

# Smoking increases risk of developing active TB

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Smoking is a risk factor for active tuberculosis (TB) disease, according to a new study on TB incidence in Taiwan.

The research analyzed data from nearly 17,000 individuals in Taiwan as part of Taiwan's 2001 National Health Interview Survey (NHIS).

While past studies have reported increased mortality among TB patients who smoke, none have been able to specifically examine the direct effect of smoking on active TB incidence using a longitudinal design in a general population. "In this prospective cohort study we found a two-fold increase in the risk of active TB in current smokers compared with never-smokers," said lead author, Hsien-Ho Lin, postdoctoral research fellow from Brigham and Women's Hospital, in Boston.

The results are reported in the September 1 issue of the [American Journal of Respiratory and Critical Care Medicine](#), published by the American Thoracic Society.

Dr. Lin and collaborators retrieved information from the individual NHIS records on smoking data and exposure to second-hand smoke at home. They also identified potential confounders, including sex, age, living in a crowded home, household income, marital status, alcohol use and employment. They then identified all incident cases of TB occurring between 2001 and 2004 by using that National Health Insurance database.

When they compared the likelihood of active TB among ever-, never-, and current smokers, they found that ever-smokers had 2.69 times the risk of developing active TB than never-smokers; current smokers had 2.73 times the risk. After adjusting for potential confounders, the increased risk remained significant for current smokers, who had twice the risk of developing active TB in comparison to never-smokers.

Interestingly, they also found that younger smokers were more likely than smokers older than 65 to develop active TB relative to their non-smoking counterparts.

"The small number of TB cases in this study prevented us from examining the age-gradient of smoking-TB association at a finer age scale, and more studies are needed to confirm these findings," Dr. Lin said. "Because the baseline risk for active TB is higher in the elderly in many countries, a smaller but still elevated relative risk in this population may yet translate to a greater number of cases of active TB, and our findings should not be interpreted to mean that smoking poses a lower risk in the older population."

Furthermore, they found that while the prevalence of active TB is known to be greater among men, when they controlled for smoking, drinking and related social behaviors, those gender differences disappeared, raising the possibility that "smoking, not biological differences, may be the underlying cause of the sex difference in TB."

Smoking may increase the risk of developing active TB through different biological mechanisms, including the impaired clearance of secretions on the tracheobronchial mucosal surface, reduced phagocytotic function of pulmonary alveolar macrophages, decreased production of tumor necrosis factor in pulmonary macrophages, and increased iron overload in pulmonary macrophages. The pulmonary macrophages are the body's primary defence mechanism to contain *M.*

*tuberculosis.*

"To our knowledge this is the first cohort study from a general population that provides evidence on the positive association between tobacco smoking and active TB. Based on results from ours and other studies, policy makers and public health personnel should consider addressing tobacco cessation as part of [tuberculosis](#) control. From the perspective of prevention, the target of smoking cessation should aim beyond TB patients to reach high-risk populations who are most likely to benefit from cessation," said Dr. Lin. "Further studies are needed on smoking and TB in different countries and ethnic groups, as well as randomized trials of [smoking](#) cessation that look at incident TB as one of the outcomes."

Source: American Thoracic Society ([news](#) : [web](#))

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