

Socioeconomic status linked with outcomes and survival in patients treated for non-small cell lung cancer

September 24 2023



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Researchers at Sylvester Comprehensive Cancer Center at the University of Miami Miller School of Medicine found an association between

"social determinants of health" and outcomes and survival in patients undergoing surgery and treatment for non-small cell lung cancer.

The findings are based on a statistical scoring system the researchers developed that consolidates and analyzes several measures of socioeconomic status and related factors.

"We believe our social determinants of health scoring system is the first to provide a composite perspective on many of the nonmedical factors that affect outcomes in [patients](#) receiving treatment for [non-small cell lung cancer](#)," said Dao Nguyen, M.D., Sylvester Thoracic Cancers Group co-leader. He said the study focused on patients with stage 2 or stage 3 NSCLC, with surgically confirmed metastasis to regional lymph nodes within the chest cavity.

Ideally, Nguyen said, patients with these cancers should receive 'multimodal' care—chemotherapy, immunotherapy and, in some cases, radiotherapy—and this high level of expertise and care may best be provided by specialized, comprehensive centers like Sylvester, a National Cancer Institute-designated center.

But studies have shown that better or worse outcomes result from more than just medical and surgical treatments. Socioeconomic disadvantages, for example, have been associated with lower-quality care and suboptimal outcomes. Social determinants of health, or SDH, include income, wealth, education, [geographical location](#), access to specialized care and other nonmedical factors that influence [health outcomes](#).

"Our analysis shows that SDH scores can identify patients who are at increased risk even if they undergo adequate initial treatment. Our research also may help point the way toward improving strategies and care for patients with [lung cancer](#) who are socioeconomically disadvantaged," said Nguyen, a thoracic surgeon who treats and studies

lung and other cancers and is the senior author of an [article](#) published online ahead of print in *The Journal of Thoracic and Cardiovascular Surgery*.

Nguyen and colleagues analyzed data from 11,274 patients with locally advanced NSCLC in the National Cancer Database (NCDB), a registry provided by the American College of Surgeons and the American Cancer Society. Patients with locally advanced disease make up about one-third of the NSCLC population. In the study sample, average patient age was about 68, and 57% of patients were female. Eighty-four percent of patients in the sample were non-Hispanic white, 8.8% were Black, 3.0% were Hispanic, and 3.3% were Asian.

The researchers quantified results based on the medical research term "textbook oncological outcome," which considers several metrics and translates to the most desirable or optimal outcome for patients undergoing surgery to remove a primary cancer. These factors include complete resection, adequate lymph node removal, timely initiation of other therapies when needed, and short hospital stay. Textbook outcomes also are reflected in statistics on mortality, re-intervention, readmission, and major complications.

The Sylvester study aimed to determine the rate of achieving ideal outcomes in relation to social determinants of health scores, the association between these scores and optimal outcomes, and the association between SDH and overall survival.

The researchers focused on income, place of residence, level of education, and location of hospitals in proximity to patient residence. Other variables of interest included patient demographics, types of treatment facilities, surgical volumes at treatment facilities (representing experience and expertise), and whether patients had other [medical conditions](#) or diseases in addition to NSCLC.

"In this cohort, we found that socioeconomic status—indicated by SDH score—has an important association with both textbook outcomes and survival," said Ahmed Alnajar, M.D., the paper's first author.

"Significant socioeconomic disadvantage was associated with a 21% decrease in textbook outcomes and a 32% decrease in overall survival when compared to a patient subgroup that was not disadvantaged.

Vulnerable patient population groups living in areas with limited income, limited education, rural locations, and areas with limited access to specialized [cancer](#) care settings are at increased risk of poor outcomes and long-term mortality."

Among highlights from the article:

- In this study, patients living in rural areas had a 30% decreased likelihood of overall survival and long-term outcomes.
- Having access to only community hospitals adversely affected survival.
- Having surgery performed in a high-volume hospital decreased mortality risk by 31% and increased textbook outcome likelihood by 93%, compared to having surgery completed in a low-volume hospital.
- Black patients were 31% less likely to achieve optimal, textbook outcomes than were white patients.
- The authors say policymakers should ensure equitable access to surgery and multimodality therapy to be sure all patients receive the best care. They also say surgeons and other care providers can strategically allocate resources and target interventions to counter the effects of SDH inequities.

In addition to Nguyen and Alnajar, Karishma Kodia, M.D., and Nestor Villamizar, M.D., contributed from Sylvester and the University of Miami Miller School of Medicine. Syed Razi, M.D., contributed from Hackensack Meridian Health in Edison, New Jersey.

More information: Ahmed Alnajar et al, The Impact of Social Determinants of Health on Textbook Oncological Outcomes and Overall Survival in Locally Advanced Non-Small Cell Lung Cancer, *JTCVS Open* (2023). [DOI: 10.1016/j.xjon.2023.09.013](https://doi.org/10.1016/j.xjon.2023.09.013)

Provided by University of Miami Leonard M. Miller School of Medicine

Citation: Socioeconomic status linked with outcomes and survival in patients treated for non-small cell lung cancer (2023, September 24) retrieved 28 April 2024 from <https://medicalxpress.com/news/2023-09-socioeconomic-status-linked-outcomes-survival.html>

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