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A Cross-Sectional Study of Awareness and Attitudes Toward Human Papillomavirus (HPV) Vaccination Among Medical Students in a Tertiary Care Teaching Institution

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Abstract: ***Background**: Cervical cancer remains a major public health problem worldwide, particularly in low- and middle-income countries. Persistent infection with high-risk human papillomavirus is the principal cause of cervical cancer, and prophylactic HPV vaccination is an effective primary preventive strategy. Medical students, as future healthcare providers, play a crucial role in promoting HPV vaccination. **Objectives**: To assess the level of awareness and attitude regarding HPV vaccination among medical students. **Methods**: A questionnaire-based cross-sectional study was conducted among 350 undergraduate medical students at a tertiary care teaching institution. Data were collected using a pre-tested, semi-structured questionnaire assessing awareness and attitude toward HPV vaccination. The questionnaire was administered online. Data were analyzed using SPSS version 25, and descriptive statistics and Chi-square test were applied, with $p < 0.05$ considered statistically significant. **Results**: The majority of participants were aged ≥23 years (76.0%), with females constituting 58% of the study population. Awareness regarding cervical cancer prevention was reported by 84.0% of participants, and 89.4% were aware of the causative role of HPV. Awareness of HPV vaccine availability was present in 74.9% of participants, while only 24.0% were aware of HPV vaccination among males. Female students demonstrated significantly higher awareness regarding vaccine availability and target population for vaccination compared to male students ($p < 0.05$). Inadequate information and high cost were identified as the major barriers to HPV vaccine acceptance. **Conclusion**: Medical students demonstrated good overall awareness regarding cervical cancer and HPV vaccination; however, important gaps persist, particularly regarding male vaccination and dosage schedule. Strengthening medical education and addressing identified barriers may improve HPV vaccine acceptance and enhance cervical cancer prevention efforts.*

Keywords: Cervical cancer, human papillomavirus, HPV vaccine, medical students, awareness, attitude

1.Introduction

Cervical cancer remains one of the leading causes of cancer-related morbidity and mortality among women worldwide, with a disproportionately higher burden in low- and middle-income countries. Despite being largely preventable, cervical cancer continues to pose a significant public health challenge due to inadequate screening coverage and limited awareness regarding preventive strategies (1). Persistent infection with high-risk human papillomavirus (HPV) types has been well established as the principal etiological factor for cervical cancer. The advent of prophylactic HPV vaccines has provided an effective primary prevention strategy, offering protection against the most oncogenic HPV strains (2).

HPV vaccination is most effective when administered prior to exposure to the virus, ideally during early adolescence; however, its benefits extend to older age groups as well. Although HPV vaccines have demonstrated proven safety, immunogenicity, and efficacy in reducing HPV-related diseases, their uptake remains suboptimal in many countries, including India. Limited awareness, misconceptions regarding safety and efficacy, high cost, and sociocultural barriers contribute significantly to vaccine hesitancy. Knowledge and attitudes toward HPV vaccination play a crucial role in determining acceptance and utilization of this preventive measure (3).

Medical students represent a vital group in this context, as they are future healthcare providers and a key source of health information for the community. Their awareness and attitude toward HPV vaccination can strongly influence public perception, counseling practices, and vaccine advocacy. Assessing the level of knowledge and acceptance of HPV vaccination among medical students is therefore essential to identify existing gaps and to guide targeted educational interventions. Strengthening awareness at the medical training level can have long-term benefits in improving HPV vaccine uptake and reducing the burden of cervical cancer in the population (4).

2.Materials and Methods

A questionnaire-based cross-sectional descriptive study was conducted among undergraduate medical students studying at a tertiary care teaching institution. The study population comprised 350 medical students from different academic years of the MBBS course. Data were collected using a pre-tested, semi-structured questionnaire designed to assess awareness, knowledge, and attitude regarding human papillomavirus vaccination. The questionnaire was administered in English using an online Google Form. Data were entered in MS-Excel and analyzed using SPSS software version 25. Appropriate descriptive statistics were applied, and the Chi-square test was used to assess associations, with a p-value of less than 0.05 considered statistically significant.

Inclusion criteria:

- Undergraduate medical students enrolled in the MBBS course at the study institution.
- Students who were present at the time of data collection and willing to participate in the study.

Exclusion criteria:

- Students who did not give consent to participate in the study.
- Incompletely filled questionnaires.

Consent:

- Informed written consent was obtained from all participants prior to data collection. Participation was voluntary, and confidentiality and anonymity of the respondents were ensured throughout the study.

