

## BRIDGING GAPS, BREAKING BARRIERS INCARCINOMA CERVIX SCREENING AND VACCINATION

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### ABSTRACT

**Background:** Cervical cancer remains a major public health burden in India, accounting for 26–43% of all cancers among Indian women. Despite the availability of effective screening methods and HPV vaccination, uptake remains low, primarily due to knowledge gaps and sociocultural barriers. **Aim:** To assess knowledge gaps and barriers related to cervical cancer and HPV vaccination among women attending the gynaecology outpatient department at a tertiary care center. **Material and Methods:** A cross-sectional study was conducted over a 3-month period at the Government General Hospital, Siddipet. A total of 200 women attending the gynaecology outpatient department were enrolled. Data were collected using a structured questionnaire comprising sociodemographic details, awareness of cervical cancer and its screening, and knowledge and attitudes toward HPV vaccination. Descriptive statistical analysis was performed using SPSS software. **Result:** Most participants were aged 21–40 years and from rural, low to middle socioeconomic backgrounds. Only 42% were aware that cervical cancer is preventable, and 35% recognized the association with HPV. Awareness of screening tests like Pap smear or VIA was 28%, and only 22% knew HPV is sexually transmitted. Thirty percent had heard of the HPV vaccine, but only 6% reported vaccine uptake. Major barriers included lack of awareness (70%), fear of side effects (45%), cost (32%), and perceived lack of necessity (38%). Using the 5 A's framework, poor awareness (68%) and limited provider recommendation (12%) were key determinants of low vaccine uptake. **Conclusion:** There is a significant gap in knowledge and acceptance of cervical cancer prevention strategies among women in rural India. Targeted educational and community-based interventions are essential to improve screening participation and vaccine coverage.

## INTRODUCTION

Cervical cancer is the second most common cancer among women in India, accounting for approximately 26% to 43% of all female cancers. India alone contributes nearly one-fifth of the global cervical cancer burden, making it a significant public health issue that demands urgent attention.<sup>[1]</sup> Persistent infection with high-risk oncogenic types of Human Papilloma Virus (HPV), particularly types 16

and 18, is the principal etiological factor for the development of cervical cancer. More than 99% of cervical cancer cases are attributable to HPV infection, underscoring the critical need for early detection and effective preventive strategies.<sup>[1,2]</sup>

Despite the availability of reliable screening tools such as the Papanicolaou (Pap) smear and Visual Inspection with Acetic Acid (VIA), and the introduction of safe and effective HPV vaccines, coverage in many parts of India remains

unacceptably low.<sup>[2,3]</sup> The HPV vaccine, approved in 2006, provides up to 70% protection against cervical cancer and also prevents a substantial proportion of other HPV-associated malignancies such as anal, vulvar, and vaginal cancers.<sup>[2]</sup> However, barriers such as low awareness, sociocultural misconceptions, vaccine hesitancy, and limited healthcare infrastructure continue to hinder widespread adoption of both screening and vaccination programs.<sup>[3,4]</sup>

Barriers to HPV vaccination are best conceptualized using the "5 A's" framework—Access, Affordability, Awareness, Acceptance, and Activation, the latter referring to healthcare provider recommendation.<sup>[3,4]</sup> Addressing these determinants through public health education, policy interventions, and technological innovations is essential to improve vaccine uptake and reduce the cervical cancer burden, especially in underserved communities.<sup>[5,6]</sup>

This study aims to assess knowledge gaps and barriers to cervical cancer screening and HPV vaccination among women attending the gynaecology outpatient department at a tertiary care hospital. Understanding these factors is critical to designing targeted interventions that bridge the gap between awareness and action, thereby improving public health outcomes.

## MATERIALS AND METHODS

**Study Design and Setting:** This was a cross-sectional observational study conducted in the Department of Obstetrics and Gynaecology at Government General Hospital, Siddipet, Telangana. The study was carried out over a period of three months.

**Study Population:** The study included women attending the gynaecology outpatient department (OPD) during the study period. Women aged 13 years and above who were willing to participate were included after obtaining informed consent.

### Inclusion Criteria

1. Women attending the gynaecology OPD at GGH Siddipet.
2. Those who provided informed oral or written consent.

### Exclusion Criteria

1. Children below 13 years of age.
2. Women who were not willing to participate in the study.

**Sample Size:** A total of 200 women were included in the study.

**Data Collection Tool:** A structured questionnaire was administered either orally or in written form in the local language, based on the participant's preference and literacy level. The questionnaire comprised two parts:

**Sociodemographic details:** including age, education, socioeconomic status, and occupation.

**Knowledge and awareness assessment:** covering knowledge of cervical cancer, awareness of HPV

infection and its transmission, familiarity with screening methods (Pap smear, VIA), awareness of HPV vaccination, and perceived barriers to vaccine uptake.

