Clinical and nonclinical factors associated with palliative-only care in patients with advanced head and neck cancer

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OBJECTIVES

- **Background:** 2/3 head and neck cancer (HNC) have advanced-stage disease, with many eligible for palliative care.
- Only approximately 20% of patients receive palliative care after their HNC diagnosis.
- **Gaps:** The factors that affect access to palliative care for these individuals are not well understood.
- **Objectives:** This study investigates the sociodemographic and clinical variables associated with receipt of only palliative care among patients with HNC as well as the effect of Palliative care only receipt on survival odds.

MATERIALS & METHODS

- **Data source:** The National Cancer Database (NCDB), a retrospective cohort between 2004 and 2020.
- **Study sample:** adult individuals diagnosed with advanced-stage (stages III and IV) HNC between 2004 and 2020.
- **Outcome:** Receipt of only palliative care. Independent variables included race/ethnicity, sex, distance from the treatment facility, health insurance status, and comorbidity burden.
- **Analyses:** Logistic regression analyses for the total study sample and cancer subset, weighting for complex survey sampling and adjusting for sociodemographic variables. Survival analysis was conducted using data from 2004 to 2019 only, as survival data is not available for 2020. Cox regression was used to estimate hazard ratios, controlling for sociodemographic variables.

Palliative Care Only Receipt	Overall: N(%)	Yes: N(%)	No/Unknown: N(%)
Distance*			
Short	227,078 (51.57%)	4,964 (1.13%)	222,114 (50.44%)
Intermediate	153,616 (34.89%)	2,657 (0.60%)	150,959 (34.28%)
Long	59,616 (13.54%)	932 (0.21%)	58,684 (13.33%)
Clinical Stage*			
Early	187,683 (37.72%)	951 (0.19%)	186,732 (37.52%)
Late	309,950 (62.28%)	8,955 (1.80%)	300,995 (60.49%)
Urbanacity*			
Metro	396,985 (82.57%)	7,737 (1.61%)	389,248 (80.96%)
Urban	74,281 (15.45%)	1,743 (0.36%)	72,538 (15.09%)
Rural			
Gender*			
Female	128,136 (25.75%)	2,652 (0.53%)	125,484 (25.22%)
Male	369,497 (74.25%)	7,254 (1.46%)	362,243 (72.79%)
Race/ethnicity*			
Non-Hispanic White	393,229 (82.38%)	7,372 (1.54%)	385,857 (80.83%)
Non-Hispanic Black	47,091 (9.87%)	1,488 (0.31%)	45,603 (9.55%)
Hispanic	20,611 (4.32%)	366 (0.08%)	20,245 (4.24%)
Non-Hispanic Other	13,815 (2.89%)	301 (0.06%)	13,514 (2.83%)
Insurance coverage*			
Private insurance	188,153 (37.81%)	2,210 (0.44%)	185,943 (37.37%)
Medicaid	50,909 (10.23%)	1,784 (0.36%)	49,125 (9.87%)
Medicare	224,648 (45.14%)	5,149 (1.03%)	219,499 (44.11%)
Not Insured	22,637 (4.55%)	627 (0.13%)	22,010 (4.42%)
Comorbidity Score*			
Score 0	377,244 (75.81%)	6,569 (1.32%)	370,675 (74.49%)
Score 1	83,738 (16.83%)	2,125 (0.43%)	81,613 (16.40%)
Score 2	23,735 (4.77%)	766 (0.15%)	22,969 (4.62%)
Score 3+	12,916 (2.60%)	446 (0.09%)	12,470 (2.51%)
Facility type			
Academic	222,063 (45.55%)	4,404 (0.90%)	217,659 (44.65%)
Non Academic	265,410 (54.45%)	5,391 (1.11%)	260,019 (53.34%)
Educational Attainment*			
>=21%	83,064 (18.82%)	1,929 (0.44%)	81,135 (18.39%)
13%-20.9%	121,156 (27.46%)	2,510 (0.57%)	118,646 (26.89%)
7%-12.9%	141,044 (31.96%)	2,692 (0.61%)	138,352 (31.35%)
<7%	96,014 (21.76%)	1,441 (0.33%)	94,573 (21.43%)
Facility Location*			
South Atlantic	111,845 (22.94%)	2,076 (0.43%)	109,769 (22.52%)
Mid-Atlantic	70,378 (14.44%)	1,778 (0.36%)	68,600 (14.07%)
New England	27,692 (5.68%)	877 (0.18%)	26,815 (5.50%)
East North Central	88,159 (18.08%)	1,713 (0.35%)	86,446 (17.73%)
East South Central	39,685 (8.14%)	842 (0.17%)	38,843 (7.97%)
West North Central	40,083 (8.22%)	804 (0.16%)	39,279 (8.06%)
West South Central	39,050 (8.01%)	625 (0.13%)	38,425 (7.88%)
Mountain	19,754 (4.05%)	367 (0.08%)	19,387 (3.98%)
Pacific	50,827 (10.43%)	713 (0.15%)	50,114 (10.28%)

