ORIGINAL ARTICLE

Visual Inspection with Acetic Acid (VIA) & Pap smear positivity rates according to socio demographic factors amongst rural married women

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Abstract

Background: Cervical cytology which is a standard screening tool in developed countries fails as a screening method in low-resource countries due to financial and technical constraints. **Objective:** To determine the prevalence of pre-malignant lesions of the cervix by VIA and Pap smear test among rural married women and to find out association of socio demographic factors with positive screening test results. **Material & Methods**: A community based cross-sectional study was carried out among rural married women in the field practice area. A pre-designed questionnaire was administered to collect information from 550 women. **Results**: The VIA and Pap smear tests were positive among 5.5% and 3.6%study subjects respectively. Pap smear test result presented with pre-cancerous lesions such as atypical squamous cell of undifferentiated significance (ASCUS)16 (2.90%), low grade squamous intraepithelial lesions (LSIL) 2 (0.36%) and high grade squamous intraepithelial lesions (HSIL) 2 (0.36%). The VIA & Pap smear positivity rate was found to be more in the age group of ≥40 years, Hindu, education above intermediate class, joint family and, upper & lower socio-economic status respectively. **Conclusion**: The prevalence of pre-malignant lesions of the cervix by VIA test was 5.5 % while 3.6% pre-malignant lesion was detected by Pap smear method.

Keywords

Introduction

Cervical cancer in India is the second most common cancer in women (12.1%). Every year, around 1.23 lakh new women are diagnosed with cervical cancer and 67,500 of these women die of the disease in India. Cervical cancer is a preventable disease as it can be diagnosed in its precancerous stage.

Screening by cervical cytology is the most common method used in developed world for detection of the disease in an early stage. The cytology screening program has failed in developing world due to financial constraints, Lack of political will, poor organizational backup, lack of expertise and lack of prioritization.(1) Prompted by the need for optimal strategies of cervical screening in low resource

settings, the role of Pap smear examination and VIA has been widely studied. These techniques are less expensive and simpler to perform and can be mastered in a short period by the health workers. They can provide the results immediately which make them suitable for the wide screening in regions with a high incidence of cervical cancer.(2)

At present, National Programme for the Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) is also started enable opportunistic screening for cervical cancer by VIA.

Aims & Objectives

1. To find out the prevalence of pre-malignant lesions of the cervix by VIA and Pap smear test among rural married women
2. To find out socio demographical factors associated with positive screening test results.

Material & Methods

The present cross-sectional study was carried out in the field area of Rural Health Training Centre, under the department of Community Medicine, SRMS Institute of Medical Sciences, Bareilly (Uttar Pradesh). The study protocol was reviewed and approved by institutional review and ethics committees

A **Sample Size** of 550 patients was selected for an estimated prevalence 12% of pre malignant lesions of cervix in the Hegde D.*et al,*(3) and a precision of 23%.

Inclusion Criteria: Rural married Women, who give consent for study

Exclusion Criteria: Pregnancy, Women with post hysterectomy status, active vaginal bleeding, seriously ill and those not willing to participate in the study.

The RHTC comprised of 24 villages, out of these villages, one village Dhaura was randomly selected in first stage. Second stage of sampling was done for selection of households. All the houses of the selected village were numbered and 1st house was randomly selected by drawing a random number. Thereafter, consequent houses were visited for the collection of the data. All the eligible study subjects present during the visit in those household were studied. The subject were explained the symptoms, risks of cervical cancer, and benefits of screening test. They were motivated to undergo gynecological check-up including VIA and Pap Smear test. Those who consented were administered questionnaire comprising of socio-demographic history.

After filling the questionnaire, the eligible women were given date and time to visit OPD at RHTC for per speculum examination. Per speculum examination was done to visualize the cervix, the external os was identified with pinkish squamous epithelium and reddish columnar epithelium and transformation zone. The condition of the cervix and vagina was noted down.

Pap smear & VIA test: Firstly, Pap smear test was done on the subject. Pap smear was taken from two samples, one from ectocervix and other from endocervix. The Pap smear slide was immediately fixed with a mixture of 50% ethyl alcohol and 50% ether. After that, each woman was subjected to visual inspection of the cervix with acetic acid (VIA). Using a cotton swab soaked in 5% acetic acid for 1-2 minutes and then the cervix was carefully inspected for any acetowhite lesions, particularly in the transformation zone. The test outcome was considered positive if any distinct acetowhite area was detected on the cervix. If no acetowhite lesions areas were detected or if the whitish appearance was doubtful or faint, the test was scored as negative.

Reporting of the slide was done according to Bethesda Classification (4) which is as follows:

NILM - Negative for intraepithelial lesions or malignancy

ASCUS - Atypical squamous cells of undetermined significance

LSIL- Low grade squamous intraepithelial lesions

HSIL- High grade squamous intraepithelial lesions

Data compilation and analysis: Data were entered in excel spread sheet. It was compiled and analysis was done with the help of appropriate statistical test.

