



Roadmap to Success: Illustrating Insights from a KAP Study on Cervical Cancer Prevention and HPV Vaccination

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South Asian J Cancer

Abstract



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Keywords

- cervical cancer
- knowledge-attitude-practices
- human papillomavirus
- HPV
- vaccination
- prevention
- public health

Introduction Cervical cancer is a public health challenge in low- and middle-income countries, with India ranking among the highest in cervical cancer burden. The World Health Organization (has set ambitious targets for cervical cancer elimination by 2030, emphasizing the importance of human papillomavirus (HPV) vaccination and screening. In response, the National Technical Advisory Group of Immunization recommends the introduction of HPV vaccination for all eligible girls aged 9 to 14 years in India under the Universal Immunization Program. However, successful implementation requires both vaccine availability and changes in health care providers' knowledge, attitudes, and practices (KAP) regarding cervical cancer prevention and HPV vaccination.

Methodology This study aims to assess KAP among clinicians regarding cervical cancer and HPV vaccination. A cross-sectional survey collected responses from 451 practicing gynecologists and medical practitioners across 15 states of India. The questionnaire sought insights into patient inquiries, information sources, awareness levels, methods of patient education, and common myths and misconceptions.

Results Results indicate a high prevalence of patient inquiries about cervical cancer and the HPV vaccine, emphasizing the need for accurate and accessible information. While doctors were generally knowledgeable, misconceptions persisted among patients, including beliefs about low risk, inevitability of cervical cancer, and concerns about vaccine safety. Doctors primarily relied on verbal communication for patient education, suggesting potential for utilizing digital platforms and visual aids to enhance outreach.

Insights Insights from doctors underscored the importance of addressing misinformation and leveraging various communication channels, including social media,

DOI <https://doi.org/10.1055/s-0044-1791523> ISSN 2278-330X

How to cite this article: Ganeshkumar P, Tank J, Choudhury SS, et al. Roadmap to Success: Illustrating Insights from a KAP Study on Cervical Cancer Prevention and HPV Vaccination. South Asian J Cancer 2024;00(00):00–00.

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posters, and celebrity endorsements, to improve awareness and acceptance of vaccination. Disparities in vaccine availability and administration rates highlighted the need for targeted interventions to ensure equitable access.

Limitations Limitations of the study included its cross-sectional design and reliance on self-reported data, which may introduce bias. However, findings suggest a need for ongoing medical education and collaboration with stakeholders to drive awareness and acceptance of HPV vaccination.

Conclusion In conclusion, while gynecologists and medical practitioners demonstrate adequate KAP regarding cervical cancer prevention, there is room for improvement in patient education and communication strategies. Refining educational materials and strengthening communication channels would enhance awareness and reduce cervical cancer burden.

Introduction

Cervical cancer is a major public health problem affecting women, particularly in low- and middle-income countries (LMICs). It is the fourth most prevalent cancer among women globally, leading to over 350,000 deaths each year.¹ Less than 20% of women in LMIC receive screenings in contrast to 60% in high-income countries.² In light of these statistics, 2018 saw a significant call to action by the Director General of the World Health Organization (WHO), emphasizing the need to eliminate cervical cancer. This resulted in the formation of WHO's goal to expedite the elimination of cervical cancer. Central to this strategy is the "90–70–90" target by 2030—for 90% of girls to be fully vaccinated with the human papillomavirus (HPV) vaccine by age 15, for 70% of women to undergo cervical cancer screening tests by the age of 35 and 45, and for 90% of women with cervical cancer to be treated.³ Both primary and secondary prevention through HPV vaccination and effective screening, respectively, have to be implemented.

