



Original Research Article

EFFECT OF AN EDUCATIONAL INTERVENTION ON HPV VACCINE KNOWLEDGE AND ATTITUDE AMONG PRECLINICAL YEARS MEDICAL STUDENTS IN KURNOOL

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ABSTRACT

Background: Our study aimed to assess medical students' knowledge and attitudes toward the HPV vaccine as well as the effects of a brief educational intervention. This was done because there is a lack of knowledge about the potential of human papillomavirus (HPV) vaccination in India, even among medical personnel.

Materials and Methods: A cross-sectional study was conducted in a government teaching hospital. Participants were given a 22-item questionnaire about their understanding and acceptance of the HPV vaccine both before and after an educational intervention. An informative group lecture served as the intervention.

Results: In August 2022, a total of 168 students were surveyed, followed by a lecture on the same day. The same students were asked to fill out the same questionnaire again in October, which was 3 months after the intervention. The results showed that after the intervention, 97.3%(138/142) of the participants recognized HPV as a sexually transmitted infection, compared to 92.9%(156/168) before, ($p < 0.05$). Additionally, awareness of HPV affecting all genders increased from 81.5%(137/168) to 95.2%(135/142), ($p < 0.01$). The participants also demonstrated a better understanding of HPV's association with various cancers. Furthermore, awareness of the vaccine's availability for all genders increased from 75.6%(127/168) to 87.5%(124/142), ($p < 0.01$) and the willingness to receive the vaccine significantly rose from 76% (114/150) to 92.4% (118/128), ($p < 0.01$). These findings highlight the positive impact of educational interventions on HPV-related knowledge and attitudes among medical students.

Conclusion: In conclusion, the study demonstrated a significant improvement in medical students' knowledge and attitudes towards the HPV vaccine following an educational intervention. To enhance HPV vaccination rates, targeted awareness campaigns, education, and improved accessibility are essential in reducing the burden of HPV-related diseases and preventing cervical cancer. Addressing these challenges will help achieve broader vaccine acceptance and protect the population from the consequences of HPV infection. Further studies are needed to evaluate and standardize HPV education programs in India.

Keywords: Human papillomavirus (HPV), Medical students, HPV vaccine, Educational intervention, Vaccine attitude, Vaccine acceptability.

INTRODUCTION

Human Papillomavirus (HPV) is a common viral infection of the reproductive tract, causing various conditions in both men and women.^[1] While most infections are asymptomatic and resolve on their own, persistent infection can lead to disease. In women, persistent infection with oncogenic HPV types can lead to cervical intraepithelial neoplasia (CIN), which may progress to invasive cervical cancer if left untreated.^[2] Additionally, HPV is associated with cancers of the head, neck, oropharynx, anogenital area, as well as anogenital warts and respiratory papillomatosis in both genders. Cervical cancer holds significant importance among HPV-related cancers, and HPV vaccines were initially licensed based on their efficacy against CIN, though they also apply to preventing other HPV-related cancers.^[3]

As of 2021, India has implemented the Human Papillomavirus (HPV) vaccine in certain regions and states as part of its immunization program. The vaccine is primarily targeted towards adolescent girls, aged 9 to 14 years, to protect them against cervical cancer and other HPV-related diseases. Taking a huge step towards the goal of elimination of cervical cancer, India is getting ready to roll out its indigenous quadrivalent human papillomavirus (HPV) vaccine named Cervavac as a part of the universal immunization program. This began with the National Technical Advisory Group on Immunization, the highest advisory body on immunization in India, which recommended incorporating the HPV vaccine into the universal immunization program in June 28, 2022.^[4]

The vaccine used in India is primarily the bivalent or quadrivalent HPV vaccine, which provides protection against certain types of HPV that are known to cause cervical cancer and genital warts. The Indian government has been working towards expanding the availability of the HPV vaccine in more regions to reach a larger population of at-risk individuals.^[5]

However, despite efforts to promote the HPV vaccination, there have been challenges in ensuring its widespread coverage. These challenges include low awareness about cervical cancer and the vaccine's benefits, cultural barriers, and logistical issues in delivering the vaccine to remote areas.^[6]

To address these challenges and increase HPV vaccination rates, various organizations, including the Indian government, are conducting awareness campaigns, providing education to healthcare providers and communities, and working towards improving vaccine accessibility in underserved areas.^[7]

It is essential for healthcare professionals to continue advocating for the importance of the HPV vaccine, as it plays a significant role in preventing cervical cancer and reducing the burden of HPV-related diseases in India.^[8]

This study aims to assess medical students' knowledge and attitudes toward the HPV vaccine and the effects of a brief educational intervention. The lack of knowledge about the potential of HPV vaccination in India, even among medical personnel, highlights the need for targeted educational initiatives to increase awareness and acceptance of the vaccine. By evaluating the impact of an educational intervention, this research hopes to contribute valuable insights into improving HPV vaccination rates among medical students and, by extension, the general population.

