



## Original Research Article

# KNOWLEDGE, ATTITUDE, AND PRACTICE REGARDING PAP SMEAR SCREENING FOR CERVICAL CANCER AMONG FEMALE HEALTHCARE WORKERS IN A TERTIARY CARE TEACHING HOSPITAL IN CENTRAL INDIA: A CROSS-SECTIONAL STUDY

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### ABSTRACT

**Background:** Cervical cancer is a major public health concern, particularly in developing countries like India, despite being preventable through effective screening methods such as the Papanicolaou (Pap) smear. Healthcare workers play a crucial role in promoting screening practices; however, gaps in their knowledge, attitude, and practice (KAP) may hinder effective implementation of preventive strategies. This study aimed to assess the KAP regarding Pap smear screening among women healthcare workers in a tertiary care teaching hospital in Central India.

**Materials and Methods:** A cross-sectional study was conducted among 250 women healthcare workers at Dr. Rajendra Gode Medical College, Amravati, from November 2025 to January 2026. Participants were selected based on willingness to participate and provided informed consent. Data were collected using a structured and pretested questionnaire assessing sociodemographic characteristics and KAP related to cervical cancer screening. Data were analyzed using SPSS software. Descriptive statistics were applied, and the association between knowledge and practice was evaluated using the Chi-square test, with  $p < 0.05$  considered statistically significant.

**Results:** A high proportion of participants were aware of cervical cancer (87.2%) and Pap smear (81.6%); however, only 56.8% had adequate knowledge of risk factors, and 38.4% were aware of the correct screening interval. Although 84.8% perceived screening as necessary and 74.4% expressed willingness to undergo testing, only 32.8% had ever undergone a Pap smear. Major barriers included absence of symptoms (57.1%), negligence (52.4%), and lack of time (48.8%). A statistically significant association was observed between knowledge and screening practice ( $p = 0.0003$ ).

**Conclusion:** Despite good awareness and positive attitude, the practice of Pap smear screening among healthcare workers was suboptimal. Strengthening educational interventions, addressing barriers, and implementing institutional screening programs are essential to improve screening uptake.

**Keywords:** Cervical cancer, Pap smear, Knowledge attitude practice, Healthcare workers, Screening uptake.

## INTRODUCTION

Cervical cancer is one of the most common malignancies affecting women worldwide and

remains a major public health problem, particularly in low- and middle-income countries like India. It is primarily caused by persistent infection with high-risk types of human papillomavirus (HPV), especially HPV-16 and HPV-18, which lead to

progressive transformation of cervical epithelial cells from precancerous lesions to invasive carcinoma. The natural history of cervical cancer typically involves a prolonged pre-invasive phase known as cervical intraepithelial neoplasia (CIN), providing a critical window for early detection and intervention. The Papanicolaou (Pap) smear test is a simple, cost-effective, and widely used screening tool that detects these premalignant changes, thereby significantly reducing the incidence and mortality associated with cervical cancer when implemented effectively.<sup>[1,2]</sup>

Despite the availability of effective screening methods, the burden of cervical cancer in India remains high due to inadequate screening coverage, lack of awareness, and sociocultural barriers. Healthcare workers, who are expected to play a key role in promoting preventive health practices, often exhibit gaps in knowledge and suboptimal screening behavior themselves. Assessing their knowledge, attitude, and practice (KAP) regarding Pap smear screening is crucial, as they serve as primary educators and influencers for the general population. Improved awareness and positive attitudes among healthcare workers can directly translate into better patient counseling and increased uptake of screening services.<sup>[3,4]</sup>

Given this background, evaluating the KAP regarding Pap smear screening among women healthcare workers becomes essential to identify existing gaps and barriers. Such insights can help in designing targeted educational interventions and strengthening institutional screening programs. Therefore, the present study was undertaken to assess the knowledge, attitude, and practices related to cervical cancer screening using Pap smear among women healthcare workers at a tertiary care teaching hospital in Amravati, Central India.<sup>[5]</sup>

## MATERIALS AND METHODS

This cross-sectional study was conducted at Dr. Rajendra Gode Medical College (DRGMCH),

Amravati, a tertiary care teaching hospital in Central India, over a period of three months from November 2025 to January 2026. The study population comprised female healthcare workers employed at the institution, including doctors, nurses, laboratory technicians, and other allied staff. A total of 250 participants were included using a convenient sampling method based on availability and willingness to participate. All eligible female healthcare workers who provided written informed consent were included in the study, while those who were not willing to participate were excluded.