In India, cervical cancer is the second most common cancer among women, making up to 18.3% of new cases in 2020. In 2020 alone, there were 77,348 reported deaths due to cervical cancer. The prevalence of HPV 16/18 ranged from 5% among women with normal cytology to 83.4% among women having cervical cancer.⁴ The Government of India has made progress in the recent past toward combating the cervical cancer burden by strengthening secondary prevention through effective screening. The interim budget for the fiscal year 2024 to 2025 saw the Government of India's dedicated effort to promote the vaccination of girls aged 9 to 14 years.⁵ This initiative underscores the government's commitment to public health and its proactive approach in addressing and mitigating the impact of cervical cancer across the nation. As we anticipate the official introduction of the HPV vaccine by the Government of India, it is imperative to ensure that accurate information is readily available to clinicians, who serve as intermediaries between health care interventions and the public.

In recognition of this necessity, Federation of Obstetric and Gynaecological Societies of India (FOGSI) embarked on a knowledge, attitudes, and practices (KAP) study aimed at

developing frequently asked questions (FAQs) surrounding the HPV vaccine. This initiative seeks to bridge the gap between evidence-based medical knowledge and the questions posed by women, parents, and other stakeholders regarding HPV vaccination and cervical cancer prevention.

The rationale behind this study lies in the understanding that while academic literature provides invaluable insights into vaccine efficacy and safety, real-world clinical experiences offer a unique perspective on the concerns expressed by patients. By directly engaging with practicing gynecologists and medical practitioners, we endeavor to capture firsthand experiences and perspectives regarding the HPV vaccine.

Through the dissemination of a meticulously crafted questionnaire, we elicited candid responses from clinicians, thereby gathering authentic insights into the specific questions and concerns raised by patients regarding the HPV vaccine and cervical cancer. By collating and analyzing this data, we seek to enrich our FAQ document, ensuring that it addresses the actual queries of the community.

Objectives

- To gather insights from clinicians and perception of the community to develop the FAQ document with accurate, credible information derived from real-world experiences.
- To equip clinicians with accurate, consistent messaging to address patient inquiries, promoting informed decision-making and trust in vaccination.

Through these objectives, the KAP study aims to support the successful introduction and implementation of the HPV vaccine in India, ultimately contributing to the reduction of cervical cancer incidence and mortality rates in the country.

Study Design and Methodology

Questionnaire Development

This study adopts a cross-sectional design, utilizing a questionnaire-based survey approach. The questionnaire was developed to capture insights from practicing gynecologists

and medical practitioners regarding patient inquiries about the HPV vaccine and cervical cancer. The questionnaire was a structured semiobjective questionnaire with subjective questions where the participants expressed FAQs they experienced from patients.

Data Collection

The questionnaire was distributed to gynecologists who were volunteering members of India's national professional body of obstetricians and gynecologists (FOGSI) digitally. A total of 451 professionals consented to participating in the survey and 451 responses were collected, capturing first-hand experiences and perspectives on patient questions and concerns related to the HPV vaccine. Questions that were answered by the medical professionals assessed KAP of both the participating medical professional and FAQs they faced from their patients regarding vaccination.

Data Analysis

The gathered responses were analyzed to identify common themes, misconceptions, and areas of confusion expressed by patients regarding the HPV vaccine and cervical cancer.

FAQ Document Development

Based on the analysis report, an FAQ document will be developed to address the identified issues with accurate information. Emphasis will be placed on providing evidence-based responses to common questions regarding vaccine safety, administration, screening recommendations, and accessibility.

Dissemination of Revised Document

The FAQ document will be disseminated among clinicians to equip them with accurate, consistent messaging for addressing patient inquiries.

Through this study, we aim to utilize real-world insights from clinicians to refine educational materials, ultimately promoting informed decision-making and trust in the HPV vaccine among patients.

Analysis

Geographical Distribution of Responses

The study collected a total of 451 responses from medical practitioners across 15 states of India, providing a comprehensive insight into the nationwide perspective on patient inquiries about the HPV vaccine and cervical cancer.

Among the responses, Uttar Pradesh contributed the highest proportion of responses, with 24% (109), followed by Maharashtra with 17% (75). Tamil Nadu, Uttarakhand, Kerala, and Gujarat also showed significant representation, with 12, 8, 6, and 5% responses, respectively.

This diverse geographical distribution ensures a broad spectrum of perspectives from different regions of India, enriching the analysis and development process of the FAQ document to cater to the varied informational needs of clinicians and patients nationwide.

