RESEARCH COMMUNICATION

Cervical Screening by Visual Inspection with Acetic Acid (VIA) is Well Accepted by Women - Results from a Community-based Study in Rural India

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Abstract

Objective: Among the low cost alternative screening tests Visual Inspection after Acetic Acid Application (VIA) has been found to be most promising. The objective of the present study was to evaluate the safety and acceptability of VIA done by health workers among rural Indian women. We also evaluated the level of women's satisfaction with the screening program. Methods:Women residing in a defined geographic area were offered cervical screening using VIA by trained health workers. Women testing positive were colposcoped by a medical officer at the same sitting. Based on the feedback from a few focus group discussions a structured questionnaire was designed to interview the women after screening. A total of 498 women were selected randomly from the screened women for interview by a social worker. Besides enquiring about any discomfort they faced during or within seven days after screening, the women were also asked to indicate their level of satisfaction with the service. Their opinions to improve the quality of service were also sought. Results: Most women reported no pain or only slight discomfort during screening (94.2%). The most common complaint after screening was vaginal discharge (12%). A burning sensation in the vagina was experienced by some of the women (5.8%). These complaints were mild and short-lasting in majority of cases. Most of the women were satisfied with the screening service (94.6% selected the top three of a six-point response scale) and 97% said they would recommend the test to others. The most common reasons for dissatisfaction with screening were discomfort during or after screening, long waiting time and failure to get treatment for other medical problems. Conclusion: VIA by trained health workers followed by colposcopy at the same sitting is an acceptable screening algorithm for Indian women. A VIA based screening program has to be integrated to the existing primary health care facility in developing countries.

Key Words: Cervical screening - acceptability - satisfaction - visual inspection with acetic acid

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Introduction

Cervical cancer is a major public health problem in India. Approximately a quarter of the global burden of the disease is in this country (126,000 new cases, 71,000 deaths around the year 2000) (Ferlay et al., 2001). The primary reason for such a high prevalence of cervical cancers in India is lack of population based cervical screening program. Facilities for good quality Pap smear cytology and the required expertise are sparsely available even in the major cities. Government of India intends to launch demonstration cervical screening programs in few districts of each state under the direct supervision of the government supported cancer centers and the medical schools (Government of India, 2005). An expert group formed by the Ministry of Health & Family Welfare, Government of India, recently formulated the guidelines and protocols for the demonstration cervical screening program. The expert group recommended Visual Inspection after Application of Acetic Acid (VIA) as the primary screening test to be performed by trained nurses and health workers at the primary health care level (Government of India & World Health Organization, 2006).

VIA has been extensively evaluated as a simple and inexpensive alternative to Pap smear cytology. No laboratory infrastructure is required to do the test, health workers or nurses can be trained as test providers and the test results are available immediately, enabling colposcopy to be performed in the same sitting. A number of studies have reported sensitivity of VIA to detect high grade cervical precancers and cancers in the range of 70-80%, significantly higher than the sensitivity of cytology performed in the same settings (University of Zimbabwe/JHPIEGO Cervical

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Cancer Project, 1999), (Belinson et al., 2001), (Sankaranarayanan et al., 2004). Taking into consideration the test accuracy and feasibility issues, VIA has been inducted into the Indian cervical screening protocol.

When a new technology is introduced into routine health care service, the evaluation of its impact on the patient's physical and functional wellbeing is critical. In the context of cervical screening, the safety and acceptability of the new test and the women's level of satisfaction with the service delivery provisions will largely determine the success of the program. The present study aims to obtain such information from a VIA based cervical screening demonstration program that was conducted among the rural Indian population. India as well as many of the developing countries is on the threshold of introducing population based cervical screening programs using VIA as the primary screening test. The information acquired from the study can be very useful to improve women's compliance by eliminating unanticipated negative effects.

Materials and Methods

Chittaranjan National Cancer Institute conducted a community based demonstration cervical screening program during 2003-2004 in a rural district of Bengal, a state in eastern India. Women in the age group of 30-65 years were screened using VIA test performed by four trained female health workers. None of these women ever had cervical screening. A trained social worker explained to the women the necessity of the screening test and how the tests would be done before they were registered for screening. Screening clinics were organized in the villages so that the women did not have to travel a long distance to avail the facility. Women testing positive on VIA were colposcoped immediately by a medical officer. If there was any abnormality on colposcopy, a punch biopsy was obtained to confirm the diagnosis. The women were treated appropriately after the biopsy reports were available.

