

CHAPTER 2

PROTECTING AGAINST HPV-RELATED DISEASES: THE ROLE OF VACCINATION IN PREVENTING CERVICAL CANCER AND GENITAL WARTS

Prof. Dr. Asha Sreenivasan¹

¹HOD Dept of Obstetrical and Gynaecological Nursing, Bombay Hospital College of Nursing, Indore, Madhya Pradesh, India.

INTRODUCTION

Human Papillomavirus (HPV) is a common sexually transmitted infection that can cause cervical cancer, as well as other cancers and genital warts. While most HPV infections resolve on their own without causing any health problems, some strains of the virus can lead to serious conditions such as cervical cancer, genital warts, and other cancers affecting the genitals, anus, mouth, and throat. According to the World Health Organization (WHO), HPV is responsible for approximately 528,000 cases of cervical cancer and 266,000 deaths worldwide each year [1]. However, HPV vaccination has been proven to be a safe and effective way to prevent HPV-related diseases.

THE ROLE OF VACCINATION

Vaccination against HPV is a critical tool in preventing these potentially life-threatening conditions. HPV vaccination plays a crucial role in preventing HPV-related diseases, including cervical cancer, genital warts, and other cancers affecting the genitals, anus, mouth, and throat. Approved HPV vaccines protect against the most common high-risk HPV strains that cause cancer, as well as some low-risk strains that cause genital warts. The vaccines are most effective when administered before an individual becomes sexually active, ideally during adolescence.

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Prevention of Cervical Cancer and other HPV-Related Cancers

Cervical cancer is primarily caused by persistent infection with high-risk HPV types, particularly HPV 16 and 18. HPV vaccines, such as Gardasil and Cervarix, target these high-risk strains, offering robust protection against HPV infections that can lead to cervical cancer. Studies have shown that HPV vaccination significantly reduces the incidence of precancerous lesions and cervical cancer itself among vaccinated populations.

For instance, a systematic review published in *The Lancet* in 2018 concluded that HPV vaccination programs have resulted in a dramatic decrease in HPV infections and related cervical abnormalities in countries with high vaccine coverage. This underscores the vaccine's role in preventing cervical cancer by interrupting the transmission of high-risk HPV strains.

Prevention of Genital Warts and Other HPV-Related Diseases

In addition to cervical cancer, HPV vaccines provide protection against other HPV-related diseases, such as genital warts caused by low-risk HPV types (e.g., HPV 6 and 11). Genital warts are a common sexually transmitted infection that can cause discomfort and affect quality of life. Vaccination helps reduce the burden of genital warts and related healthcare costs.

VACCINE EFFECTIVENESS AND SAFETY

HPV vaccines have been shown to be safe and effective in preventing human papillomavirus infections and related diseases ¹. Since their introduction in 2006, over 270 million doses of HPV vaccines have been distributed, and the vaccines have been found to be extremely safe, with no serious safety concerns identified

Extensive research supports the effectiveness and safety of HPV vaccines. Clinical trials have demonstrated high levels of protection against HPV infections and related diseases. Additionally, numerous studies and global monitoring efforts have consistently affirmed the safety profile of HPV vaccines, with no evidence linking them to serious long-term health problems.

HPV vaccines have undergone extensive safety testing and have been found to be safe, with the benefits of vaccination far outweighing the potential risks. The most common side effects of HPV vaccines are mild and include pain, redness, or swelling in the arm where the shot was given. Fainting (syncope) can occur after any medical procedure, including vaccination, and is more common in adolescents.

The HPV vaccine works extremely well in preventing HPV infections and related diseases. In the 10 years after the vaccine was recommended in 2006 in the United States, quadrivalent type HPV infections decreased by 86% in female teens aged 14 to 19 years and 71% in women in their early 20s. The vaccine has also been shown to reduce the risk of genital warts and cervical precancers

DURATION OF PROTECTION

Studies have found that HPV vaccines offer long-lasting protection against HPV infection and disease, with no evidence of protection decreasing over time [2].