3.Results

Table 1: Demographic data of participants

Characteristics	Number (n=350)	Percentage (%)
Age		
Age <22 years	84	24.0
Age ≥23 years	266	76.0
Gender		
Male	147	42
Female	203	58
MBBS Batch		
2021 batch	175	50
2022 batch	175	50

Table 1: The present table shows the distribution of study participants according to age groups. Out of a total of 350 participants, the majority belonged to the age group of 23 years and above, accounting for 266 participants (76.0%). Participants aged less than 22 years constituted 84 (24.0%) of the study population. With respect to gender distribution, females formed the majority with 203 participants (58%), whereas males accounted for 147 participants (42%). Regarding the academic year, an equal proportion of participants were enrolled from the 2021 and 2022 MBBS batches, with 175 students (50%) from each batch. Overall, the findings indicate that most of the study participants were young adults aged 23 years and above, with a higher representation of female students.

Table 2: Awareness about cervical cancer prevention through HPV vaccination

Awareness domain	Number (n=350)	Percentage
Cervical cancer prevention	294	84.0
Causative agent of cervical cancer	313	89.4
Vaccine availability	262	74.9
Target population for vaccination	230	65.8
HPV vaccination among males	84	24.0
Vaccination beyond target age group	287	82.1
Awareness regarding dose	141	40.3
Awareness regarding protection	263	75.2

Table 2: The present table shows the distribution of study participants according to their awareness regarding cervical cancer prevention through HPV vaccination. Out of the total 350 participants, awareness regarding cervical cancer prevention was reported by 294 participants (84.0%). Knowledge about the causative agent of cervical cancer was observed in 313 participants (89.4%). Awareness regarding the availability of the HPV vaccine was present among 262 participants (74.9%), while 230 participants (65.8%) were aware of the target population for vaccination. Awareness about HPV vaccination among males was comparatively low, with only 84 participants (24.0%) reporting correct knowledge. Awareness regarding vaccination among women beyond the target age group was noted in 287 participants (82.1%). Knowledge about the recommended dose schedule was present in 141 participants (40.3%), whereas awareness regarding the protection provided by the HPV vaccine was reported by 263 participants (75.2%). Overall, the findings indicate good awareness regarding cervical cancer and HPV vaccination in general, with notable gaps in knowledge related to vaccination among males and dosage schedule.

Table 3: Comparison of awareness among males & females

Awareness domain	Male (n=147)	Female (n=203)	p value
Cervical cancer prevention	121 (82%)	175 (86%)	0.610
Causative agent of cervical cancer	129 (88%)	183 (90%)	0.443
Vaccine availability for cervical cancer prevention	96 (65%)	166 (82%)	0.001
Target population for vaccination	90 (61%)	152 (75%)	0.001
HPV vaccination among males	37 (25%)	47 (23%)	0.110
Vaccination among women beyond target age	125 (85%)	162 (80%)	0.045
Awareness regarding dose	56 (38%)	83 (41%)	0.512
Awareness regarding protection provided by HPV vaccine	106 (72%)	158 (78%)	0.094

Table 3: The present table shows the comparison of awareness regarding cervical cancer and HPV vaccination among male and female participants. Awareness about cervical cancer prevention was observed among 121 male participants (82%) and 175 female participants (86%), with no statistically significant difference between the two groups (p = 0.610). Knowledge regarding the causative agent of cervical cancer was reported by 129 males (88%) and 183 females (90%), and this difference was also not statistically significant (p = 0.443).

Awareness regarding the availability of HPV vaccine for cervical cancer prevention was present among 96 males (65%) and 166 females (82%), and this difference was found to be statistically significant (p = 0.001). Similarly, awareness about the target population for vaccination was higher among females, with 152 participants (75%) compared to 90 males (61%), and the difference was statistically significant (p = 0.001).

Awareness about HPV vaccination among males was reported by 37 male participants (25%) and 47 female participants (23%), with no statistically significant difference between the groups (p = 0.110). Awareness regarding vaccination among women beyond the target age group was observed among 125 males (85%) and 162 females (80%), and this difference was statistically significant (p = 0.045). Awareness regarding the recommended dose schedule was reported by 56 males (38%) and 83 females (41%), while awareness regarding the protection provided by the HPV vaccine was observed among 106 males (72%) and 158 females (78%); however, these differences were not statistically significant (p = 0.512 and p = 0.094 respectively). Overall, female participants demonstrated better awareness in several domains related to HPV vaccination compared to male participants.

