

The Rise in HPV Related Head and Neck Cancer: A Concerning Knowledge Disparity and Need for Focused Intervention

Jad Zeitouni¹, Arif Dauod² and Yusuf Dundar^{3*}

¹School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, USA.

²Department of Pathology, School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, USA.

³Department of Otolaryngology-Head and Neck Surgery, Texas Tech University Health Sciences Center, Lubbock, TX, USA

***Corresponding Author:** Yusuf Dundar, Department of Otolaryngology-Head and Neck Surgery, Texas Tech University Health Sciences Center, 3601 4th Street, STOP 8315, Lubbock, TX 79430-8315, USA; E-mail: yusuf.dundar@ttuhsc.edu

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Abstract

Human Papillomavirus (HPV) is one of the US's most widespread sexually transmitted diseases. HPV is associated with several cancers, including cervical and oropharyngeal (OPC). Interventions like the HPV vaccine and the Papanicolaou test have aided in decreasing the rates of cervical cancer. However, HPV-associated OPC has been on the rise in the US and is estimated to become one of the most prevalent cancers in men by 2045. Therefore, a multi-pronged approach must be adopted to combat this concerning trend. This approach should increase HPV vaccination, standardized screening for OPC, and public awareness on the association of HPV and OPC.

Keywords: HPV; Oropharyngeal cancer; HPV vaccine

Introduction

Human Papillomavirus (HPV) is the most prevalent sexually transmitted illness in the United States. Some strains of HPV are associated with various cancers. The most prevalent HPV-associated cancer is cervical cancer [1]. Several measures were implemented to combat the rise of HPV-associated cervical cancer, including the Papanicolaou test or “Pap smear” and the HPV vaccine (approved in 2006). These interventions have proven successful in combatting the rise in cervical cancer [1].

HPV, however, is also associated with several other cancers, including anal, vaginal, and oropharyngeal cancer. Many of the initial measures were geared towards combatting cervical cancer. Furthermore, the HPV vaccine was initially recommended for girls only in 2006 (the recommendation was adjusted to include boys in 2009). Intuitively, HPV-related cervical cancer rates have fallen in the US, but HPV-affiliated oropharyngeal cancer has risen [2,3].

Several factors are associated with this contrary trend. One, indeed, is the lack of standardized screening for oropharyngeal cancer [2]. Several other associated factors can also be attributed to this rise. Much of the literature confirms the presence and effect of these factors. However, it is also integral that we contextualize

these factors and advocate for a multi-pronged intervention to avoid a rapid rise and prevalence of oropharyngeal cancer. Here we discuss the various factors that attributed to this concerning rise and potential actions that can help mitigate this concerning rise.

Discussion

The rise of HPV-related cancer has been particularly prevalent in men. In 2017, of all HPV-related cancers in men, 80 percent were oropharyngeal cancer [2]. The rate of HPV-related oropharyngeal cancer in men was nearly five times the rate in women [2]. This stark difference points to a vulnerable population that requires intervention to combat this growing prevalence. Additionally, HPV related oropharyngeal cancer is predicted to be one of the most prevalent cancers in men by the year 2045 [4]. The survivability of HPV associated oropharyngeal cancer (three-year survivability of 82 percent) is better than non-HPV oropharyngeal cancer (three-year survivability of 57 percent) [5]. Despite the better survivability, HPV associated oropharyngeal cancer deaths will substantially increase as the rate of this cancer increases.

Non-Hispanic white men are at the greatest risk for HPV-associated oropharyngeal cancer, followed by Hispanic, Black, and Asian men [6]. One of the largest barriers to combatting this rise in

HPV-associated oropharyngeal cancer is the lack of widespread screening, especially in at-risk populations. White, Hispanic, and Black men all have a higher risk of developing HPV-associated oropharyngeal cancer than Asian men [6]. One study found that most of HPV oropharyngeal cancer deaths were in men, and the same study found that black men have the highest mortality rate to oropharyngeal cancer [6]. It may be even more challenging for patients with poor access to care to receive screening or seek a provider if they have concerning symptoms. This challenge necessitated a standardized and widespread screening process for oropharyngeal cancer in primary care. Just as a pap smear is recommended for sexually active women every year, however there is no standardized oropharyngeal cancer screening for sexually active men. Incorporating a screening program is essential, as men in the US are significantly under-vaccinated for HPV compared to women [7]. For example, 18-33-year-old males in the US have a vaccination rate of 35 percent even though FDA approved HPV vaccine up to 45 years old [8]. A low vaccination rate among this population may result in rising rates of HPV and, therefore, an increased risk of oropharyngeal cancer in the future. Additionally, the prevalence of HPV-associated oropharyngeal cancer is higher in middle-aged and elderly adults who were not eligible for the vaccine [9]. Our current vaccination rates are insufficient to quell the rise of HPV-associated oropharyngeal cancer for the next 25 years [10]. One of the primary interventions necessary to combat the rise of this cancer is increasing vaccination rates. While some policies like vaccine mandates positively affect vaccine rates, physician recommendation remains one of the most integral tools for increasing HPV vaccination rates [11].

