EVIDENCE FOR THE CUMULATIVE IMPACT OF SOCIAL DETERMINANTS OF HEALTH (SDOH) ON CANCER MORTALITY: A SCOPING REVIEW

Kathleen M. Aguilar, MPH, PhD(c);[1,2] Robert Reid, MD;[1] Zhaohui Su, PhD;[1] Lydia Mills, MSW, LCSW, LICSW;[3] Jessica K. Paulus, ScD[1]

1. Ontada (Boston, MA). 2. Faulkner University (Montgomery, AL). 3. McKesson (Las Colinas, TX)

Introduction

- Research on cancer mortality should encompass a comprehensive range of factors affecting health outcomes, extending beyond those that are biological or medical in nature, and consider the interaction and compounding effects of these influences.[1]
- The body of literature examining these social determinants of health (SDOH) is extensive and has grown significantly over the past decade.
- An evidence synthesis of SDOH systematic reviews uncovered the use of 193 Medical Subject Headings (MeSH terms) and 1,388 keywords across 64 reviews.[2]
- By systematically delineating key concepts within the SDOH literature, examining prevalent research methodologies, and identifying existing knowledge gaps, valuable insights can be generated to guide future research on the relationship between SDOH and cancer mortality.

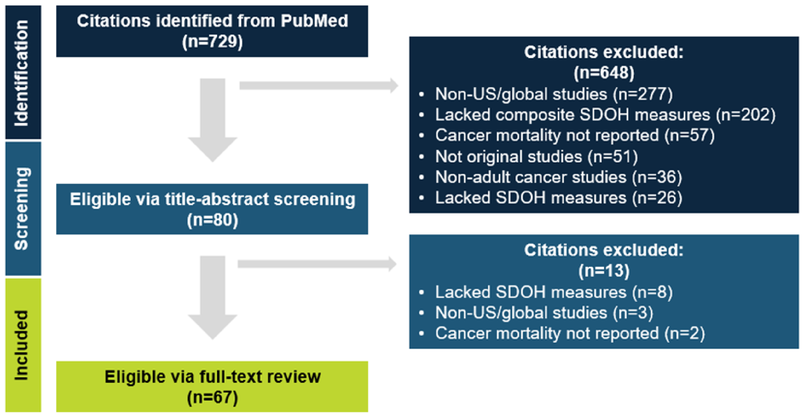
Purpose

- To evaluate the breadth of evidence published on the relationship between SDOH and cancer mortality through a scoping review that adhered to Joanna Briggs Institute (JBI) recommendations.

Scoping Review Methods

- **Research question:** How do SDOH influence adult cancer mortality across US populations?
- **Population:** The US adult population.
- **Concept:** Cancer mortality and all-cause mortality among patients with cancer.
- **Context:** SDOH were operationally defined as non-medical influences on health.
- **Search strategy:** A PubMed search was undertaken on 09/15/2024 using keywords and MeSH terms related to SDOH and cancer mortality, followed by title/abstract and full-text screening (**Figure 1**).
- **Selection criteria:** Studies published since 2019 that reported the association between cancer mortality and composite metrics of SDOH among adult US populations.
- **Abstraction & coding:** Details on each eligible study were captured in an evidence table and were synthesized for interpretation.

Figure 1: PRISMA Flow Diagram



Key Findings

- Eligible studies (n=67) comprised 43 retrospective/prospective cohorts (64%), 19 cross-sectional studies (28%), and 5 with other study approaches (8%; **Table 1**).
- Across the literature, SDOH were classified as individual factors (e.g., race/ethnicity) and place-based measures (e.g., rurality; **Table 1**).
- Most SDOH were associated with cancer mortality in at least one study, though the strength and direction of these correlations were inconsistent (**Figures 2 & 3**).

Table 1. Characteristics of eligible studies

	Overall (n=67)	Cohort study (n=43)	Cross-sectional (n=19)	Other (n=5)
Study location - n (%)				
Nationwide	38 (56.7)	21 (48.8)	12 (63.2)	5 (100.0)
Regional	29 (43.3)	22 (51.2)	7 (36.8)	0
Cancer type - n (%)				
Pan tumor/multiple cancer types	15 (22.4)	7 (16.3)	6 (31.6)	2 (40.0)
Breast	17 (25.4)	14 (32.6)	2 (10.5)	1 (20.0)
Prostate	3 (4.5)	3 (7.0)	0	0
Colorectal	5 (7.5)	0	4 (21.1)	1 (20.0)
Lung	3 (4.5)	1 (2.3)	2 (10.5)	0
Liver	3 (4.5)	0	3 (15.8)	0
Other	21 (31.3)	18 (41.9)	2 (10.5)	1 (20.0)
Individual SDOH measures - n (%)				
Race/ethnicity	45 (67.2)	41 (95.3)	4 (21.1)	0
Insurance coverage	31 (46.3)	31 (72.1)	0	0
Social isolation/marital status	18 (26.9)	18 (41.9)	0	0
Education	5 (7.5)	5 (11.6)	0	0
Income	4 (6.0)	4 (9.3)	0	0
Allostatic load	4 (6.0)	4 (9.3)	0	0
Employment	1 (1.5)	1 (2.3)	0	0
Place-based SDOH measures - n (%)				
Area deprivation/SES	49 (73.1)	36 (83.7)	13 (68.4)	0
Rurality/urbanicity	31 (46.3)	18 (41.9)	13 (68.4)	0
Public health/healthcare access	12 (17.9)	4 (9.3)	8 (42.1)	0
Racial/ethnic geographic composition/segregation	17 (25.4)	6 (14.0)	11 (57.9)	0
Social Vulnerability Index	6 (9.0)	1 (2.3)	5 (26.3)	0
Food Environment Index/food desert	4 (6.0)	1 (2.3)	3 (15.8)	0
Environmental Quality Index	3 (4.5)	0	3 (15.8)	0
Social isolation	2 (3.0)	1 (2.3)	1 (5.3)	0