A cross-sectional survey was conducted after the test among a randomly selected sample of screened women to receive their feedbacks. At the end of each month a quarter of the women screened during that period were selected at random using computer generated random numbers. The minimum interval between the screening test and the interview was seven days so that the post-screening problems could be recorded. The recruitment was stopped after 502 women were selected for interview.

The structured survey questionnaire was designed on the basis of the feedback received from focus group discussions held in the same area where the screening program was being implemented. The group discussions involved screened women, their husbands, the health workers and the doctors working for the program. The questionnaire was pre-tested on 10 screened women before finalization.

A female social worker interviewed the screened women at their homes. The interviewer was not working for the screening program and was not accompanied by any staff of the program during interview. This ensured that the responses related to the performance of the screening services were collected in an unbiased way and the women could express their genuine feelings without any reservations. In such a questionnaire survey, a possibility of social acceptability bias exists. To minimize such bias the social worker emphasized the anonymous nature of the survey and requested the participants to be as honest as possible with their responses.

The screened women were asked about any discomfort/ pain they felt during the tests and also about any physical problem they felt during the week following the tests. The women were asked to rate their level of satisfaction on a six-point response scale: 0 ,complete dissatisfaction; 1, unsatisfied; 2, undecided; 3, satisfied but suggest service improvement; 4, satisfied; and 5, complete satisfaction. As many of the women were illiterate a visual scale was also included with no star indicating complete dissatisfaction to five stars indicating complete satisfaction.The social worker explained the interpretation of the visual scale to the interviewees. Suggestions about the steps that could be taken to improve service delivery were sought from the women through an open ended question.

The survey data were entered in a Microsoft Access Database. Most of the analysis was done by frequency distribution tables. To explore the relationship between pain perception and increasing age we compared the frequency of pain during screening between women younger than 45 years and the older women. Colposcopy and cervical punch biopsy during screening increase the duration of pelvic examination and can increase the pain perception. These variables may confound the association between age and pain. Stratified analysis was done to exclude the confounding effects of colposcopy and biopsy.

The Research Ethics Committee of the Institute approved the questionnaire survey. Verbal consent was obtained from each woman before administering the questionnaire.

Results

During the study period 2184 women were screened of whom 502 were randomly selected for interview. The socio-demographic characteristics of the screened women are described in Table 1.

VIA was positive in 247 (11.3%) women. As the results were immediately available, colposcopy could be offered to all the VIA positive women. All of the women agreed to have colposcopy in the same sitting (compliance = 100%). Cervical punch biopsies were performed in 153 (7.0%) women. Biospy was refused by 7 women (compliance = 95.6%). Cervical intra-epithelial neoplasias (CIN 1-3) were detected in 46 (2.1%) women. There was no case of invasive cervical cancer among the screened women.

Out of the 502 women selected for interview 498 women agreed to respond. The median interval between the date of screening and the date of interview was 22 days (range 8 - 46 days).

Table 1. Socio-demographic Characteristics of the Screened Women (N = 2184)

Variables		No.	(%)
Age (years)	30-39	1,406	(64.4)
	40-49	553	(25.3)
	50-59	171	(7.8)
	>60	54	(2.5)
Education	None	672	(30.8)
	Secondary	1,330	(60.9)
	High School	131	(6.0)
	College	51	(2.3)
Household Monthly Income (Indian Rupees)			
	<1000	69	(3.2)
	1000 - 3000	1,172	(53.7)
	3000 - 5000	902	(41.3)
	>5000	41	(1.9)
No. of Pregnancies	0-2	1,130	(51.7)
	3-5	900	(41.2)
	>5	154	(7.1)
Menopause Status	Pre-menopausal	1,856	(85%)
	Post-menopausal	328	(15%)

At the time of screening 104 (20.9%) women experienced slight discomfort. Only 23 (4.6%) women complained of moderate to severe pain (Table 2). The proportion of women complaining of moderate to severe pain during screening was higher among the women older than 45 years (Crude Odds Ratio [OR] = 4.75; 95% Confidence Interval [CI] = 1.89-12.08). Some of the women underwent colposcopy and biopsy at the same sitting. There is a possibility that such additional procedures could confound the observed association between pain and older age. Stratified analysis was done to exclude the confounding effects of these two variables. After adjusting for colposcopy the Mantel-Haenszel Weighted OR of age more than 45 yrs was reduced to 2.24 (95% CI = 0.86- 5.73). After adjusting for punch biopsy the Weighted OR was even less (OR = 1.77; 95% CI = 0.63-4.76).

