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Contact: Staci Vernick Goldberg
goldberg@aacr.org
215-440-9300
American Association for Cancer Research

Smokers who cut back on cigarettes may negate benefit through 'compensatory smoking'

PHILADELPHIA ‑Heavy smokers who have reduced their number of daily cigarettes still experience significantly greater exposure to toxins per cigarette than light smokers, according to a new study by researchers at the University of Minnesota.

Even when smokers in the two groups smoked as few as five cigarettes a day, heavy smokers who reduced their cigarette intake experienced two to three times the amount of total toxin exposure per cigarette when compared with light smokers, researchers report in the December issue of Cancer Epidemiology, Biomarkers & Prevention.

In addition, researchers observed that the more that heavy smokers reduced their smoking, the more likely they were to increase their exposure to toxicants per cigarette presumably because they took more frequent puffs or inhaled deeper or longer on each cigarette, a process referred to as "compensatory smoking." As a result, smokers who decreased their smoking to as little as one to three cigarettes per day experienced a four- to eight-fold increased exposure to toxins per cigarette as compared with light smokers.

Compensatory smoking occurs because smokers are trying to maintain a specific level of nicotine in their bodies, says Dorothy K. Hatsukami, Ph.D., lead author of the study and director of the University's Transdisciplinary Tobacco Use Research Center in Minneapolis. Other factors, such as the sensory aspects of smoking, also may play a role in compensatory smoking, Hatsukami says.

"These results are consistent with other studies that show that people who decrease their smoking by 50 percent or more don't experience a comparable reduction in risk for lung cancer because they tend to smoke their fewer cigarettes more intensely," she says. "The best way to lower the risk for premature death is to stop smoking altogether."

For the study, Hatsukami and colleagues compared a group of 64 people participating in two smoking reduction intervention studies and who reduced their smoking to levels similar with a group of 62 light smokers. The researchers created a mathematical formula to calculate the degree of smoking compensation in reducers compared with light smokers. As part of the formula, they measured a biological marker, total NNAL, which indicates the amount of exposure to the tobacco-specific lung cancer-causing agent NNK.

The light smokers averaged age 48, were 53 percent female and smoked an average of 5.6 cigarettes a day. The reducers averaged age 51, were 39 percent female and smoked an average 26 cigarettes per day prior to cigarette reduction. All of the reducers studied decreased their smoking by at least 40 percent and smoked five cigarettes per day within six months of enrolling in the study.

Results indicated that the average level of NNAL for reducers was more than twice that of light smokers, even when the two groups smoked about the same number of cigarettes per day. The amount of smoking reduction was shown to be a strong predictor of compensatory smoking, with greater cigarette reduction associated with more compensation.

Hatsukami says heavy smokers fare better health-wise by quitting smoking than decreasing their cigarette intake: "Although light smokers have lower levels of disease risk than heavy smokers, a low rate of smoking still confers increased risk compared to non-smokers and quitters."

In a previous study of smoking reduction using nicotine replacement therapies such as gum or patches, the researchers observed that smokers who reduced their cigarette intake by 73 percent only experienced a 30 percent reduction in carcinogens because of compensatory smoking. Another study showed that a reduction of 62 percent in tobacco consumption was associated with only a 27 percent reduction in lung cancer risk.

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