



**ASSESSING KNOWLEDGE AND ACCEPTANCE OF HPV VACCINATION
AMONG MEDICAL AND PARAMEDICAL STUDENTS IN VADODARA: A
CROSS-SECTIONAL STUDY**

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ABSTRACT

Background of the Study: Human Papillomavirus (HPV) is a prevalent sexually transmitted infection responsible for various cancers, including cervical cancer, which is a significant global health concern. HPV vaccination has proven to be an effective strategy in preventing HPV-related cancers. In India, where the burden of cervical cancer is particularly high, efforts to increase HPV vaccination rates are crucial. Medical and paramedical students, as future healthcare professionals, play a pivotal role in disseminating information about preventive healthcare practices, including HPV vaccination. **Aims:** The aim of research study was to assess knowledge and acceptance of HPV Vaccination among medical and paramedical students. **Material and Method:** A cross-sectional research design and a quantitative survey approach were employed to gather data from a sample of 427 female students studying in Medical and Paramedical colleges in Vadodara. The study included female students aged 18 to 22 years who were pursuing MBBS, BDS, B.Pharm, Bachelor of Physiotherapy, Bachelor of Nursing, and Ayurvedic programs. Male students, Third year & final year students of bachelor's programs and postgraduate students were excluded from the study. Data was gathered using a demographic tool and a self-structured questionnaire to assess the participants' current knowledge and willingness to accept the HPV vaccine. Data analysis involved the use of

descriptive and inferential statistics, employing SPSS-20 software. Ethical clearance was obtained from the ethical committee of Sumandeep Vidyapeeth (SVIEC), and participants provided their consent before participating in the study. **Result:** The findings from this study provide a comprehensive overview of knowledge and Acceptability regarding HPV vaccination among medical and paramedical students. The majority, 56%, exhibited a satisfactory level of knowledge, while 44% had a moderate level of knowledge, with scores ranging from 3 to 22. 12.64% confirmed they were vaccinated against the HPV virus, while 87.35% reported not being vaccinated. Among those who hadn't received the vaccine, various reasons were cited. The majority (15.54%) mentioned unavailability of the vaccine, 23.86% expressed concerns and queries, 16.08% claimed to be unaware of the vaccine, 24.66% cited fear as a factor, and 19.83% considered the vaccine too expensive. In terms of their willingness to receive the HPV vaccine and recommend to family and friends, 64.8% of participants expressed a willingness to be vaccinated, while 35.2% expressed a lack of willingness to receive the vaccine and recommend it to family and friends. **Conclusion:** These findings underscore the need for educational interventions to improve knowledge about HPV vaccination among future healthcare professionals. Efforts to address barriers to vaccination, such as availability and cost, are essential to increase HPV vaccine uptake. Ultimately, the study emphasizes the pivotal role that medical and paramedical students can play in promoting preventive healthcare practices, including HPV vaccination, in the context of India's public health concerns related to cervical cancer and HPV.

Keywords: Knowledge, Acceptability, HPV Vaccine, Cervical cancer, Paramedical and Medical students

INTRODUCTION

Cervical cancer, or carcinoma of the cervix, ranks as the second most prevalent cancer affecting women on a global scale [1]. However, in developing nations, including India, it stands as the leading cause of cancer-related fatalities in the female population. Every year in India, approximately 1,22,800 women confront the diagnosis of cervical cancer, with nearly half succumbing to the disease [2]. Indian women bear a cumulative lifetime risk of 2.5% and a cumulative death risk of 1.4% from cervical cancer. Notably, an

estimated 6.6% of women in the general population in India are believed to harbor cervical HPV infection. The absence or inadequacy of screening options and the unavailability or unaffordability of standard treatment has exacerbated the issue in developing nations. In India, HPV serotypes 16 and 18 contribute to almost 76.7% of cervical cancer cases [3]. This ailment poses a significant burden on society, draining resources through medical and non-medical expenses, as well as lost productivity. Recent findings from

the Indian Council of Medical Research (ICMR) have indicated a rapid rise in cervical cancer-related deaths in India over the past two years.⁴

Considerable molecular and epidemiological evidence has linked cervical cancer to oncogenic human papillomavirus (HPV), a sexually transmitted infection, particularly serotypes 16, 18, and 31 [4-6]. HPV, a group of small DNA viruses, is associated with both benign and malignant conditions in the genital regions and oropharynx [7, 8]. These viruses are nearly ubiquitous, with a point prevalence of 10.1%, indicating that most women worldwide likely encounter at least one type of HPV during their sexual lifetime [5]. HPV infection can lead to intraepithelial neoplasia and, ultimately, invasive cervical cancer [6].