Availability and Monthly Administration of HPV Vaccine at Health Facilities

→ Fig. 1(A) reveals a promising trend in the integration of HPV vaccination into routine health care services, with a majority of surveyed facilities offering the vaccine (73%). This underscores an encouraging step toward improving accessibility and uptake among eligible populations.

However, the analysis also unveils disparities in the monthly administration of HPV vaccine doses among clinics. While some administer a substantial number of doses, others administer significantly fewer. These differences likely stem from various factors such as clinic size, location, patient demographics, and vaccination promotion efforts.

Understanding these variations is crucial for implementing targeted interventions aimed at boosting vaccine uptake in clinics with lower administration rates. By addressing these differences, we can strive for more equitable access to HPV vaccination services across diverse health care settings.

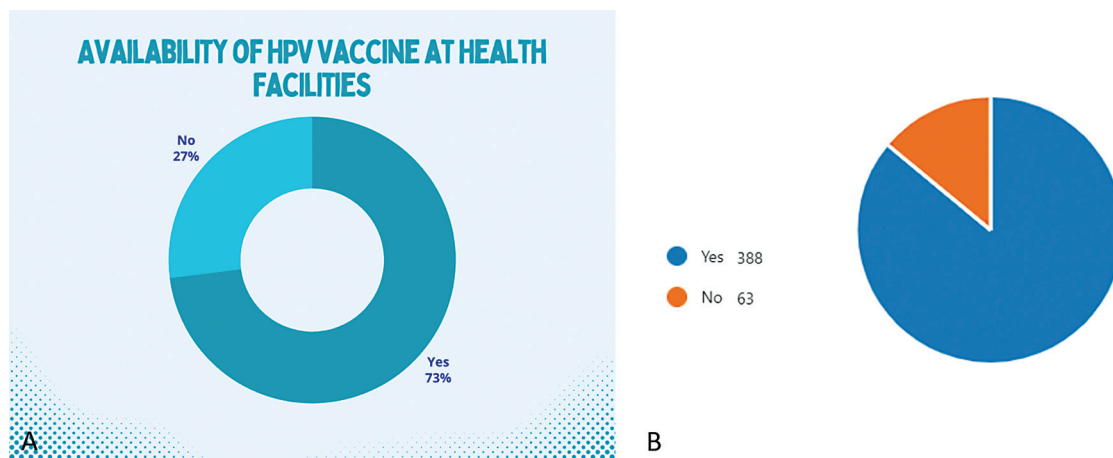


Fig. 1 (A) Proportion of participating health care facilities with availability of human papillomavirus (HPV) vaccines. (B) Proportion of participating health care providers who encountered patients with queries regarding HPV vaccination.

