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Original Research Article

Awareness and knowledge regarding cervical cancer and screening practices among women attending a tertiary care center in Bhavnagar, Gujarat: a prospective observational study

Drashti Rathod*, Kanaklatta D. Nakum

Department of Obstetrics and Gynecology, Sir T. Hospital, Bhavnagar, Gujarat, India

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***Correspondence:**
Dr. Drashti Rathod,
E-mail: drashtirathod22033@gmail.com

ABSTRACT

Background: Cervical cancer remains one of the leading causes of cancer-related mortality among women in developing countries, particularly in India. Despite being preventable through effective screening methods like the Pap smear, lack of awareness leads to late-stage presentation and poor outcomes. Objective was to assess the awareness and knowledge of cervical cancer and its screening methods among women attending a tertiary care center.
Methods: This prospective observational study was conducted among 100 women aged 30-60 years attending Gopinath Maternity Home and Sir T. Hospital, Bhavnagar. From January 2025 to March 2025, data were collected using a structured questionnaire assessing socio-demographic variables and knowledge regarding cervical cancer and screening.
Results: The majority of participants were in the 36-40 years age group and were married. Most women had limited knowledge regarding symptoms, risk factors, and screening methods. Only a small proportion correctly identified Pap smear as a screening tool and understood its significance.
Conclusions: Awareness regarding cervical cancer and its screening remains inadequate. There is a need for targeted educational programs to improve knowledge and promote early detection practices.

Keywords: Awareness, Cervical cancer, Pap smear, Screening, Women's health

INTRODUCTION

Cervical cancer remains a major global health challenge and continues to be one of the leading causes of cancer-related morbidity and mortality among women, particularly in low- and middle-income countries (LMICs). Despite being largely preventable through vaccination, screening, and early treatment, the disease accounts for a substantial burden of illness due to inadequate awareness, limited access to healthcare services, and delayed diagnosis. India contributes significantly to the global cervical cancer burden, with a considerable proportion of cases being diagnosed at advanced stages, thereby reducing treatment success and survival outcomes.[1,2]

Persistent infection with high-risk human papillomavirus (HPV), especially HPV-16 and HPV-18, has been identified as the principal etiological factor in the development of cervical cancer. The progression from persistent HPV infection to precancerous cervical intraepithelial neoplasia and eventually invasive carcinoma generally occurs over several years, offering an important opportunity for early detection and prevention through organized screening programs[3-5] Recent advances in HPV-based screening and vaccination strategies have further strengthened global efforts toward cervical cancer elimination.[6]

Screening methods such as the Papanicolaou (Pap) smear, visual inspection with acetic acid (VIA), and HPV testing

are effective tools for detecting premalignant cervical lesions at an early and treatable stage. Among these, Pap smear cytology has long been regarded as the cornerstone of cervical cancer screening, while VIA serves as a low-cost and feasible alternative in resource-limited settings[7-9] In recent years, HPV DNA testing and self-sampling techniques have demonstrated improved sensitivity and greater participation rates, especially among underscreened populations.[10,11] Evidence from population-based studies has consistently shown that regular screening significantly reduces cervical cancer incidence and mortality through timely diagnosis and management of precancerous lesions[12,13]

However, the success of screening programs largely depends on community awareness, accessibility, and participation. In many parts of India, particularly among women from rural areas and lower socio-economic backgrounds, awareness regarding cervical cancer risk factors, symptoms, preventive measures, and screening services remains inadequate.[14,15] Social stigma, cultural barriers, poor health literacy, lack of organized screening infrastructure, and limited interaction with healthcare providers contribute to low screening uptake. Furthermore, socio-demographic determinants such as age, educational status, occupation, marital status, and healthcare accessibility significantly influence women's knowledge and health-seeking behavior related to cervical cancer screening.[16,17]

Given the preventable nature of cervical cancer and the growing emphasis on early detection strategies, assessing women's awareness and understanding of cervical cancer screening is essential for planning effective public health interventions.[18] Identifying existing knowledge gaps can help formulate targeted educational programs and strengthen screening initiatives at the community level. In this context, the present study was undertaken to evaluate the awareness and knowledge regarding cervical cancer and its screening methods among women attending a tertiary care center in Bhavnagar.

Aim and objectives

The aim of this study was to assess awareness and knowledge of cervical cancer and its screening methods among women.

The objectives were to evaluate awareness based on socio-demographic factors and to identify gaps in knowledge.

METHODS

Sample size and sampling method

This prospective observational study was conducted at Gopinath Maternity Home, Bhavnagar on 100 women. The study population comprised patients aged between 30 and 60 years who visited the maternity home during the study period and fulfilled the inclusion criteria.

