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COMMENTARY

Males' Access to Human Papillomavirus Vaccination in Resource-Limited Settings

Wubishet Gezimu[1], Firomsa Bekele[2], Teshome Bekana[3], Ababo Demeke[4]

[1]Department of Nursing, College of Health Science, Mattu University, Mattu, Ethiopia; [2]Department of Pharmacy, Institute of Health Science, Wallaga University, Nekemte, Ethiopia; [3]Department of Medical Laboratory Sciences, College of Health Science, Mattu University, Mattu, Ethiopia; [4]Department of Nursing, College of Medical and Health Science, Dilla University, Dilla, Ethiopia

Correspondence: Wubishet Gezimu, Department of Nursing, College of Health Science, Mattu University, P.O. Box: 318, Mattu, Ethiopia, Tel +251-0916701966, Email wubishet151@gmail.com

Abstract: The human papillomavirus is known to cause cervical and anogenital cancer and benign anogenital and cutaneous warts. Both males and females can contract the virus during sexual intercourse and skin-to-skin contact. Communities in low- and middle-income countries, including Africa, are particularly suffering from human papillomavirus-related diseases, mainly cervical cancer. Vaccination is the most economical and efficient prevention strategy to control human papillomavirus-related diseases. Undoubtedly, to control all types of human papillomavirus-related morbidity and mortality, the entire at-risk, sexually active population needs to be vaccinated regardless of their sex. However, the vaccination program, particularly in Africa, the world's most resource-limited region, is habitually limited to the female population, considering only the burden of cervical cancer. We think that it is impossible to fully mitigate the human papillomavirus infection by vaccinating only the female population, while males can carry and pass the virus. In addition, marginalizing males from this program seems to violate gender inequality and their sexual and reproductive health rights. Hence, we voice the need for global and local governments to consider and customize human papillomavirus vaccination programs for the male population. Also, it is better to consider the male population in different research studies regarding human papillomavirus-related malignant and benign conditions.

Keywords: HPV, vaccination, male, resource-limited settings

Commentary

The human papillomavirus (HPV) is a DNA virus that causes infection of human epithelial cells, including the genital and oral mucosal epithelia.[1] Of the more than 200 types of HPV, the majority invade the cutaneous epithelium, whereas around 40 affect the mucus membranes.[2]

An individual can acquire the virus during sexual (oral, anal, vaginal, and penile) intercourse and through skin-to-skin contact. Thus, all sexually active men and women are at risk for the HPV infection.[2]

The HPV types are categorized into high-risk and low-risk groups. The high-risk types are mostly oncogenic, and the low-risk types cause benign conditions like anal or genital warts. The high-risk HPV types include types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59.[3] About two-thirds of cervical cancer cases are related to types 16 and 18. Independently, type 16 covers half of the causes of cervical cancer.[4] The oncogenic HPV types mostly cause cervical cancer.[5] HPV types 16 and 18 cover 70% of all global cervical cancer cases.[6]

Various pieces of evidence show that HPV infections occur more frequently in men than in women.[7–9] The lifetime probability of HPV infection in sexually active males and females is 90% and 80%, respectively.[10] The world's one-third of sexually active men are infected by any type of HPV, whereas one-fifth are infected with one or more high-risk HPV types. Regionally, the highest prevalence (37%) was observed in Sub-Saharan Africa, and the lowest (15%) was seen in Eastern and South-Eastern Asia.[11]

Globally, HPV causes 5% of all cancers. Annually, about 625,600 females and 69,400 males develop cancer related to HPV.[12] HPV is the primary cause of cervical cancer, the world's most fatal and fourth-most diagnosed cancer, among the

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female population.[2] Sub-Saharan Africa, a resource-limited region, carries a 90% burden of cervical cancer.[12] Similar to females, males in sub-Saharan Africa are more affected by HPV infection than males in other regions.[13] According to evidence, HPV can infect about 19% of the penis, 13% of the scrotum, 8% of the perineal area, and 21% of any male site.[14]

Other HPV-related cancers induced by the virus include anal cancer, vulva cancer, vaginal cancer, penile cancer, head and neck cancer, and oropharyngeal cancer.[6] HPV types 16 and 18 are responsible for nearly one-third of penile cancers. Likewise, type 16 is associated with tonsillar and oropharyngeal cancer.[15]

