

Introduction

Head and neck cancer represents a significant global health concern, with its prevalence and impact extending across diverse populations. The United States is known to have a large diverse patient population which includes patients with limited English proficiency (LEP). The Migration Policy Institute estimates that there are approximately 25 million residents with limited English proficiency.¹

It is well established that effective communication between healthcare providers and patients is crucial for optimal care outcomes. However, this poses a challenge for patients who have limited English proficiency (LEP).²⁻⁴ Linguistic barriers can impede the understanding of complex medical information, affect treatment adherence, and lead to suboptimal health outcomes.

Language proficiency is intricately linked to health literacy, a key determinant of patient engagement and adherence to medical recommendations.^{2-4,8} Head and neck cancers, often require complex treatment regimens and regular follow-ups, demanding a high level of health literacy for effective self-management. Limited English proficiency may lead to misunderstandings, missed appointments, and suboptimal medication adherence, potentially contributing to an increased risk of hospital readmissions and ED visits. Unlike certain other cancer types, head and neck cancers often necessitate specialized treatments that can directly impact communication abilities. Therefore, investigating readmission and ED visit rates among this patient population with limited English proficiency offers a nuanced understanding of the interplay between linguistic barriers and disease-specific factors.

Disparities in healthcare outcomes among patients with limited English proficiency are well-documented.^{1-4,7} Exploring the specific impact of limited English proficiency on readmission and ED visit rates in head and neck cancer patients provides an opportunity to identify potential areas for intervention. Understanding these disparities is critical for the development of targeted strategies to enhance communication, support patient education, and improve overall care coordination.^{2,3,5}

The outcomes of this research have the potential to inform healthcare policies, enhance clinical practice, and guide the development of tailored interventions aimed at mitigating the impact of limited English proficiency on health outcomes in head and neck cancer patients. By shedding light on the intricate relationship between language barriers and healthcare utilization patterns, this study contributes valuable insights that may ultimately improve the quality of care and outcomes for a population facing unique challenges in navigating their cancer journey.

Objectives

- To investigate the relationship between Head & Neck cancer patients with limited English proficiency (LEP) and ED visits and readmission rates.
- To perform a multifactorial analysis and determine risk factors associated with readmission rates and ED visits.

Methods

This study is a retrospective chart review of adults diagnosed with Head and Neck Cancer who received treatment (surgical, medical, radiation) for their head and neck cancer at Loyola University Medical Center from 01/2012-12/2022. Patients were excluded if they had missing language proficiency data, had a history of prior head and neck cancer treatment, an active secondary malignancy, or received treatment for their head and neck cancer at another institution. Patients who were designated as LEP were then matched randomly to patients who were considered English proficient.

Summary statistics are reported to describe this sample of head and neck cancer patients. Frequencies and percentages are reported for categorical variables. Means and standard deviations are reported for quantitative variables. Univariable binary logistic regression models estimated the unadjusted effects of limited English proficiency and other predictors on the logits of ED visits and hospital readmissions at 30 days, 90 days, and 1 year post-treatment. Logistic regression models featured a logit link and a binary distribution. Odds ratio estimates are reported with corresponding Wald 95% confidence intervals and Chi square p-values. Type 3 Wald Chi square p-values are reported for the omnibus effects of polytomous predictors. Statistical analyses were conducted using SAS Version 9.4 (Cary, NC).

Results

There was a total of 204 total patients included in the study, 102 with LEP and 102 that were English proficient. The majority of patients were male (n=142, 69.61%). The average patient age was 64 years. Patients most identified as White (67.65%), followed by Multiracial (22.55%), African American (4.90%), and Asian (3.92%). The three most common non-English primary languages spoken were Spanish (38.23%), Polish (31.37%), and Gujarati (7.84%).

Table 1. Demographic Data

| Variable | Average |
|--|---------------|
| Age (years) | 64.50 (12.76) |
| Sex | n(%) |
| Female | 62 (30.39) |
| Male | 142 (69.61) |
| Race | |
| Multiracial/Other | 46 (22.55) |
| Asian | 8 (3.92) |
| Black/African American | 10 (4.90) |
| White | 138 (67.65) |
| Ethnicity | |
| Hispanic/Latino/a | 42 (20.59) |
| Non-Hispanic/Latino/a | 161 (78.92) |
| Current Smoker at Time of Cancer Diagnosis | 53 (25.98) |
| Limited English Proficiency | 102 (50.00) |
| Interpreter Present/Provider Speaks Language | 50 (24.51) |
| ED Visit at 30 Days Post-Treatment | 22 (10.78) |
| ED Visit at 90 Days Post-Treatment | 7 (3.43) |
| ED Visit at 1 Year Post-Treatment | 16 (7.84) |
| Readmission at 30 Days Post-Treatment | 27 (13.24) |
| Readmission at 90 Days Post-Treatment | 14 (6.86) |
| Readmission at 1 Year Post-Treatment | 20 (9.80) |

Figure 1. Distribution of patient preferred language at Loyola University Medical Center

