Introduction and Objective

Head and Neck cancers account for 3% of cancer cases in the United States and result in 2% of the deaths caused by cancer in the United States. Head and Neck cancers encompass a number of diseases including cancers of the oral cavity, pharynx, larynx, nasal cavity, and salivary glands. Although there is a relatively low incidence of head and neck cancers overall, there are significant morbidity and mortality associated with these cancers. Morbidity may include disfigurement, mental distress, dry mouth, and hoarseness. The breadth of the impact of head and neck cancer makes its study valuable even though fewer patients are affected.

In Philadelphia, PA head and neck cancer rates are highest for white residents, while related mortality rates are highest for black residents. It is unclear how clinical risk factors including Human Papillomavirus (HPV) status and smoking status contribute to these disparities. The objective of this study is to determine what factors are associated with advanced head and neck cancers in a diverse sample of patients from a Philadelphia area hospital. It is our hypothesis that race will an independent risk factor for head and neck cancer mortality. The data collected may be utilized to improve services and screening in the Philadelphia catchment area.

Methods

Cancer registry data from Thomas Jefferson University was collected to obtain the clinical records for 922 head and neck cancer patients diagnosed with the disease between 2011 and 2015. The data was de-identified.

One patient of other race was removed from the analyses. Twenty cases of in-situ cancer were excluded from the analyses. Cancer was examined among the three primary racial groups in our data set including White, Black, and Asian.

Chi-square analysis was done to examine differences in categorical variables. Logistic and Cox Regression models were designed to examine associations with advanced stage disease and time to mortality. Covariates assessed included race, tumor stage, HPV status, smoking status, gender, and treatment type. All analysis was performed utilizing SAS analytical software.

Results

Our final sample included 901 patients (769 White, 96 Black, 36 Asian). In descriptive analysis, patients were more likely to be male (p = .0269). Positive HPV status was highest in white patients (p < .00001). Oral cancers were more prevalent among Asian patients (p = .0001). Oropharyngeal cancers were most common in white patients (p < .0001). Patients presenting at stage 4 were most likely to die from their cancer (p = .0002). Patients presenting with oral cancer were more likely to die from their cancer (p = .0654).

In multivariate analysis, time to death was shorter for those who were smokers (HR = 1.95, CI= 1.311-2.901) and those who were former smokers (HR= 2.94, CI= 1.949-2.387), compared to those who have never smoked. Positive HPV status was consistently protective, regardless of race (HR = .34, CI = .244-.481). No significant effects of race were observed in any of the multivariate analysis models.

Conclusions

This analysis strongly suggests that race is not independently associated with head and neck cancer associated mortality. Instead, this analysis suggests that modifiable risk factors including smoking status and Human Papillomavirus status are independently associated with head and neck cancer mortality.

These results then suggest that some risk factors for head and neck cancer mortality may be modified by educational and behavioral interventions. Based upon this data confirming that patients who present at a later stage are more likely to die from their cancer, patients may be screened more regularly to find cases before they progress to stage 4. Educational services may also be offered to encourage smoking cessation, and to inform those who do smoke to be aware of the possible signs and symptoms of head and neck cancers. Many smokers and users of other tobacco products may not be aware of the risks of head and neck cancer.

To further support these findings, additional research can be carried out following head and neck cancer mortality rates in patients as the rates of HPV vaccination continue to rise in an aging population. Additionally, moving forward, the cancer registry could benefit other studies by ensuring that each patient diagnosed with head and neck cancer is screened for an accurate HPV status. Not all patients in the current cancer registry are screened for their HPV status.

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References


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