

Sociodemographic Indices in Head and Neck Cancer: A Scoping Review

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Background

- Community deprivation is increasingly recognized as an important factor shaping health outcomes in head and neck cancer (HNC).¹⁻⁴
- Neighborhood disadvantage can influence patient access to specialty care, continuity of treatment, ability to navigate complex cancer therapies, and long-term survivorship.⁵⁻⁶
- Geographic-based sociodemographic indices (SDI)** aggregate relevant SDOH measures into composite measures of area-level disadvantage and have **gained popularity in SDOH research** among many clinical subspecialties, including **otolaryngology**.⁷⁻⁸
- Despite growing SDI use in HNC research, there is no consensus on which indices should be used, what SDOH factors they capture, or how methodological differences may affect findings.**

Objectives

The purpose of this scoping review is to **systematically examine the use of SDI in head and neck research**. We aim to describe the indices used, the factors they incorporate, the cancer sites and populations studied, the methodologies employed, and the limitations and gaps in the literature.

Methods

- This scoping review was conducted using PRISMA-ScR guidelines.
- Studies were included if they met the following criteria:
 - Population of **patients with HNC**, including malignancies of the oropharynx, hypopharynx, larynx, nasopharynx, salivary glands, paranasal sinuses, thyroid, or parathyroid
 - Conducted in the **United States**
 - Geographically-based SDI**
 - Reported **original, peer-reviewed data**
 - Sample size of **at least 50 patients**
- Databases were searched from June 2024. The full search strategy is available in **Figure 1**.
- Data collection included: title, authors, year of publication, study design, study years, location, setting, sample size, demographics, tumor site, AJCC clinical staging, primary and secondary outcomes, SDI(s) utilized, SDI construct, source, and operationalization, primary and secondary outcome results, findings related to SDI, and study reported limitations
- A descriptive synthesis** was conducted to compare SDI types, constructs, outcomes analyzed, and methodological approaches

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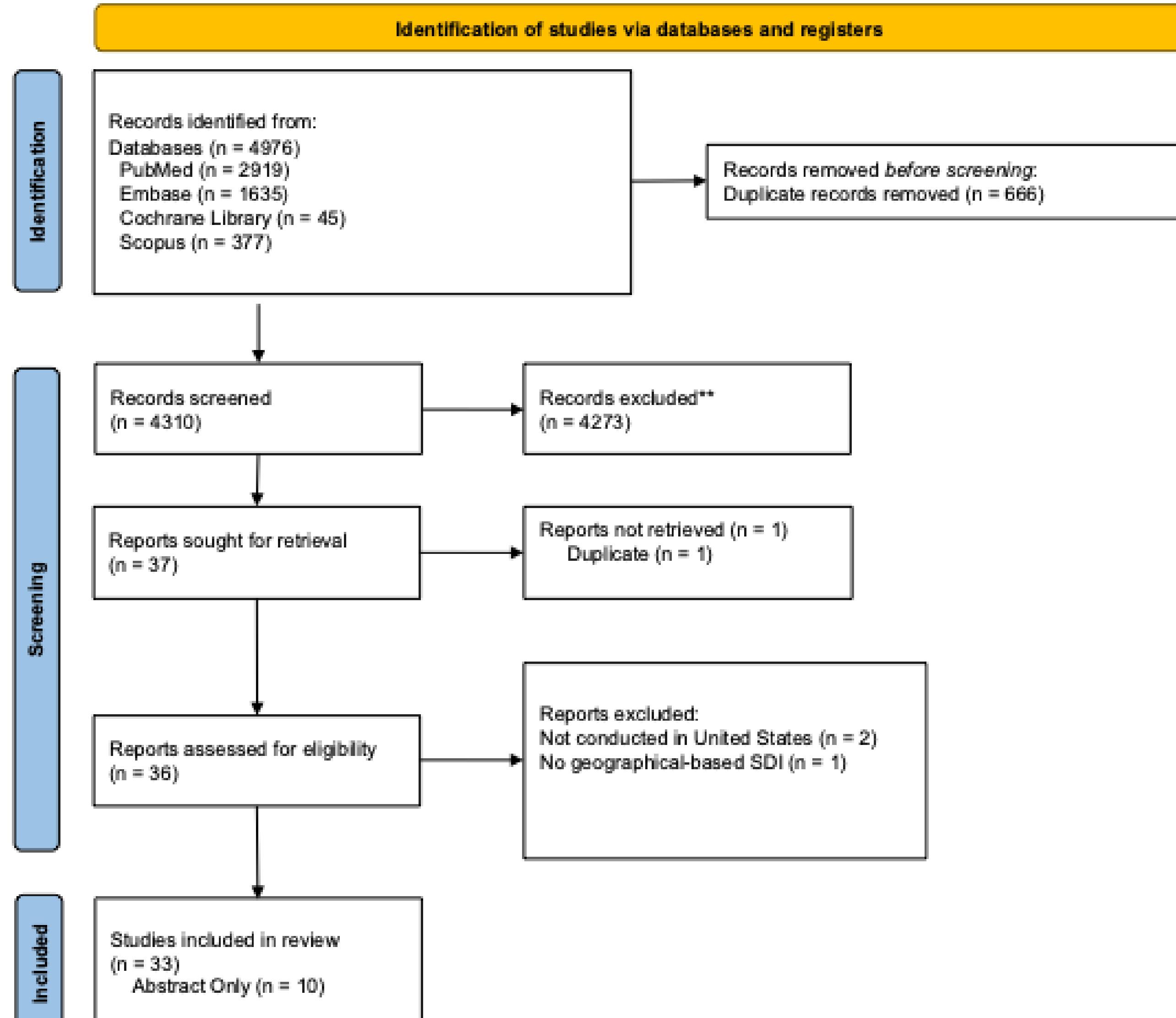


