SURVIVAL DISPARITIES IN SMOKING STATUS AND HPV-ASSOCIATED OROPHARYNGEAL AND CERVICAL CANCERS: AN ANALYSIS OF POPULATION-BASED FLORIDA CANCER REGISTRY (1981-2009)

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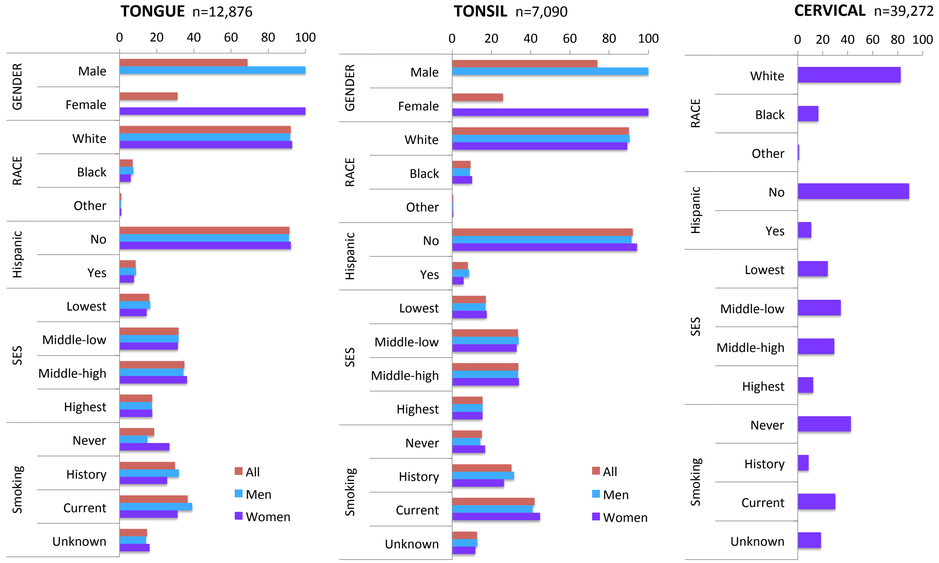
INTRODUCTION

- Smoking and Human Papillomaviruses (HPV) have been implicated in various cancers.
- Both smoking and persistent oncogenic HPV infection can result in oropharyngeal and cervical cancers.
- We aim to identify survival disparities between smoking status and HPV-associated oropharyngeal and cervical cancers in Florida as well as gender differences in survival between smoking status and HPV-associated cancers.

METHODS

- The Florida Cancer Data System (1981-2009) and US census were linked to explore median survival, survival rates, and prevalence of HPV-associated oropharyngeal and cervical cancers by smoking status in Floridian adults (≥18yrs).
- Survival time as the primary clinical endpoint was calculated as elapsed time from date of cancer diagnosis to date of death or last contact for alive patients.
- Multivariable Cox regression models for overall survival were used to calculate adjusted hazard ratio (AHR) and 95% confidence interval (95%CI) for smoking status.

Figure 1: Demographic Characteristics (n=59,238)



SES is determined from the US Census by neighborhood poverty status of patient's residence at the time of cancer diagnosis. Stratified by % households in neighborhood living below the poverty line: lowest (≥20 %), middle-low (≥10% and <20%), middle-high (≥5% and <10 %), or highest (<5%)

Table 1: Median Survival (95% CI)

