

ABSTRACT

Objective: The objective of this study was to examine the effects of marital status on distant and regional metastasis at presentation, treatment course, and disease specific survival.

Study Design: The Surveillance, Epidemiology, and End Results database was used to analyze head and neck cancer patients from 1983-2013. The sample size was 78,670, the largest ever used to study the effect of marital status in head and neck cancers.

Methods: The impact of marital status on distant and regional metastasis at presentation as well as treatment course was analyzed using logistic regression. A Cox regression analysis on five year disease specific survival was also conducted. Demographics, income level, and high school education were all accounted for and adjusted odds ratios (AOR) were obtained.

Results: Marital status was associated with lower five year disease specific mortality across every site: hypopharynx (AOR, 0.675; 95% CI, 0.631-0.722), larynx (AOR, 0.631; 95% CI, 0.604-0.659), nasopharynx (AOR, 0.601; 95% CI, 0.537-0.673), oral cavity (AOR, 0.626; 95% CI, 0.606-0.646), and oropharynx (AOR, 0.671; 95% CI, 0.614-0.733). Marital status was also found to be significantly protective against regional metastases at diagnosis (AOR, 0.739; 95% CI, 0.716-0.763) as well as distant metastases at diagnosis for all sites (AOR 0.549; 95% CI, 0.526-0.574). Furthermore married patients are statistically more likely to receive some form of therapy in all head and neck cancer patients (AOR, 1.942; 95% CI, 1.829-2.062).

Conclusions: Marital status confers a survival advantage in cancer outcomes. Spousal support may also play a role in visual and symptomatic surveillance in head and neck cancer patients.

BACKGROUND

- Approximately 61,760 cases of head and neck cancer are diagnosed in the oral cavity, pharynx, and larynx with a mortality of 13,190 every year.¹
- The risk of mortality can depend on a variety of factors such as type of treatment, stage at diagnosis, and quality of life.²
- Social support can improve all of these factors. It can lead to increased compliance with treatment and diagnosis at an earlier stage.

MATERIALS & METHODS

Patient Database

- Retrospective analysis of SEER database with cases from 1983-2003.
- SEER provides information about demographic characteristics, type of malignancy, clinicopathologic information at diagnosis, treatment modalities and survival/cause of death.
- Extraction of 78,670 cases of patients with oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx Squamous Cell Carcinoma.
- Exclusion criteria included patients under the age of 18, diagnosis made at autopsy, prior diagnosed malignancy, incomplete clinical information, cause of death unknown and marital status that was unknown or domestic partner.

Statistical Methods

- Data was extracted from the SEER database using SEER*Stat 8.3.2 (National Cancer Institute, Bethesda, Maryland) software.
- All statistical analyses were conducted with SPSS software.
- Frequency data were stratified and analyzed by gender, age, race, income, AJCC stage, and treatment information to characterize the marital and unmarried populations.
- The relationship between marital status and survival was studied using Cox regression. Multivariate logistic regression was conducted to see the effect of marital status on regional and distant metastasis. Lastly, multivariate logistic regression was conducted to see the effect of marital status on receipt of any treatment, surgery only, radiation only, or radiation and surgery.
- The analyses were adjusted for age, sex, race, income, and education level.

RESULTS

Table 1. Demographic and Clinicopathological Characteristics of the Cohort Based on Marital Status