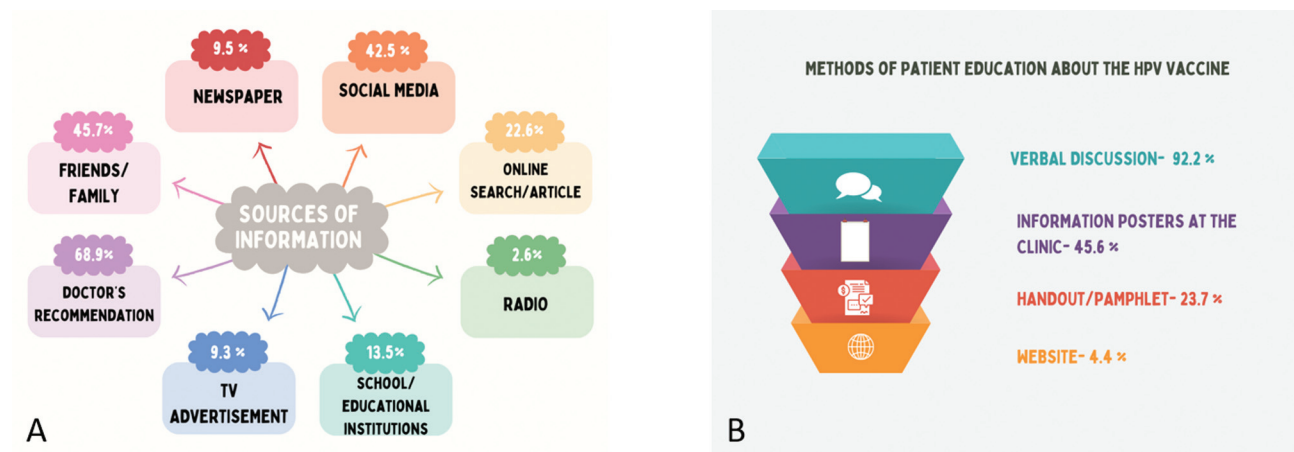


Fig. 2 (A) Sources through which patients receive information regarding human papillomavirus (HPV) vaccination and cervical cancer prevention. (B) Methods through which patients were educated about the HPV vaccine by the participating health care providers.

Patient Inquiries about Cervical Cancer and HPV Vaccine

A significant majority of respondents (86%), comprising 388 out of 451, reported encountering patients who inquire about cervical cancer and the HPV vaccine in their practice (→Fig. 1B).

This high prevalence of patient inquiries underscores the importance of health care providers being knowledgeable and equipped to address questions and concerns related to cervical cancer prevention and HPV vaccination. It emphasizes the need for comprehensive patient education and effective communication strategies to ensure that accurate information about cervical cancer and the HPV vaccine is readily accessible to patients, ultimately promoting informed decision-making and uptake of preventive measures.

Sources of Information for HPV Vaccination

This diverse array of information sources highlights the multifaceted nature of patient education and awareness regarding HPV vaccination (→Fig. 2A). While doctors' recommendations emerge as the most common source of information, it is noteworthy that a considerable number of patients also rely on information for HPV vaccination from friends/family and social media. Other important sources of information include educational institutions and traditional media channels.

Understanding the varied sources of information can guide health care providers in tailoring their communication strategies to reach patients effectively. It underscores the importance of leveraging multiple platforms and channels to disseminate accurate and credible information about HPV vaccination, thereby promoting informed decision-making and increasing vaccine acceptance and uptake among diverse patient populations.

Methods of Patient Education about the HPV Vaccine

Verbal discussion is the most common method for educating patients about the HPV vaccine (→Fig. 2B). Additionally, handouts/pamphlets and information posters in the clinic are also utilized. However, the use of Web sites for patient

education about the HPV vaccine appears to be less common among respondents.

Awareness Levels of Patients Regarding Cervical Cancer

→Fig. 3(A) indicates a range of awareness levels among patients regarding cervical cancer. While a significant portion of patients were perceived as slightly or moderately aware, a smaller proportion was considered very or extremely aware. This insight underscores the importance of leveraging platforms like resident welfare association meetings, events/celebrations/melas, workplaces, educational institutions, etc., and enhancing ongoing efforts to enhance public education and awareness campaigns about cervical cancer, ensuring that patients have access to accurate information about prevention, screening, and early detection measures.

Awareness Levels of Patients Regarding HPV Vaccine

→Fig. 3(B) highlights varying levels of awareness among patients regarding the HPV vaccine. While a considerable number of patients were perceived as slightly aware, a smaller proportion were considered as moderately, very, or extremely aware of the HPV vaccine.

This insight emphasizes the need for targeted educational efforts to increase awareness and knowledge about the HPV vaccine among patients. It underscores the importance of health care providers in providing comprehensive information and recommendations to improve vaccine acceptance and uptake rates, ultimately contributing to cervical cancer prevention efforts along with harnessing mid-media and tradition media and social media.

Frequently Asked Questions about Cervical Cancer: Insights

Here are the main themes extracted from the responses:

General Information

- What causes cervical cancer?

