

COMMENT

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Shifting HPV-cancer burden: from cervical cancer to oropharyngeal cancer

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Abstract

Purpose This study aims to explore the contrasting trends of decreasing cervical cancer (CC) rates among women and increasing oropharyngeal cancer (OPC) rates among men.

Methods The analysis examines public health initiatives, including CC screening programs and HPV vaccination efforts, alongside the changing epidemiology of OPC.

Results Declines in CC incidence are attributed to improved screening and HPV vaccination. Conversely, OPC rates are rising among men, linked primarily to HPV infection and lack of established screening programs. Data indicate a higher OPC burden in men compared to CC in women in several countries.

Conclusion Addressing the rising OPC trend requires a multifaceted approach, including gender-neutral HPV vaccination, the development of OPC screening methods, and increased public awareness. Sustained efforts in HPV-related cancer prevention are crucial to mitigate these opposing trends.

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Text box 1. Contributions to the literature

- Highlights the contrasting trends of declining cervical cancer rates among women and rising oropharyngeal cancer rates among men, emphasizing the gender-specific impacts of HPV-related cancers.
- Contextualizes the global burden of oropharyngeal cancer in men, showing its surpassing of cervical cancer incidence in specific countries and the underlying role of HPV infection.
- Identifies gaps in public health strategies, such as the absence of screening protocols for oropharyngeal cancer and lower HPV vaccination rates among boys.
- Advocates for gender-neutral HPV vaccination, awareness campaigns, and the development of screening methods to mitigate the growing oropharyngeal cancer burden.

Introduction

Cancer incidence rates are dynamic, influenced by a myriad of factors including public health initiatives, screening practices, vaccination programs, and lifestyle changes [1]. In recent years, a notable decline in cervical cancer (CC) rates among women has been observed globally, largely due to CC screening and human papillomavirus (HPV) vaccination [2]. However, juxtaposed against this positive trend is the unsettling increase in oropharyngeal cancer (OPC) among men [3]. This commentary explores the underlying causes of these opposing trends and highlights specific countries in which the burden of OPC in men has surpassed that of CC in women.

Decline in CC rates among women

Enhanced screening programs, such as Pap smear and HPV DNA testing, have played a crucial role in early detection and treatment of pre-cancerous lesions, contributing to the decline in CC incidence and preventing progression to invasive cancer [2]. Further, studies have demonstrated that HPV vaccination not only reduces the prevalence of oncogenic genotypes but leads to a substantial decrease in cervical intraepithelial neoplasia, the precursor to CC [2]. Public health campaigns and educational initiatives have increased awareness and uptake of screening and vaccination, further bolstering these efforts [2].

Rising OPC rates among men

In contrast to the declining CC rates, OPC rates are on the rise among men [3]. This increase is predominantly linked to HPV infection [3]. Traditionally associated with tobacco and alcohol use, the epidemiology of OPC has shifted with HPV emerging as a significant etiological factor [4]. A recent publication highlighted rising incidence of OPC among men worldwide, with significant increases observed in 19 countries with 13 of these countries showing annual increases exceeding 3%.⁶ Further, this work examined age-specific incidence changes and noted that OPC rates have risen notably among men aged over 50 [5].

This work complements data from the U.S. and the U.K. that found higher rates of OPC in men than rates of CC in women [6]. Further, data from the International Agency for Research on Cancer has found higher incidence rates of OPC in men, compared to CC rates, in France, Switzerland, and Slovenia [7]. Several factors contribute to this rising trend. First, men do not mount a strong immune response after HPV infection, which results in their susceptibility to HPV throughout their life course [8]. Moreover, changes in sexual behaviors have led to higher transmission rates of oral HPV among men [3].

Unlike CC, there is no established screening program for OPC, leading to more advanced disease and poorer prognoses [3]. Further, although HPV vaccination has been shown efficacious for both sexes, vaccination rates among boys have historically lagged those of girls [9]. This discrepancy can be attributed to initial vaccine rollouts primarily targeting CC prevention [2], leading to lower awareness and acceptance of vaccination for boys. Currently, data from the WHO show that 75 countries include both sexes as part of their HPV National Immunization Program with 69 countries including only females.

Implications for public health

Recent data emphasize the need for greater awareness and public health efforts to address the rising OPC rates, particularly as CC continues to decline with expanded screening. While it may take years for OPC to surpass CC in some regions, especially where CC remains high, attention to OPC is critical. Sustaining CC screening and increasing vaccination efforts are key to addressing both challenges and reducing overall HPV-related cancers. Several key actions are necessary.

1. Promoting Gender-Neutral Vaccination:

Public health campaigns should emphasize the importance of HPV vaccination for both boys and girls. Educational initiatives should address misconceptions and promote vaccine uptake to prevent HPV-related cancers. A gender-neutral approach can reduce the virus' transmission for all sexes and is crucial to stem the rising tide of such cancer in the future.

2. Developing Screening Protocols: Research is needed to develop effective screening methods for early detection of OPC. Identifying biomarkers and leveraging advanced imaging techniques could facilitate earlier diagnoses and improve outcomes.**3. Raising Awareness:** Increased awareness about the risk factors and symptoms of OPC can lead to earlier presentation and diagnosis. Educational programs

targeting both healthcare providers and the public are crucial.

4. **Research and Surveillance:** Ongoing surveillance of cancer trends and further research into the natural history of OPC will provide valuable insights to guide prevention and treatment strategies.

Conclusion

The contrasting trends of decreasing CC rates among women and rising OPC rates among men underscore the complex interplay of public health initiatives, vaccination programs, and epidemiological factors. By adopting a multi-faceted approach that includes increasing HPV vaccination rates among boys, developing effective screening protocols, and enhancing public awareness, we can work towards stemming the upward trend of OPC.

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Author contributions

CV drafted the manuscript, with MF providing feedback and edits on the original and subsequent drafts. AG and EM contributed feedback on later drafts. All authors reviewed and approved the final manuscript.

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Data availability

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Declarations

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Ethics approval and consent to participate were not required for this study.

Consent for publication

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Competing interests

MF is an employee of Merck Sharp & Dohme LLC, a subsidiary of Merck & Co., Inc., Rahway, New Jersey, USA and receives stock as part of long-term incentive. EM is an employee of MSD France, Puteaux, France. AG reports grants and consulting fees from MSD during the conduct of the study.

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