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**“Evaluating Social Vulnerability Impact on Care & Prognosis of Head & Neck-Nervous System Cancers in the US”**

## **Introduction**

In the current literature, the association between social determinants of health (SDH) and head & neck-nervous system cancer (HNNsC) is limited by the narrow scope of SDH assessed and the broad classifications of HNNsC. Our study utilizes the CDC-Social Vulnerability Index (SVI) to assess both the individual and collective impact of four social determinant themes on various HNNsC in US adults.

## **Methods**

This retrospective cohort study utilized the SEER database to evaluate 116,373 adult patients from 1975-2017 who presented with various types of HNNsC. Patients were assigned SVI scores based on county-of-residence at the time of diagnosis, encompassing total SVI score and 4 sub-scores of socioeconomic status, minority-language status, household composition, and housing-transportation. Using these scores, univariate linear regressions were used to assess patient care (months of follow-up) and prognosis (months of survival).

## **Results**

As the total SVI score/overall social vulnerability increased, a significant decrease in months of follow-up was observed for many HNNsC tumors ( $p < 0.001$ ), ranging from 3.55-36.6% decreases in mean lengths of follow-up when comparing the lowest to highest vulnerability cohorts. Similarly, a decrease in months of survival was observed ( $p < 0.001$ ), ranging from 6.90-45.81% decreases in the mean survival period when comparing the lowest to highest vulnerability cohorts. Increases in vulnerability within SVI sub-scores/SDH themes contributed significantly to these total-SVI trends in months of follow-up and survival, with each social determinant impacting different disease classes to varying extents.

## **Conclusions**

The results of this study show that with increasing social vulnerability, there is a significant decrease in both the care (follow-up) and the prognosis (survival) of US adults with HNNsC and highlight which particular SDH contributes more to disparities.