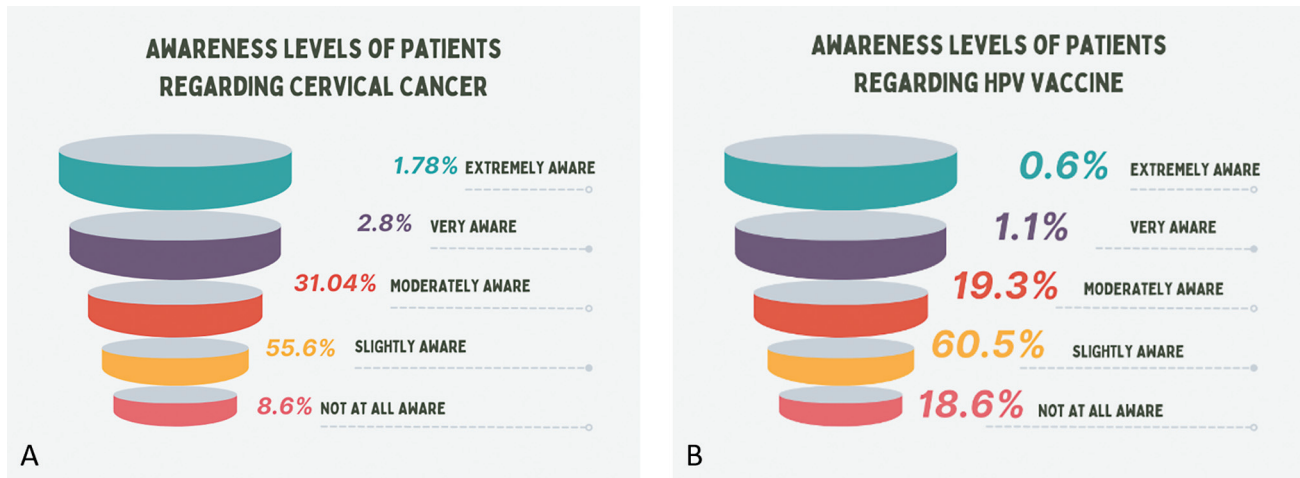


Fig. 3 (A) Awareness of patients regarding cervical cancer. (B) Awareness of patients regarding human papillomavirus (HPV) vaccination.

- How common is cervical cancer?
- Is cervical cancer contagious?

Risk Factors and Prevention

- Is cervical cancer hereditary?
- What are the risk factors for cervical cancer?
- How can cervical cancer be prevented?
- Is HPV vaccine effective in preventing cervical cancer?

Symptoms and Diagnosis

- What are the symptoms of cervical cancer?
- How is cervical cancer diagnosed?
- Can white discharge lead to cervical cancer?
- What tests are available to recognize cervical cancer?

Treatment and Prognosis

- Is cervical cancer curable?
- What are the treatment options for cervical cancer?
- What is the prognosis of cervical cancer?

Vaccination Queries

- How effective is the HPV vaccine?
- What are the side effects of the HPV vaccine?
- What is the recommended age for HPV vaccination?
- Is HPV vaccination necessary for everyone?

These insights reflect the concerns individuals have regarding cervical cancer, ranging from its causes and prevention to vaccination effectiveness and treatment options. Addressing these FAQs can help raise awareness against cervical cancer.

Frequently Asked Questions about HPV Vaccine: Insights

Based on the responses, here are the main themes of questions and concerns regarding the HPV vaccine:

- **Safety and side effects:** Many individuals are concerned about the safety of the vaccine and inquire about potential side effects.

- **Cost and availability:** Cost is a significant concern for many, along with questions about whether the vaccine is available for free or at government hospitals.
- **Age and dosage:** Questions about the appropriate age for vaccination, the number of doses required, and the vaccination schedule are common.
- **Efficacy in preventing cancer:** Individuals often ask if the vaccine provides complete protection against cervical cancer and other HPV-related cancers.
- **Necessity and mandate:** Some inquire about the necessity of the vaccine, whether it is mandatory, and why it is recommended for certain age groups.
- **Impact on fertility:** Concerns about the vaccine's impact on future fertility or menstrual cycles are raised by some individuals.
- **Other health concerns:** Some ask about potential interactions with other medications or health conditions.
- **Knowledge and awareness:** Many express a lack of awareness about the vaccine and seek basic information about its purpose and benefits.
- **Specific population concerns:** Questions about vaccination for specific populations, such as older women, boys, or those already diagnosed with HPV or cervical issues, are raised.

