

Low education, smoking, high blood pressure may lead to increased stroke risk

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Adults smokers with limited education face a greater risk of stroke than those with a higher education, according to new research in the American Heart Association's journal *Stroke*.

The combination of smoking and [high blood pressure](#) increased stroke risk the most, confirming earlier findings in numerous studies.

In a multicenter Danish study, researchers defined lower education as grade school or lower secondary school (maximum of 10 years) education.

"We found it is worse being a current smoker with lower education than a current smoker with a higher education," said Helene Nordahl, Ph.D., M.S.C., study lead author and researcher at the Department of Public Health at the University of Copenhagen in Denmark. "Targeted interventions aimed at reducing smoking and high blood pressure in lower socioeconomic groups would yield a greater reduction in stroke than targeting the same behaviors in higher socioeconomic groups."

Researchers divided 68,643 adults (30-70 years old) into low, medium and high education levels and assessed smoking and high blood pressure levels. They found:

- Sixteen percent of men and 11 percent of women were at high-risk of stroke due to low education level, smoking and high blood pressure.
- Men were more at risk of stroke than women, and the risk of stroke increased with age.
- Ten percent of the high-risk men and 9 percent of the high-risk women had an [ischemic stroke](#) during the study's 14-year follow-up.
- Smokers with low education had a greater risk of stroke than smokers with high

education regardless of their blood pressure.

"Universal interventions such as legislation or taxation could also have a strong effect on stroke in the most disadvantaged," Nordahl said. "We need to challenge disparities in unhealthy behaviors, particularly smoking."

Researchers weren't able to consider differences associated with ethnicity because 98 percent of the participants were Danes.

"The distribution of stroke risk factors may vary across various contexts and study populations," Nordahl said. "However, since the most disadvantaged groups are often exposed to a wide number of [stroke risk factors](#), it seems plausible that these people are at higher risk of [stroke](#) not only in Denmark, but also in other industrialized countries."

Provided by American Heart Association

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