MATERIALS AND METHODS

Participants and Recruitment:

The study included preclinical year medical students aged between 18 and 22 years from Kurnool Medical College. Participants were recruited through a random sampling method from the student population who are in preclinical years.

Informed Consent

Before participation, informed consent was obtained from all selected students. The informed consent process ensured that the participants were fully aware of the study's purpose, procedures, potential risks, and their right to withdraw from the study at any time without repercussions.

Educational Intervention

An educational intervention was conducted in the form of a lecture on HPV and the HPV vaccine. The lecture was delivered in a lecture hall at Kurnool Medical College with the assistance of the Social and Preventive Medicine (SPM) department. The lecture aimed to enhance participants' knowledge and attitudes towards the HPV vaccine.

Statistical Analysis

For data analysis, we used a p-value significance calculator

(<https://www.gigacalculator.com/calculators/p-value-significance-calculator.php>) to determine the statistical significance of the pre and post-intervention questionnaire results. The p-value was used to assess the significance of the changes observed in participants' knowledge and attitudes towards the HPV vaccine after the educational intervention.

Ethical Considerations

The study adhered to ethical guidelines and obtained permission from the Ethical Committee of Kurnool Medical College. All aspects of the research, including participant confidentiality and data handling, were conducted in accordance with ethical standards to protect the rights and well-being of the participants.

RESULTS

Demographics

In the study's demographic analysis, the participants' gender distribution was found to be predominantly

female, accounting for 57.6% of the sample, while males constituted 42.4%. Additionally, the majority of participants fell within the age group of 18 to 22 years old. These demographics provide a foundation for understanding the characteristics of the study population and its potential implications on the research findings.

Pre and post interventional HPV and it's vaccine related knowledge and Attitude towards HPV vaccine

The results of our study showed a significant improvement in medical students' knowledge and attitudes toward the HPV vaccine after the educational intervention (figure 1). Before the intervention, 92.9%(156/168) of participants were aware that HPV is a sexually transmitted infection, which increased to 97.3%(138/142), ($p < 0.05$) after the intervention. Similarly, knowledge about HPV infecting all genders also increased from 81.5%(137/168) to 95.2%(135/142), ($p < 0.01$) after the intervention.

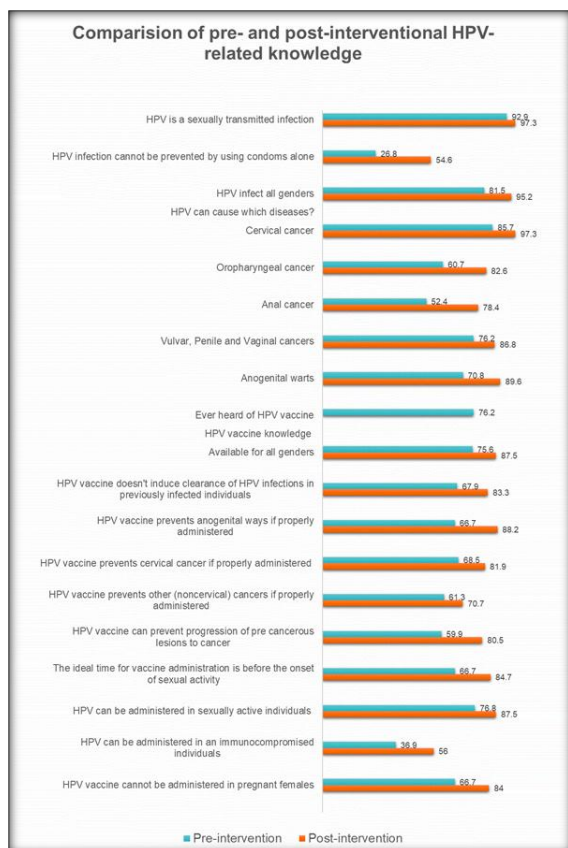


Figure 1

Prior to the intervention, only 26.8%(45/168) of participants knew that HPV infection cannot be prevented by using condoms alone, but this awareness increased to 54.6%(77/142), ($p < 0.01$) after the intervention. Moreover, there was a notable improvement in knowledge about the diseases caused by HPV. For instance, knowledge about cervical cancer being associated with HPV increased from 85.7%(144/168) to 97.3%(138/142), ($p < 0.01$) after the intervention. The awareness of