Overall, the responses indicate concerns regarding safety, efficacy, cost, and necessity of the HPV vaccine, highlighting the need for comprehensive education and awareness campaigns.

Insights from Doctors on Common Myths and Misconceptions Regarding Cervical Cancer and HPV Vaccine

Doctors have encountered several misconceptions regarding cervical cancer and the HPV vaccine during their interactions with patients (→ Fig. 4). Here are the key insights:

Perceived low risk: Many individuals believe they are not at risk of cervical cancer (191 responses). This misconception often leads to complacency regarding vaccination and preventive measures.

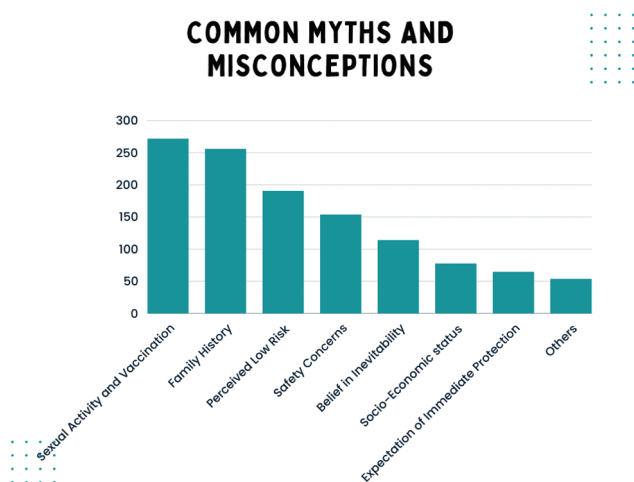


Fig. 4 Myths and misconceptions of patients regarding cervical cancer faced by participating health care providers in the clinics.

Belief in inevitability: Some patients perceive cervical cancer as inevitable, similar to other cancers (114 responses). Consequently, they may not see the value in preventive measures such as vaccination.

Sexual activity and vaccination: There is a common misconception that vaccination is only necessary for sexually active individuals (272 responses). Parents often believe their nonsexually active children do not need the HPV vaccine.

Safety concerns: Many patients express concerns about the safety of the HPV vaccine and fear various side effects (114 responses). Addressing these concerns is crucial in promoting vaccine acceptance.

Expectation of immediate protection: Some individuals believe that the HPV vaccine provides immediate protection from cervical cancer (65 responses), which is not the case. Educating patients about the timeline for vaccine efficacy is essential.

Family history: A significant number of patients (256 responses) believe that if there is no family history of cancer, they are not at risk. This misconception may lead to a false sense of security and reluctance to get vaccinated.

Socioeconomic status: There is a misconception among some patients that the HPV vaccine is only meant for those from lower socioeconomic backgrounds (78 responses). This stigma may contribute to vaccine hesitancy among other demographics.

These insights, gathered from doctors' experiences and the number of responses per myth, underscore the importance of addressing misinformation and providing accurate education about cervical cancer, HPV, and the benefits of vaccination to patients.

Insights on Improving Information Delivery about Cervical Cancer and HPV Vaccine

Doctors provided valuable suggestions for enhancing the delivery of information about cervical cancer and the HPV vaccine to patients (→Fig. 5).

Informative videos: Patients expressed a preference for informative videos (242 responses) to learn about cervical cancer and the HPV vaccine.

Posters in clinics: Posters displayed in clinics (261 responses) serve as visual aids to reinforce information about cervical cancer and the HPV vaccine during their clinic visits.

Social media: Social media platforms (258 responses) provide a widespread and accessible medium for disseminating information about cervical cancer and the HPV vaccine.

Recommendations by trusted sources: Patients value recommendations by trusted doctors or key influencers (211 responses) who can provide reliable information and guidance about cervical cancer and the HPV vaccine.

