

Effects of Socioeconomic Status on Timing of Adjuvant Chemoradiation Therapy

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INTRODUCTION

Effective management of head and neck cancers (HNC) requires a multidisciplinary approach.¹ Radiotherapy is the mainstay in adjuvant therapy for high-risk squamous-cell HNC.² Current National Comprehensive Cancer Network (NCCN) guidelines recommend initiation of adjuvant radiation therapy within 6 weeks of surgery. However, over 50% of HNC patients who receive surgery and post-operative therapy do so outside the NCCN timeframe guidelines.³ Various socioeconomic barriers can prevent patients from obtaining care within this time frame. Medicaid patients are more likely to have worse cancer-specific survival;⁴ other barriers include low socioeconomic status, smoking, access to oral cancer exams, and ability to travel to medical centers.⁵ Consequently, delays in receiving multidisciplinary care are associated with decreased overall survival (OS).⁶ We examine institutional data over a 10-year period to assess adherence with NCCN guidelines and to identify factors that prevented timely access to head and neck cancer adjuvant therapy.

METHODS and MATERIALS

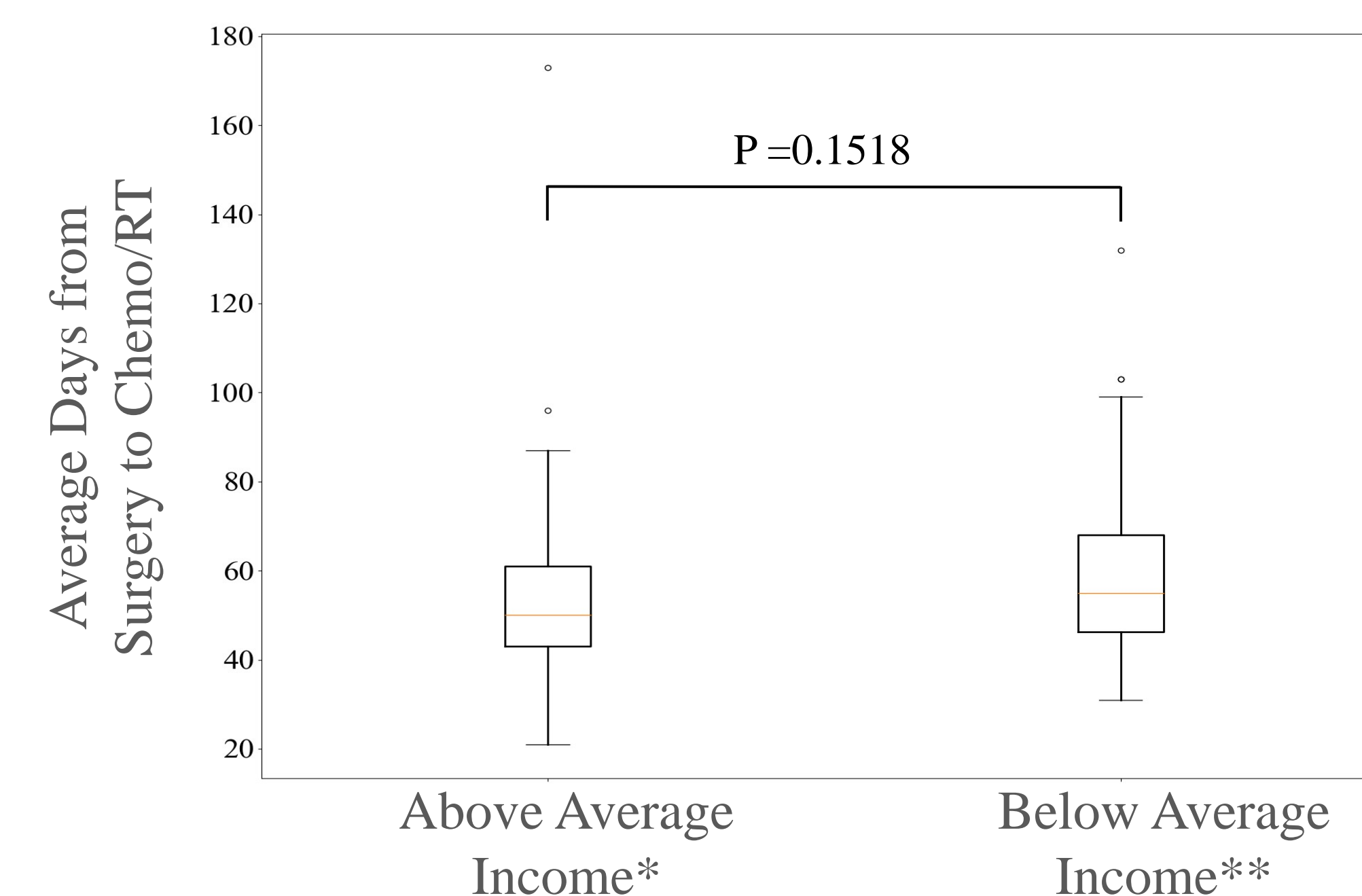
Records from patients older than 18 years, diagnosed of HNC, and reviewed by an institutional tumor board from 2011-2022 were queried from a large academic hospital in Western NY. All patients presented at the tumor board were reviewed; patients who underwent surgery and subsequently refused or were not recommended adjuvant radiotherapy were excluded. Primary measures are median household income based on zip code according to US census data from 2010 and insurance type. Other measures included adjuvant therapy recommendation (radiotherapy w/wo chemotherapy), time between surgery and initiation of adjuvant therapy, NCCN guidelines adherence rate, and barriers preventing timely chemoradiotherapy. Statistical testing was done using Fisher's exact test with $P < 0.05$ as significant.