Figure 2: Individual SDOH Associations

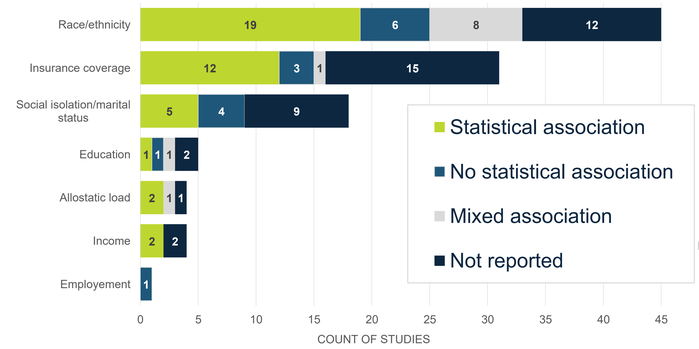
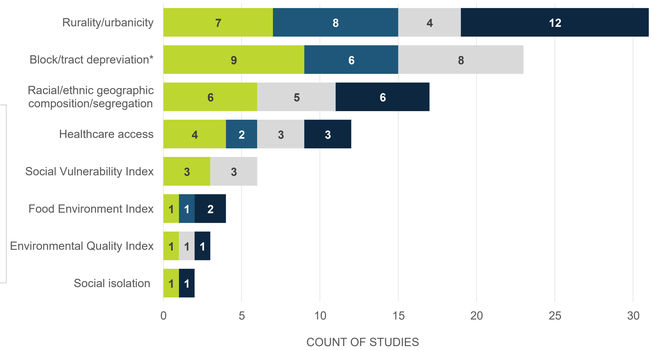


Figure 3: Place-Based SDOH Associations



*A high degree of heterogeneity across studies limited comparisons of area deprivation and socioeconomic status across study. For example, 12 approaches for assessing composite socioeconomic status at the census tract or block group level were identified across the 23 studies presented in this figure.

Evidence Synthesis and Opportunities

- **Study Heterogeneity:** Differences in patient populations and methods limit the comparability and combinability of results.
- **SDOH Underrepresentation:** Key factors, such as education, occupation, income, and psychosocial factors, were scarce or absent in the included literature.
- **Data Constraints:** Incomplete data sources, such as cancer registries with limited demographics, can lead to gaps in SDOH information.
- **Regional Limitations:** Generalizability may be hindered in regional studies that do not reflect broader US diversity.
- **Place-Based Bias:** Cross-sectional studies of individual data and reliance on broad-area measurements, like those at a county level, risk ecological fallacy.
- **Methodology Gaps:** Few studies use statistical techniques to elucidate mediators and confounders to explore the causal pathways of cancer mortality.

Future Directions

Comprehensive and Large Datasets: Utilizing individual and place-based SDOH data can deepen understanding of the scope and interconnection between factors, especially when the sample sizes are large enough to support multivariable analyses.

Census Linkage: Linking addresses to census tracts/block groups enhances measurement precision and reduces ecological fallacy risks.

Nationwide Studies: Expanding research across the US improves generalizability and reduces institutional bias.

Tumor Diversity: Examining multiple tumor types strengthens the applicability and relevance of findings; moreover, comparing how individual SDOH influence different cancer types may highlight disparities and opportunities for targeted interventions (e.g., cancers that rely on early detection may be most impacted by SDOH that affect screening).

Selected References

1. **Krieger, N. (2024).** Epidemiology and the people's health: Theory and context (2nd ed.). Oxford University Press.
2. **Hanneke, R., & Brunskill, A. (2024).** Searching for the social determinants of health: Observations from evidence synthesis publications. Systematic Reviews, 13(1), 134. https://doi.org/10.1186/s13643-024-02551-y

Acknowledgements

This research was conducted during a doctoral program at **Faulkner University** with additional non-financial support from **Ontada**.

Presented at ISPOR 2025; Montreal, Canada; May 13-16 , 2025