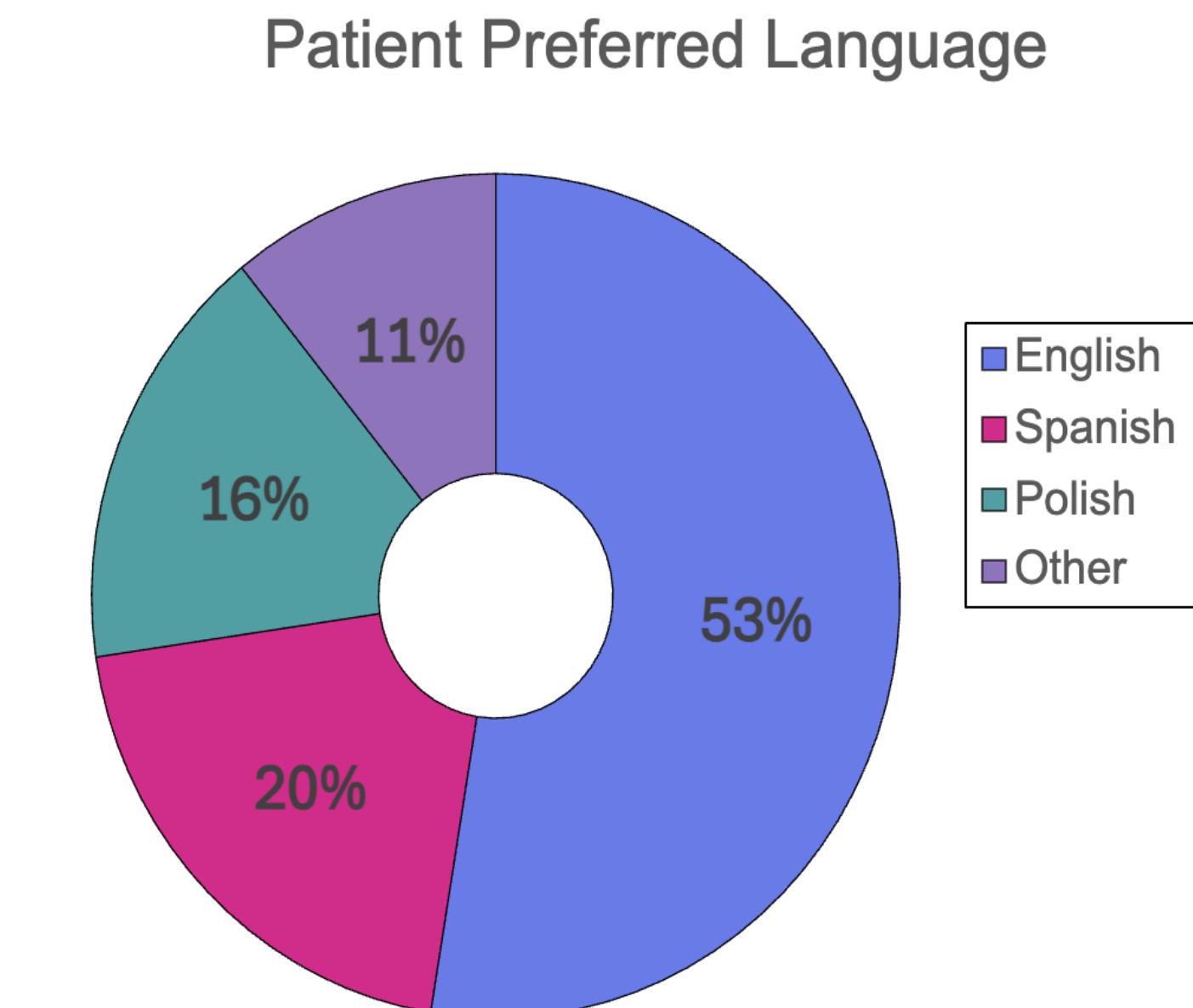


Table 2. Unadjusted Effects of LEP & Other Predictors on Post-Treatment ED Visits