A primary preventive strategy against cervical cancer involves vaccinating adolescents against HPV prior to their first sexual exposure [7]. The approval and endorsement of two HPV vaccines, Gardasil and Cervarix, offer a significant opportunity to mitigate the burden of cervical cancer [5, 9]. The provision of HPV vaccines in low and middle-income countries is a critical component of the global action plan for addressing disparities in cancer outcomes

[8]. The World Health Organization (WHO) recommends administering HPV vaccines to girls aged 9 to 13, prior to sexual exposure, as the vaccine exhibits the highest efficacy when administered before HPV infection is acquired [9].

Vaccination against high-risk HPV types plays a pivotal role in averting cervical carcinoma, representing the sole available medical intervention [10]. HPV infection remains impervious to prevention through any other means apart from abstinence and lifelong mutual monogamy. Moreover, HPV infections often remain asymptomatic. Genital HPV is highly prevalent, with a 50-80% lifetime risk of infection. Natural infections may elicit a feeble immune response, which might not offer adequate protection, whereas vaccination triggers a robust immune response. While the definitive impact of vaccination on cervical cancer is yet to be fully ascertained, nations that have introduced HPV immunization programs have reported a decrease in the prevalence of vaccine-type HPV infections [11]. Herd immunity and cross-protection further enhance the effectiveness of the vaccine. Regrettably, India has not yet incorporated HPV vaccination into its national immunization program. Vaccination remains a voluntary endeavor, contingent upon public awareness of its availability

and benefits. The extent of coverage is also influenced by concerns related to the cost and perceived side effects of vaccination [12].

This cross-sectional study is conducted in Vadodara, a city in the western Indian state of Gujarat, with the aim of understanding the knowledge and acceptability of HPV vaccination among medical and paramedical students. The study is prompted by the recognition that these students not only represent a target group for vaccination themselves but also serve as potential advocates for vaccination in their future healthcare roles. The study seeks to assess the existing knowledge levels of medical and paramedical students regarding HPV, its associated health risks, and the HPV vaccine. Additionally, it aims to gauge their willingness to accept the vaccine personally and their readiness to recommend it to others.

MATERIAL AND METHOD

A cross-sectional design and quantitative survey approach was used to collect data by non probability convenient sampling technique from 427 female students of Medical and Paramedical colleges affiliated with Sumandeep Vidyapeeth deemed to be University, Vadodara. The female students aged between 18 to 22 years and studying MBBS, BDS, B.Pharm,

Bachelor of Physiotherapy, Bachelor of Nursing and Ayurvedic were included in the study. Male, TY, Final year bachelor and Post graduate students were excluded. Data collection was conducted over a three-month period. Initially, a demographic tool and a self-structured questionnaire were utilized to assess the current knowledge level and acceptability regarding the HPV vaccine. Our research group members created a Google Form and we obtained permission from the Principals of Medical and paramedical colleges. The Google Form was subsequently distributed to students by their class coordinators via a link, and the responses were recorded within the form. Data was analyzed by using Descriptive and inferential statistics were applied to analyzed the data by using SPSS-20 software. Ethical clearance was obtained from the ethical committee of Sumandeep Vidyapeeth (SVIEC) and consent was also taken from the participants prior to data collection of the study.

RESULTS

The present research includes data from 427 female students enrolled in Medical and Paramedical colleges in Vadodara. The primary objective of this study was to evaluate the knowledge and acceptance of HPV Vaccination among students pursuing medical and paramedical education.

Findings related to demographic data

In terms of age, the majority of students, 106 (24.8%), were 18 years old, while another 106 (24.8%) were 19 years old. Additionally, 83 (19.4%) were 20 years old, 74 (17.4%) were 21 years old, and 58 (13.6%) were 22 years old. Regarding their year of study, the data showed that 218 (51.1%) were enrolled in their second year, while 209 (48.9%) were in their first year. With respect to their field of study, the majority, 122 (28.57%), were pursuing nursing, followed by 68 (15.9%) in BPT, 68 (15.9%) in MBBS, 44 (10.30%) in pharmacy, 54 (12.64%) in BDS, and 59 (13.81%) in Ayurvedic programs. When it came to the source of information on HPV vaccination, the highest number, 187 (43.8%), reported obtaining information from books and media, followed by 130 (30.4%) who received information from their peer groups or friends, 92 (21.6%) from mass media, and 18 (4.2%) from their parents. In terms of their living area, the majority of students, 312 (73.1%), resided in urban areas, while 115 (26.9%) lived in rural areas. Regarding any previous knowledge about Human Papillomavirus vaccines, more than half, 150 (35.2%), had prior knowledge, while 277 (64.8%) had no previous knowledge about Human Papillomavirus vaccines.

Findings related to Association between knowledge regarding HPV vaccination among medical and paramedical students and selected demographic variables

The association between knowledge regarding HPV vaccination among medical and paramedical students with demographic variables were tested by using chi-square test. Result revealed that the age group, course of study either medical or paramedical students, source of information from where they had gathered the knowledge regarding the HPV Vaccine and particular living area either rural or urban were found significant at $p < 0.05$.

