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Original Research Article

Awareness of cervical cancer, its screening and HPV vaccination among women of reproductive age group (15-49 years) in a tertiary care centre in Maharashtra

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ABSTRACT

Background: In India, cervical cancer is the second most common cause of cancer among females after breast cancer. Human papilloma virus is one of the most common sexually transmitted infections worldwide among both men and women and is found to be the most common cause of cervical intraepithelial neoplasia (CIN) and cervical cancer in females. This study was undertaken to assess awareness of cervical cancer and its screening and vaccination among women of reproductive age group in a tertiary care centre in Maharashtra.

Methods: This was an observational study with all patients who attended the gynaecology outpatient department of Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital, Kalwa, Thane and included all women in the age group of 15-49 years during the study period September 2025-March 2026.

Results: The majority of participants (25%) were aged between 26-30 years. Awareness about PAP smear testing was low, with 59% being unaware. Knowledge about cervical cancer risk factors was alarmingly low, with only 30% women not having awareness. HPV vaccine awareness was also limited, with 72% lacking awareness.

Conclusions: In our study, the most common risk factors of cervical cancer known were poor genital hygiene, tobacco use, followed by uterine infections. In our study, 63 % were aware of signs and symptoms of cervical cancer. Our study highlights an urgency to enhance women's knowledge about HPV infection and cervical cancer. This can be effectively addressed via a multifaceted approach. Awareness campaigns using both print and electronic media should be used to disseminate accurate information to a wide audience, especially in underserved areas.

Keywords: Cervical cancer, PAP smear, HPV, Screening, Vaccination

INTRODUCTION

The world is heading toward the rising epidemic of non-communicable diseases (NCDs). Out of these NCDs, cancer is the second leading cause of death. In India, cervical cancer is the second most common cause of cancer among females after breast cancer.¹ Most of the cervical cancer cases are found to be associated with carcinogenic human papillomavirus (HPV) infection. HPV types 16 and

18 cause 70% of cervical cancer and pre-cancer lesions.² HPV is one of the most common sexually transmitted infections worldwide among both men and women and is found to be the most common cause of cervical intraepithelial neoplasia (CIN) and cervical cancer in females.³ Onset of sexual activity at an early age, unprotected sexual intercourse, multiple sexual partners or a partner with multiple sexual partners, intercourse with uncircumcised men are predisposed to an increased risk of acquiring HPV infection.³ Smoking, immune-

compromised state (HIV), long term use of oral contraceptive pills (OCPs), multiparity, first childbirth age <20 years of age, presence of other untreated vaginal infections, poor genital hygiene and low socioeconomic status are some of the other risk factors associated with cervical cancer.⁴

Cervical cancer can be detected early through screening with Papanicolaou (PAP) smear examination or visual inspection with acetic acid (VIA).⁵ According to National Program for Non communicable disease (NP-NCD), screening of cervical cancer is recommended using VIA by ANM among women aged 30 years and above every five years.⁶ As it does not produce signs and symptoms, the patient does not seek health care in early precancerous stage. Hence, most of the cervical cancer patients present to the hospital in the advanced stage, leading to high morbidity, sufferings, and mortality in India.⁷ Generally, women in India do not discuss freely about diseases related to female reproductive system such as sexually transmitted diseases (STDs) and cervical cancer due to cultural taboo. In Indian women, HPV infection is common at 26-35 years of age, which is a decade later than that in developed countries, and cancer occurs between 45-59 years of age. Hence, there is a long gap between infection and invasive cancer, which gives ample scope for preventive activities.⁸ Knowledge regarding various signs, symptoms and risk factors associated with cervical cancer influences health-seeking behaviour. This study was undertaken to assess awareness of cervical cancer and its screening and vaccination among women of reproductive age group in a tertiary care centre in Maharashtra.

METHODS

An observational study was conducted in the Department of Obstetrics and Gynaecology at RGMC, CSMH, Kalwa after obtaining permission from the Institutional Ethics Committee.

The present study was an observational study conducted among women aged 15-49 years attending the gynaecology outpatient department. The study was carried out over a period of seven months, from September 2025 to March 2026. A total of 200 women meeting the eligibility criteria were included in the study and evaluated according to the study objectives.

