Clin Obstet Gynaecol.* 2012; 26:221-32.
13. Ghosh P, Gandhi G, Kochhar PK, Zutshi V, Batra S. Visual inspection of cervix with Lugol's iodine for early detection of premalignant and malignant lesions of cervix. *Indian J Med Res.* 2012; 136:265-71.
14. Sankaranarayanan R, Basu P, Wesley R, Mahe C, Keita N, Mbalawa CC, et al. IARC Multicentre Study Group on Cervical Cancer Early Detection. Accuracy of visual screening for cervical neoplasia: Results from an IARC multicentre study in India and Africa. *Int J Cancer.* 2004; 110:907-13.
15. Arbyn M, Sankaranarayanan R, Muwonge R, Keita N, Dolo A, Mbalawa CG, et al. Pooled analysis of the accuracy of five cervical cancer screening tests assessed in eleven studies in Africa and India. *Int J Cancer.* 2008; 123:153-60.
16. Jeffcoate N. Tumours of the cervix uteri. In: Bhatla N (ed). *Jeffcoate's principles of gynaecology.* 6th edn. London: Butterworth-Heinemann Ltd., 2001: 444-65.
17. Sultana F. Incidence of CIN in a group of patients presenting with clinically unhealthy cervix [MS thesis]. Dhaka: Bangabandhu Sheikh Mujib Medical University; 1996.
18. The prevention and control of cervical cancer in developing countries. Available at: www.bangla.pedia.org/HT/C-0033.HTM. Accessed January 2013
19. Illancheran A. Screening for cervical cancer. In: Ratnam SS, Rao KB, Arulkumaran S (eds). *Obstetrics & gynecology for postgraduates (Vol II).* 2nd edn. India: Orient Longman Ltd, 1994; 328-38.
20. Belinson JL, Pretorius RG, Zhang WH, Qiao YL, Elson P. Cervical cancer screening by visual inspection with acetic acid. *Obstet & Gynecol.* 2001; 98: 441-44.
21. Gaffikin L, Lauterbach M, Blumenthal PD. Performance of visual inspection with acetic acid for cervical cancer screening: a qualitative summary of evidence to date. *Obstet & Gynecol Surv.* 2003; 58(8): 543-50.
22. Sankaranarayanan R, Rajkumar R, Esmey PO, et al. Effectiveness, safety and acceptability of 'see and treat' with cryotherapy by nurses in a cervical screening study in India. *Br J Cancer.* 2007; 96:738-43.
23. Chowdhury NNR. Diagnosis and treatment of cervical cancer. In: Ratnam SS, Rao KB, Arulkumaran S (eds). *Obstetrics & gynecology for postgraduates (Vol I).* 26th ed. India: Orient Longman Ltd, 1999. p.380-94.
24. Visual inspection with acetic acid for cervical cancer screening: Test qualities in a primary-care setting. University of Zimbabwe/JHPIEGO Cervical Cancer Project. *Lancet.* 1999; 353:869-73.
25. Basu PS, Sankaranarayanan R, Mandal R, Roy C, Das P, Choudhury D, et al. Calcutta Cervical Cancer Early Detection Group. Visual inspection with acetic acid and cytology in the early detection of cervical neoplasia in Kolkata, India. *Int J Gynecol Cancer.* 2003; 13:626-32.
26. Sauvaget C, Fayette JM, Muwonge R, Wesley R, Sankaranarayanan R. Accuracy of visual inspection with acetic acid for cervical cancer screening. *Int J Gynaecol Obstet.* 2011; 113:14-24.
27. Sayeeda S. Colposcopic findings in clinically unhealthy cervix: a study in a group of patients attending colposcopy clinic at BSMMU [FCPS Dissertation]. Dhaka: Bangladesh College of Physicians and Surgeons; 2003.
28. Tofazzal N, Khan BR, Islam B, Mohsin A, Quddus R. Study of the association of human papilloma virus with cervical cancer and precancerous lesions in a group of Bangladeshi women. *J Bangladesh Coll Phy Surg.* 1994; 12(1):85-88.
29. World Health Organization, Pan-America Health Organization. Visual inspection of the uterine cervix with acetic acid (VIA) for cervical cancer--cancer screening. Available at: www.Paho.Org/english/ad/dpc/nc-cc-via.htm. Accessed November 2004.
30. K Nessa, K Nazneen, N Munni, R Laila, F Islam, SR Akhter. Role of Visual Inspection of Cervix with Acetic Acid (VIA) in Detecting Precancerous Lesions of Cervix. *Journal of Enam Medical College* 2014; 4(1):23-25.
31. UR Poli, PD Bidinger, S Gowrishankar. Visual Inspection with Acetic Acid (VIA) Screening Program: 7 Years Experience in Early Detection of Cervical Cancer and Pre-cancers in Rural South India. *Indian J Community Med.* 2015; 40(3):203-7.