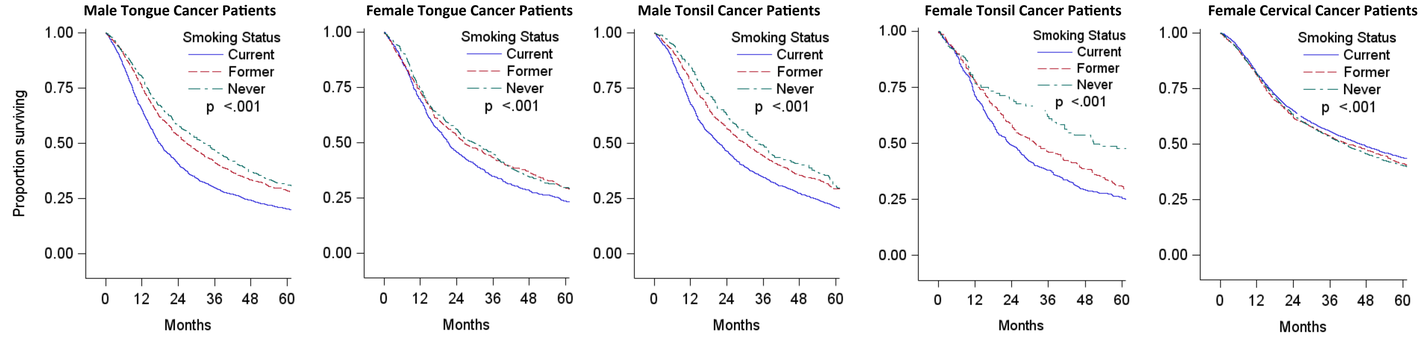
Cancer Site	Smoking Status		
Tongue	**Never**	**Former**	**Current**
All	2.7(2.4, 3.0)	2.3(2.1, 2.5)	1.6(1.5, 1.7)
Men	2.8(2.4, 3.2)	2.3(2.1, 2.5)	1.5(1.4, 1.6)
Women	2.6(2.2, 3.0)	2.2(2.0, 2.7)	1.8(1.7, 2.0)
Tonsil			
All	3.2(2.9, 3.9)	2.6(2.3, 2.8)	1.9(1.7, 2.0)
Men	2.9(2.4, 3.3)	2.5(2.3, 2.8)	1.8(1.6, 1.9)
Women	4.2(3.1, 6.6)	2.6(2.1, 3.4)	2.0(1.7, 2.3)
Cervical			
Women	3.4(3.2, 3.5)	3.5(3.1, 4.0)	3.8(3.6, 4.1)

Table 2: Adjusted Hazard Ratio (95% CI)

Cancer Site	Smoking Status	
Tongue	**Former**	**Current**
All	1.1 (1.1, 1.2)	1.5 (1.4, 1.6)
Men	1.1 (1.0, 1.2)	1.5 (1.3, 1.6)
Women	1.2 (1.2, 1.6)	1.5 (1.3, 1.6)
Tonsil		
All	1.2 (1.1, 1.4)	1.6 (1.4, 1.7)
Men	1.1 (1.0, 1.3)	1.5 (1.3, 1.7)
Women	1.4 (1.1, 1.7)	1.7 (1.4, 2.1)
Cervical		
Women	1.1 (1.0, 1.1)	1.1 (1.1, 1.2)

Never smoker was the reference group. Adjusted also with age, race, ethnicity, and SES.

Figure 2: Kaplan-Meier Overall Survival Curves by Smoking Status and Cancer Site



RESULTS

- Of 59,238 patients, 21.7% had tongue cancer, 12.0% tonsil, 66.3% cervical. Most tonsil (42%) and tongue (37%) cancer patients were current smokers.

Tongue Cancer

- Median survival time was 1.6yrs in current, 2.3yrs in former and 2.7yrs in non-smokers. Current (AHR=[1.5]) and former [1.1] smokers had worse survival than non-smokers.
- Among men, current [1.5] and former [1.1] smokers had worse survival than non-smokers.
- Among women, current [1.5] and former [1.2] smokers had worse survival than non-smokers.

Tonsil Cancer

- Median survival was the shortest in current-smokers (1.9yrs), followed by former (2.6yrs) and non-smokers (3.2yrs). Current [1.6] and former [1.2] smokers had worse survival.
- Among men, current [1.5] and former [1.1] smokers had worse survival than non-smokers.
- Among women, current [1.7] and former [1.4] smokers had worse survival than non-smokers.

Cervical Cancer

- Current smokers had slightly longer median survival (3.8yrs); former (3.5yrs) and non-smokers (3.4yrs) had similar survival.
- Current [1.1] and former [1.1] smokers had worse survival than non-smokers after adjustment.

CONCLUSION

- Current and former male and female smokers had worse HPV-associated tongue, tonsil, and cervical cancer survival.
- Such survival disparities highlight importance of anti-smoking and HPV prevention campaigns.
- These results may provide a foundation for targeted culturally competent, gender specific cancer screening and prevention programs and smoking cessation and HPV vaccination efforts.