200 women fulfilling the inclusion criteria were interviewed with a structured questionnaire after obtaining their consent and their sociodemographic characteristics were recorded. After completion of the interview, the study participants were given health education regarding cervical cancer using pictorial diagrams by the researchers. Associations between the socio-demographic characteristics and awareness of cervical cancer, risk factors, symptoms, treatment and prognosis were studied. Their awareness and opinions regarding screening of cervical cancer with PAP smear testing were noted.

Inclusion criteria for the study encompassed women aged between 15 and 49 years who had provided their consent to participate. Conversely, the exclusion criteria involved women who had been diagnosed with any form of malignancy or premalignant conditions and were currently undergoing treatment for these issues. Additionally, antenatal women who were admitted to labor rooms, those hospitalized due to serious illnesses requiring intensive care, women with psychiatric disorders and individuals who had declined to give consent were also excluded from the study.

RESULTS

The total number of respondents who gave informed consent for the participation in the study were 200. The socio demographic characteristics of the participants are presented in Table 1. The majority of the study participants had lower secondary education or higher level of education (65%). About two-thirds (65.5%) women were homemakers.

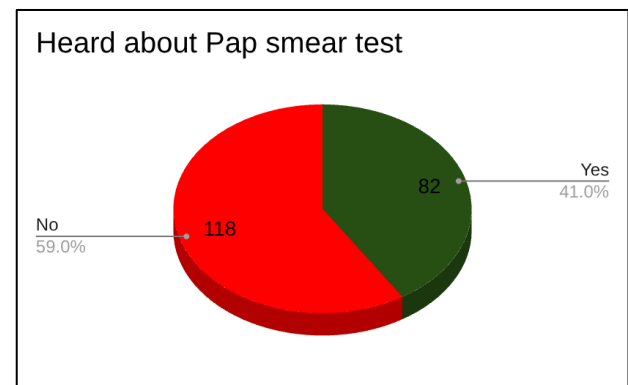


Figure 1: Heard about PAP smear test.

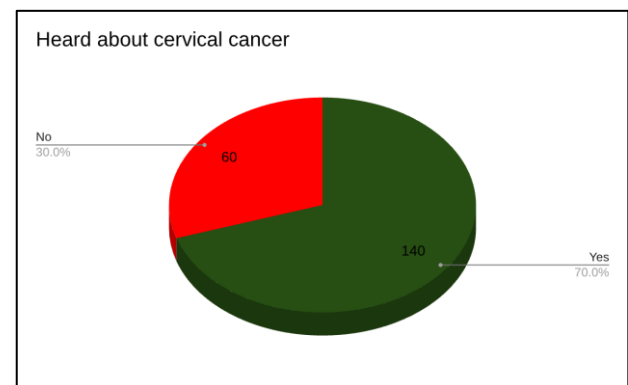


Figure 2: Heard about cervical cancer.

Out of the total respondents, 56.5% belonged to the urban population and 25% women were under the age group of 26-30 years, with 21% having 1 parity. Less than half of the respondents had heard about the screening test i.e. 41%. (70%) were found to have awareness of cervical cancer (i.e. have heard about cervical cancer and knew at least one risk factor or sign and symptom of cervical

cancer). The most common source of information was from doctors followed by friends and relatives.

Table 1: Distribution based on demographic details.

Socio-demographic profile		Frequency (N)	Percentage (%)
Age of the patient (years)	18-25	47	23.5
	26-30	49	24.5
	31-35	38	19
	36-40	38	19
	41-45	28	14
Marital status	Married	94	47
	Never married	60	30
	Divorced	22	11
	Widowed	24	12
Education	Uneducated	45	22.5
	Middle school	80	40
	High school	52	26
	Graduation	20	10
	Post graduation	3	1.5
Socio-economic status	Upper	21	10.5
	Upper middle	42	21
	Lower middle	54	27
	Upper lower	45	22.5
	Lower	38	19
Area	Urban	113	56.5
	Rural	87	43.5
Employment status	Housewife	131	65.5
	Employed	69	34.5
Parity	0	29	14.5
	1	41	20.5
	2	56	28
	3	40	20
	>=4	34	17