Data were collected using a pre-designed, structured, and pretested questionnaire administered after obtaining informed consent from each participant. The questionnaire consisted of sections assessing sociodemographic characteristics, knowledge regarding cervical cancer and Pap smear screening, attitude towards screening, and actual screening practices. Knowledge was evaluated based on awareness of risk factors, symptoms, and screening guidelines, while attitude was assessed through perceptions, willingness, and perceived barriers. Practice was determined by history of undergoing Pap smear and screening behavior. Confidentiality was maintained by assigning unique identification codes and ensuring anonymity of responses.

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) software version XX. Descriptive statistics such as frequencies and percentages were used to summarize categorical variables. Knowledge levels were categorized as adequate or inadequate based on predefined scoring criteria. The association between knowledge and practice of Pap smear screening was assessed using the Chi-square test, and a p-value of <0.05 was considered statistically significant. Ethical approval for the study was obtained from the Institutional Ethics Committee, and all procedures were conducted in accordance with standard ethical guidelines.

## RESULTS

**Table 1: Sociodemographic Characteristics of Study Participants (n = 250)**

Category	Variable	Frequency (n)	Percentage (%)
Age (years)	20–30	98	39.2
	31–40	82	32.8
	41–50	48	19.2
	>50	22	8.8
Profession	Doctors	72	28.8
	Nurses	110	44.0
	Laboratory Technicians	38	15.2
	Other Staff (ANM, ward staff)	30	12.0
Marital Status	Married	162	64.8
	Unmarried	88	35.2
Education Level	Graduate	96	38.4
	Postgraduate	78	31.2
	Diploma	76	30.4
Work Experience	<5 years	104	41.6
	5–10 years	76	30.4
	>10 years	70	28.0

The present study included a total of 250 women healthcare workers. The majority of participants belonged to the younger age group of 20–30 years (39.2%), followed by 31–40 years (32.8%), indicating a predominantly young workforce. Nurses constituted the largest professional group (44.0%), followed by doctors (28.8%), laboratory technicians (15.2%), and other healthcare staff (12.0%). Most

participants were married (64.8%), and a substantial proportion had graduate-level education (38.4%), with the rest being either postgraduate (31.2%) or diploma holders (30.4%). In terms of work experience, 41.6% had less than 5 years of experience, suggesting relatively early-career professionals formed a significant portion of the study population.

**Table 2: Knowledge Regarding Cervical Cancer and Pap Smear Screening Among Participants (n = 250)**

Category	Variable	Frequency (n)	Percentage (%)
Awareness of Cervical Cancer	Yes	218	87.2
	No	32	12.8
Knowledge of Risk Factors	Adequate	142	56.8
	Inadequate	108	43.2
Knowledge of Symptoms	Adequate	128	51.2
	Inadequate	122	48.8
Awareness of Pap Smear Test	Yes	204	81.6
	No	46	18.4
Purpose of Pap Smear	Correct (Screening)	176	70.4
	Incorrect / Don't know	74	29.6
Knowledge of Screening Interval	Correct (3–5 years)	96	38.4
	Incorrect / Don't know	154	61.6
Eligibility for Screening	Correct (Sexually active women)	112	44.8
	Incorrect / Don't know	138	55.2
Source of Information	Medical Education	122	48.8
	Colleagues	58	23.2
	Media/Internet	42	16.8
	Others	28	11.2

A high proportion of participants (87.2%) were aware of cervical cancer, and 81.6% had heard about the Pap smear test. However, detailed knowledge was comparatively lower, with only 56.8% having adequate knowledge of risk factors and 51.2% demonstrating adequate knowledge of symptoms. While 70.4% correctly identified the purpose of Pap smear as a screening tool, only 38.4% were aware of

the correct screening interval, and 44.8% correctly identified the eligible population for screening. Medical education was the primary source of information for nearly half of the participants (48.8%). These findings indicate that although general awareness was high, gaps existed in comprehensive and guideline-based knowledge.