Results

The result shows that out of 550 study participants 30 (5.50%) turned out to be VIA positive in comparison to 20 (3.60%) subjects who were Pap smear positive.

Out of 20 (3.6%) positive Pap smear cases, 16 (2.9%) were in ASCUS category while equally 2 (0.36%) in each LSIL and HSIL category.

[Table 1] depicts that both VIA and Pap smear positivity rates were progressively increasing with the age group of participants and the association between VIA and Pap smear positivity rate with age group of the participants were found to be highly statistically significant. Here high VIA (19.23%) and

Pap smear positivity rate (10.0%) were found to be in 41-50 and ≥50 year age group respectively.

The distribution of the study subjects according to their religion and the VIA and Pap smear positivity shows that more than half 306(55.60%) of the study subjects were Hindus and 244(44.40%) were Muslims. The VIA positivity rate (7.51%) and Pap smear positivity rate (5.55%) among Hindus were more than Muslim subjects. The association between the religion and the VIA and Pap smear positivity rate were found to be statistically significant.

In this study high VIA and Pap smear positivity rate were reported8 (12.69%) & 4(6.35%) among SC/ST and General caste respectively while low VIA and Pap smear positivity rate were 14(3.94%) & 10(2.81%) among OBC and SC/ST respectively and here association between the caste of study subjects and VIA and Pap smear positivity rate were both found to be statistically significant.

The distribution of the study subjects according to the type of family and their VIA and Pap smear positivity rate shows that majority, 541(98.36%) of the study subjects belonged to the nuclear family. Here both VIA and Pap smear positivity rate among joint family subjects were found to be high 3(33.33%) and 1(11.11%) respectively. The association of VIA and Pap smear positivity rate with the type of family of study subjects were both found to be statistically significant.

According to socio economic status of the study participants, the VIA positivity rate was 25.00% in study subjects belonging to upper class but none of them was found to be Pap smear positive. The VIA positivity rate 4(26.66%) and Pap smear positivity rate 12(15.58%) was found more in subjects belonging to upper middle & lower class respectively. The association between VIA and Pap smear positivity rate with the socio-economic status of the study participants were found to be statistically highly significant.

The majority of the study subjects were illiterate 257(46.72%) and less were having intermediate and above education 11(2.0%). The high VIA and Pap smear positivity rate were reported in the subjects of intermediate and above education. The association between the VIA and Pap smear positivity rate with the level of education of the study subjects were not found to be statistically significant

The distribution of study subjects according to their occupation and VIA and Pap smear positivity rate,

none of the study subjects were found to be VIA or Pap smear positive among professional and unskilled group. The high VIA and Pap smear positivity rate was found to be 7(6.67%) among clerical/farmer/shop owners and 15(4.15%) among semiskilled group of study subjects respectively. The association between the VIA and Pap smear positivity rate and the occupation of the study participants were both found to be highly statistically significant.

Discussion

In this present study, the VIA positivity rate was found to be 5.5% and Pap smear positivity rate was 3.60%. Results of present study are aligned with Makuza J.D *et al*,(5) who reported VIA positivity to be 5.9%. However, the hospital-based study carried out by Hegde D.*et al*,(3) in Karnataka showed very high VIA and Pap smear positivity rate (12% and 11.5%). This may be due to the regional variation, difference in methodology adopted and difference in the age group taken for the study.

The present study depicted that VIA positivity rate was highest in age group above 40 yrs. Results of present study shows that VIA and Pap smear positivity rate increases with the age (p value<.001). Similar results were also found in Bhattacharya K.A. *et al*,(6) and MakuzaJ.D *et al*,(5) study, in which the VIA positivity rate was also found to be highest in the age group of 40 years and above.

VIA and Pap smear positivity rate was higher in Hindus (7.5% and 5.5%) than Muslims (2.86% and 1.22%) (p value<.01). The higher prevalence in Hindu was also reported by Paul S.B. *et al*,(7) study. The lower prevalence of Ca cervix in this present study in Muslim population may be due to the ritual of circumcision in males among Muslims.

Surprisingly, VIA positivity rate was highest in women educated up to intermediate and above but number of study subjects in these group was very low. No statistically significant association between VIA positivity rate and educational level has been seen in this present study (p value>0.05). The same pattern of VIA positivity rate was also reported by the Bhattacharyya A.K. *et al*,(6).

No VIA and Pap smear positive cases were found in professional and unskilled groups in the present study. This may be because of very low number of study subjects in these two occupational groups. VIA positivity rate was relatively higher in women belonging to clerical/ shopkeeper/ farmer group (p

value<.01). However, Pap smear positivity was highest in semi-skilled groups.

There were less VIA and Pap smear positive cases found in study subjects residing in the nuclear family in the present study. Higher VIA positivity rate (33.33%) and Pap smear positivity (11.11%) was observed in subjects of joint family. The possible factors may be illiteracy, ignorance and low socio-economic status for such pattern (p value <.01).

