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Socioeconomic Determinants of Survival in Laryngeal Squamous Cell Carcinoma Patients

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Socioeconomic Determinants of Survival in Laryngeal Squamous Cell Carcinoma Patients

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all for you

Background

- Laryngeal squamous cell carcinoma (SCC) causes an estimated 3660 deaths each year, and despite extensive research over the past several decades, survival outcomes have not improved.
- Certain populations, such as patients with Medicare and Medicaid, the uninsured, and African Americans have particularly poor outcomes
- Race is often associated with and considered a surrogate for lower socioeconomic status (SES). In our diverse patient population, it is prudent to consider race and SES independently.

Objectives

- Determine whether comorbidities, socioeconomic factors, and race affect median survival times and overall survival outcomes for patients with laryngeal cell carcinoma treated at a single institution with a large African American population

Methods

- Retrospective cohort study of 619 patients treated for laryngeal squamous cell carcinoma at Henry Ford Health System between 1999 and 2013.
- Kaplan-Meier survival curve analysis and Cox proportional hazard models were used.

Results – cohort characteristics

Variable	All patients (N=619)
Age, N Mean (SD)	619 63.3 (11.4)
Sex	
Male	482 (78%)
Female	137 (22%)
Race	
Caucasian	239 (39%)
African American	364 (59%)
Hispanic	12 (2%)
Middle Eastern	4 (1%)
Alcohol	
Never	179 (32%)
Social	309 (55%)
Heavy	77 (14%)
Pretreatment tobacco	
No	57 (10%)
Yes	540 (90%)
Posttreatment tobacco	
No	446 (77%)
Yes	132 (23%)
Pack years, N Mean (SD)	580 40.3 (29.6)

Variable	All patients (N=619)
Stage	
Stage 0	80 (12.9%)
Stage 1	162 (26.2%)
Stage 2	101 (16.3%)
Stage 3	74 (12%)
Stage 4	202 (32.6%)
T	
0	84 (14%)
1	174 (29%)
2	132 (22%)
3	102 (17%)
4	100 (17%)
Unknown	25 (4%)
N	
0	431 (72%)
1	52 (9%)
2	104 (17%)
3	14 (2%)
M	
0	577 (93%)
1	21 (3%)
Unknown	21 (3%)

Variable	All patients (N=619)
Follow-up time (months), N Mean (SD)	618 70.9 (59.5)
Status	
Dead	354 (57%)
Alive	265 (43%)
Median HH inc, N Mean (SD)	588 44198.0 (20459.2)
Below poverty, N Mean (SD)	572 15.3 (15.2)
Less than high school, N Mean (SD)	587 22.8 (13.1)
High school diploma, N Mean (SD)	589 30.4 (9.1)
Some college, N Mean (SD)	589 29.8 (7.3)
Bachelor's degree, N Mean (SD)	559 11.4 (8.6)
Postgraduate degree, N Mean (SD)	525 7.0 (6.6)
Overall survival time (months), median (95% CI)	89.8 (78.8, 105.6)
5-year survival rate, Prob (SE)	0.587 (0.021)
10-year survival rate, Prob (SE)	0.394 (0.023)

Table 1. Descriptive statistics on all variables

Results – median survival time

Variable	Response	Median survival time in months (95% CI) or HR (95% CI)	P Value
Age group	<65	123.0 (107.3, 162.5)	<0.001
	>65	55.7 (43.7, 76.7)	
Age (continuous)	HR (95% CI) per +1 year	1.04 (1.03, 1.05)	<0.001
Stage (binary)	Early	115.8 (107.1, 142.1)	<0.001
	Late	34.9 (25.4, 51.8)	
T stage (binary)	1 or 2	107.3 (90.5, 120.0)	<0.001
	3 or 4	43.0 (25.4, 80.8)	
N stage (binary)	0	112.6 (102.1, 123.0)	<0.001
	>0	30.9 (20.8, 49.0)	
Sex	Female	76.7 (49.0, 112.6)	0.880
	Male	95.4 (79.8, 109.2)	
Race	African American	107.3 (88.6, 122.4)	0.010
	Caucasian	73.3 (51.8, 87.0)	
Charlson Comorbidity Index	HR (95% CI) per +1 unit	1.23 (1.15, 1.32)	<0.001