Characteristic	Unmarried n=35,374	Married n=43296	
Age:			
Mean	62.38	62.35	
SD	13.117	11.694	
Sex:			
Male	23744	67.1%	34087
Female	11630	32.9%	9209
Male:Female	2.04	3.70	
Race:			
White	25233	71.3%	33639
Black	6135	17.3%	3019
Hispanic	2408	6.8%	2919
Other	1598	4.5%	3419
Completed High School:			
Mean	85.09%	85.51%	
SD	5.99	6.1	
Median Household Income Level:			
Mean	58011.9	59252.9	
SD	14915.04	15095.53	
Site:			
Oral Cavity	17437	49.3%	22732
Larynx	11863	33.5%	13807
Oropharynx	2068	5.8%	1959
Nasopharynx	1228	3.5%	2002
Hypopharynx	2778	7.9%	2796
Metastasis:			
Local	12021	34.0%	18687
Regional	16627	47.0%	18991
Distant	6726	19.0%	5618
T Stage			
T0	40	0.1%	75
T1	10499	29.7%	17722
T2	9839	27.8%	12094
T3	5333	15.1%	5109
T4	9663	27.3%	8296
N Stage			
N0	19223	54.3%	26384
N1	5146	14.5%	5634
N2	9824	27.8%	10272
N3	1180	3.3%	1006
Unknown	1	0.0%	0
Treatment			
No treatment	3132	8.9%	2018
Radiation only	14172	40.1%	16432
Surgery only	8629	24.4%	12405
Radiation and Surgery	9441	26.7%	12441

Table 2. Disease Specific Survival in Married Patients Compared to Unmarried Patients Based on Site

SITE	P-value	AOR	CI
Overall	<0.001	0.631	0.617-0.645
Hypopharynx	<0.001	0.675	0.631-0.722
Larynx	<0.001	0.631	0.604-0.659
Nasopharynx	<0.001	0.601	0.537-0.673
Oral Cavity	<0.001	0.626	0.606-0.646
Oropharynx	<0.001	0.671	0.614-0.733

Table 3. Regional and Distant Metastasis at Presentation in Married Patients Compared to Unmarried Patients Based on Site

Site	Regional Metastasis			Distant Metastasis		
	p-value	AOR	CI	p-value	AOR	CI
Overall	<0.001	0.737	0.714-0.761	<0.001	0.549	0.525-0.574
Hypopharynx	0.002	0.746	0.619-0.898	<0.001	0.539	0.438-0.663
Larynx	<0.001	0.685	0.647-0.726	<0.001	0.491	0.458-0.526
Nasopharynx	0.042	0.733	0.544-0.988	0.001	0.597	0.437-0.817
Oral Cavity	<0.001	0.749	0.717-0.783	<0.001	0.573	0.535-0.614
Oropharynx	<0.001	0.786	0.667-0.927	0.004	0.585	0.477-0.718