**Table 3: Attitude Towards Pap Smear Screening Among Participants (n = 250)**

Category	Variable	Frequency (n)	Percentage (%)
Perceived Need for Screening	Yes	212	84.8
	No	38	15.2
Willingness to Undergo Pap Smear	Willing	186	74.4
	Not willing	64	25.6
Perception of Pap Smear Effectiveness	Effective	198	79.2
	Not sure / Not effective	52	20.8
Fear of Pain/Discomfort	Present	108	43.2
	Absent	142	56.8
Embarrassment as a Barrier	Yes	96	38.4
	No	154	61.6
Preference for Female Doctor	Yes	172	68.8
	No preference	78	31.2
Perceived Personal Risk of Cervical Cancer	High	64	25.6
	Low/Not at risk	186	74.4

The majority of participants (84.8%) perceived cervical cancer screening as necessary, and 74.4% expressed willingness to undergo Pap smear testing, reflecting an overall positive attitude. Additionally, 79.2% believed that Pap smear is an effective screening method. However, notable barriers in attitude were identified, with 43.2% reporting fear of pain or discomfort and 38.4% experiencing

embarrassment associated with the procedure. A preference for female healthcare providers was expressed by 68.8% of participants. Interestingly, only 25.6% perceived themselves to be at high risk of cervical cancer, indicating a significant gap in personal risk perception despite good general awareness.

**Table 4: Practice of Pap Smear Screening Among Participants (n = 250)**

Category	Variable	Frequency (n)	Percentage (%)
Ever Undergone Pap Smear	Yes	82	32.8
	No	168	67.2
Frequency of Screening (n = 82)	Once	46	56.1

	Irregular	28	34.1
	Regular (as recommended)	8	9.8
Time Since Last Pap Smear (n = 82)	<3 years	34	41.5
	3–5 years	26	31.7
	>5 years	22	26.8
Reason for Undergoing Test (n = 82)	Routine check-up	38	46.3
	Symptoms	26	31.7
	Doctor's advice	18	22.0
Intention to Undergo Screening in Future (n = 168)	Yes	104	61.9
	No / Not sure	64	38.1

Despite adequate awareness and generally positive attitudes, only 32.8% of participants had ever undergone a Pap smear test, highlighting a substantial gap between knowledge and practice. Among those screened, more than half (56.1%) had undergone the test only once, and only 9.8% reported regular screening as per recommendations. Regarding recency, 41.5% had undergone screening within the

last three years. Routine check-up was the most common reason for undergoing screening (46.3%), followed by symptomatic evaluation (31.7%). Among those who had never been screened, 61.9% expressed willingness to undergo screening in the future, suggesting potential for improvement through targeted interventions.

**Table 5: Barriers to Pap Smear Screening Among Participants (n = 168\*) Participants who had never undergone Pap smear**

Category	Variable	Frequency (n)	Percentage (%)
Lack of Symptoms	Yes	96	57.1
	No	72	42.9
Lack of Time	Yes	82	48.8
	No	86	51.2
Lack of Awareness	Yes	68	40.5
	No	100	59.5
Fear of Pain/Discomfort	Yes	74	44.0
	No	94	56.0
Embarrassment/Shyness	Yes	62	36.9
	No	106	63.1
Negligence / Low Priority	Yes	88	52.4
	No	80	47.6
Fear of Diagnosis (Cancer Anxiety)	Yes	54	32.1
	No	114	67.9
Lack of Recommendation by Doctor	Yes	46	27.4
	No	122	72.6

Among participants who had never undergone Pap smear screening, the most commonly reported barrier was the absence of symptoms (57.1%), reflecting a misconception that screening is unnecessary without clinical complaints. Other major barriers included negligence or low prioritization of screening (52.4%), lack of time (48.8%), and fear of pain or discomfort (44.0%). Lack of awareness was reported

by 40.5% of participants, while embarrassment (36.9%) and fear of diagnosis (32.1%) also contributed significantly. Additionally, 27.4% reported lack of recommendation by a healthcare provider as a reason for not undergoing screening. These findings highlight both informational and psychological barriers affecting screening uptake.

**Table 6: Association Between Knowledge Level and Pap Smear Practice (n = 250)**

Category	Variable	Pap Smear Done (n = 82)	Pap Smear Not Done (n = 168)	Total (n)	p-value
Knowledge Level	Adequate	58	84	142	0.0003
	Inadequate	24	84	108	

A statistically significant association was observed between knowledge level and Pap smear screening practice. Among participants with adequate knowledge, a higher proportion (58 out of 142) had undergone screening compared to those with inadequate knowledge (24 out of 108). This association was found to be highly significant ( $p = 0.0003$ ), indicating that better knowledge significantly influences screening behavior. This finding underscores the importance of improving awareness and education to enhance screening uptake among healthcare workers.