RESULTS

A total of 216 patient records were reviewed for this study. Patients who were not recommended adjuvant therapy, declined adjuvant therapy, or had unavailable records were excluded, resulting in 107 patients included in the analysis. Of these patients, 70.1% were male and 29.9% were female. The average time to initiation of adjuvant therapy was 57.59 days, with a range of 21 to 173 days. 20.56% of patients received adjuvant treatment within 6 weeks. Socioeconomic information was inferred by determining the median household income based on zip code using data from the United States Census for the years 2017-2021. Average median household income was lower than the national average (\$60,383 vs. \$70,784). Patients below the regional average median household income were more likely to experience a delay in adjuvant treatment (55% vs. 44.7%), although this difference was not statistically significant ($p = 0.15$). Additionally, a higher percentage of patients with Medicare, Medicaid, or VA insurance experienced a delay in receiving adjuvant therapy (100%) compared to those with private insurance (29.6%), and was statistically significant ($p < 0.0001$). The all-cause mortality rate was higher in patients with a delay in adjuvant therapy (34% vs. 13.6%).

Table 1. Patient demographics, primary and secondary outcomes (N=107).

Gender	Male: 70% (75/107) Female: 30% (32/107)
Age (years)	Mean: 64 Median: 64.5
Average days to Adjuvant Therapy	57.6 days ≤ 6 weeks: 20.6% (22/107) > 6 weeks: 79.4% (85/107)
Median household income	\$60,383
Mortality	≤ 6 weeks: 13.6% (3/22) > 6 weeks: 34.1% (29/85)



Average Household Income = \$60,383
*N=49; **N=58

Figure 1. Median household income and time to adjuvant therapy.