In this present study, there were very few study participants in upper class with a high Pap smear positivity rate of (25.00%). Similar observation had been seen in Mhaske M.*et al,*(8) study in which the Pap smear positivity rate was high(33.33%) in upper class socio economic status (p value <.001).Their study too showed statistically significant association between the socio economic status and cervical dysplasia.

Conclusion

In this study, the prevalence of pre-malignant lesions of the cervix among rural married women was 5.5% and 3.6% by VIA & Pap smear test respectively. Its positivity rate was found to be more in the age group of ≥40 years, Hindu, education above intermediate class, joint family and, upper & lower SES respectively. As there is no baseline data on prevalence of pre-malignant lesions of the cervix among women from this area, further research studies are needed in this direction.

Recommendation

Our study showed that we can use VIA as a screening method for cervical cancer detection. In areas with low facilities VIA is a helpful method in cervical cancer screening. When colposcopy is not available, it is recommended to use VIA accompanying with Pap smear.

Limitation of the study

The limitation of this study was that it was a quantitative study and hence psycho-socio-cultural reasons for not undertaking the screening test could not be explored in depth. Qualitative research may add to understanding the factors affecting those who have not gone for screening the test, and to help unravel the silence of the non-responders.

The investigator also found it difficult to convince the women for cervical screening as many women did not give consent due to poor awareness, social stigma and fear associated with the diagnosis of cancer.

Relevance of the study

This study is the more relevant and having similar finding with other studies.

Author Contribution

All authors helped to each other in the preparation, compilation and analysis of data for this article.

Acknowledgement

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Tables

TABLE 1 SOCIO-DEMOGRAPHIC PROFILE OF VIA AND PAP SMEAR POSITIVITY SUBJECTS

Socio-demographic profile		Total women studied 550 (%)	Test	
			VIA+ve30 (%)	Pap Smear +ve 20 (%)
Age group	≤20	186(33.80%)	2(1.07%)	1(0.55%)
	21-30	100(18.20%)	3(3.00%)	3(3.00%)
	31-40	162(29.50%)	7(4.32%)	7(4.32%)
	41-50	52(9.50%)	10(19.23%)	4(7.69%)
	≥50	50(9.10%)	8(16.00%)	5(10.00%)
	Statistical value		Yates $x^2 = 38.41$,p value<.001	Yates $x^2 = 13.65$, p value<.05
Religion	Hindu	306(55.60%)	23(7.51%)	17(5.55%)
	Muslim	244(44.40%)	7(2.86%)	3(1.22%)
	Statistical value		$x^2 = 5.60$,p value<.01	$x^2 = 7.25$,p value<.01
Caste	OBC	355(64.54%)	14(3.94%)	6(4.54%)
	SC/ST	63(11.45%)	8(12.69%)	10(2.81%)
	General	132(24.00%)	8(6.06%)	4(6.35%)
	Statistical value		$x^2 = 72.23$, p value <.001	$x^2 = 38.37$, p value<.001
Type of family	Nuclear	541(98.36%)	27(4.99%)	19(3.51%)
	Joint	9(1.63%)	3(33.33 %)	1(11.11%)
	Statistical value		Yates $x^2 = 15.17$, p value<.01	Yates $x^2 = 38.92$, p value<.01
Socio economic class	Upper	8(1.50%)	2(25.00%)	0(0.00%)
	Upper middle	15(2.70%)	4(26.66%)	2(13.33%)
	Middle	314(57.10%)	3(0.96%)	1(0.31%)
	Lower Middle	136(24.70%)	7(5.14%)	5(3.67%)
	Lower	77(14.00%)	14(18.18%)	12(15.58%)
	Statistical value		$x^2 = 28.92$, p value<.001	Yates$x^2 = 38.92$,p value<.001
Education	≥ Intermediate	11(2.00%)	2(18.18%)	1(9.09%)
	High school	47(8.54%)	2(4.25%)	2(4.25%)
	Middle school	85(15.45%)	5(5.88%)	2(2.35%)
	Primary school	150(27.37%)	6(4.00%)	3(2.00%)
	illiterate	257(46.72%)	15(5.83%)	12(4.66%)
	Statistical value		$x^2 = 4.304$, p value>.05	$x^2 = 7.493$, p value>.05
Occupation	Professional	10(1.81%)	0(0.00%)	0(0.00%)
	Clerical/shop owner/farmer	105(19.09%)	7(6.67%)	4(3.80%)
	Skilled	51(9.27%)	3(5.89%)	1(1.97%)
	Semi-skilled	361(65.60%)	20(5.54%)	15(4.15%)
	Un skilled	23(4.18%)	0(0.00%)	0(0.00%)
	Statistical value		Yates $x^2 = 13.48$,P value<.01	Yates$x^2 = 15.33$,p value<.01