

INTRODUCTION

Various socioeconomic factors have been associated with worse outcomes of locally advanced head and neck cancer. Underinsured patients and ethnic minorities exhibit significantly higher mortality rates, while limited access to care (further distance to hospitals and rural residences) is linked to inferior outcomes.¹⁻⁵ Delays in treatment initiation, in part driven by missed appointments or decreased patient health literacy, preferentially affects underserved populations.⁴ For patients with mitigating socioeconomic circumstances, treatment plans may be associated with practical concerns and financial pressures leading to treatment delays. This phenomenon may be even more apparent in those patients who also have multiple chronic comorbidities. Located in an urban city where an estimated 40% of the population lives in poverty, our academic tertiary-care institution serves a large demographic of socioeconomically challenged patients. This report investigated several social and clinical factors that may impact delay in diagnosis, lead to treatment delays, and decrease survival for patients evaluated for multimodal HNC treatment.

METHODS AND MATERIALS

Retrospective review of 136 patients (ages 31-92) presented at our institution’s Head and Neck Tumor Board receiving multidisciplinary treatment with curative intent. The association between several socioeconomic and clinical factors were assessed using logistic regression analysis. Wald chi-square testing estimated the relationship between multiple comorbidities and Karnofsky Performance Scores at the time of presentation. Cox proportional hazards and Kaplan Meier analyses quantified the influence of each predictor on survival. A cohort of 50 randomly-selected uninsured or government insured patients were reviewed for a transportation analysis and its relationship to treatment delays.

RESULTS

Patients with government insurance did not present with more advanced staged disease compared to patients with private or commercial insurance. Patients who received an initial KPS of 70 or less were more likely to have two or more current comorbidities compared to patients with an initial KPS of 80 or more (OR 5.9; 95% CI 1.9 - 18.2; $p<0.05$). For every additional year of patient age at diagnosis, the risk of death increases by 11% (hazard ratio: 1.11), irrespective of socioeconomic status.

In the underinsured subgroup analysis, 40% of patients missed treatment or surveillance appointment(s) within the first year. Thirty-two percent reported using public transportation; 42% relied on caregivers. Patients who used public transportation were 3.3 and 4.6 times more likely to miss treatment ($p = 0.001$) and surveillance ($p = 0.014$) visits, respectively. Median one-way travel duration for such routes was 52 minutes (range: 16-232 minutes) and included 0.7 miles of walking. Physical distance to care was not associated with transportation type, missed appointments, or disease recurrence.

CONCLUSION

Head and neck cancer patients must balance numerous surgical, medical, and radiation oncology appointments over the course of their treatment, which can be practically and financially challenging. Although limited by sample size and selection bias, this report highlights the under-recognized magnitude of transportation challenges faced by patients of an underserved population and the clinical implications they hold. An enhanced understanding of these social determinants will provide practitioners with insight to address the current discrepancies in head and neck oncology and explore novel methods of optimizing care, such as a multidisciplinary clinic setting.

Figure 1: Results of univariate analysis testing the association of patient, disease, geospatial, and transportation factors with missed treatment and surveillance appointments. Statistically significant predictors are highlighted in bold.

Factors	Missed Treatment Appointment(s)			Missed Surveillance Appointment(s)		
	<i>p</i>	OR	95% CI	<i>p</i>	OR	95% CI
Gender, Male	0.081	4.05	0.78-21.0	0.15	2.31	0.66-7.9
Age	0.86	1.01	0.95-1.1	0.31	0.97	0.91-1.03
Distance	0.22	1.02	0.98-1.1	0.22	2.18	0.63-7.5
Tobacco						
<i>Current</i>	0.035	4.33	1.1-17.3	0.43	3.36	1.02-11.1
<i>Previous</i>	0.49	0.77	0.2-3.0	0.89	0.92	0.28-3.1
<i>Never</i>	0.032	0.71	0.58-0.87	0.025	0.12	0.01-0.93
Alcohol						
<i>Current</i>	0.083	3.22	0.83-12.5	0.14	2.49	0.72-8.6
<i>Previous</i>	0.149	2.68	0.67-10.7	0.17	2.43	0.67-8.8
<i>Never</i>	0.006	0.49	0.01-0.63	0.011	0.19	0.05-0.72
Public Transportation	0.001	3.26	2.8-8.7	0.014	4.63	1.3-16.4
Family Transportation	0.49	0.62	0.16-2.4	0.56	0.71	0.22-2.3
Pro Transportation	0.30	2.60	0.49-13.7	0.12	3.37	0.81-14.1

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