International Journal of Research in Medical Sciences
Chandila P et al. Int J Res Med Sci. 2025 Jun;13(6):2442-2445
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20251632

Original Research Article

Knowledge, attitude and practice regarding human papillomavirus vaccination among medical students

Prerna Chandila*, Amrit Pal Kaur, Jyothi

Department of Obstetrics and Gynaecology, Government Medical College, Amritsar, Punjab, India

Received: 21 March 2025
Revised: 17 April 2025
Accepted: 02 May 2025

***Correspondence:**
Dr. Prerna Chandila,
E-mail: prernachandila@gmail.com

ABSTRACT

Background: Cervical cancer is a leading cause of cancer-related deaths among women, especially in developing countries like India. Human papillomavirus (HPV) types 16 and 18 are primary causative agents, and the HPV vaccine is a key preventive tool. However, uptake remains low due to limited awareness, safety concerns, and cultural misconceptions. This study aimed to evaluate knowledge, attitudes, and practices (KAP) regarding HPV vaccination among medical students and to identify barriers and facilitators to vaccine uptake.
Methods: A cross-sectional study was carried out at a tertiary care teaching hospital in Amritsar India. Undergraduate students aged 18-22 years, from 1st, 2nd, 3rd and 4th year professional MBBS students were included in the study.
Results: Out of 300 participants, 229 (76.33%) were aware of the HPV vaccine, while only 21 (7%) had received it. Common barriers included limited access, concerns over safety and efficacy, and cost. Demographic factors like age, gender, maternal education, and family history of malignancy showed no significant association with knowledge levels. A majority expressed willingness to get vaccinated in the future.
Conclusions: Medical students in India demonstrate moderate knowledge of HPV vaccination. Improving education on vaccine safety and efficacy, incorporating it into the curriculum, increasing awareness programs, reducing costs, and introducing supportive government policies may enhance vaccine acceptance.

Keywords: HPV vaccine, Medical students, Knowledge, Attitude, Practice, Cervical cancer, Government programmes

INTRODUCTION

Cervical cancer remains one of the most common cancers among women worldwide. The high mortality rate is often due to late stage diagnosis.[1]

Cervical cancer accounts for 18.7 per 1,00,000 women and mortality rate is 11.7 per 1,00,000 women in India.[2] Almost all cervical cancer cases (99%) are linked to infection with human papillomavirus (HPV) and extremely common virus transmitted through sexual contact.[3]

Total 1,27,526 new cases were reported in 2024 in India. Based on the Globocan 2022 findings, the age-standardized mortality rate (ASMR) for cervical cancer across the globe stands at around 7.1 per 100 000 women. In contrast, India exhibits an ASMR of approximately 11.2 per 100 000 women for cervical cancer, indicating a significantly elevated mortality rate compared to the global average.[4]

The World Health Organization (WHO) targeted and gave a plan to eliminate cervical cancer, all countries must reach and maintain an incidence rate of below 4 per 1,00,000 women. Achieving that goal rests on three key pillars and their corresponding targets: vaccination - 90% of girls fully vaccinated with the HPV vaccine by the age of 15; screening - 70% of women screened using a high-performance test by the age of 35, and again by the age of 45; and treatment - 90% of women with pre-cancer treated and 90% of women with invasive cancer managed.[5]

Each country should meet the 90–70–90 targets by 2030 to get on the path to eliminate cervical cancer.[5] One of the most effective method for preventing the deadly cervical cancer is HPV vaccination. Through this study we have accessed the knowledge and attitude of medical students regarding HPV vaccination helping us to understand the barriers and facilitators influencing the vaccine uptake.

After finding out the vaccination status, it will guide us to conduct appropriate awareness programs for HPV vaccination.

Aims and objectives

This study was conducted to evaluate the knowledge, attitudes, and practices (KAP) related to HPV vaccination among MBBS students. The specific objectives were: to assess the level of awareness regarding the availability of the HPV vaccine, to examine students' attitudes toward receiving the HPV vaccine, to determine the vaccination status among the participants, and to identify perceived barriers and suggest strategies to increase HPV vaccine uptake among medical students.

METHODS

A cross-sectional study was conducted between February 2025 and March 2025 among medical students of 1st, 2nd, 3rd and 4th year professional MBBS at Government Medical College, Amritsar. A total of 300 students aged 18–22 years were surveyed using a structured, self-designed, and pre-validated self-administered questionnaire. The questionnaire was developed based on a review of existing literature and expert consultations. Content validity was ensured through review by a panel of subject experts in Community Medicine and Public Health. A pilot study was conducted on 30 students (excluded from final analysis) to assess feasibility and clarity. Internal consistency reliability was measured using Cronbach's alpha, yielding a value of 0.82, indicating good reliability.