**Study Variables:** Primary variables included awareness and knowledge about cervical cancer and HPV vaccination, along with identification of specific barriers using the 5 A's framework (Access, Affordability, Awareness, Acceptance, and Activation).

**Statistical Analysis:** Data were entered and analyzed using SPSS software. Descriptive statistics were used to summarize the data. Results were expressed as percentages and proportions in tabular form.

**Ethical Considerations:** The study was approved by the Institutional Ethics Committee. Confidentiality of all participant information was maintained throughout the study.

## RESULTS

A total of 200 women attending the gynaecology outpatient department at Government General Hospital, Siddipet, were included in this cross-sectional study. The age distribution of participants ranged from adolescence to postmenopausal years. Sociodemographic assessment revealed that the majority were in the 21–40 years age group, predominantly from rural areas and of low to middle socioeconomic status. A significant proportion had not completed secondary education, and many were homemakers (Table 1).

Regarding knowledge about carcinoma cervix, only 42% of participants were aware that cervical cancer is a preventable disease. Thirty-five percent knew about the association of human papillomavirus (HPV) with cervical cancer, while 28% had heard of cervical cancer screening methods such as the Pap smear or visual inspection with acetic acid (VIA). Knowledge about HPV as a sexually transmitted infection was particularly limited, with only 22% correctly identifying its mode of transmission (Table 2).

Assessment of awareness and uptake of HPV vaccination showed that 30% of women had heard of the HPV vaccine. However, only 18% of these women were aware of the ideal age for vaccination, and a mere 6% of the participants or their daughters had received at least one dose of the vaccine (Table 3).

The major barriers to HPV vaccination identified among participants included lack of awareness (70%), fear of side effects (45%), cost concerns (32%), cultural or familial opposition (26%), and the perception that vaccination is unnecessary in the absence of symptoms (38%) (Table 4).

Evaluation of determinants using the 5 A's framework revealed that 29% of participants cited lack of access to nearby vaccination centers as a limiting factor, and 32% considered cost a barrier. Awareness remained insufficient in 68% of

participants. While 21% expressed willingness to vaccinate their daughters when informed, only 12% reported receiving any recommendation from

healthcare providers regarding HPV vaccination (Table 5).

**Table 1: Sociodemographic Characteristics of Participants**

| Characteristic                     | Frequency (n)          |
|------------------------------------|------------------------|
| Age group 21–40 years              | Majority               |
| Rural background                   | Most                   |
| Low to middle socioeconomic status | Most                   |
| Not completed secondary education  | Significant proportion |
| Homemakers                         | Large number           |

**Table 2: Knowledge Regarding Carcinoma Cervix**

| Knowledge Parameter                          | Percentage (%) |
|--|----------------|
| Aware that cervical cancer is preventable    | 42%            |
| Knew HPV is associated with cervical cancer  | 35%            |
| Heard of Pap smear or VIA                    | 28%            |
| Knew HPV is a sexually transmitted infection | 22%            |

**Table 3: Awareness and Uptake of HPV Vaccination**

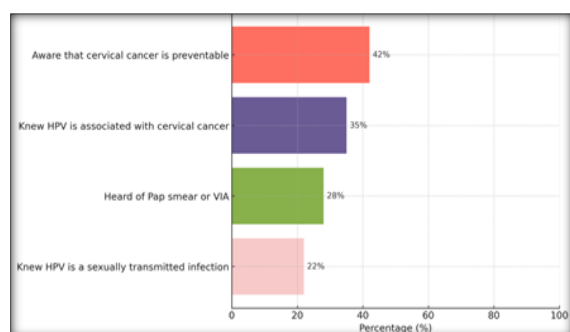
| Vaccination Awareness/Uptake                  | Percentage (%) |
|---|----------------|
| Heard of HPV vaccine                          | 30%            |
| Knew ideal age for vaccination                | 18%            |
| Received at least one dose (self or daughter) | 6%             |

**Table 4: Barriers to HPV Vaccination**

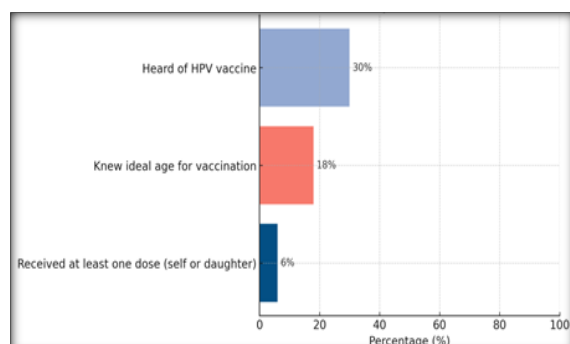
| Barrier  | Percentage (%) |
|--|----------------|
| Lack of awareness                                  | 70%            |
| Fear of side effects                               | 45%            |
| Cost concerns                                      | 32%            |
| Cultural or family opposition                      | 26%            |
| Perceived lack of necessity in absence of symptoms | 38%            |