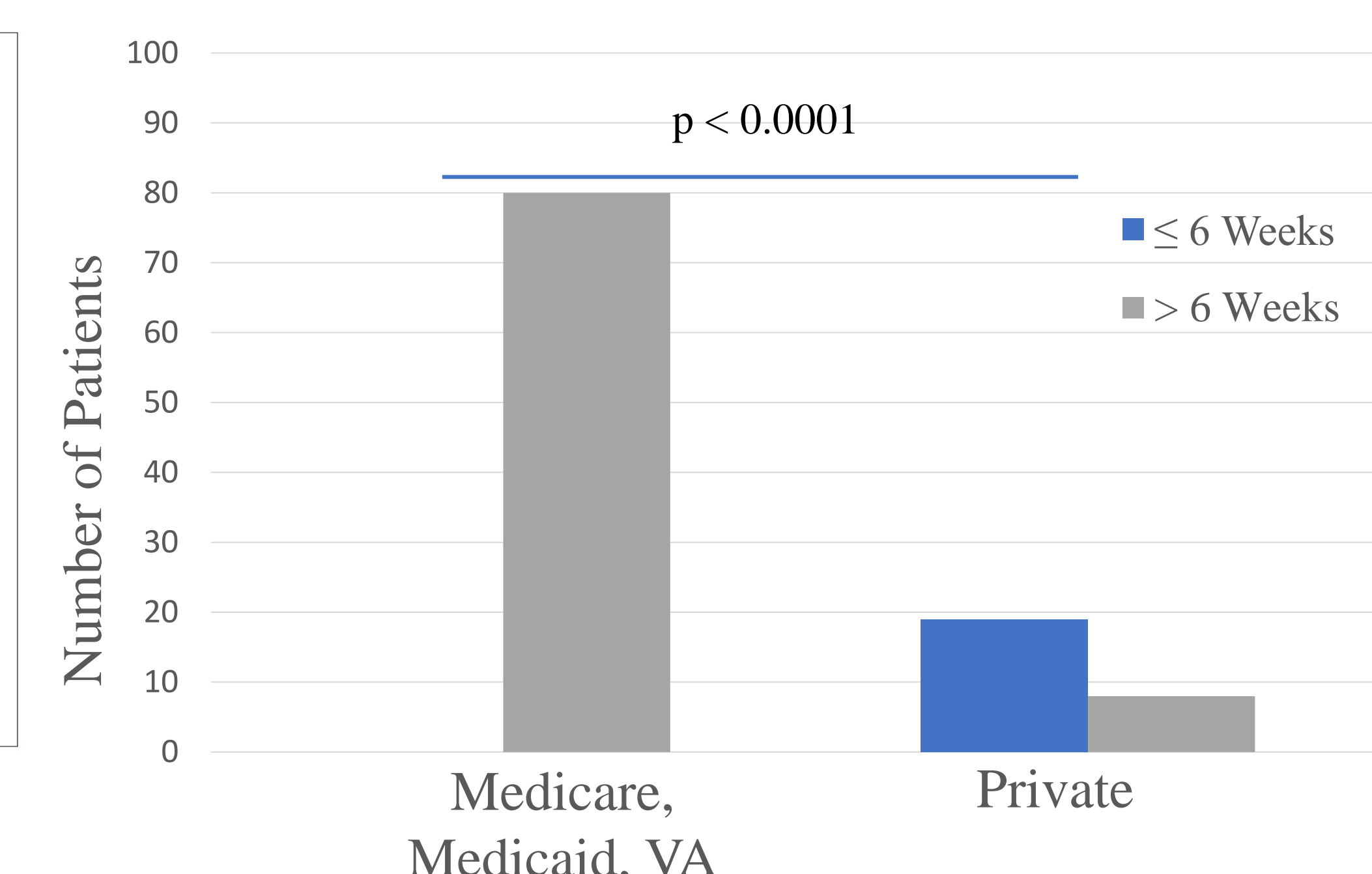


Figure 2. Insurance type and time to adjuvant therapy.