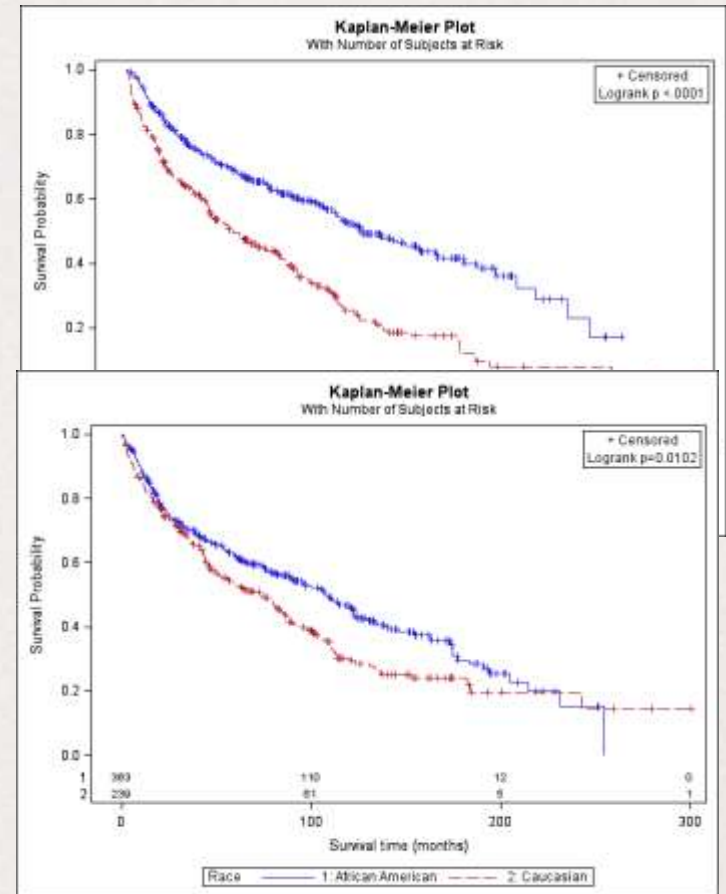


Figure 2. Overall survival curves by race

Results

Variable	Response	Median survival time in months (95% CI) or HR (95% CI)	P Value
Less than high school	HR (95% CI) per +10 percentage points	1.14 (1.06, 1.23)	<0.001
Bachelor's degree	HR (95% CI) per +10 percentage points	0.85 (0.74, 0.98)	0.026
Post-professional degree	HR (95% CI) per +10 percentage points	0.85 (0.71, 1.03)	0.087
Below poverty	HR (95% CI) per +10 percentage points	1.14 (1.07, 1.22)	<0.001
Median HH inc	HR (95% CI) per \$10,000 increase	0.89 (0.84, 0.94)	<0.001

Table 2. Univariable associations with median survival time

Results – multivariate analysis

Predictor	HR (95% CI)	P-Value
Race (African American vs Caucasian)	0.95 (0.73, 1.23)	0.704
MedHHinc (per +\$10K)	0.90 (0.79, 1.01)	0.028

Table 3. Multivariable model: risk of death by race controlling for socioeconomic factors

- However, controlling for socioeconomic factors (the variable associated with increased risk of death in the univariate model) did not change the risk of death by race. For each \$10,000 increase in median household income, the risk of death decreased by 10%. The risk of death was not significantly different between African Americans and Caucasians ($P = .704$).

Conclusion

- Socioeconomic factors and medical comorbidities were negative prognostic indicators of survival in patients with laryngeal squamous cell carcinoma.
- Contrary to previous reports, African American race was associated with improved overall survival in univariate analysis. However, once socioeconomic factors were controlled for, race conferred no effect on survival.
- **Rather, living in neighborhoods with higher median household income was protective access to other patients**