HPV's link to oropharyngeal cancer, anal cancer, vulvar, penile, and vaginal cancers, as well as anogenital warts also improved significantly.

Regarding knowledge about the HPV vaccine, 76.2% of participants had heard about it before the intervention. After the intervention, there was an increase in knowledge about the availability of the HPV vaccine for all genders, from 75.6%(127/168) to 87.5%(124/142), ($p < 0.01$). Additionally, awareness that the HPV vaccine does not induce clearance of HPV infections in previously infected individuals increased from 67.9%(114/168) to 83.3%(118/142), ($p < 0.01$).

Furthermore, understanding that the HPV vaccine can prevent anogenital warts if properly administered increased from 66.7%(112/168) to 88.2%(125/142), ($p < 0.01$) and awareness of its role in preventing cervical cancer if properly administered increased from 68.5%(115/168) to 81.9%(116/142), ($p < 0.01$). Knowledge about the HPV vaccine preventing other (noncervical) cancers also improved from 61.3%(103/168) to 70.7%(100/142), ($p < 0.01$) along with the understanding that the vaccine can prevent progression of precancerous lesions to cancer, which increased from 59.9%(101/168) to 80.5%(114/142), ($p < 0.01$).

Regarding the ideal time for vaccine administration, the awareness of it being before the onset of sexual activity increased from 66.7% (112/168) to 84.7%(120/142), ($p < 0.01$). However, there was a smaller increase in awareness that the HPV vaccine can be administered in sexually active individuals, from 76.8%(129/168) to 87.5%(124/142), ($p < 0.01$).

Regarding specific populations, knowledge about the HPV vaccine being contraindicated in pregnant females increased from 66.7%(112/168) to 84%(120/142), ($p < 0.01$) after the intervention. However, there was a relatively smaller increase in awareness about the HPV vaccine being suitable for immunocompromised individuals, from 36.9%(62/168) to 56%(79/142), ($p < 0.01$).

Regarding vaccination status, only 10.7% of participants reported being already vaccinated, while 27.3% received 1 dose, 40.9% received 2 doses, and 31.8% received 3 doses of the HPV vaccine.

Attitudes and acceptability towards the HPV vaccine

After the intervention, there was a significant increase in willingness to receive HPV vaccination, rising from 76% (114/150) to 92.4% (118/128) ($p < 0.01$), (Figure 1). Several factors influenced the participants' willingness to get vaccinated, including their knowledge about cervical cancer, concerns about contracting the disease, and their general approval of widespread vaccine usage.

Before the intervention, 24% (36/150) of the participants were unwilling to vaccinate, and the most common reasons against vaccination were the lack of adequate information about the vaccine,

accounting for 39% (14/36) of respondents. Additionally, some believed they had a low risk of contracting cervical cancer, making up 24% (10/36) of those who were hesitant. Concerns about the vaccine's efficacy accounted for 14% (5/36), and worries about its safety constituted 10% (4/36), both playing significant roles in vaccine hesitancy. For a few participants, the cost of the vaccine was a barrier, making up 8% (3/36). Other reasons contributed to 5% (2/36) of people's unwillingness to receive the vaccine, reflecting the complexity of attitudes and beliefs surrounding vaccination. Baseline attitudes against vaccination are illustrated in Figure 2.

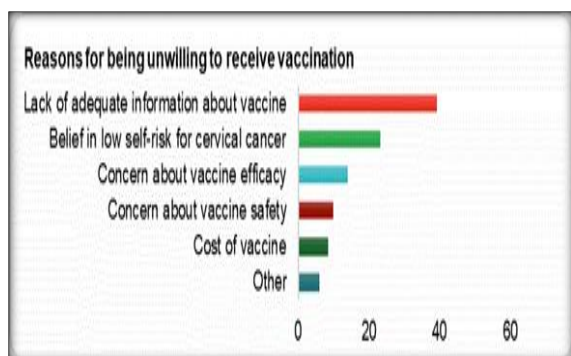


Figure 2

Despite educational instruction, 8% (10/128) of students remained unwilling to vaccinate due to concerns about vaccine safety, concerns about vaccine efficacy, and the belief that they were too young to be at risk.