The questionnaire consisted of items on demographics, knowledge of HPV and vaccination, attitudes toward vaccination, and actual vaccination practices. Knowledge was assessed using multiple-choice questions; attitudes were evaluated based on agreement/disagreement with various statements using a Likert scale, and practices assessed vaccination status.

Data were analyzed using statistical package for the social sciences (SPSS) software. Descriptive statistics summarized KAP scores, and Chi-square tests examined associations between demographic factors and responses. Statistical significance was set at $p<0.05$.[6]

RESULTS

Table 1 shows the distribution of 300 students across different age groups. The largest group is 21 years old, with 73 patients, representing 24.33% of the total. This is followed by the 20-year-olds, comprising 69 patients or 23.00%. Patients aged 18 make up 18.67% with 56 individuals, while 19-year-olds account for 19.67% with 59 patients. The smallest group is those aged 22, with 43 patients, making up 14.33% of the total.

Table 1: Age distribution of respondents.

Age (years)	Frequency	Percentage
18	56	18.67
19	59	19.67
20	69	23.00
21	73	24.33
22	43	14.33
Total	300	100.00

Table 2 reveals that out of the total number of patients, 217 are female, representing 72.33% of the population, while 83 are male, accounting for 27.67%, indicating that the study predominantly represents the perceptions of female medical students.

Table 2: Gender distribution.

Gender	Frequency	Percentage
Female	217	72.33
Male	83	27.67
Grand total	300	100.00

A majority (75%) had heard about HPV and its vaccine, while 25% were unaware of it.

Table 3 reflects the appropriate age for HPV vaccination among 300 individuals. A majority, 134 participants (44.67%), believe the vaccine is most appropriate for those aged 10-14 years. Following that, 76 individuals (25.33%) suggest the 15-20 years age group, while 28 people (9.33%) think it should be given to those aged 21 years and above. Additionally, 40 respondents (13.33%) are unsure about the appropriate age, and 22 participants (7.33%) believe it should be given to children under 10 years. The total number of responses is 300, representing 100% of the population.

Table 4 shows that the primary source of information about the HPV vaccine for most individuals is healthcare providers, with 202 respondents (67.33%) citing doctors or nurses. Schools or universities were the second most common source, with 58 people (19.33%) reporting this. Social media informed 20 respondents (6.67%), while 14 individuals (4.67%) learned about it from family or friends. Government or public health campaigns were the source for 4 participants (1.33%), and others accounted for 2 responses (0.67%).

Table 5 reveals that the majority of individuals, 201 participants (67.00%), are willing to get the HPV vaccine. However, 62 respondents (20.67%) are unsure about it,

while 37 individuals (12.33%) are not willing to receive the vaccine.

Table 3: Awareness about HPV vaccine and perceived appropriate age for HPV vaccination.

Variables	Frequency	Percentage
Aware about HPV vaccine		
No	71	23.67
Yes	229	76.33
Total	300	100.00
Perceived appropriate age for HPV vaccination (years)		
10-14	134	44.67
15-20	76	25.33
21 and above	28	09.33
Not sure	40	13.33
Under 10	22	07.33
Grand total	300	100.00

Table 4: Source of information about HPV vaccine.

Source of information about HPV vaccine	Frequency	Percentage
Healthcare providers (doctors, nurses)	202	67.33
School or university	58	19.33
Family/friends	14	04.67
Social media	20	06.67
Government or public health campaigns	4	01.33
Others	2	00.67
Total	300	100.00

Table 5: Willingness to get the HPV vaccine.

Willingness to get the HPV vaccine	Frequency	Percentage
No	37	12.33
Not sure	62	20.67
Yes	201	67.00
Grand total	300	100.00

DISCUSSION

The present study demonstrates that while awareness of the HPV vaccine among medical students is relatively high (76.33%), actual uptake remains low (7%). This disconnect between awareness and behavior mirrors findings from Sharma et al, who reported that although over 70% of medical students were knowledgeable about HPV, less than 10% were vaccinated.[7] This suggests that awareness alone may not be sufficient to drive action.

In terms of gender distribution, the predominance of female respondents (72.33%) aligns with the observed greater awareness and willingness to be vaccinated among females in other Indian studies, potentially due to higher perceived personal relevance of HPV-related diseases.[8] However, vaccination hesitancy, even among this group, underlines persistent misconceptions and safety concerns that need to be actively addressed.

Our findings also showed no significant association between knowledge levels and demographic factors such as age, gender, or maternal education, which differs from Bansal et al, who identified parental education as a significant determinant of vaccine awareness.[9] This disparity may stem from differences in study population or regional sociocultural influences.