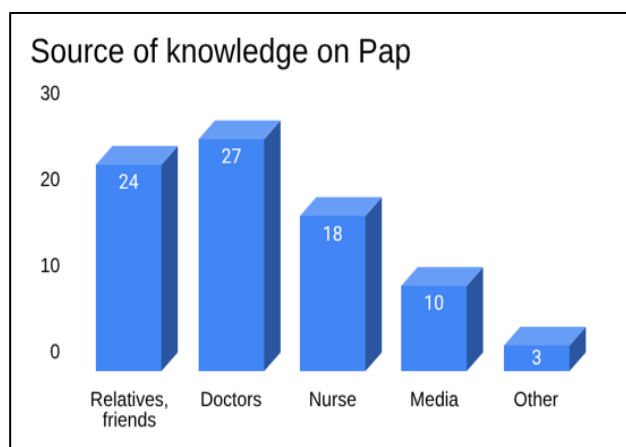


Figure 3: Source of knowledge on PAP.

STD's and early menarche, late menopause were the most common risk factors known to the respondents. None of the respondents got HPV vaccination but 28% had awareness regarding the vaccine.

Not having signs and symptoms and lack of knowledge about the vaccine were the common reasons for not getting vaccinated.

Table 2: Distribution on the basis of knowledge and beliefs of the women about cervical cancer risk and prevention.

Knowledge	Frequency (N)	Percentage (%)
Source of knowledge on PAP		
Relatives, friends	24	29
Doctors	27	33
Nurse	18	22
Media	10	12
Other	3	4
Knowledge on risk factors		
STD	55	39
Smoking	15	11
Multiple sexual partners	18	13
Early menarche, late menopause	21	15
Young age at 1st pregnancy	13	9
Immunocompromised status	18	13
Awareness on HPV vaccine		
Yes	56	28
No	144	72

Details of responses for knowledge and attitude are shown in Table 3. Only 25.5% women had taken a pap smear test in the past and the most common reason for taking the test was foul smelling discharge followed by routine screening practices.

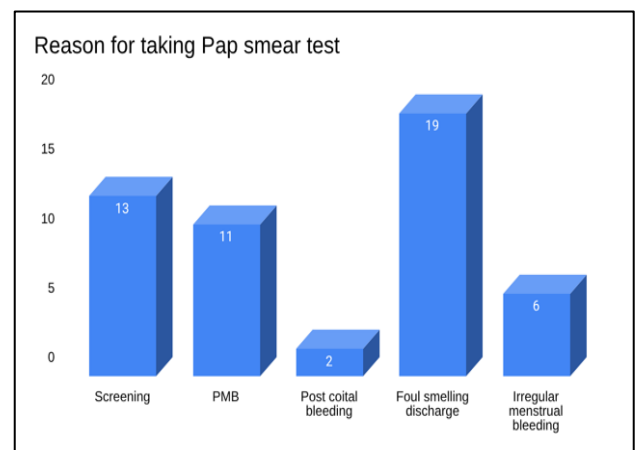
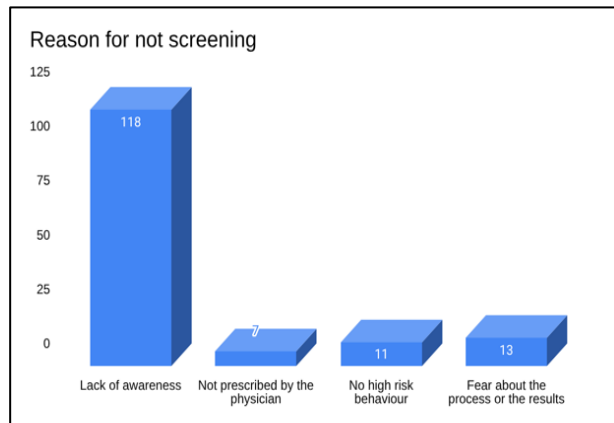


Figure 4: Reason for PAP smear test.

The most common reason for not undergoing the screening test was lack of awareness followed by fear about the process and results.

Table 3: Attitude and practice of women toward cervical cancer screening.