Figure 1: 5 Year Disease Specific Survival in Married and Unmarried Patients

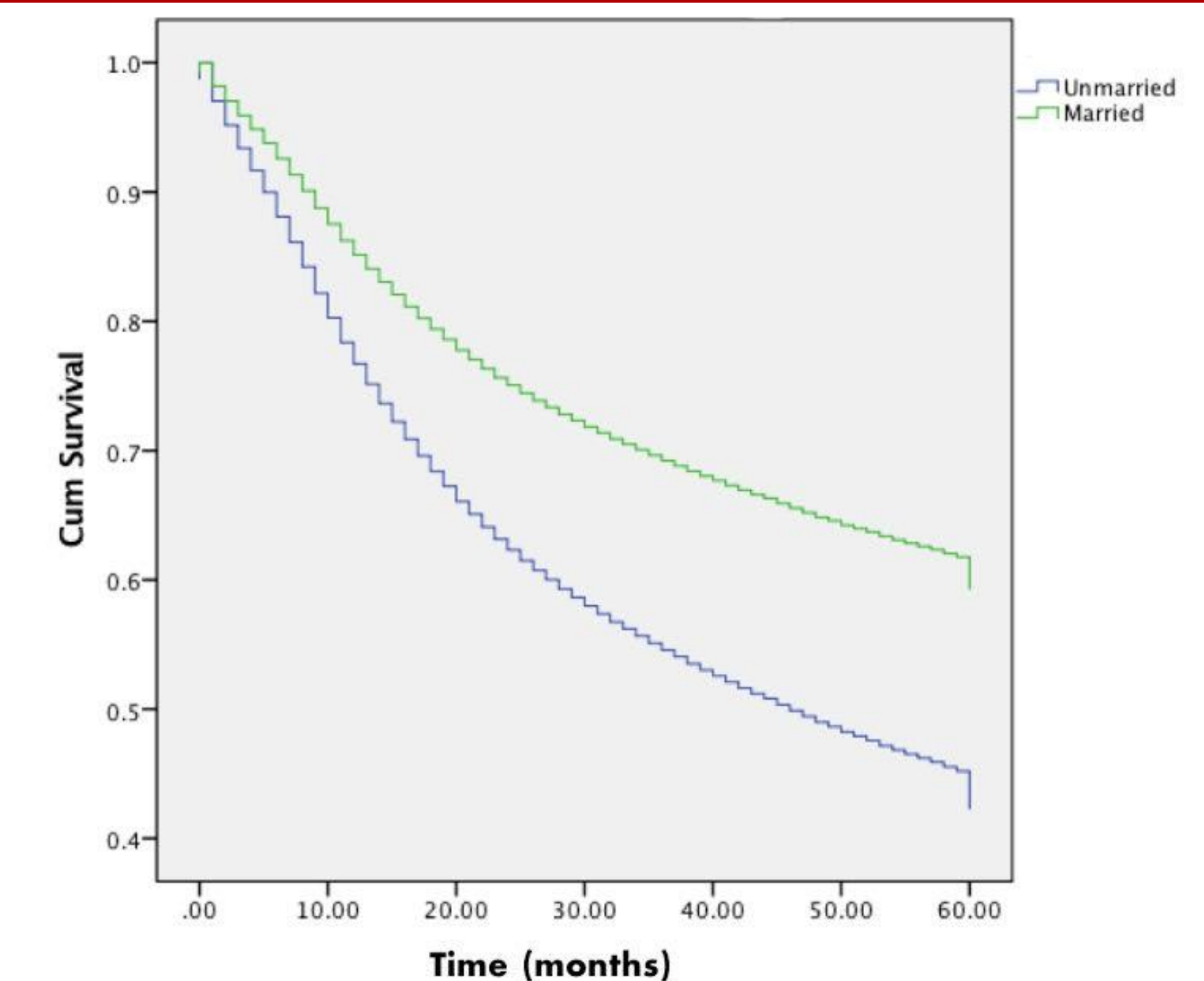


Table 4. Treatment Modalities Based on Marital Status

Site	p-value	AOR	CI
Hypopharynx			
Any Treatment	<0.001	1.83	1.536-2.181
Surgery Only	NS		
Radiation Only	NS		
Radiation and Surgery	<0.001	1.392	1.229-1.552
Larynx			
Any Treatment	<0.001	1.832	1.662-2.020
Surgery Only	NS		
Radiation Only	NS		
Radiation and Surgery	<0.001	1.189	1.125-1.256
Nasopharynx			
Any Treatment	<0.001	1.967	1.532-2.525
Surgery Only	0.039	2.059	1.037-4.089
Radiation Only	NS		
Radiation and Surgery	0.034	1.287	1.020-1.624
Oral Cavity			
Any Treatment	<0.001	2.143	1.942- 2.365
Surgery Only	<0.001	1.28	1.228-1.335
Radiation Only	<0.001	0.845	0.806-0.885
Radiation and Surgery	NS		
Oropharynx			
Any Treatment	<0.001	1.651	1.327-2.054
Surgery Only	0.044	1.202	1.005-1.439
Radiation Only	NS		
Radiation and Surgery	0.001	1.296	1.106-1.519

CONCLUSION

- There were a total of 78,670 within the database between 1983 and 2013. Out of this cohort, 43,296 were married and 35,374 were unmarried.
- This study determined that across all sites, head and neck cancer patients who were married were less likely to present with regional or distant metastasis at diagnosis. In addition, married patients were more likely to receive treatment in comparison to their unmarried counterparts and had a greater 5-year disease specific survival.
- We believe that the social support these patients received from their spouses compelled them to visit the doctor sooner, start a treatment modality and enhance their compliance, which in turn positively affects outcomes. Therefore, this study suggests that integration of social support into head and neck cancer treatment is valuable.

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