These results suggest that both colposcopy and biopsy are confounders of the association between age and pain. Even after adjusting for the confounding effects the odds ratios are consistent with the fact that women aged more than 45 years experienced more pain and discomfort as compared to the younger women.

All the women were questioned about the occurrence of discharge per vagina, burning sensation inside vagina and non-menstrual bleeding per vagina at any instance within one week after the test. Discharge per vagina was the most common post-screening event occurring in 12% of the women (Table 3). However, the number of women who had discharge that was excessive in amount and required medical consultation was very small (2, 0.4%). A burning sensation in the vagina was experienced by 5.8% of the interviewed women. Bleeding per vagina apparently not due to menstruation occurred in 3.8% of the women within seven days of screening. Moderate to heavy bleeding was experienced only in 5 (1%) women; 3 of them had cervical biopsy. Women who underwent biopsy had significantly higher incidence of discharge (OR = 2.1, 95% CI = 0.8-5.4) and bleeding (OR = 71.4, 95% CI = 21.0- 253.8) per vagina.

When asked about their level of satisfaction with the screening, 322 (64.7%) women responded that they were satisfied and 28 (5.6%) women responded that they were very satisfied. Nearly a quarter of the women (121, 24.3%) said that they were somewhat satisfied but the services needed to be improved. Rest of the women was either undecided (23, 4.6%) or unsatisfied (4, 0.8%). The most common reason for not being completely satisfied with the test was post-screening discharge and/or bleeding (Table 5). Majority of the interviewees (97%) agreed that the test was beneficial and they would recommend it to other women. Only 3.5% of the women responded that their husbands were unhappy about their wives undergoing the test.

In response to the open-ended question about how the service delivery could be improved the responders offered quite a few suggestions. The ten most common suggestions are listed in order of frequency in Table 6.

Table 3. Pain/discomfort During the Screening Test

	Total (498)	< 45yr (383)	> 45yr (115)
No pain/discomfort	371 (74.5%)	311 (81.2%)	60 (52.2%)
Slight discomfort	104 (20.9%)	62 (16.2%)	42 (36.5%)
Moderate pain	21 (4.2%)	10 (2.6%)	11 (9.6%)
Severe pain	2 (0.4%)	0 (0.0%)	2 (1.7%)

Table 4. Test-related Problems after Screening

	Total (498)	Biopsy (33)	No biopsy (465)
Vaginal discharge	60 (12.0%)	7 (21.2%)	53 (11.4%)
Burning	29 (5.8%)	3 (9.0%)	26 (5.6%)
Vaginal bleeding	19 (3.8%)	12 (36.4%)	7 (1.5%)

Table 5. Reasons for Not Being Completely Satisfied

Reasons for dissatisfaction		No. of responders (%)
1.	Post-screening problems (discharge, bleeding)	69 (46.6)
2.	Long waiting time at the clinic	63 (42.6)
3.	Other health problems not taken care of	57 (38.5)
4.	Pain during screening	23 (15.5)
5.	Too much trouble for too little gain	14 (9.5)
6.	Privacy inadequate	13 (8.8)
7.	Examined by male doctor	5 (3.4)
8.	Unhappy with staff behavior	3 (2.0)
9.	Unhappy with the set up	1 (0.7)

Multiple responses were allowed

Discussion

The present study reports the acceptability of VIA test and the womenâ_ s perceptions of quality of care based on a cross-sectional survey of women participating in a population based screening program. The major limitation of the study is the recall bias as the responders had to rely on their memories rather than on any diary card or other objective tool. We had observed that women were not very receptive to the idea of maintaining a diary card due to their various preoccupations and logistic difficulties. Many of

Table 6. Suggestions Received for Improvement of the Services (in order of frequency)

1. Other health problems should be taken care of
2. Female doctors preferred as service provider
3. Adequate privacy should be maintained
4. Staff behavior should be more cordial
5. More information needed about cervical cancer screening
6. Medicines should be provided free of cost
7. Male family members should be invited to awareness meetings
8. Children should also be examined
9. Clinics in the afternoon will be more convenient
10. Referral for treatment to a local hospital is preferred to a city hospital

these women were not educated enough to be able to maintain the diary of events.

