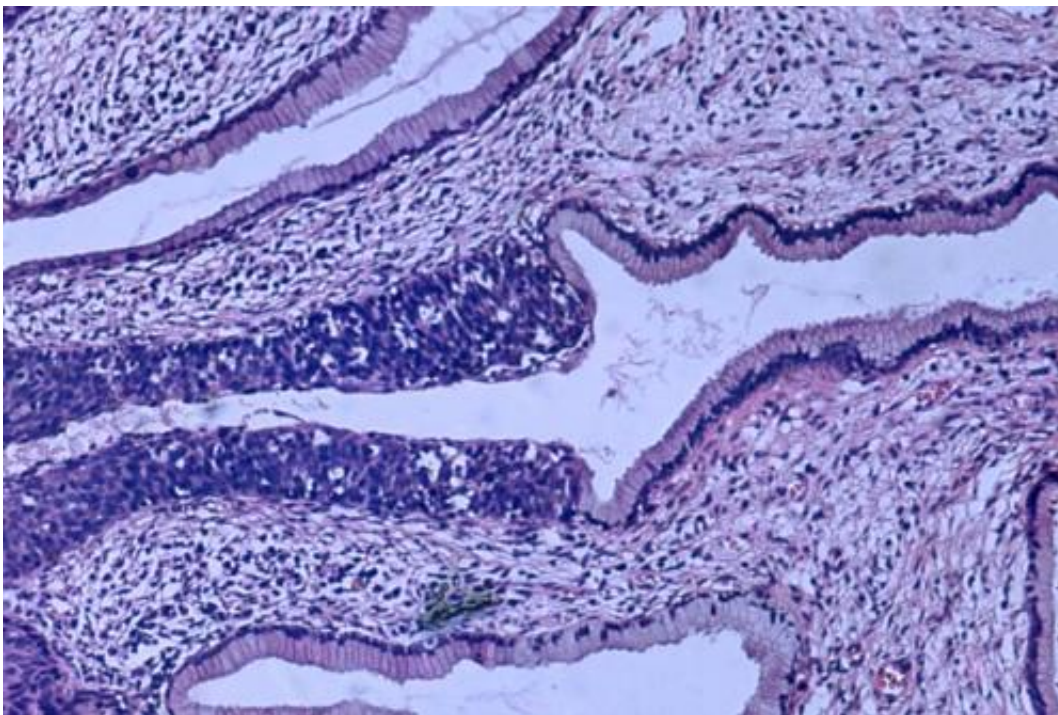# Cervical cancer rates for women highest in New York City's lowest socioeconomic neighborhoods

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High grade dysplasia (carcinoma in situ) in the uterine cervix. The abnormal epithelium is extending into a mucus gland to the left of centre. This disease can progress to invasive cancer (squamous cell carcinoma) of the cervix. Credit: Haymanj/public domain

Women living in New York City neighborhoods with the lowest socioeconomic status (SES) had a 73 percent greater chance of being

diagnosed with cervical cancer than women living in neighborhoods with the highest SES, according to research conducted by investigators at the Dana-Farber Brigham Cancer Center (DFBCC) and other institutions. Their results are published in *JAMA Oncology.*

"Our study quantifies the disproportionate burden of cervical cancer in low SES neighborhoods that are predominantly populated by Hispanic and Black residents," said lead author Stephanie Cham, MD, of Brigham and Women's Department of Obstetrics and Gynecology and the Gynecologic Oncology Program at DFBCC. "Socioeconomic status has long been thought to be linked with cervical cancer incidence rates, but the magnitude of the disparity we've found is stunning."

Cervical cancer occurs when tumors grow in the cervix, the lower part of the uterus. Human papillomavirus (HPV), a sexually transmitted infection, often plays a role in its development. A vaccine against HPV has greatly reduced the disease's prevalence. Routine gynecological care, including screening procedures for cervical cancer, namely pap smears, and follow-up care for abnormal test results, also helps prevent late-stage cases of cervical cancer.

To understand the relationship between SES and cervical cancer rates, the investigators drew on information from two databases. The first, the New York State Cancer Registry, tracks rates of cancer among populations in the state. The second, the American Community Survey, asks individuals from diverse neighborhoods about many SES factors, including educational attainment, poverty rates, crowding, unemployment, transportation access, amongst other variables. Using data from this survey they calculated a SES index validated by the American Healthcare Research and Quality. This extensive data allowed the researchers to assess SES more accurately than previous studies that relied solely on income or education status.

Cham and the team, which included investigators from Columbia University, analyzed data collected from New York City residents between 2012 and 2016. The databases included 932 cases of cervical cancer across 55 neighborhoods—a rate of about 9 cases per 100,000 women. However, the incidence of the disease varied greatly among neighborhoods; those in the top 10 percent for SES status experienced rates of around 4 cases per 100,000 women, while those in the lowest 10 percent for SES status peaked at almost 15 cases per 100,000 women. Based on these differences, the team calculated a 73 percent greater risk of cervical cancer in the lowest SES neighborhoods. Racial distribution also varied across neighborhoods: nearly 70 percent of the population was white in neighborhoods with the highest SES, compared to only 3 percent in the neighborhoods with the lowest SES. Conversely, 60 percent of the population was Hispanic, and 33 percent was Black in the lowest SES neighborhoods. In the highest SES neighborhoods, less than 12 percent of residents were Hispanic and less than 5 percent were Black.

The investigative team chose New York City for its study because it features closely spaced neighborhoods with diverse populations from different backgrounds, counties, and socioeconomic levels. The researchers hope to next analyze less densely populated areas, such as New England, to see if a correlation still exists between SES and rates of cervical cancer.

Cham noted their research does not pinpoint why SES seems to correlate with rates of cervical cancer, but she suspects lower SES areas may exhibit lower rates of HPV vaccinations as well as reduced access to preventative health care. She suggested that educational systems and community centers could play a role in delivering neighborhood-level interventions, which would better consider social and cultural factors than city-wide interventions decided by health care institutions.

"The findings from this study encourage us to consider cervical cancer rates in individual neighborhoods, how residents receive medical information, and how easily they can access preventative services, and ensure it's appropriate for a neighborhood's social and cultural profile," said Cham. "Our findings also support the importance of examining scalable, evidence-based interventions that leverage social determinants of health, such as patient navigators, to support patients in cancer screening and prevention."

The authors stated that the findings garnered from the two databases are limited by their scope, as they focus on neighborhood level data rather than individuals. Still, Cham hoped this study will encourage others to use databases "more creatively," diving deeply into and synthesizing information from different sources to examine associations of how built environments can affect the health of patients.

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