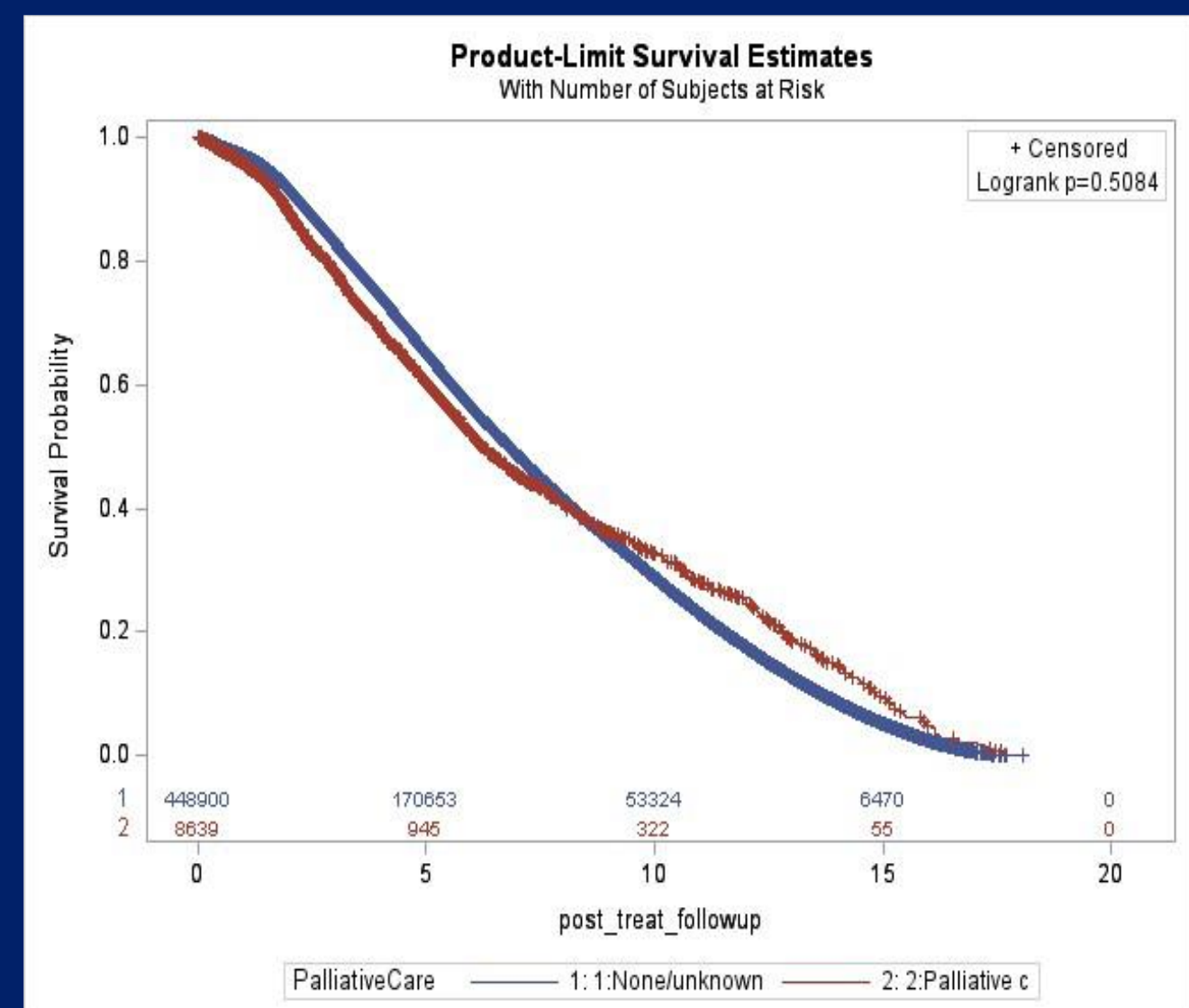Table 1. Baseline characteristics of the NCDB cohort from 2004 to 2020 (N=497,633). * P value < 0.05

Figure 1. Survival Curve based on receipt of palliative care.