VIA as a new screening test, has been extensively evaluated for its accuracy. Little information is available about its safety and acceptability, especially from an actual community based program that is quite different from the highly controlled research settings. Any negative experience related to the new test may reduce the motivation to pursue regular screening and therefore deprive the women of the screening's protection (Lerman et al., 1990; Fylan, 1998).

A number of studies have indicated that 20-68% of the women undergoing the Papanicolaou (Pap) test experience discomfort and pain (Crombie et al., 1995), (Schwartz et al., 1989), (Holroyd et al., 2001). Unlike Pap smear, no scraping from the cervix, especially from the pain sensitive endocervix is done in VIA. There is a hypothetical possibility that women may experience less pain and discomfort with VIA. In our study 20.9% women experienced slight discomfort during screening and only 4.6% complained of moderate to severe pain. In the Safety, Acceptability and Feasibility of single visit approach (SAFE) Study of Thailand the proportion of women complaining of any discomfort during VIA test was even less (11%) (Gaffikin et al., 2003). This can be attributed to the lesser age (< 45) of the studied population and substantial counseling before and after screening.

We observed that age above 45 years, having colposcopy and having biopsy were independent variables that influenced the perception of pain in the screened women. It will be interesting to compare Pap test and VIA in terms of the pain/discomfort caused by the individual procedure through a randomized trial.

Vaginal discharge was the most frequently reported complaint in the post-screening period and can be explained by the local irritant effect of acetic acid and silver nitrate (used to stop bleeding after biopsy). Very few women (0.4%) required medical consultation for discharge per vagina persistent beyond 3 days. This subgroup of women may have acquired iatrogenic infection from improperly sterilized instruments. Such avoidable complications should be as low as possible in any screening program.

The diluted acetic acid (3-5%) used for VIA can give a stinging or burning sensation in the vagina in some women. In our program we used 4% acetic acid. Nearly 6% of the interviewed women said that they felt a burning sensation; though most of them agreed that the sensation was mild, transient and disappeared within a few hours.

Post-screening abnormal bleeding was experienced by 3.8% of the women and can be attributed to taking biopsy (OR = 71.4; 95% CI = 21.0-253.8) at the same sitting rather than to the screening procedure itself.

Patientsâ_ views on what is important in connection with the care they receive help a lot to improve the quality of care. Client satisfaction is a crucial indicator of quality of service (Cleary & McNeal, 1988), (Davies & Ware, 1988), (World Health Organization, 1988). Very few studies have examined women's level of satisfaction with the care provided in cervical cancer screening programs (Fylan, 1998). Available research data point towards a consistent association between positive evaluation of the screening test and adherence to screening recommendations (Orbell & Sheeran 1993).

Nearly 70% of all the women we interviewed had no hesitation in saying that they were satisfied with the test and the service delivery provisions. The possibility of this figure being inflated due to social acceptability bias can not be completely ruled out in spite of our best efforts to minimize such bias.

Most common reason for women to be dissatisfied with our service was post-screening problems like discharge and bleeding. This is quite comprehensible, as these women were apparently healthy and symptom-free before they went for the test. Pain during screening was also a reason for discontent. Other authors have similarly observed the negative effect of pain and discomfort on the overall satisfaction rating. The effect is potentiated by the negative emotions and beliefs women often associate with gynecological examinations (Jennings, 1997). Other deficiencies pointed out by the women were related to service delivery provisions like long waiting time at the clinic, lack of female doctor, inadequate privacy etc.

The screening clinics were held in the villages within walking distance for most of the women and the service was provided free of cost. As a result, the women did not complain about problems related to accessibility and affordability, though these are very important determinants of success of a screening program. The most frequently obtained suggestion for improvement was that any medical problem causing symptoms and sufferings should be attended to along with screening. Most of the study women were indigent, did not have access to primary health clinics and could not afford private health care. They were more concerned about their existing ailments rather than prevention of cancer. They came to the screening clinics with the expectations that all of their medical problems would be properly addressed and they would be provided medicines free of cost. They were disappointed when such broad based service was not available. This signifies that cervical cancer screening can not be run as a stand-alone program. It has to be integrated into a functioning primary

health care delivery system.

In conclusion, this study indicates that VIA is a well tolerated and well accepted test and there was moderate to high level of satisfaction with care provided through our population-based cervical cancer-screening program. Incidence of discomfort and pain during VIA is less than the reported incidence of these problems during Pap. There are indications that for optimization of the program more attention should be given to reduce the post-screening complications and to provide primary health care support along with the screening tests.

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