Attitude	Frequency (N)	Percentage (%)
Have taken a PAP smear test?		
Yes	51	25.5
No	149	74.5
Willing to take a PAP smear test after awareness about the importance, method etc. in those who have not?		
Yes	110	74
No	39	26

**Figure 5: Reason for not screening.**

DISCUSSION

The present study was conducted among 200 respondents to assess the awareness regarding cervical cancer, its screening and vaccination against cervical cancer. In other studies, conducted in different parts of India, less than half of the women were found to be aware of cervical cancer. The difference in the awareness of cervical cancer in different studies may be due to the difference in study populations, with people belonging to urban areas or people with higher level of education, higher density of health institutions and their outreach activities.⁹⁻¹¹

In our study, the most common risk factors of cervical cancer known were STD's, early menarche, late menopause, immunocompromised status and multiple sexual partners. Similar findings were reported by Dahiya N et al conducted in New Delhi where the most common risk factors were tobacco and smoking followed by HPV infection.¹⁰ However, other studies considered multiple sexual partners as a major risk factor.^{12,11} In our study, 70 % were aware of signs and symptoms of cervical cancer. Foul smelling/abnormal vaginal discharge, pelvic pain and menstrual abnormalities were some of the signs and symptoms known to them. Inadequate level of knowledge/awareness could be due to poor mass media, campaigns on specific aspects of prevention and control for cervical cancer, cultural barriers preventing open discussion with peers. In our study, less than half of the respondents had heard about the screening test i.e. 41%.

However, in a study conducted in Pondicherry, 60% were aware of the various screening methods and 15% participants reported PAP smear as screening method.¹³ In other studies, lower proportion of respondents knew about pap smear.¹¹⁻¹⁴ In this study, not having signs and symptoms was found to be the major barrier among participating women to undergo screening for cervical. Similar findings were seen in study which was conducted by in Northern India.¹²

In our study, only 25% had undergone cervical screening. This finding was comparable with the study conducted in New Delhi where 18% had Pap smear done in the past. The difference in coverage of screening services may be due to lack of awareness about screening tests and willingness to get screening tests. All of these indicate a complex phenomenon which involves interaction of multiple factors at various levels that drive the decision of willingness of women to undergo screening for cervical cancer.¹⁰

Lack of knowledge about the HPV vaccine and high cost of the vaccination were the most important barriers to HPV vaccination. Surprisingly, although over half of the participants (56.5%) were from urban areas, Pap smear awareness was still low. The present study, along with similar research from other states of India, highlights that despite Pap smear testing being an effective tool for cervical cancer control, it remains underutilized.

Further research is necessary to explore the underlying causes of this knowledge gap and to develop evidence-based interventions to improve cervical cancer awareness and prevention. By prioritising education and awareness among women about Pap smear screening, knowledge of risk factors and prevention by vaccination, we can reduce the burden of this preventable disease and promote women's health.

CONCLUSION

Our study highlights an urgency to enhance women's knowledge about HPV infection and cervical cancer. This can be effectively addressed via a multifaceted approach. Awareness campaigns using both print and electronic media should be used to disseminate accurate information to a wide audience, especially in underserved areas. Organizing free cancer screening and prevention camps in rural and semi-urban regions may increase accessibility and encourage participation. Besides, opportunistic screening for cervical cancer at Community Health Centres (CHCs) and Primary Health Centres (PHCs) should be focused. In addition, healthcare professionals, including community health workers, nurses and physicians, can serve as trusted sources of information, educating women about cervical cancer risk factors, the importance of HPV vaccination, and the need for regular screening. Adolescent school girls should be educated about HPV infection and cervical cancer as part of early awareness and prevention efforts. Age-appropriate

information through school-based health education programs, including awareness and promoting the importance of HPV vaccination and regular screenings later in life, should be given. The study reveals a concerning lack of awareness about cervical cancer screening, risk factors and HPV vaccination among the participants. The majority of women aged 20-65 years were unaware of PAP smear testing, cervical cancer risk factors and the HPV vaccine.

The alarming gap in knowledge underscores the need for targeted education and awareness campaigns to promote cervical cancer prevention and early detection. By addressing this knowledge deficit, we can empower women to take charge of their health and reduce the incidence of cervical cancer.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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