DISCUSSION

The study aimed to evaluate medical students' knowledge and attitudes towards the HPV vaccine and the impact of an educational intervention in a government teaching hospital in India. The findings demonstrated a significant improvement in participants' knowledge and attitudes towards the HPV vaccine after the intervention, which highlights the importance of educational initiatives in increasing awareness and acceptance of the vaccine. The study's results indicated that before the intervention, there was a lack of awareness among medical students regarding HPV as a sexually transmitted infection and its association with various cancers. However, post-intervention, there was a notable increase in participants' recognition of HPV as an STI, as well as a better understanding of its link to different types of cancers. This improvement in knowledge is crucial, as it can lead to better-informed decisions regarding HPV vaccination and its potential benefits in preventing HPV-related diseases, particularly cervical cancer.

The educational intervention also had a positive impact on participants' awareness of the HPV vaccine's availability for all genders. This finding is significant, as it indicates a shift towards

recognizing the vaccine's importance in protecting not only females but also males from HPV-related diseases. Moreover, the intervention enhanced knowledge about the ideal time for vaccine administration, contraindications, and vaccine efficacy. This increased understanding can help dispel misconceptions and encourage informed decision-making regarding vaccination.^[9,10]

Additionally, the study found a considerable improvement in participants' willingness to receive the HPV vaccine after the intervention. This increase in vaccine acceptability is a promising outcome, as it suggests that targeted education can positively influence attitudes towards vaccination. However, the study also identified some individuals who remained hesitant to vaccinate, mainly due to concerns about vaccine safety, efficacy, and age-related risk perception. These findings highlight the need for continued efforts to address vaccine hesitancy and provide evidence-based information to overcome barriers to vaccination.^[11]

The study's results underscore the significance of medical students' role in promoting HPV vaccination. As future healthcare professionals, their knowledge, attitudes, and behaviors can influence patient recommendations and vaccination rates in the community. By equipping medical students with accurate information and positive attitudes towards vaccination, the impact can extend beyond the study population to the broader public.^[12]

Nevertheless, despite the positive outcomes of the intervention, the study also identified challenges in promoting widespread HPV vaccination in India. Low awareness about cervical cancer and the vaccine's benefits, cultural barriers, and logistical issues in vaccine delivery to remote areas were among the challenges encountered. To address these obstacles, targeted awareness campaigns, education for healthcare providers and communities, and improved accessibility in underserved regions are essential.^[13]

The study's findings contribute valuable insights into the effectiveness of educational interventions in improving HPV-related knowledge and attitudes among medical students in India. However, the study has some limitations that should be considered. The study's focus on medical students in a specific region may limit the generalizability of the findings to other populations or settings. Moreover, the self-reporting nature of the questionnaire may introduce response biases, and the short-term follow-up after the intervention may not fully capture long-term behavioral changes.

CONCLUSION

In conclusion, this research highlights the positive impact of a brief educational intervention on medical students' knowledge and attitudes toward the HPV vaccine in India. The study revealed significant improvements in participants' awareness of HPV as a sexually transmitted infection, its link

to various cancers, and the importance of the HPV vaccine for preventing cervical cancer and other HPV-related diseases. The intervention effectively increased knowledge about the ideal time for vaccination, contraindications, and vaccine efficacy. Additionally, it positively influenced participants' willingness to receive the HPV vaccine.

Despite these encouraging results, challenges remain in promoting widespread HPV vaccination in India. Certain participants still expressed concerns about vaccine safety, efficacy, and age-related risk perception, underscoring the need for targeted educational initiatives to address vaccine hesitancy.

The findings of this research contribute valuable insights into enhancing HPV vaccination rates among medical students and the general population. As healthcare professionals continue to advocate for the importance of the HPV vaccine, targeted awareness campaigns, education for healthcare providers and communities, and improved accessibility in underserved areas will be crucial in reducing the burden of HPV-related diseases and preventing cervical cancer in India. By addressing these challenges, we can move closer to achieving broader vaccine acceptance and protecting the population against the consequences of HPV infection.

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