Inclusion in government immunization campaign/program: Introducing the HPV vaccine through government initiatives (360 responses) can significantly improve accessibility and uptake among the population.

Handouts/Pamphlets: Handouts or pamphlets (168 responses) containing information about cervical cancer and the HPV vaccine can serve as takeaway materials for patients, reinforcing key messages and providing references for further reading.

Celebrity endorsements: Endorsements by celebrities (140 responses) can help raise awareness and destigmatize discussions about cervical cancer and the HPV vaccine.

Newspaper articles: Newspaper articles (183 responses) can reach a diverse audience and provide in-depth information about cervical cancer and the HPV vaccine.

These insights highlight the importance of utilizing diverse communication channels and trusted sources to effectively educate patients about cervical cancer and the HPV vaccine, ultimately promoting prevention and vaccination efforts (→Fig. 5).

Discussion

This study provides insights into the KAP concerning cervical cancer and HPV vaccination among obstetricians, gynecologists, and patients throughout India. A study conducted in Saudi Arabia revealed that while physicians demonstrated a generally positive outlook on the importance of the HPV vaccine, merely 16.5% reported routinely advising their patients to receive it.⁶ This contrasts with findings from an earlier study in Saudi Arabia where 50% of the physicians indicated they would recommend the vaccine.⁷ Furthermore, an Indian study on community and academic physicians revealed only 30% reported being favorable to recommend HPV vaccination to their patients.⁸ A comprehensive study in India, involving health care providers from 232 hospitals and 80 primary health centers, found that less than half of the respondents were recommending the HPV vaccine to their patients.⁹ Likewise, the findings of this study showed that there is a pressing need for continued medical education of health care providers and enhanced patient education and awareness regarding cervical cancer prevention and the HPV vaccine.⁹ The study reveals varying levels of awareness among patients as reported by the clinicians, with misconceptions and myths still being prevalent. It is imperative to address these issues through educational initiatives, awareness programs, improve the accessibility and affordability of