Figure 1. Scoping review search strategy

Study Characteristic	N (%)
Study Design	National
	Retrospective Database Study
	17 (53.1)
Study Years	Retrospective Cohort
	12 (37.5)
	Cross-sectional
	3 (9.4)
Study Location	2010-2015
	2 (6.3)
	2016-2020
	2 (6.3)
Study Setting	2021-2022
	7 (21.9)
	2023-2024
	21 (65.6)
	National
	17 (53.1)
	Midwest
Sample Size	7 (21.9)
	South
	3 (9.4)
	Pacific
	2 (6.3)
	Northeast
	1 (3.1)
	Midwest, South
	1 (3.1)
	West
Demographics Reported	1 (3.1)
	Southwest
	0 (0)
	Age
	22 (68.8)
	Gender
	24 (75)
	Race
	24 (75)
	Ethnicity
Clinical Staging	15 (46.9)
	Unavailable
	AJCC
	15 (46.9)
	SEER Summary Stage
	1 (3.1)
	ICD Grade
	1 (3.1)
	Unavailable
	13 (40.6)
Tumor Site	Not Applicable
	2 (6.3)
	Oral Cavity
	9 (28.1)
	Oropharynx
	10 (31.3)
	Nasopharynx
	3 (9.4)
	Sinonasal
	3 (9.4)
Clinical Staging	Larynx
	6 (18.8)
	Hypopharynx
	3 (9.4)
	Salivary Glands
	4 (12.5)
	Thyroid
	3 (9.4)
	Vestibular
	1 (3.1)
Not available/applicable	Schwannoma
	10 (31.3)

Table 1. Study and sample characteristics

Results

- See **Table 1** and **Table 2** for full results.
- 87.5% of included studies were published in 2020 or later
- The most frequently studied primary outcomes were **survival, surveillance period, and treatment choice**.
- The most used SDIs were **Area Deprivation Index (ADI)** and **Social Vulnerability Index (SVI)**
- 29 (90.6%) of the included studies, including 100% of SVI studies (n=10) and 75% of ADI studies (n=9), had a **significant association between worse primary outcomes and greater deprivation**
- Common limitations among the studies included inability to control for individual level socioeconomic factors, reliance on retrospective datasets, and lack of standardization in how indices were defined or applied

Conclusions

- SDIs are increasingly used to examine disparities HNC outcomes, yet they have inconsistent application across study design, index selection and operationalization, and reporting practices**
- Majority of studies were **retrospective national database studies** that had **variable reporting** of key clinical elements with a focus on **survival and surveillance period**.
- Important gaps include **geographic representation, impact of staging, wider database applicability, and validation of indices as accurate proxies for individual-level deprivation**
- Limitations include the number of abstracts, inability to directly compare results across studies given variability outcome measures, and the qualitative nature of a descriptive synthesis

Future Directions

Standardization in methodology, prospective study designs, and direct comparison of indices are needed to strengthen the rigor of this field and support the development of targeted interventions to **improve equity in HNC care**

Study Characteristic	N (%)	
Primary Outcome*	Survival	13 (40.6)
	Overall	12 (37.5)
	Cancer Specific Survival	4 (12.5)
Surveillance Period	9 (28.1)	
Treatment Choice	9 (28.1)	
Tumor Characteristics at Presentation	7 (21.9)	
Incidence	4 (12.5)	
Delay in Treatment	3 (9.4)	
Patient Reported Outcomes	2 (6.3)	
Symptom Burden	2 (6.3)	
Quality of Life	1 (3.1)	
Mortality	2 (6.3)	
All Cause	1 (3.1)	
Disease Specific	2 (6.3)	
Care Fragmentation	2 (6.3)	
Vaccination Rates	1 (3.1)	
30-Day Readmission	1 (3.1)	
Postoperative Recovery	1 (3.1)	
SDI(s) Utilized	Area Deprivation Index (ADI)*	12 (37.5)
	Social Vulnerability Index (SVI)**	10 (31.3)
	Yost index	3 (9.4)
	Digital Inequity Index (DII)	1 (3.1)
	Housing-based Index of Socioeconomic Status (HOUSES)	1 (3.1)
	Social Deprivation Index (SDI)	1 (3.1)
	U.S. State Tobacco Control Initial Outcomes Index (IOI)	1 (3.1)
	Area Deprivation Index (ADI) and Social Vulnerability Index (SVI)	1 (3.1)
	Other	2 (6.3)
SDI Operationalization	Continuous Scale	18 (56.3)
	Dichotomized	3 (9.4)
	Tertiles	3 (9.4)
	Continuous and Quartiles	3 (9.4)
	Quintiles	2 (6.3)
	Continuous and Deciles	2 (6.3)
	Quartiles	1 (3.1)

Table 2. Primary study outcomes and SDI utilization

*ADI - created to identify how neighborhood-level socioeconomic conditions affect health and contribute to disparities; assesses variables of education, income, housing (home value, rent, housing unit composition), unemployment, poverty

**SVI - created to inform emergency response planning for public officials; assesses variables of age, language, housing (crowding, group, mobile), disability status, unemployment, poverty, income, education, vehicle access