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Abstract B125: Structural drivers, neighborhood disinvestment, and lung cancer risk: The Multiethnic Cohort Study and Southern Community Cohort Study

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Abstract

Background:

While lung cancer incidence has declined in the U.S., population differences persist, highlighting the need to examine structural and social drivers. We investigated associations of structural drivers and neighborhood disinvestment with lung cancer risk in two large prospective cohorts.

Methods:

Among 137,639 African American, Japanese American, Latino, and Native Hawaiian participants in the Multiethnic Cohort (MEC; recruited 1993-1996) and 47,638 African American participants in the Southern Community Cohort Study (SCCS; recruited 2002-2009), baseline addresses were geocoded and appended with 1990 (MEC) and 2000/2010 (SCCS) census tract (CT) metrics of structural drivers (redlining, racial/ethnic mortgage lending bias, Index of Concentration at the Extremes for privilege by race/ethnicity, education, and income) and neighborhood disinvestment (percent poverty, tobacco retail density, and geographic access to health care). Study-specific multivariable Cox proportional hazard models estimated hazard ratios (HR) and 95% confidence intervals. Follow-up was calculated from baseline to lung cancer diagnosis, death, or end of follow-up (12/31/2019) with age as the time metric. Base models included strata for baseline age, sex, and race/ethnicity and adjustment for state of residence, clustering by CT, and recruitment source

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(SCCS). A second model additionally included smoking status, quantity, and time dependent quitting (MEC). A final model further included participant-level lung cancer risk factors.

Results:

During mean follow-up of 20 years (MEC) and 12 years (SCCS), 4,758 (MEC) and 1,294 (SCCS) incident lung cancers occurred. In the MEC overall, residence in neighborhoods with high education or income privilege, or high poverty, was positively associated with lung cancer in base models (HRs of 1.17, 1.26, and 1.25, respectively). The positive association with income privilege was found among Japanese American and Native Hawaiian participants, while the association with high poverty was found among Native Hawaiian participants only. Positive associations were also found among Japanese American participants in more low-income, minoritized neighborhoods (HR=1.22). Among African American SCCS participants, positive associations were found in base models for neighborhoods with high redlining (HR=1.55), mortgage-lending bias (HR=1.29), or poverty (HR=1.94); less education (HR=1.54) or income privilege (HR=1.64); and those that were more low-income and minoritized (HR=1.69). Most associations attenuated after adjustment for smoking behavior, except for the finding in Native Hawaiian MEC participants, which persisted after full adjustment. Tobacco retail density and geographic access to health care were not associated with lung cancer in either cohort.

Conclusion:

Associations of structural drivers and neighborhood disinvestment with lung cancer were attenuated after adjustment for smoking. Future analyses will formally assess mediation by smoking and air pollution; and effect modification by participant- and neighborhood-level factors.

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