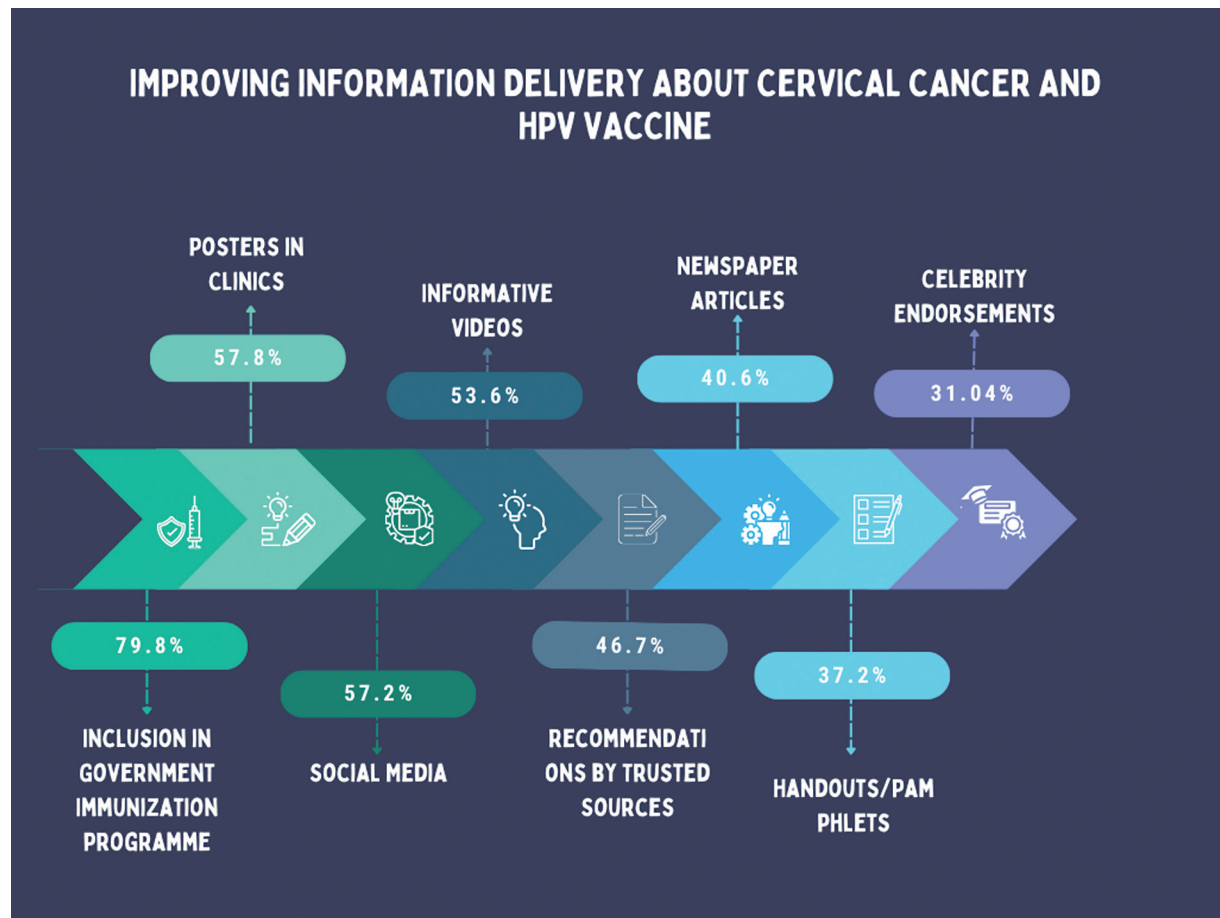


Fig. 5 Roadmap providing suggestions provided by participating health care providers regarding potential ways to improve cervical cancer awareness among patients and the community.

HPV vaccines, and utilize health care professionals to disseminate accurate information. This study underscores the crucial role of effective communication between health care providers and patients, emphasizing that the clarity, conciseness, and persuasiveness of information improves as health care providers' knowledge about HPV and its vaccine increases. Furthermore, the study points out that verbal interactions are currently the predominant form of patient education. Nevertheless, there is also potential to utilize digital tools, social media, and visual aids like videos and posters to expand reach and reinforce essential messages, as demonstrated by various global studies.^{10–13}

The disparities in vaccine availability and administration rates across health care facilities highlight the need for targeted interventions to improve accessibility and uptake. Integrating the HPV vaccine into government immunization campaigns and ensuring its availability at all clinics can help bridge these gaps and increase coverage among eligible populations. Success stories from the Indian states of Punjab and Sikkim, where high vaccination rates were attained, provide guidance for other areas.¹⁴

Limitations

This is a cross-sectional study that could not allow for assessment of the causal relationships between physicians'

knowledge or attitude and the HPV vaccination prescriptions. Our study relied on self-reported data from self-administered questionnaires that could be liable to recall bias, Hawthorne effect, and social desirability issues. The convenience sample of obstetrician-gynecologist clinicians from the FOGSI network could introduce selection bias. The selected sample may not be representative of the entire country due to relatively modest number of responses.

Conclusion

Clinicians have adequate knowledge toward cervical cancer and its prevention with HPV vaccination, however, it is imperative to refine the educational materials, strengthen communication channels, continued medical education of health care providers, and collaboration with stakeholders at various levels to drive awareness and acceptance. By working toward these objectives, we can strive to reduce the burden of cervical cancer and improve the overall health outcomes of women across the country.

Authors' Contributions

The Conceptualization Of The Manuscript Was Carried Out By P.G. And J.T. Data Collection Involved P.G., J.T., V.A., R.J., S.S.C., And R.S. The Study Logistics And Resources Were Managed By J.T., V.A., R.J., S.S.C., And R.S. Writing The

Manuscript Was Undertaken By P.G. And A.G. Visualization And Analysis Were Performed By A.G. And P.G. The Manuscript Was Reviewed By J.T., V.A., R.J., S.S.C., R.S., P.G., And A.G. Finally, A.G. And P.G. Were Responsible For Manuscript Preparation For Submission And Formatting.

Conflict of Interest

None declared.

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