

Cigarette smoking is a risk factor for Alzheimer's Disease: an analysis controlling for tobacco industry affiliation.

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Abstract

To examine the relationship between smoking and Alzheimer's disease (AD) after controlling for study design, quality, secular trend, and tobacco industry affiliation of the authors, electronic databases were searched; 43 individual studies met the inclusion criteria. For evidence of tobacco industry affiliation, <http://legacy.library.ucsf.edu> was searched. One fourth (11/43) of individual studies had tobacco-affiliated authors. Using random effects meta-analysis, 18 case control studies without tobacco industry affiliation yielded a non-significant pooled odds ratio of 0.91 (95% CI, 0.75-1.10), while 8 case control studies with tobacco industry affiliation yielded a significant pooled odds ratio of 0.86 (95% CI, 0.75-0.98) suggesting that smoking protects against AD. In contrast, 14 cohort studies without tobacco-industry affiliation yielded a significantly increased relative risk of AD of 1.45 (95% CI, 1.16-1.80) associated with smoking and the three cohort studies with tobacco industry affiliation yielded a non-significant pooled relative risk of 0.60 (95% CI 0.27-1.32). A multiple regression analysis showed that case-control studies tended to yield lower average risk estimates than cohort studies (by -0.27 ± 0.15 , $P=0.075$), lower risk estimates for studies done by authors affiliated with the tobacco industry (by -0.37 ± 0.13 , $P=0.008$), no effect of the quality of the journal in which the study was published (measured by impact factor, $P=0.828$), and increasing secular trend in risk estimates ($0.031/\text{year} \pm 0.013$, $P=0.02$). The average risk of AD for cohort studies without tobacco industry affiliation of average quality published in 2007 was estimated to be 1.72 ± 0.19 ($P < 0.0005$). The available data indicate that smoking is a significant risk factor for AD.

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