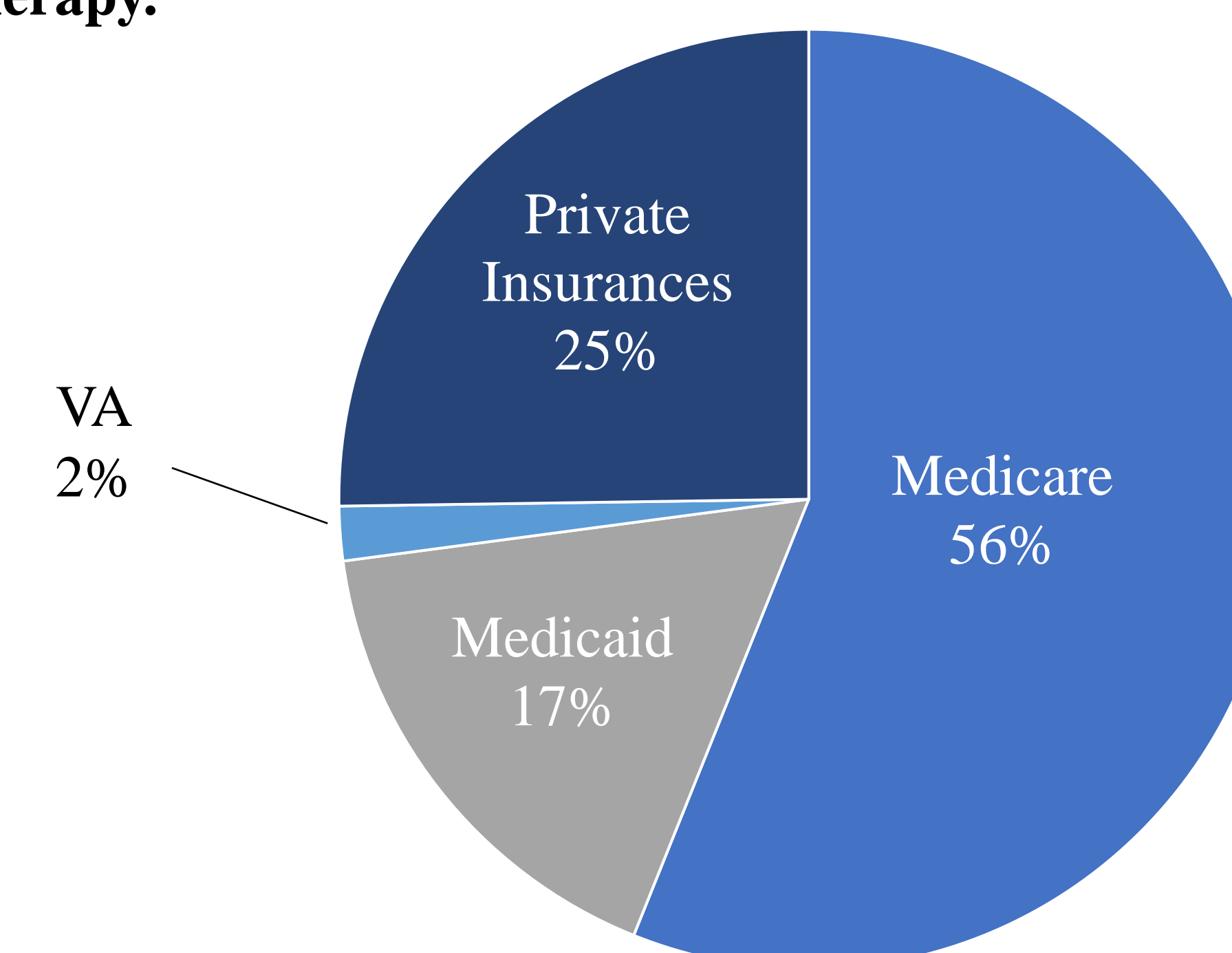


Figure 3. Percentage of patients with private, Medicaid, Medicare and VA insurances.

DISCUSSION

Since 2022, the AHNS quality metric has emphasized the importance of initiating adjuvant radiation therapy within 6 weeks of surgery for squamous cell carcinoma of the head and neck.⁷ Adjuvant therapy > 6 weeks after surgical resection of squamous cell carcinoma of the head and neck has been associated with worse oncologic outcomes.⁶ Therefore, studying the association between time to adjuvant therapy and prognosis is crucial, and our findings are consistent with previous research indicating that patients with delayed adjuvant therapy have a higher all-cause mortality rate. Moreover, several studies have demonstrated that lower socioeconomic status is linked to increased delays in receiving adjuvant therapy.^{8,9,10} In this study, we examined two indicators of socioeconomic status: median household income and insurance type. Although the difference in adjuvant therapy delay between patients above and below median household income did not reach statistical significance, there is a trend towards greater delay in patients with lower income in western New York. Insurance type had a more substantial impact on the percentage of patients with delayed treatment, with a higher rate observed in the Medicare, Medicaid, and VA insurance group compared to the private insurance group. Patients with lower socioeconomic status are likely to have greater barriers to healthcare access such as living farther away from treatment center and poorer access to transportation. Although further research is necessary to identify interventions that can assist patients with low socioeconomic status, this study provides a foundation for identifying patients at risk of adjuvant therapy delay in western New York.

This study has several limitations. First, it was a retrospective study, which introduces selection bias and uncontrolled confounding variables although this was attempted to be controlled by consecutive patient analysis. Second, the study may have been underpowered to achieve statistical significance for some measures.

CONCLUSIONS

Adherence to timely adjuvant therapy was lower than the national average at our institution, and patients with lower socioeconomic status or specific insurance types (Medicare, Medicaid, VA) had higher rates of treatment delay and mortality. Identifying factors associated with patients at risk for adjuvant therapy delay, such as socioeconomic status, can significantly improve treatment outcome.

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