Common barriers reported in our study — including cost, safety concerns, and limited access — have been echoed in previous literature across South Asia.[8,9] This highlights the systemic challenges in implementing HPV vaccination programs in developing countries, where misinformation, stigma, and logistical constraints hinder vaccine outreach.

Encouragingly, a majority of students expressed willingness to receive the vaccine in the future. This optimism reinforces the potential effectiveness of targeted educational interventions, especially if embedded within the medical curriculum and supported by public health messaging. Integration of the HPV vaccine into national immunization schedules and subsidized access could further improve uptake.

Limitations

The study was limited to a single institution, which may affect generalizability. Self-reported responses may introduce bias. Future studies could include longitudinal assessments and intervention-based approaches.

CONCLUSION

In conclusion, while medical students demonstrate a reasonable level of awareness regarding HPV, there remains a gap in their understanding of the vaccine's safety and effectiveness. To bridge this gap, it is crucial to enhance the medical curriculum by incorporating more detailed information on HPV vaccination, particularly focusing on safety profiles and effectiveness. Additionally, increasing outreach efforts through targeted campaigns and addressing common misconceptions can further improve knowledge and foster a more positive attitude toward the vaccine. One of the major concern is to make the vaccine easily accessible and affordable. By ensuring that future healthcare professionals are well-informed and confident in advocating for the HPV vaccine, we can potentially increase vaccine acceptance and contribute to better public health outcomes.

Recommendations

Recommendations include: strengthening government and university-level initiatives to improve vaccine access, integrating HPV vaccine education into school level

curricula, including HPV vaccine in National Immunization Schedule, reducing the financial burden regarding HPV vaccine, conducting workshops and seminars to dispel myths about vaccine safety, and encouraging healthcare providers to proactively discuss HPV vaccination with other medical and paramedical students.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. National Centre for Disease Informatics and Research. Cervical cancer statistics in India. Government of India. 2024. Available at: https://ncdirindia.org/display/wcd.aspx. Accessed on 15 March 2025.
2. Indian Council of Medical Research. Annual report on cancer statistics. ICMR Publications. 2022. Available at: https://www.icmr.gov.in/reports. Accessed on 15 March 2025.
3. World Health Organization. Human papillomavirus (HPV) and cervical cancer. Available at: https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer. Accessed on 15 March 2025.
4. International Agency for Research on Cancer. GLOBOCAN 2022: Cervical cancer fact sheet – India. 2022. Available at: https://gco.iarc.fr/today/data/factsheets/populations/356-india-fact-sheets.pdf. Accessed on 15 March 2025.
5. World Health Organization. Global strategy to accelerate the elimination of cervical cancer as a public health problem. 2020. Available at: https://www.who.int/publications/i/item/9789240014107. Accessed on 15 March 2025.
6. Creswell JW. Research design: Qualitative, quantitative, and mixed methods approaches. 4th Edition. SAGE Publications India Pvt. Ltd. 2014.
7. Sharma A, Gupta N, Mehta V. Knowledge and attitude towards HPV vaccination among medical students. J Educ Health Promotion. 2021;10:105.
8. Khan S, Kausar S, Rahman M. HPV vaccine uptake and knowledge in South Asian countries. Vaccine. 2020;38(5):1120-5.
9. Bansal A, Yadav R, Tiwari P. Barriers to HPV vaccination in India: A review. Asian Pacific J Cancer Prev. 2022;23(1):45-50.
10. Bruni L, Saura-Lázaro A, Montoliu A, Brotons M, Alemany L, Diallo MS, et al. HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010–2020. Prev Med. 2022;154:106900.
11. Ladner J, Besson MH, Hampshire R, Tapert L, Audureau E. Assessment of eight HPV vaccination programs implemented in lowest-income countries. BMC Public Health, 2020;20:972.
12. Basu P, Malvi SG, Joshi S, Bhatla N, Muwonge R, Lucas E. Vaccine hesitancy among parents of adolescent girls in India: A barrier to introducing the HPV vaccine. Vaccine. 2021;39(35):5111-7.
13. Paul P, Fabio A. Literature review of HPV vaccine delivery strategies: Considerations for school- and non-school based immunization program. Vaccine. 2014;32(3):320-6.
14. Mehta S, Rajaram S, Goel G, Goel N. Impact of educational interventions on HPV vaccine awareness and acceptability: A systematic review. Asian Pacific J Cancer Prev. 2022;23(4):1203-10.
15. Gopala K, Sharma P. Enhancing HPV vaccination through policy interventions in India: A roadmap. Indian J Public Health. 2023;67(1):23-9.

Cite this article as: Chandila P, Kaur AP, Jyothi. Knowledge, attitude and practice regarding human papillomavirus vaccination among medical students. Int J Res Med Sci 2025;13:2442-5.