

Research shows not all low nicotine cigarettes reduce harm

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Credit: Vera Kratochvil/public domain

Switching to reduced nicotine content (RNC) cigarettes may not necessarily reduce harm to smokers, according to new research conducted by Penn's Center for Interdisciplinary Research on Nicotine Addiction (CIRNA). Smokers also tend to ignore cautions contained in warning box labels, the authors found in a separate study. The study results were published recently in *Cancer Epidemiology Biomarkers and*

Prevention and Drug and Alcohol Dependence. RNC cigarettes are a new type of cigarette that contain varying levels of *low* nicotine and are constructed differently than light cigarettes.

The first study was a [randomized clinical trial](#) that showed smokers used more daily [cigarettes](#) and had higher smoke exposure when given cigarettes with nicotine levels slightly lower than their own brand; and while they increased their puffing when provided the very lowest nicotine level cigarettes, their nicotine and smoke exposure decreased overall. In the second study, researchers experimentally altered advertisements for these same RNC cigarettes and found ways to correct some of the false beliefs smokers have about the smoking risks associated with lower nicotine cigarettes.

The research, led by Andrew A. Strasser, PhD, an associate professor of Psychiatry and the director of Penn's Biobehavioral Smoking Lab in the Perelman School of Medicine at the University of Pennsylvania, may inform policy under the U.S. Food and Drug Administration's (FDA) Tobacco Control Act.

The randomized clinical trial involved 158 non-treatment-seeking smokers who participated in a 35-day study to examine smoking topography behavior, or how a person smokes a cigarette (including the number of puffs and puff volume, duration, and velocity). After a five-day baseline period 80 participants were randomly assigned to an experimental group and were asked to smoke three levels of progressively decreasing RNC cigarettes (during three 10-day periods), and 78 participants served as a [control group](#) that smoked their own brand of cigarettes throughout the study. The researchers assessed smoking behaviors and took blood samples to test for various biomarkers throughout the study.

"Of particular interest is that when smoking the moderate nicotine level

cigarettes, participants consumed more cigarettes each day but puffed each less intensely than when smoking their own brand, or compared to the control group. But then daily cigarette consumption decreased and puffing intensity increased for the lowest nicotine cigarette, illustrating the complexities in evaluating cigarette use patterns," Strasser said. "To further add to the complexities, our measures of smoke exposure significantly decreased for the lowest nicotine cigarette compared to the control group, but the intermediate nicotine level cigarettes increased some toxicant exposures while decreasing others."

The second study utilized eye-tracking technology to examine how 202 smokers view cigarette advertising with the goal of better understanding how to effectively convey risk to smokers. Specifically, the study focused on whether counter-advertising and corrective messages—such as adding information in the advertisements informing smokers that lower nicotine does not mean fewer health risks—could improve smokers' understanding of their risks.

The eye tracking results demonstrated that the majority of smokers do not look in the warning label box found in tobacco advertisements, making the text only warning areas currently found in many advertisements an ineffective way to convey risk. By including risk information in the body of the advertisement, [smokers](#) were more likely to look at, remember, and believe their risks of using the tobacco product. The researchers suggest these results could support regulation for how tobacco products are marketed.

"The Tobacco Control Act allows the FDA to regulate tobacco product marketing and advertising so that people are not misled about harm; and, the FDA can also set standards on cigarette constituent levels, including nicotine, if scientific evidence supports it will benefit public health," said Strasser. "While these studies are scientifically quite different, their results may collectively inform future policy and law by

regulating the ways RNCs can be marketed, as well as identifying optimal [nicotine](#) levels in cigarettes to reduce exposure to the dangerous substances they contain."

Provided by University of Pennsylvania

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