Study design

This was a prospective observational hospital-based study conducted to assess awareness and knowledge regarding cervical cancer and its screening methods among women.

Study setting and study period

The study was conducted at Gopinath Maternity Home and Sir T. Hospital, Bhavnagar, Gujarat, India. Data collection was carried out over a three-month period from January 2025 to March 2025.

Study population and selection criteria

The study included women attending the outpatient and healthcare services of the study centers during the study period.

Inclusion criteria

Women aged 30-60 years and women willing to participate and provide written informed consent.

Exclusion criteria

Women aged below 30 years or above 60 years and women unwilling to participate. Women unable to complete the questionnaire due to communication or comprehension limitations. A total of 100 participants fulfilling the eligibility criteria were enrolled in the study.

Study procedure

After obtaining informed consent, participants were interviewed using a pre-designed structured questionnaire developed by experts from the department of obstetrics and gynecology.

The questionnaire consisted of two major components: i) socio-demographic characteristics- data regarding age, marital status, education, occupation, parity, and socio-economic status were collected; ii) assessment of awareness and knowledge regarding cervical cancer and screening- participants were asked whether they had prior knowledge of cervical cancer. Women responding positively were further assessed regarding: symptoms of cervical cancer (irregular menstrual bleeding, postcoital bleeding, blood-stained vaginal discharge, weight loss, foul-smelling discharge, and urinary symptoms); risk factors including early sexual activity, multiple sexual partners, multiparity, and viral infection (HPV).

Knowledge scoring was performed by assigning one mark for each correct response. Total knowledge scores ranged from 0 to 9 and were categorized as: poor knowledge: <4, satisfactory knowledge: 5-6, good knowledge: >7.

Participants were additionally assessed for awareness regarding cervical cancer screening and Pap smear using

questions related to: eligibility for screening; appropriate age for screening; places where screening services are available; interpretation of positive screening results.

Screening awareness was similarly scored and categorized using the same grading criteria.

Ethical approval

The study protocol was reviewed and approved by the institutional ethics committee/institutional review board of Government Medical College, Bhavnagar prior to commencement of data collection. Written informed consent was obtained from all participants before enrolment, and confidentiality of collected information was maintained throughout the study.

Statistical analysis

Data were entered and analyzed using appropriate statistical methods. Descriptive statistics were used to summarize socio-demographic variables and awareness outcomes. Categorical variables were expressed as frequencies and percentages. The Chi-square test was applied to evaluate associations between awareness levels and socio-demographic factors such as education and socio-economic status. A p value <0.05 was considered statistically significant.

RESULTS

Table 1 shows that majority of participants (40%) belonged to 36-40 years age group.

Table 1: Distribution of participants according to age.

Age group (years)	Number	Percentage
30-35	16	16
36-40	40	40
41-45	19	19
46-50	12	12
51-55	8	8
56-60	5	5

Table 2: Socio-demographic characteristics.

Variables	Category	Number	Percentage
Marital Status	Married	92	92
	Unmarried	8	8
Occupation	Housewife	60	60
	Working	40	40
Parity	Nulliparous	11	11
	1 child	14	14
	2 children	54	54
	≥3 children	21	21

Table 2 shows most women were married (92%) and multiparous, with 54% having two children.

Table 3: Awareness of cervical cancer symptoms.

Symptoms	Aware	Percentage
Irregular menstrual bleeding	27	27
Blood-stained discharge	20	20
Weight loss	19	19
Postcoital bleeding	15	15
Foul-smelling discharge	14	14
Difficulty in urination	10	10

Finding: Awareness of symptoms was low; only 27% recognized irregular bleeding as a symptom.

Table 4: Knowledge of risk factors for cervical cancer.

Risk factors	Aware	Percentage
Early sexual activity	21	21
Multiple sexual partners	18	18
Multiparity	25	25
Viral infection (HPV)	14	14
No knowledge	40	40

Finding: A significant proportion (40%) had no knowledge of risk factors.

Table 5: Awareness of cervical cancer screening.

Parameters	Correct response	Percentage
Heard of Pap smear	30	30
Correct age group (20-50 years)	24	24
Who should be screened (any female)	26	26
Correct interpretation of positive test	44	44

Finding: Only 30% of women had heard of Pap smear, indicating poor awareness.

Table 6: Overall knowledge grading.

Knowledge level	Cervical cancer (%)	Screening (%)
Poor (<4)	55 (55)	62 (62)
Satisfactory (5-6)	30 (30)	25 (25)
Good (>7)	15 (15)	13 (13)

Finding: Majority of participants 55% had poor knowledge regarding both cervical cancer and its screening.

In Table 7 Chi-square test showed a significant association between education level and awareness ($p<0.05$).

As shown in Table 8, a statistically significant association was observed between socio-economic status and awareness ($p<0.05$).