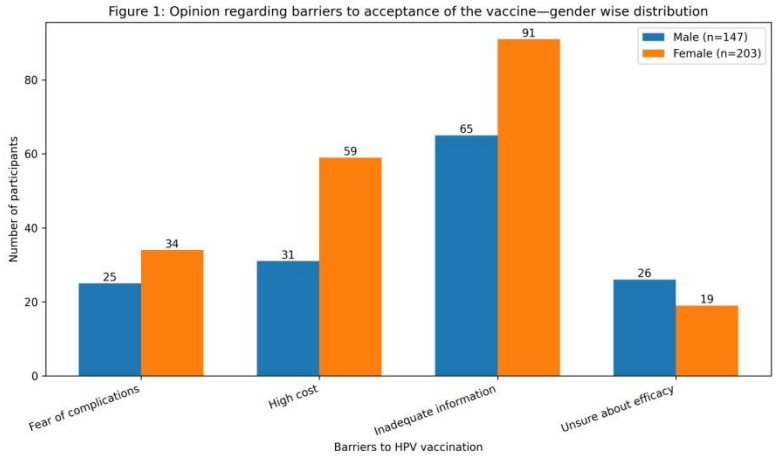

Figure 1: Opinion regarding barriers to acceptance of the vaccine-gender wise distribution

Figure 1-The present figure shows the gender-wise distribution of perceived barriers to acceptance of HPV vaccination among the study participants. Among male participants, inadequate information was the most commonly reported barrier, cited by 65 males, followed by high cost reported by 31 participants. Fear of complications was reported by 25 males, while 26 males expressed uncertainty regarding the efficacy of the vaccine.

Among female participants, inadequate information was also the most frequently reported barrier, with 91 participants indicating this concern. High cost was reported by 59 females, followed by fear of complications reported by 34 participants. Uncertainty regarding vaccine efficacy was reported by 19 female participants. Overall, the findings indicate that inadequate information and high cost were the major barriers to HPV vaccine acceptance among both males and females, with females reporting inadequate information more frequently than males.

4.Discussion

Cervical cancer remains the leading cause of mortality among gynecological cancers, and prevention through vaccination is a relatively recent public health strategy. Awareness and education are therefore crucial for the successful implementation of HPV vaccination programs. The present study assessed awareness and attitude regarding HPV vaccination among medical students, who

are future healthcare providers and play an important role in disseminating health information to the community.

In the present study, most participants were aged ≥23 years, with a predominance of female students. Overall awareness regarding cervical cancer prevention, its causative agent, and HPV vaccine availability was high among the participants. These findings indicate better awareness among medical students compared to the general population and are consistent with earlier Indian studies reporting higher knowledge levels in medical students due to academic exposure. Female participants demonstrated significantly better awareness regarding vaccine availability, target population, and vaccination beyond the target age group compared to male participants. Awareness regarding HPV vaccination among males was comparatively low, a finding also reported in other Indian studies.

Inadequate information was identified as the most common barrier to HPV vaccine acceptance among both male and female participants, followed by high cost. Similar barriers have been reported in previous studies from India and other countries. Medical school teaching emerged as the main source of information, highlighting the importance of strengthening undergraduate medical curriculum through focused and interactive educational sessions. Addressing existing knowledge gaps and barriers may improve vaccine acceptance and enable future healthcare professionals to contribute effectively to cervical cancer prevention.

5.Conclusion

The present study demonstrates that medical students have a generally good level of awareness regarding cervical cancer and HPV vaccination, particularly with respect to disease prevention, causative agent, and vaccine availability. Female students exhibited better awareness than male students in several domains, highlighting a gender-based difference in knowledge. However, gaps were observed in awareness regarding HPV vaccination among males and the recommended dosage schedule. Inadequate information and high cost were identified as the major barriers to vaccine acceptance. Strengthening medical education through focused and structured teaching on HPV vaccination may improve knowledge, attitude, and acceptance among medical students, thereby enabling them to play an effective role in promoting HPV vaccination and contributing to the prevention of cervical cancer in the community.

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Conflict of interest: None.

References

[1] World Health Organization. Cervical cancer. Geneva: World Health Organization; 2025 Dec 2. Available from: https://www.who.int/news-room/fact-sheets/detail/cervical-cancer

[2] Kamolratanakul S, Pitisuttithum P. Human papillomavirus vaccine efficacy and effectiveness against cancer. Vaccines (Basel). 2021 Nov;9(12):1413. doi:10.3390/vaccines9121413

[3] Chandila P, Kaur AP, Jyothi. Knowledge, attitude and practice regarding human papillomavirus vaccination among medical students. Int J Res Med Sci. 2025 Jun;13(6):2442–2445. doi:10.18203/2320-6012.ijrms20251632

[4] Maletin N, Milić J, Jovanović M, Vuković J, Božić J, Cvetković J. Knowledge and attitudes regarding HPV vaccination among medical students: implications for education and future practice. Vaccines (Basel). 2024 Jan;13(1):11.