

# Smoking behavior partially explains socioeconomic inequities in lung cancer incidence

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Europeans with the least education have a higher incidence of lung cancer compared with those with the highest education. However, smoking history accounts for approximately half of this risk, according to a study in the February 24 online issue of the *Journal of the National Cancer Institute*.

Previous studies showed that individuals with a lower socioeconomic status have a higher risk for developing lung cancer. Some studies have also suggested that some of the excess risk of lung cancer is due to smoking.

To further investigate the contribution of smoking to the discrepancy in lung cancer incidence, Gwenn Menvielle, Ph.D., and colleagues examined the association of smoking, diet, education, and lung cancer in 391,251 individuals in the European Prospective Investigation into Cancer and Nutrition study. Menvielle, who conducted the research in The Netherlands at the National Institute for Public Health and the Environment, Bilthoven, and the department of public health of the Erasmus MC, Rotterdam, is now at the Institut National de la Santé et de la Recherche Médicale in Villejuif, France.

The researchers used participants' highest level of education achieved as an indicator of socioeconomic status and had smoking and diet information from questionnaires completed at study entry.

With a mean follow-up time of 8.4 years, 939 men and 692 women were diagnosed with lung cancer. Men with the lowest education had a 3.62-fold increased risk of lung cancer compared with men with the highest education. Women with the lowest education had a 2.39-fold increased risk compared with women with the highest education. The association between education and cancer risk was greatest in Northern Europe and Germany. When the researchers adjusted the risk models to account for smoking, the excess risk dropped by approximately half. Diet did not appear to contribute to the inequity in lung cancer risk between participants with lowest and highest education.

The authors state that while their model shows that smoking accounts for some of the discrepancy in lung cancer risk, they may not have yet accounted for the full impact of smoking. Therefore, some of the residual inequity in lung cancer risk associated with socioeconomic status may still be due to smoking behavior. Nonetheless, the new data suggest that other factors contribute to the inequality. "In future studies, other risk factors should be considered, perhaps in relation with smoking," the authors write. "However, we also observed that removing smoking would reduce the population health burden that is associated with social inequality in lung cancer considerably, in terms of number of cancers avoided. Therefore, public health policies aiming at reducing smoking rates, especially among persons with low education, are still strongly needed."

In an accompanying editorial, Michael J. Thun, M.D., of the American Cancer Society in Atlanta, Georgia, writes that Menvielle and colleagues' effort to disentangle the impact of smoking and socioeconomic status on lung cancer risk is laudable. However, given shifting patterns of smoking in Europe, from a behavior associated more frequently with higher socioeconomic status to one associated with lower socioeconomic status, and geographic differences in that pattern, it is an extremely difficult task.

Thun concurs with the authors' conclusion that smoking must remain a focus of anti-cancer efforts. He concludes that "...the most effective approach to reducing both the socioeconomic disparities and the overall burden of lung cancer is to implement measures that we already know are effective in reducing tobacco use."

More information:

Article: Menvielle G et al. The role of smoking and diet in explaining educational inequalities in lung cancer incidence. *J Natl Cancer Inst* 2009;101: 321-330

Editorial: Thun M. The Evolving Relationship of Social Class to Tobacco Smoking and Lung Cancer. *J Natl Cancer Inst* 2009;101: 285-287

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