GLOBAL IMPACT AND VACCINATION PROGRAMS

Many countries have implemented HPV vaccination programs as part of their routine immunization schedules for adolescents. These programs aim to achieve high vaccination coverage to maximize population-level protection against HPV-related diseases. Vaccination rates can vary widely across regions due to factors such as healthcare access, awareness, and cultural beliefs. Despite the benefits of HPV vaccination, many countries have low vaccination rates. In the United States, for example, only 63% of girls and 50% of boys aged 13-17 had received the recommended three doses of the HPV vaccine in 2020 [3]. In low- and middle-income countries, access to the HPV vaccine is often limited due to cost and availability [4].

IMPACT ON POPULATION HEALTH AND HEALTHCARE SYSTEMS

The widespread implementation of HPV vaccination programs has had a significant impact on population health. Countries with high vaccination coverage have observed declines in HPV infections, cervical abnormalities, and related cancers. This not only improves individual health outcomes but also reduces the economic burden on healthcare systems by decreasing the need for diagnostic and treatment services for HPV-related conditions.

ADDRESSING MISCONCEPTIONS AND CHALLENGES

Despite the proven benefits, HPV vaccination programs face challenges such as misinformation and vaccine hesitancy. Concerns about safety, lack of awareness about HPV and its consequences, and cultural or religious beliefs are among the reasons some individuals or parents choose not to vaccinate. The vaccine has been shown to reduce the risk of cervical, vulvar, vaginal, and anal cancers, as well as genital warts [5]. A study published in the *Journal of Clinical Oncology* found that the HPV vaccine reduced the risk of cervical cancer by 93% in girls who received the vaccine before age 17 [6]. Vaccine hesitancy, misinformation, and access barriers are among the factors that contribute to suboptimal vaccine uptake in some regions. Efforts to address these challenges include public education campaigns, healthcare provider training, and improving access to vaccination services.

RECOMMENDATIONS AND FUTURE DIRECTIONS

Health authorities worldwide, including the World Health Organization (WHO), strongly recommend HPV vaccination for adolescents as part of a comprehensive strategy to reduce the burden of HPV-related diseases. Efforts to improve vaccine acceptance include education campaigns targeting healthcare providers, parents, and adolescents themselves.

Moving forward, Continued efforts are needed to expand HPV vaccination coverage globally, particularly in low- and middle-income countries where the burden of cervical cancer and HPV-related diseases is disproportionately high. Integrating HPV vaccination into national immunization programs and ensuring equitable access to vaccines are crucial steps toward achieving global health goals related to HPV prevention.

CONCLUSION

In conclusion, HPV vaccination is a powerful tool in preventing cervical cancer, genital warts, and other HPV-related cancers. It is safe, effective, and crucial for public health efforts worldwide. By increasing awareness, addressing misconceptions, and expanding access to vaccination, we can further reduce the global burden of HPV-related diseases and save lives.

Efforts to increase HPV vaccination rates are essential to preventing cervical cancer and other HPV-related diseases. Healthcare providers, governments, and public health organizations must work together to educate the public about the importance of HPV vaccination and improve access to the vaccine.

REFERENCES

- [1] Ferlay J, Soerjomataram I, Ervik M, et al. GLOBOCAN 2012 v1. 1, Cancer Incidence and Mortality Worldwide: *IARC Cancer Base* No. 11. 2012. 24/06/15.
- [2] Centers for Disease Control and Prevention (2022). HPV Vaccine Safety and Effectiveness.
- [3] Centers for Disease Control and Prevention (2020). HPV Vaccination Coverage.
- [4] World Health Organization (2020). HPV Vaccine Availability and Uptake.
- [5] National Cancer Institute (2020). HPV Vaccine.
- [6] Drolet, M., et al., (2019). Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: a systematic review and meta-analysis. *Journal of Clinical Oncology*, 37(22), 2043-2052.
- [7] Brisson M, et al., (2016) Population-level impact, herd immunity, and elimination after human papillomavirus vaccination: a systematic review and meta-analysis of predictions from transmission-dynamic models. *Lancet Public Health*; 1(1):e8-e17.
- [8] Markowitz LE, et al., (2013) Reduction in human papillomavirus (HPV) prevalence among young women following HPV vaccine introduction in the United States, National Health and Nutrition Examination Surveys, 2003-2010. *J Infect Dis*; 208 (3): 385-393.