Table 1 illustrates the frequency and percentage distribution of knowledge regarding HPV vaccination among these students, revealing that the majority, 239 (56%), possessed a satisfactory level of knowledge, while 188 (44%) exhibited a moderate level of knowledge, with scores ranging from 3 to 22. The Median score was 18, the Mean score was 18.92, and the Standard Deviation was 2.090.

The **Table 2** provides insights into the frequency and percentage distribution of the acceptance of HPV vaccination among medical and paramedical students. In response to the question "Are you vaccinated against the HPV virus?" the majority, 54 (12.64%), responded that they

were vaccinated, while 373 (87.35%) indicated that they were not vaccinated. Regarding the reasons for not getting vaccinated, the majority, 58 (15.54%), cited the unavailability of the vaccine. Additionally, 89 (23.86%) expressed concerns and queries, 60 (16.08%) reported being unaware of the vaccine, 92 (24.66%) mentioned fear as a factor, and 74 (19.83%) stated that the vaccine was too expensive. As for their willingness to receive the HPV vaccine, over half of the

participants, 277 (64.8%), expressed a willingness to be vaccinated, while 150 (35.2%) expressed a lack of willingness to receive the HPV vaccine. Lastly, when asked whether they would recommend the vaccine to their family and friends, the majority, 277 (64.8%), stated that they would recommend it, while 150 (35.2%) indicated that they would not recommend the vaccine to their family and friends.

Table 1: Frequency and percentage distribution of level of knowledge regarding HPV vaccination among medical and paramedical students (N=427)

Level of Knowledge	F	%	Score range	Median	MEAN	SD
Inadequate	0	0	0-22	18	18.92	2.090
Moderate	188	44				
Adequate	239	56				

Table 2: Frequency and Percentage Distribution of acceptability of HPV vaccination among medical and paramedical students (N=427)

S. No	Factors	frequency	Percentage
1	Are you vaccinated against HPV virus?		
	a. Yes	54	12.64
	b. No	373	87.35
2	If no what is the reason?		
	a. Unaware	60	16.08
	b. Queries	89	23.86
	c. Afraid	92	24.66
	d. Expensive	74	19.83
	e. Unavailable	58	15.54
3	Willingness to be vaccinated against HPV?		
	a. No	150	35.2
	b. Yes	277	64.8
4	Do you recommend this vaccine to your family and friends?		
	a. Yes	277	64.8
	b. No	150	35.2

DISCUSSION

The research topic explores the knowledge and acceptance of HPV vaccination among medical and paramedical students, with a particular focus on the relationship between this knowledge and various demographic variables. In the following discussion, we will delve into the implications of the study's findings and the insights they provide.

Age Group Influence: The results of our study demonstrated that age had a significant impact on the knowledge and acceptance of HPV vaccination among the participating students. Specifically, a substantial portion of the students in the 18-22 age group exhibited varying levels of knowledge. It is essential to recognize that younger individuals may have different information sources and attitudes towards vaccines. Understanding these age-related differences can guide targeted educational interventions to enhance awareness among younger students.

Field of Study Variation: Another critical finding was the significant relationship between the students' field of study (medical or paramedical) and their knowledge of HPV vaccination. This observation suggests that medical and paramedical curricula may influence students' understanding and acceptance of vaccines differently. A tailored educational approach may be warranted to bridge any

knowledge gaps, especially among paramedical students, to ensure a well-informed healthcare workforce.

Information Sources Matter: The sources of information regarding the HPV vaccine were also a significant factor in the students' knowledge and acceptance levels. Those who relied on books and media exhibited a different level of knowledge compared to those who obtained information from peer groups or friends. This finding underscores the importance of ensuring that accurate and reliable information about HPV vaccination is readily available through diverse channels. Moreover, it highlights the potential role of peers in influencing vaccine-related decisions.

Urban vs. Rural Dynamics: The study revealed that the students' living area (urban or rural) played a significant role in shaping their knowledge and acceptance of HPV vaccination. Students from urban areas demonstrated different levels of awareness compared to their rural counterparts. These disparities emphasize the need for targeted public health campaigns, especially in rural regions, to address potential disparities in vaccine knowledge and uptake.

Implications for Healthcare: The results of this study hold important implications for healthcare policy and practice. Improving the knowledge and acceptance of HPV

vaccination among future healthcare professionals is essential, as they play a pivotal role in educating and counseling patients about preventive healthcare measures. Tailored educational interventions and awareness campaigns should be developed to address the demographic variations identified in this study.

Limitations and Further Research: It is important to acknowledge the limitations of this study, such as potential recall bias and the cross-sectional design. Future research could employ longitudinal approaches to track changes in knowledge and acceptance over time. Additionally, a more comprehensive investigation into the reasons behind vaccine hesitancy and non-acceptance among students is warranted.

