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NAKO study confirms link between smoking and depression

A research group led by the Central Institute of Mental Health (CIMH) in Mannheim has confirmed for the first time within the German National Cohort (NAKO) an association between cigarette consumption and depression. The findings show that depression occurs more frequently over the lifetime of current and former smokers than among those who have never smoked. The study focused in particular on the dose-dependent effects of smoking behaviour on the occurrence of depression. The data also showed that stopping smoking is worthwhile: the longer ago the last cigarette was smoked, the lower the risk of developing depression.

With over eight million smoking-related deaths worldwide, smoking is the leading preventable cause of premature mortality (WHO, 2021). "Although the association between smoking and depression is well established, the mechanisms underlying this link remain poorly understood. In our study, we therefore examined in particular the dose-response relationships and time factors such as age at onset and time since smoking abstinence, reports Maja Völker, doctoral candidate in the Department of Genetic Epidemiology in Psychiatry at the Central Institute of Mental Health (CIMH).

The analysis included 173,890 participants between 19 and 72 years, 50 per cent of whom were women. In interviews and using standardised questionnaires, participants reported on doctors' diagnoses of depression, current depressive symptoms, living conditions and smoking habits. This resulted in three groups: 81,775 never-smokers, 58,004 former smokers and 34,111 current smokers. Current and former smokers also stated the age at which they had started smoking. In addition, the average number of cigarettes smoked per day was recorded – for active smokers and retrospectively for former smokers. For the latter, the time since quitting smoking was also calculated.

'We were able to investigate and confirm the link between smoking and depression for the first time within the German National Cohort (NAKO), Germany's largest population study,' says PD Dr Stephanie Witt, acting head of the Department of Genetic Epidemiology in Psychiatry at CIMH.

The scientists showed that depression was more common among current and former smokers than among never-smokers over the course of their lifetime. "These differences were particularly pronounced in the middle age groups between 40 and 59 years. This underlines that in addition to social factors, temporal effects could play a role in the interaction between smoking and mental health," says Carolin Marie Callies, doctoral candidate at the Chair of Health Psychology at the University of Mannheim.

In addition, a dose-response relationship was observed: the more cigarettes smoked per day, the more severe the current depressive symptoms were (0.05 more symptoms per additional cigarette). A later onset of smoking was associated with a later onset of the first depression (0.24 years later onset of illness per year later onset of smoking). Stopping smoking also had a positive effect: the longer ago this was, the longer ago the last depressive episode was, as a rule (0.17 years per year of smoking abstinence).

The consumption of other tobacco products (e.g. cigars, cigarillos, pipes) was not taken into account in this analysis. It should be noted that the cross-sectional design of the study and the retrospective assessments do not allow causal conclusions to be drawn. Further studies and supplementary analyses should therefore supplement the findings in the future.

"Our observations underline how important it is to prevent people from taking up smoking and to encourage them to quit in order to improve their mental health. Particularly worthy of note in this regard are the dose-dependent effects of smoking behaviour: according to our analysis, higher cigarette consumption was associated with more severe depressive symptoms, while a longer period since stopping smoking was associated with better depression scores," summarises Dr Fabian Streit, researcher at the Hector Institute for Artificial Intelligence in Psychiatry at CIMH. "Future longitudinal analyses and the inclusion of genetic and imaging data could help clarify further mechanisms and possible causal relationships."

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