**Table 5: Determinants of Vaccination (5 A's Framework)**

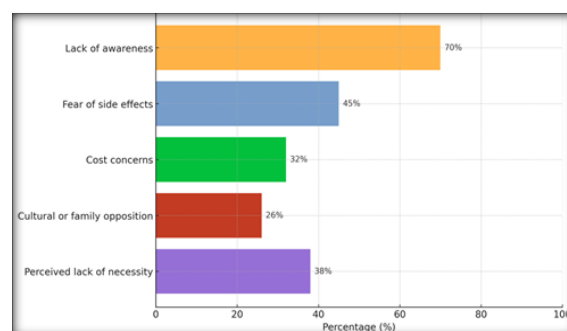
| Determinant                                 | Percentage (%) |
|---|----------------|
| Access (vaccine not available nearby)       | 29%            |
| Affordability (cost concern)                | 32%            |
| Awareness (lack of awareness)               | 68%            |
| Acceptance (willing to vaccinate daughters) | 21%            |
| Activation (provider recommendation)        | 12%            |



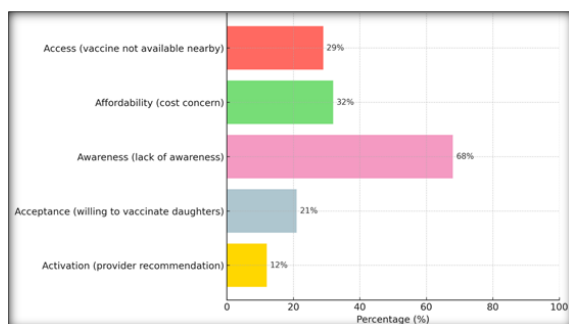
**Figure 1: Knowledge Regarding Carcinoma Cervix**



**Figure 2: Awareness and Uptake of HPV Vaccination**



**Figure 3: Barriers to HPV Vaccination**



**Figure 4: Determinants of Vaccination (5 A's Framework)**

## DISCUSSION

This study aimed to assess awareness, knowledge, and barriers related to cervical cancer screening and HPV vaccination among women attending a gynaecology outpatient clinic in a rural tertiary care setting. The findings revealed significant knowledge deficits and low uptake of preventive measures, despite the availability of effective screening and vaccination strategies.

The majority of participants were of reproductive age and from rural, low- to middle-income backgrounds—demographics commonly associated with delayed diagnosis and poor health-seeking behavior due to restricted access and limited health literacy.<sup>[7,8]</sup> In this study, only 42% of women were aware that cervical cancer is preventable, and just 35% recognized HPV as a causative factor. These figures are in line with population-based data from other low-resource settings, such as China and Saudi Arabia, which also report inadequate awareness and poor preventive practices.<sup>[8,11]</sup>

Knowledge regarding screening methods like the Pap smear or VIA was low (28%), consistent with findings from both Indian and international studies, which highlight systemic gaps in community-level health education.<sup>[9,13]</sup> Only 22% of participants knew that HPV is sexually transmitted, underscoring the need for culturally tailored education and destigmatization campaigns.

HPV vaccine awareness (30%) and uptake (6%) were alarmingly low, reflecting global patterns of vaccine hesitancy and misinformation.<sup>[10,11]</sup> Key barriers identified—lack of awareness (70%), fear of side effects (45%), cost (32%), and perceived lack of necessity (38%)—are widely reported in similar contexts, including among underserved populations, migrants, and those with limited healthcare access.<sup>[9,10]</sup>

Using the “5 A’s” framework, poor awareness (68%) and lack of healthcare provider recommendation (12%) were the most critical barriers, reinforcing findings from multiple studies that emphasize the central role of healthcare professionals in influencing vaccine uptake.<sup>[12,13]</sup>

Overall, this study emphasizes the urgent need for structured community-based education, school-based

immunization drives, and training of healthcare workers to overcome sociocultural, informational, and structural barriers. Mobile technology, as suggested by recent literature, may also serve as an effective tool to bridge access gaps in remote areas.<sup>[10,12]</sup>

## CONCLUSION

This study highlights significant gaps in awareness and knowledge regarding cervical cancer, its screening, and HPV vaccination among women in a rural Indian setting. Despite the proven efficacy of preventive measures, uptake remains critically low due to lack of awareness, fear of side effects, cost concerns, and insufficient provider recommendation. The findings underscore the need for targeted educational campaigns, improved access to vaccination, and active involvement of healthcare professionals in promoting cervical cancer prevention. Implementing community- and school-based vaccination programs, along with culturally sensitive health education, is essential to enhance awareness, increase vaccine coverage, and ultimately reduce the burden of cervical cancer in low-resource populations.

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