While the association between HPV and cervical cancer has been well advertised since the approval of the HPV vaccine, the association of HPV with other cancers, including oropharyngeal cancers, is less known. One recent study looked at parental knowledge of HPV and the HPV vaccine. It found that a very low number of parents had even heard that HPV could cause oropharyngeal cancer or that the HPV vaccine helps protect against certain types of oropharyngeal cancers [12]. When looking at different gender and ethnic groups, the knowledge gap appears even more stark. For example, females were three times more likely to have known or heard of HPV than men in one study [13]. In the same study, Blacks and Hispanics were less likely to have heard of HPV than whites [13]. Lower vaccination rates among boys can be partly attributed to this knowledge gap. There has even been a decline in HPV vaccine knowledge among males and females since 2013 (with males having a more considerable decline) [14]. Additionally, other groups may have low knowledge of the association between oropharyngeal cancer and HPV. A study recently found that only 30 percent of respondents knew of the association between HPV and oropharyngeal cancer [15]. This lack of awareness is also present among college students, a population at risk for contracting HPV [16]. This knowledge

gap and lower vaccination rates among men highlight a concern that will only propel the growing HPV-associated oropharyngeal cancer rates.

There seem to be gaps in HPV vaccine policy that need revamping to include better and target adolescent males. One of the best examples is the HPV vaccine mandate in Virginia. This policy mandates the HPV vaccine, with various exceptions, only in girls [17]. Outdated policy is apparent in various areas across the country. Newer HPV vaccine policies, however, have better incorporated boys. For example, Rhode Island's HPV vaccine mandate was implemented in 2015 and is one of the most stringent policies in the country [17,18]. It mandates the HPV vaccine for boys and girls entering sixth grade. This mandate has proven effective and significantly improved male adolescent vaccination rates in the state [19]. Additionally, Rhode Island has one the highest HPV vaccination rates in the country [18]. Hawaii and Washington DC have implemented similar mandates, and both also have high vaccination rates in the country.

The rising rates of HPV-associated oropharyngeal cancer, especially among men, is cause for concern among providers across the US. Additionally, it could potentially become one of the most prevalent cancers in men by 2045 [4]. To combat or even impede this rise; a multi-pronged approach must be adopted by providers and policymakers alike. The first component of this approach is increasing provider recommendations of the vaccine. Provider recommendation is one of the strongest factors related to HPV vaccine acceptance. Increased provider recommendations should be part of a broader educational outreach strategy to better teach the public about HPV's association with oropharyngeal cancer. Public knowledge of this association will be vital to increase awareness and HPV vaccine acceptance. This will be particularly important in states with lower HPV vaccine acceptance (such as the south). Next, a standardized, widespread screening program for oropharyngeal cancer should be implemented in higher-risk groups, including men. Many adults were not vaccinated for HPV, and more widespread screening will be necessary for older adults who did not have the HPV vaccine available in their youth. Finally, HPV and HPV vaccine policies should be adjusted to better target both girls and boys. Some states have outdated policies that only apply to females, while others do not even have HPV vaccine policies. Providers must work with lawmakers to implement laws that are effective at quelling HPV rates in all populations.

Conclusion

HPV-associated oropharyngeal cancer rates have been growing in the United States while other HPV-associated cancers, namely cervical cancer, have been declining in the US. HPV-associated oropharyngeal cancer is estimated to be one of the most prevalent cancers in men in the next 20-25 years. A multi-pronged approach must be implemented to combat HPV infection and the rise of

oropharyngeal cancer effectively and wholly. This must include increasing provider recommendations of the HPV vaccine, educating the public on the association of HPV and oropharyngeal cancer, and updating HPV health policy to better cover the whole population.

Authors' Contribution

Conceptualization: JZ, AD, YD. Methodology: JZ, AD, YD. Project administration: JZ, AD, YD. Visualization: JZ, AD, YD. Writing – original draft: JZ, AD, YD. Writing – review & editing: YD.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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