| | ED Visit at 30 Days | | | ED Visit at 90 Days | | | ED Visit at 1 Year | | |
|--|---------------------|-------------------|------|---------------------|-------------------|------|--------------------|--------------------|-------|
| | n | OR (95% CI) | p | n | OR (95% CI) | p | n | OR (95% CI) | p |
| Age (years) | 203 | 0.96 (0.81, 1.14) | 0.67 | 204 | 0.93 (0.71, 1.23) | 0.62 | 204 | 1.03 (0.84, 1.26) | 0.79 |
| Sex | 203 | 0.47 (0.15, 1.46) | 0.19 | 204 | - | - | 204 | 1.41 (0.49, 4.08) | 0.52 |
| Ethnicity | 202 | 0.83 (0.27, 2.60) | 0.75 | 203 | 1.56 (0.29, 8.34) | 0.60 | 203 | 0.88 (0.24, 3.23) | 0.84 |
| Current Smoker | 199 | 1.04 (0.38, 2.81) | 0.94 | 200 | 1.11 (0.21, 5.92) | 0.90 | 200 | 3.09 (1.10, 8.71) | 0.03* |
| Limited English Proficiency | 203 | 0.42 (0.16, 1.09) | 0.07 | 204 | 0.74 (0.16, 3.40) | 0.70 | 204 | 0.31 (0.10, 0.98) | 0.05* |
| Interpreter Present/Provider Speaks Language | 202 | 0.65 (0.21, 2.01) | 0.45 | 203 | 1.23 (0.23, 5.56) | 0.81 | 203 | 1.02 (0.31, 3.32) | 0.97 |
| Surgery | 203 | 1.19 (0.42, 3.41) | 0.74 | 204 | 0.85 (0.16, 4.52) | 0.85 | 204 | 0.54 (0.19, 1.57) | 0.26 |
| Adjuvant | 203 | 1.86 (0.76, 4.53) | 0.17 | 204 | 1.95 (0.42, 8.95) | 0.39 | 204 | 1.12 (0.40, 3.14) | 0.83 |
| Radiation | 202 | 1.70 (0.63, 4.54) | 0.29 | 203 | - | - | 203 | - | - |
| Systemic Therapy | 203 | 1.60 (0.65, 3.91) | 0.30 | 204 | - | - | 204 | 4.58 (1.52, 13.76) | 0.01* |

Table 3. Unadjusted Effects of LEP & Other Predictors on Post-Treatment ED Visits

| | Readmission at 30 Days | | | Readmission at 90 Days | | | Readmission at 1 Year | | |
|--|------------------------|-------------------|-------|------------------------|-------------------|---------|-----------------------|-------------------|------|
| | n | OR (95% CI) | p | n | OR (95% CI) | p | n | OR (95% CI) | p |
| Age (years) | 203 | 1.05 (0.89, 1.23) | 0.59 | 204 | 1.04 (0.84, 1.30) | 0.70 | 204 | 0.99 (0.83, 1.19) | 0.91 |
| Sex | 203 | 0.47 (0.17, 1.32) | 0.15 | 204 | 1.30 (0.42, 4.04) | 0.65 | 204 | 1.26 (0.48, 3.34) | 0.64 |
| Ethnicity | 202 | 1.45 (0.57, 3.71) | 0.44 | 203 | 1.05 (0.28, 3.94) | 0.94 | 203 | 0.40 (0.09, 1.78) | 0.23 |
| Current Smoker | 199 | 1.45 (0.61, 3.47) | 0.40 | 200 | 1.12 (0.34, 3.73) | 0.86 | 200 | 1.21 (0.44, 3.34) | 0.71 |
| Limited English Proficiency | 203 | 0.66 (0.29, 1.50) | 0.32 | 204 | 0.53 (0.17, 1.65) | 0.27 | 204 | 0.64 (0.25, 1.63) | 0.35 |
| Interpreter Present/Provider Speaks Language | 202 | 0.88 (0.33, 2.31) | 0.79 | 203 | 1.24 (0.37, 4.15) | 0.72 | 203 | 1.35 (0.49, 3.74) | 0.56 |
| Surgery | 203 | 0.36 (0.15, 0.82) | 0.02* | 204 | 0.11 (0.03, 0.38) | < 0.01* | 204 | 1.41 (0.45, 4.43) | 0.55 |
| Adjuvant | 203 | 0.57 (0.24, 1.36) | 0.21 | 204 | 0.22 (0.05, 1.01) | 0.05 | 204 | 2.33 (0.91, 5.99) | 0.08 |
| Radiation | 202 | 1.55 (0.64, 3.75) | 0.33 | 203 | - | - | 203 | 2.65 (0.85, 8.26) | 0.09 |
| Systemic Therapy | 203 | 2.68 (1.18, 6.10) | 0.02* | 204 | - | - | 204 | 2.46 (0.97, 6.26) | 0.06 |

LEP did not demonstrate a significant effect on ED visits at 30 days (p = 0.07) or at 90 days (p = 0.70). At 1 year, patients with LEP showed a significantly lower risk of ED visits compared to English proficient patients (OR 0.31, p=0.05). LEP did not demonstrate a significant effect on readmission at 30 days (p = 0.32), 90 days (p = 0.27), or at 1 year(p = 0.35).

Conclusion

This study found that patients with limited English proficiency (LEP) had significantly lower odds of emergency department (ED) visits at 1 year post-treatment compared to patients without LEP. However, no significant differences were observed between LEP and non-LEP patients in readmission rates at 30 days, 90 days, and 1 year, or in ED visits at 30 and 90 days. These findings suggest that while long-term ED utilization may differ by English proficiency, short-term outcomes and readmissions appear to be unaffected. The lower odds of 1-year ED visits among patients with LEP may reflect barriers to accessing care rather than better health outcomes, raising concerns about potential underutilization. Additionally, the study may be subject to selection bias and limitations in generalizability since it was conducted at a single tertiary medical center. The reliance on retrospective data limits the ability to infer causal relationships. Further research is warranted to explore the underlying factors contributing to the reduced long-term ED visits among patients with LEP.

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