## DISCUSSION

Cervical cancer remains a significant public health challenge in developing countries despite being largely preventable through effective screening programs. In the present study, a high level of awareness regarding cervical cancer (87.2%) and Pap smear (81.6%) was observed among women healthcare workers. Similar findings were reported by Shekhar et al., where 83% of healthcare professionals were aware of cervical cancer and 78% had knowledge of Pap smear screening.<sup>[6]</sup> However,

despite good general awareness, detailed knowledge in our study was suboptimal, with only 56.8% having adequate knowledge of risk factors and 38.4% knowing the correct screening interval. This is comparable to a study by Nair et al., which reported that although 89% of healthcare workers had heard of Pap smear, only 40% were aware of appropriate screening intervals.<sup>[7]</sup> These findings highlight that superficial awareness does not necessarily translate into comprehensive knowledge required for effective screening practices.

The attitude towards cervical cancer screening in our study was generally positive, with 84.8% of participants considering screening necessary and 74.4% expressing willingness to undergo Pap smear testing. These findings are consistent with the study by Bansal et al., where 82% of participants showed a positive attitude towards screening.<sup>[8]</sup> However, similar to our findings, psychological barriers such as fear of pain (43.2%) and embarrassment (38.4%) were also reported. A study by Raychaudhuri and Mandal found that 46% of healthcare workers perceived Pap smear as uncomfortable, and 35% reported embarrassment as a barrier.<sup>[9]</sup> Additionally, only 25.6% of participants in our study perceived themselves at risk of cervical cancer, which is comparable to findings by Goyal et al., where only 28% of healthcare workers considered themselves susceptible.<sup>[10]</sup> This gap in risk perception may contribute to poor screening uptake despite adequate awareness.

In terms of practice, only 32.8% of participants in the present study had ever undergone Pap smear screening, indicating a substantial gap between knowledge and practice. This finding is in line with several Indian studies, such as that by Sirohiwal et al., which reported screening uptake of 30% among healthcare workers, and by Varughese et al., where only 26% had undergone Pap smear testing.<sup>[11,12]</sup> Furthermore, regular screening was reported by only 9.8% of participants in our study, similar to findings by Thippeveeranna et al., where only 12% adhered to recommended screening intervals.<sup>[13]</sup> The most common barriers identified in our study were absence of symptoms (57.1%), negligence (52.4%), and lack of time (48.8%). Comparable findings were reported by Sankaranarayanan et al., where lack of symptoms (55%) and low perceived need were major reasons for non-participation in screening.<sup>[14]</sup> These results emphasize that even among healthcare workers, misconceptions and behavioral barriers significantly affect screening practices.

A statistically significant association was observed between knowledge and practice in the present study ( $p = 0.0003$ ), indicating that participants with adequate knowledge were more likely to undergo screening. Similar associations have been reported by Wright et al., who demonstrated that increased knowledge significantly improves participation in cervical cancer screening programs.<sup>[15]</sup> This finding reinforces the importance of targeted educational

interventions to bridge the gap between knowledge and practice.

**Interpretation:** The present study demonstrates that although women healthcare workers possess relatively high awareness and positive attitudes towards cervical cancer screening, there exists a significant gap in detailed knowledge, risk perception, and actual screening practices. Psychological barriers, misconceptions, and lack of prioritization contribute to low uptake of Pap smear screening. The significant association between knowledge and practice underscores the need for structured educational programs and institutional screening policies to improve compliance and promote preventive health behavior among healthcare workers.

## CONCLUSION

The present study reveals that although women healthcare workers demonstrated relatively high awareness and a generally positive attitude towards cervical cancer screening, there exists a considerable gap in comprehensive knowledge, risk perception, and actual practice of Pap smear screening. Despite being part of the healthcare system, only a minority had undergone screening, and regular adherence to recommended guidelines was notably low. Key barriers identified included absence of symptoms, negligence, lack of time, and psychological factors such as fear and embarrassment. The significant association between knowledge and screening practice highlights the crucial role of awareness in influencing health-seeking behavior.

Based on these findings, it is recommended that regular educational and sensitization programs be conducted within healthcare institutions to improve detailed knowledge and correct misconceptions regarding cervical cancer screening. Implementation of institutional screening policies, periodic health check-ups, and easy accessibility to screening services may further enhance uptake. Additionally, targeted interventions addressing psychological barriers and promoting risk perception are essential. However, the study has certain limitations. Being a single-center study with a relatively small sample size, the findings may not be generalizable to all healthcare settings. The use of self-reported data may also introduce response bias. Despite these limitations, the study provides valuable insights into gaps in screening practices among healthcare workers and underscores the need for strengthening preventive strategies.

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