

# Exposure to secondhand smoke may produce cognitive impairment in non-smokers

Maria FLORESCU, MD

Research Fellow in Cardiology, Department of Cardiology,  
Emergency University Hospital, Bucharest, Romania

It is well known that smoking is associated with deleterious effects on health, including an increased risk for cognitive impairment and dementia. In a meta-analysis of 19 prospective studies published in 2007, current smoking vs never smoking was associated with increased relative risks of 80% for both Alzheimer's disease and vascular dementia. However, the risk for the development of any type of dementia was similar in comparing former smokers vs current smokers. The current study investigates the relationship between exposure to secondhand smoke and the risk for cognitive impairment in non-smokers and the results are published online in *BMJ*.

This study examined saliva samples from 4809 participants who completed the Health Survey for England in 1998, 1999, and 2001. All individuals were adults at 50 years or older who did not use tobacco products and did not have a history for dementia. Saliva samples were tested for cotinine – a product of nicotine that can be found for about 25 hours after exposure to secondhand smoke. All participants underwent a comprehensive neuropsychological tests,

including measurements of attention, processing speed, time orientation, simple mathematical skills, verbal fluency, and immediate, delayed and prospective memory.

The main aim of the current study was to assess the relationship between salivary cotinine levels and cognitive impairment, which was defined as a cognitive score in the lowest 10%. This outcome was adjusted to account for multiple potential confounders, including age, sex, ethnicity, education, obesity, physical inactivity, and depressive symptoms.

The results of the study are presented in the next paragraph. The mean age of the participants was 65.1 years, 53% were women, and 98% were white. 42% of participants had never smoked, and 14% were former smokers (stopped < 10 years ago). The 4 quartiles of salivary cotinine concentration were 0 to 0.1 ng/mL, 0.2 to 0.3 ng/mL, 0.4 to 0.7 ng/mL, and 0.8 to 13.5 ng/mL. Compared with adults in the lowest quartile of salivary cotinine concentration, participants in the second, third, and fourth quartiles experienced fully adjusted odds ratios of 1.08, 1.13, and 1.44 for cognitive impairment, respectively. There was also a

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*Comment on the paper:*

Llewellyn DJ, Lang IA, Lasnga KM, et al – Exposure to secondhand smoke and cognitive impairment in non-smokers: national cross sectional study with cotinine measurement. *BMJ* 2009; Feb 12 (published online)

nonsignificant trend toward an increased rate of cognitive impairment as the cotinine concentration increased in former smokers, but this trend was not as pronounced vs never-smokers. There was no significant interaction between cardiovascular disease and the effects of secondhand smoke on the risk for cognitive impairment.

In conclusion, the current study demonstrated that increased exposure to secondhand

smoke was associated with a progressively higher risk for cognitive impairment in non-smokers. Therefore, this new study adds cognitive impairment to the list of adverse health effects related to secondhand smoke and suggests that greater public awareness about the dangers of secondhand smoke and its link to a much-feared disease like dementia should translate into political action aimed at passing smoke-free legislation. □

