

Social Vulnerability Is Positive Correlated With Number Of Cancelled Postoperative Appointments Following Pituitary Adenoma Resection

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Introduction

There is a need to identify factors impacting post-operative outcomes of neurosurgical patients, and social determinants of health (SDOH) disparities are some of many such factors. It is well established that these factors play a large role in health outcomes, including decreased access to healthcare, increased financial burden, and increased morbidity and mortality¹. Furthermore, some studies have found that SDOH disparities can independently predict a prolonged hospital length of stay and 90-day mortality in brain tumor patients, and a study published from our institution showed that this same trend of prolonged length of stay persisted in a socioeconomically disadvantaged population following pituitary adenoma resection². Given that our institution operates out of the Bronx, home to one of the most socially vulnerable populations in this country, we have the unique opportunity to examine the impact of social vulnerability on post-operative outcomes in neurosurgical patients.

In this single-center study, we aimed to determine if increased social vulnerability was associated with more frequent cancelled follow-up appointments after pituitary resection.

Methods and Materials

We conducted a retrospective chart review of patients treated for pituitary adenoma between 2017 and 2023 at a single academic tertiary care center. A total of 154 patients were included in this study. By race, 79 (51.2%) patients were Black, 14 (9.1%) patients were White, 2 (1.3%) were Asian, and 49 (31.8%) were other or declined to respond. By ethnicity, 51 (33.1%) patients were Hispanic/Latino, 86 (55.8%) were non-Hispanic/Latino, and 17 (11.0%) declined to respond. Social Vulnerability Index (SVI) scores were collected for each patient based upon home address, drawn from a series of metrics from 2020 census data. The four major metrics included in our study were socioeconomic status (SES), household composition/disability (HCD), minority status and language (MSL), and housing type and transportation (HTT). These data were composited into an overall SVI calculation, and for each category, a higher value indicated a greater vulnerability.

Statistical analysis was carried out using GraphPad Prism and Microsoft Excel.

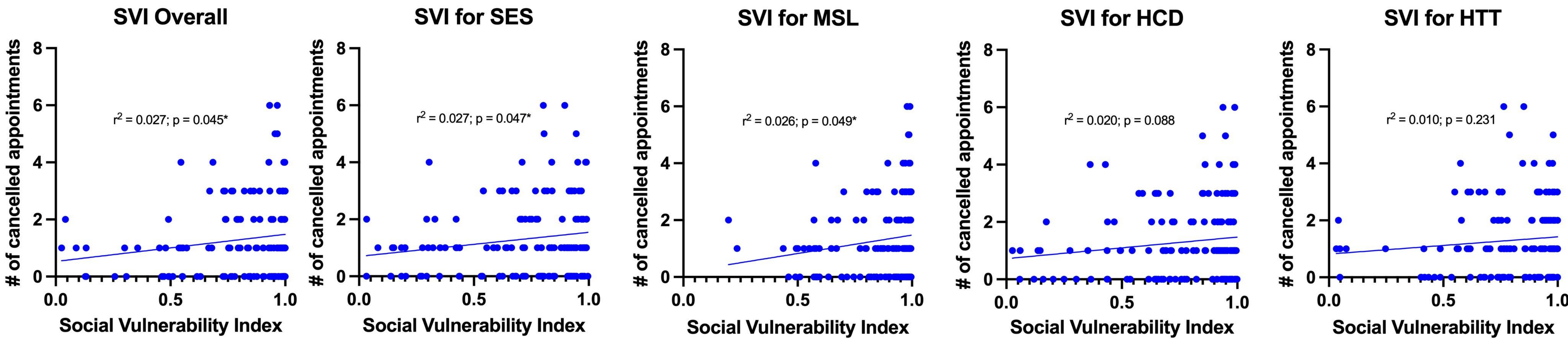


Figure 1. Simple Linear Regression comparing overall SVI and SVI subgroups with number of cancelled follow-up appointments following pituitary adenoma resection.

Results

In our patient population, the mean overall Social Vulnerability Index (SVI) was 0.81 (95% CI [0.78, 0.85]), with individual SVI domain means as follows: socioeconomic status (SES) 0.71 (95% CI [0.67, 0.76]), household composition/disability (HCD) 0.77 (95% CI [0.73, 0.81]), minority status/language (MSL) 0.80 (95% CI [0.76, 0.83]), and housing type/transportation (HTT) 0.75 (95% CI [0.70, 0.79]).

Analysis of follow-up appointment cancellations demonstrated a positive correlation with overall SVI ($r^2 = 0.027$; $p = 0.045^*$ [$n=147$]), as well as positive correlations with SES SVI ($r^2 = 0.027$; $p = 0.047^*$ [$n=147$]) and MSL SVI ($r^2 = 0.026$; $p = 0.049^*$ [$n=147$]).

No significant correlation was observed between cancelled appointments and SVI for HCD ($r^2 = 0.020$; $p = 0.088$ [$n=147$]) or HTT ($r^2 = 0.010$; $p = 0.231$ [$n=147$]). Additional analyses assessing interactions between different SVI components did not yield significant findings. Further stratification by demographic variables did not reveal additional patterns in cancellation trends.

References

- Braveman, P., Egerter, S., & Williams, D. R. (2011). The social determinants of health: coming of age. Annual review of public health, 32(1), 381-398.
- Pecorari, I. L., & Agarwal, V. (2024). Length of Hospital Stay after Pituitary Tumor Resection among a Socioeconomically Disadvantaged Population. Journal of Neurological Surgery Part B: Skull Base, 85(S 01), S192.

Discussion

Our study highlights the significant impact of social vulnerability on post-operative care in patients undergoing pituitary adenoma resection. Specifically, we found that higher overall Social Vulnerability Index (SVI) scores were associated with an increased number of cancelled follow-up appointments. This trend was particularly evident in the socioeconomic status (SES) and minority status/language (MSL) components of SVI, suggesting that financial strain and language barriers may be key contributors to reduced follow-up adherence.

These findings align with prior research demonstrating that SDOH disparities contribute to worse neurosurgical outcomes, including prolonged hospital stays and increased post-operative complications. Missed follow-up appointments can lead to delays in detecting complications, adjusting treatment plans, and providing necessary supportive care, ultimately impacting long-term patient outcomes. While we did not observe a significant correlation between follow-up cancellations and household composition/disability (HCD) or housing type/transportation (HTT), this does not rule out their potential influence on post-operative care and access to healthcare resources.

Given that our institution serves a highly socially vulnerable population, these findings underscore the need for targeted interventions to improve continuity of care. Strategies such as patient navigation programs, transportation assistance, and multilingual patient education could help mitigate barriers to follow-up care. Future research should focus on evaluating the effectiveness of such interventions in reducing disparities in post-operative neurosurgical outcomes.