Cervical Cancer

HPV Vaccination as a Mode of Cervical Cancer Prevention in Pakistan

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Introduction

In Pakistan, cervical cancer continues to be a challenge. About 68.6 million women over the age of 15 are at risk of developing cervical cancer, with the annual number of cases being over 5,000. Of these, more than 3,000 women lose their lives, making cervical cancer the third leading cause of cancer-related deaths in women of the reproductive age group in Pakistan. In the country, 88% of cervical cancer cases are due to human papillomavirus (HPV) serotypes 16 and 18, as reported by the International Agency for Research on Cancer.[1]

HPV is a nonenveloped DNA virus belonging to the *Papillomaviridae* family, with over a hundred different serotypes. Of which, 15 to 20 are oncogenic, with 16 and 18 being the most common. HPV is transmitted via sexual activity. It is found that 75% of all sexually active adults are estimated to be positive for at least one HPV serotype. However, most of these infections have spontaneous resolution with only less than 1% progressing to cancer.[2]

This progression can be reduced by regular screening via pap smears. The developed world has seen a significant decline in cervical cancer mortality since screening through pap smears introduced to the population. Unfortunately, in developing countries like Pakistan, the uptake of pap smears is very limited, estimated at one instance to be as low as 2%.[3]

In such circumstances, where pap smears are already difficult to conduct and have low uptake, HPV vaccinations become even more crucial for cervical cancer prevention. Two globally licensed HPV vaccines have been introduced in Pakistan: a quadrivalent vaccine Gardasil (marketed by Merck, Pakistan) and a bivalent vaccine Cervarix (marketed by GlaxoSmithKline, Pakistan). Gardasil is protective against the HPV serotypes 6, 11, 16, and 18, providing protection against both cervical cancer and genital warts. On the other hand, Cervarix is effective against serotypes 16 and 18, thereby protecting only against cervical cancer. It is important to note that both these vaccines work prophylactically and do not have any effect on pre-existing infections.[2]

Despite their introduction in Pakistan, there is a dearth of awareness regarding these vaccines and a low uptake in the general population. One study done in women of the reproductive age group at a tertiary care center in Karachi estimated the awareness of HPV vaccines to be as low as 20% and their uptake to be less than 10%.[4]

Exploring Reasons for Lack of Awareness and Uptake

One of the major reasons for poor uptake of the HPV vaccine is the lack of affordability. The Cervarix vaccine by GlaxoSmithKline costs around 5,000 PKR (US$ 22) in Pakistan, which the majority of the general population cannot afford. Pakistan's neighboring country, India, was faced with a similar issue until 2022, when the Serum Institute of India, in collaboration with the Indian government, launched the country's first locally manufactured HPV vaccine. The quadrivalent vaccine, Cervavac, protects against the four HPV serotypes like Gardasil and costs ten times less than the previously available vaccines. This will not only make the vaccine more affordable but also more accessible as it can be produced locally in large quantities, thereby providing greater coverage to the population. Meanwhile, other South Asian countries like Bhutan, Thailand, Sri Lanka, Maldives, and Bangladesh have launched national HPV vaccination programs for their female population.[5] Unfortunately, Pakistan does not have a national HPV vaccination program, does not manufacture its own vaccines, and also lacks such government backed initiatives to subsidize the HPV vaccines available. In addition to this, the availability of

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Cervarix and Gardasil continue to be limited in most parts of the country despite their introduction 3 to 4 years ago.[6]

Another barrier to HPV vaccination in the general population is poor awareness and education about the topic. This arises from cultural taboos associated with discussions around sexual health, activities, and diseases. There is a hesitance to address these issues in the public sphere that further contributes to this lack of awareness, perpetuating a vicious cycle.

Possible Solutions and Recommendations

A careful approach should, therefore, be adopted in making the masses more receptive to the discussion around cervical cancer and HPV vaccination. Nationwide awareness programs backed by the government should be launched to educate the population on cervical cancer and its prevention. The target audience for this should include parents, caregivers, local stakeholders, religious leaders, and members of the civil society.

Keeping in mind the cultural taboo around this issue, it may be beneficial to introduce the vaccine as a measure to prevent cervical cancer rather than sexual disease transmission. This approach is important as the vaccine is recommended to be administered to young girls starting from age 9.[2] Parents of these young girls should therefore be counseled and educated on the importance of early administration of this vaccine.

Healthcare providers also have an important role to play here. Previous studies have shown that patients who are recommended the vaccine by their doctors are more likely to opt for vaccination, as doctors are seen as reliable and trusted figures by the masses. Therefore, it is crucial that these awareness campaigns train healthcare providers to encourage young girls and their parents to get them vaccinated against HPV.

As the recommended age for HPV vaccine administration is 9 to 26 years, and it is preferred to give it as early as possible, these nationwide campaigns should also involve school settings, as was done previously in Pakistan for the typhoid vaccine. The typhoid conjugate vaccine was introduced into the country's routine immunization program in 2019. In the last 3 years, the typhoid vaccination drives carried out in schools, door to door campaigns, and at local healthcare facilities have managed to administer the vaccine to more than 30 million children, with over 12 million being vaccinated in the first 2 weeks alone.[7,8] These successful vaccination campaigns can, therefore, be used as templates to design campaigns for HPV vaccination.

There is also a need to address the lack of availability of HPV vaccines in Pakistan and make them accessible and affordable to the public. Their availability needs to be ensured in local clinics, community health centers, hospitals, and school-based clinics. This can be modeled around similar HPV vaccination programs running successfully in Bhutan, Indonesia, India, Malaysia, and Bangladesh. Bhutan was the first of the low- and middle-income countries to initiate a national HPV vaccination program in 2010 and was able to achieve above 90% coverage with its successful execution.[9] Australia, on the other hand, is projected to achieve cervical cancer elimination by 2035 by providing free vaccines to the target population through its National Immunization Program.[6]

There is much to learn from these countries for Pakistan. Similar measures need to be taken to provide these vaccines free of cost or at subsidized rates to the population that cannot afford the costly vaccines available. One way this can be achieved is by importing Cervavac from India, which costs one-tenth of the previously available vaccines, Cervarix and Gardasil. For their sustainable provision, HPV vaccines can also be introduced into the Expanded Program of Immunization, which works at the district level in collaboration with civil society organizations in Pakistan.

Conclusion

To meet the World Health Organization's target of cervical cancer elimination by 2030 and achieve 90% vaccination of girls by the age of 15, it is imperative that we take strong initiatives. We must ensure the availability, affordability, and accessibility of the HPV vaccine for our population while working to eliminate barriers that contribute to vaccine hesitancy. Vaccination alone is not sufficient in preventing cervical cancer and measures to promote screening via pap smear should be coupled with these efforts. Although difficult, it is a challenge we must collectively take on to work toward a cervical cancer-free future.

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Conflict of Interest
None declared.

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