Anogenital warts (AGW) are another condition caused by HPV. The majority of AGW is caused by the low-risk HPV types, particularly types 6 and 11. All sexually active adolescents and young males and females are at risk for this condition. Globally, around 160 to 289 per 100,000 males and females contract AGW annually. The incidence among males was 103 to 168 per 100,000 males.[16]

Fortunately, HPV infection is a vaccine-preventable condition.[2] The HPV vaccine is effective against all types of HPV-related diseases, including cancer and genital warts.[17,18] Regarding its types, currently, there are four approved HPV vaccines distributed to the global market. These are: Cervarix and Cecolin (the two bivalent vaccines), Gardasil (the 4-valent recombinant vaccine), and Gardasil-9 (the 9-valent vaccines).[19,20] Vaccinating early adolescent girls and boys (9–14 years) was found to be a cost-effective and efficient strategy to prevent cervical cancer in resource-limited settings.[18,21] Early male vaccination against HPV is effective in the prevention of anogenital warts, penile, and anorectal cancer.[22]

It is believed that female-only vaccination with the HPV vaccine is inadequate to eradicate HPV infection and its consequences.[23] Vaccinating both genders has a crucial role in the elimination of HPV-related cancers.[24] Male vaccination against the HPV vaccine has various advantages over vaccinating only females. For instance, men, especially homosexuals, cannot be protected from anal cancer if they are not vaccinated. In addition, pan-gender vaccination against HPV has a substantial effect on the control of oropharyngeal cancer.[25]

However, the World Health Organization (WHO) targets the uptake of the HPV vaccine only by girls, considering that girls are more likely to be affected by HPV-related cancer, particularly cervical cancer.[26] The WHO planned to achieve 90% HPV vaccine uptake by girls before the age of 15 by 2030.[27] However, there is low coverage of male vaccination.[28] Also there is no clear-cut target for male vaccination against HPV. In 2019, only 33 countries practiced the HPV vaccination program for both sexes out of 107 countries that endorsed the same program. According to evidence, only 4% of males globally were vaccinated against HPV.[29]

Male vaccination against HPV was first started in Australia and then practiced on other continents, including Europe, South America, and North America. However, the status of male vaccination against HPV in resource-limited settings, including the African continent, is unclear so far.[29] Globally, increased access to the HPV vaccine decreased the risk of being infected by HPV in the female population; however, vaccination against males has not received clear attention.[30]

According to a systematic review, the factors influencing males' HPV vaccine utilization were categorized into three categories. These include predisposing (socio-demographic and social structure and beliefs) factors, enabling (family and community-related) factors, and need (perceived and evaluated) factors. For instance, age is a common socio-demographic factor that affects male vaccination.[31] Empirically, the HPV vaccine's effectiveness decreases with men's increased age beyond 26.[28] Moreover, having a chronic illness, hearing about HPV, and having a family history of cervical cancer are also factors determining the uptake of the HPV vaccine.[32] Lack of awareness about the HPV vaccine and perceived risk of contracting HPV were evidenced as user-related barriers to vaccination uptake by males.[19,33] Knowledge deficits and hesitancy were also found to be barriers to vaccine uptake.[30] Another challenge for male vaccination is the fear of vaccine shortages for females, the global primary target.[20]

According to the 2030 global vaccination agenda, "extend the benefits of vaccines to everyone, everywhere". and identify vaccination "coverage and equity" as the priority strategy.[34] Everyone who needs a vaccine has the right to get it, regardless of their background. Targeting the HPV vaccination to only females cannot preserve suboptimal vaccine utilization, assert the protection of males, or be gender-neutral. In economically advanced regions like European Union (EU) countries, the HPV vaccine is equally accessible to both sexes.[20] However, in resource-limited settings where HPV-related burdens are high, there is poor access to male vaccination.

Conclusion

Numerous studies show that the male population is more infected by HPV than the female population. Although the HPV vaccine is effective and recommended for both male and female populations, poor male vaccination practices have been observed, particularly in resource-limited settings. Hence, it is better to consider and strengthen the custom of pan-gender vaccination in future settings. Further, scientific inquiries aimed at identifying the benefits of male vaccination against HPV should be strengthened in resource-limited settings.

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