Predictors	OR (95% CI)	P value	HR (95% CI)	P value
Palliative Care Only			0.99 (0.93, 1.04)	0.6416
Distance				
Short	Reference		Reference	
Intermediate	**0.79 (0.75, 0.84)**	<.0001	**1.12 (1.11, 1.13)**	<.0001
Long	**0.64 (0.59, 0.70)**	<.0001	**1.23 (1.21, 1.25)**	<.0001
Clinical Stage				
Early	Reference		Reference	
Late	**5.96 (5.52, 6.43)**	<.0001	**0.87 (0.85, 0.88)**	<.0001
Urbanacity				
Metro	Reference		Reference	
Urban	**1.33 (1.24, 1.42)**	<.0001	**0.92 (0.91, 0.94)**	<.0001
Rural	**1.23 (1.04, 1.46)**	0.0159	**0.90 (0.87, 0.94)**	<.0001
Gender				
Female	Reference		Reference	
Male	**0.89 (0.85, 0.94)**	<.0001	**1.03 (1.02 1.05)**	<.0001
Race/ethnicity				
Non−Hispanic White	Reference		Reference	
Non−Hispanic Black	**1.29 (1.21, 1.38)**	<.0001	**1.03 (1.02, 1.05)**	0.0003
Hispanic	**0.80 (0.71, 0.90)**	0.0003	**1.27 (1.24, 1.30)**	<.0001
Non−Hispanic Other	**1.23 (1.09, 1.40)**	0.0013	**1.31 (1.28, 1.34)**	<.0001
Insurance Coverage				
Private Insurance	Reference		Reference	
Medicaid	**2.28 (2.11, 2.45)**	<.0001	**1.24 (1.22, 1.26)**	<.0001
Medicare	**1.92 (1.81, 2.04)**	<.0001	**1.11 (1.09, 1.12)**	<.0001
Not Insured	**2.10 (1.90, 2.32)**	<.0001	**0.96 (0.94, 0.98)**	0.0009
Comorbidity Score				
Score 0	Reference		Reference	
Score 1	**1.29 (1.22, 1.36)**	<.0001	**1.04 (1.03, 1.06)**	<.0001
Score 2	**1.63 (1.50, 1.78)**	<.0001	**1.22 (1.19,1.25)**	<.0001
Score 3+	**1.64 (1.47, 1.83)**	<.0001	**1.64 (1.58, 1.69)**	<.0001
Facility Type				
Academic	Reference			
Non Academic	0.99 (0.94, 1.04)	0.6222		
Educational Attainment				
>=21%	Reference		Reference	
13%−20.9%	0.98 (0.92, 1.04)	0.4962	1.01 (0.99, 1.02)	0.2231
7%−12.9%	0.98 (0.91,1.05)	0.4976	**1.04 (1.02, 1.05)**	<.0001
<7%	**0.81 (0.75, 0.88)**	<.0001	**1.05 (1.04, 0.88)**	<.0001
Facility Location				
South Atlantic	Reference		Reference	
Mid-Atlantic	**1.43 (1.33, 1.53)**	<.0001	**1.12 (1.11, 1.14)**	<.0001
New England	**1.37 (1.24, 1.51)**	<.0001	**1.05 (1.03, 1.07)**	<.0001
East North Central	0.97 (0.90, 1.04)	0.4231	**1.06 (1.04, 1.07)**	<.0001
East South Central	1.01 (0.92,1.11)	0.7920	1.00 (0.98, 1.02)	0.7467
West North Central	**1.14 (1.04,1.26)**	0.0061	**1.06 (1.04, 1.08)**	<.0001
West South Central	**0.87 (0.79, 0.96)**	0.0056	**1.12 (1.10, 1.14)**	<.0001
Mountain	1.02 (0.89, 1.16)	0.8193	**1.15 (1.12, 1.18)**	<.0001
Pacific	**0.78 (0.72, 0.86)**	<.0001	1.00 (0.98, 1.01)	0.7552

Figure 2. Forest Plot of adjusted odds ratio (aOR) estimates and their confidence intervals (CI) for the association between sociodemographic characteristics and receipt of palliative care only, and of adjusted hazard ratio (aHR) estimates and their confidence intervals (CI) to determine the effect of receipt of palliative care only on survival odds.

RESULTS

Baseline characteristics (Table 1)
- A total of 497633 patients with HNC were included in our cohort, 9,906 received only palliative care, forming our analytic cohort.

Variables associated with palliative-only care (Figure 1 & 2)
- Male patients had a lower odds of receiving palliative care only (adjusted odds ratio [aOR] = 0.89; 95% confidence interval [CI]: 0.85, 0.94).
- Non-Hispanic Black (NH Black) patients had a higher odds of receiving only palliative care, (aOR = 1.29; 95% CI: 1.21, 1.38), compared to Non-Hispanic White (NH White) patients.
- Patients who were uninsured (aOR = 2.10; 95% CI:1.80, 2.32), on Medicaid (aOR = 2.28; 95% CI: 2.11, 2.45), or Medicare/other government insurance (aOR = 1.92; 95% CI: 1.81, 2.04) had a higher odds of receiving only palliative care compared to those with private insurance/managed care.
- Comorbidity burden(Score 3+) was associated with higher the odds of receiving only palliative care only (aOR = 1.64; 95% CI: 1.47,1.83), as well as higher hazard ratios (aHR = 1.64 ; 95% CI: 1.58, 1.69) compared to those with a low comorbidity burden.
- Patients presenting with a late stage disease were 5.96 times more likely to receive palliative care only compared yo those with early stage disease (aOR = 5.96; 95% CI: 5.52, 6.43).
- Non Hispanic Black (aHR = 1.03 ; 95% CI: 1.02, 1.05), Hispanic (aHR = 1.27 ; 95% CI: 1.24, 1.30) and Non Hispanic Other (aHR = 1.31; 95% CI: 1.28, 1.34) patients all had higher hazard ratios/less survival odds compared to Non Hispanic White Patients.

CONCLUSIONS

- Cancer survivors with depression are significantly more likely to experience high-impact chronic pain compared to those without depression.
- Prioritizing mental health in cancer pain management is essential to developing care strategies aimed at enhancing the quality of life of cancer survivors.