Table 7: Association between education and awareness.

Education level	Good knowledge (%)	Poor knowledge (%)	P value
Illiterate	5	75	p<0.05
Primary	10	65	
Secondary	18	50	
Higher	35	30	

Table 8: Association between socio-economic status and awareness.

Socio-economic status	Good knowledge (%)	Poor knowledge (%)	P value
Low	8	70	p<0.05
Middle	20	50	
High	40	25	

DISCUSSION

The present study evaluated awareness and knowledge regarding cervical cancer and its screening methods among women attending Gopinath Maternity Home and Sir T. Hospital, Bhavnagar. The findings demonstrated inadequate awareness regarding cervical cancer symptoms, risk factors, and screening practices among a substantial proportion of participants, indicating persistent gaps in preventive women's health education despite the availability of effective screening modalities.

In the present study, the majority of participants belonged to the 36-40 years age group (40%), and most were married and multiparous. Although this age group represents women who are generally eligible for routine cervical cancer screening, awareness remained unsatisfactory. These findings suggest that reproductive age and healthcare contact alone may not ensure adequate knowledge regarding cervical cancer prevention.

Regarding awareness of cervical cancer symptoms, only 27% of participants identified irregular menstrual bleeding, while awareness regarding postcoital bleeding, abnormal vaginal discharge, and urinary symptoms remained low. Similarly, knowledge of risk factors was poor, with 40% of participants reporting no knowledge of cervical cancer risk factors and only 14% recognizing HPV infection as an etiological factor. These findings are comparable with the study by Singh et al, which reported poor awareness regarding symptoms and preventive measures among women in rural India and emphasized that inadequate knowledge contributes to delayed healthcare-seeking behavior.[19] Comparable observations were also reported by Dhendup and Tshering, who found insufficient understanding of cervical cancer symptoms and preventive strategies among women despite educational exposure.[20]

Awareness regarding screening practices was also found to be inadequate in the present study. Only 30% of women had heard of Pap smear screening, and less than one-third correctly identified the appropriate target population and age group for screening. Similar findings were reported by Mishra et al, who concluded that limited public awareness, inadequate screening infrastructure, and socioeconomic barriers remain major challenges in cervical cancer prevention programs in India.[18]

The findings of the current study support previous evidence demonstrating that organized screening programs significantly improve early detection and reduce disease burden. Basu et al reported that both Pap smear cytology and visual inspection with acetic acid (VIA) provide effective and feasible screening approaches in low-resource settings and can substantially improve early diagnosis when implemented systematically.[14] Likewise, Bhatla et al emphasized that strengthening screening programs along with HPV vaccination remains essential for reducing cervical cancer incidence and mortality.[15]

The present study further demonstrated a statistically significant association between education level and awareness ($p<0.05$). Women with higher educational attainment showed better knowledge regarding cervical cancer and screening practices compared with illiterate participants. Similar associations have been demonstrated by Gakidou et al, who reported marked inequalities in cervical cancer screening coverage across countries and identified education and socioeconomic status as important determinants of screening utilization.[21] The observed association in the current study suggests that educational interventions may substantially improve awareness and participation in preventive services.

Socio-economic status also showed a significant relationship with awareness levels in the present study. Women from lower socio-economic groups had poorer knowledge compared with women from higher socio-economic categories. These findings support earlier studies indicating that limited access to health information and preventive services contributes to reduced screening uptake and delayed diagnosis.[18,22]

Recent advances in cervical cancer prevention have shifted global recommendations toward HPV-based screening and self-sampling approaches. Arbyn et al demonstrated that HPV testing using self-collected samples improves participation among under-screened women and enhances detection of precancerous lesions.[16] Similarly, Gupta et al reported improved acceptability and participation with self-sampling approaches, particularly in resource-limited settings.[17] These approaches may provide practical opportunities for expanding screening coverage in Indian populations. The findings of this study also align with the broader global strategy for cervical cancer elimination. According to the World Health Organization, achieving high coverage of HPV vaccination, screening, and treatment can substantially reduce cervical cancer

incidence and mortality worldwide.[23] Therefore, strengthening awareness campaigns, integrating counselling into routine healthcare visits, and expanding access to organized screening services may improve early detection and reduce disease burden.[24,25]

However, this study should be interpreted considering its limitations. The study was conducted at a single center with a relatively small sample size, which may limit generalizability. In addition, questionnaire-based assessment may introduce recall and reporting bias. Future multicentric studies with larger populations and inclusion of HPV vaccination awareness are recommended.

CONCLUSION

Awareness regarding cervical cancer and its screening methods is significantly low among women attending the tertiary care center. There is an urgent need for educational interventions and improved access to screening services to reduce the burden of cervical cancer.

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

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