The findings of our study on knowledge and acceptance of HPV vaccination among medical and paramedical students align with and further underscore the importance of addressing awareness gaps highlighted in a study by Asha Neravi *et al.* conducted in December 2019. In their cross-sectional observational study, they explored the knowledge, awareness, and acceptability of HPV vaccination among 207 students from different healthcare disciplines, including MBBS, BDS, Nursing, and Physiotherapy. The overarching message from both studies is the significance of improving awareness about HPV vaccination. As Asha Neravi

and colleagues suggested, advancements in disease prevention, such as the potential eradication of cervical carcinoma through vaccination and screening, necessitate widespread participation [13].

The study conducted by Jyoti Singh and her team in December 2018 on cervical cancer awareness and HPV vaccine acceptability among females in Delhi provides crucial insights into the current state of knowledge and attitudes regarding cervical cancer and preventive measures. This study, based on a cross-sectional design and a sample of 450 females, primarily in the 16-25 age group, reveals several key findings that warrant discussion. Regarding HPV vaccination, the study recommends educating healthcare professionals on effective communication strategies with parents to encourage the vaccination of their children. Additionally, the government's involvement is crucial, as including the HPV vaccine in the National Immunization Program would be a vital step in controlling this preventable disease [14].

CONCLUSION

This study provides valuable insights into the factors that influence the knowledge and acceptance of HPV vaccination among medical and paramedical students. The findings suggest the need for targeted interventions to address demographic disparities and improve vaccine awareness among future healthcare professionals.

Ultimately, enhancing knowledge and acceptance of the HPV vaccine can contribute to better public health outcomes by reducing the burden of HPV-related diseases.

REFERENCES

- [1] Singh, J., Roy, B., Yadav, A., Siddiqui, S., Setia, A., Ramesh, R. and Singh, K., 2018. Cervical cancer awareness and HPV vaccine acceptability among females in Delhi: A cross-sectional study. *Indian Journal of Cancer*, 55(3), p.233.
- [2] Goldfarb, Jennifer A., and Joseph D. Comber. "Human papillomavirus (HPV) infection and vaccination: a cross-sectional study of college students' knowledge, awareness, and attitudes in Villanova, PA." *Vaccine: X* 10 (2022): 100141.
- [3] Sharma, Charu, et al. "Assessment of understanding about human papilloma virus vaccination among undergraduate medical students in a developing country: Perspective from India." *Journal of Family Medicine and Primary Care* 9.8 (2020): 4311.
- [4] Stanley, Margaret. "Pathology and epidemiology of HPV infection in females." *Gynecologic oncology* 117.2 (2010): S5-S10.
- [5] Curty, G., de Carvalho, P. S., & Soares, M. A. (2019). The role of the cervicovaginal microbiome on the genesis and as a biomarker of premalignant cervical intraepithelial neoplasia and invasive cervical cancer. *International journal of molecular sciences*, 21(1), 222.
- [6] Ugwu, E. O., et al. "Acceptability of human papilloma virus vaccine and cervical cancer screening among female health-care workers in Enugu, Southeast Nigeria." *Nigerian journal of clinical practice* 16.2 (2013): 249-252.
- [7] Viegas, Edna Omar. *Human Immunodeficiency Virus and Human Papillomavirus Infections in Mozambique: From Epidemiological Reports to Clinical Trials and Vaccine Implementation*. Karolinska Institutet (Sweden), 2017.
- [8] World Health Organization. *Weekly Epidermal Record*. 2017
- [9] Marlow, Laura AV, et al. "Knowledge of human papillomavirus (HPV) and HPV vaccination: an international comparison." *Vaccine* 31.5 (2013): 763-769.
- [10] Poole, Danielle N., et al. "A cross-sectional study to assess HPV knowledge and HPV vaccine

- acceptability in Mali." *PloS one* 8.2 (2013): e56402.
- [11] Dursun, Polat, *et al.* "Women's knowledge about human papillomavirus and their acceptance of HPV vaccine." *Australian and New Zealand Journal of Obstetrics and Gynaecology* 49.2 (2009): 202-206.
- [12] Poole, Danielle N., *et al.* "A cross-sectional study to assess HPV knowledge and HPV vaccine acceptability in Mali." *PloS one* 8.2 (2013): e56402.
- [13] Hoblidar, Suchith, *et al.* "Human papilloma virus vaccination: knowledge, awareness and acceptability among medical and paramedical students." *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 9.2 (2020): 474-482.
- [14] Singh, Jyoti, *et al.* "Cervical cancer awareness and HPV vaccine acceptability among females in Delhi: A cross-sectional study." *Indian Journal of Cancer* 55.3 (2018): 233.