

Researchers find social hookah smoking packs a carbon monoxide punch

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A new University of Florida study shows that patrons leaving hookah cafés had carbon monoxide levels more than three times higher than patrons exiting traditional bars.

Carbon monoxide reduces the blood's ability to carry oxygen to tissues, and long-term exposure has been linked to cardiovascular disease. The UF study results appeared in the March issue of the American Journal of Preventive Medicine.

The social nature of [hookah](#) smoking, which is often shared in groups, makes it appealing to young people, said lead researcher Tracey Barnett, an assistant professor in the UF College of Public Health and Health Professions' department of behavioral science and community health.

“There is also a common misperception that hookah smoking is a harmless alternative to cigarette smoking,” she said.

Hookah pipes are composed of a head, where lit charcoal and tobacco sit, a body with water bowl, and a hose. Air is drawn through the tobacco and into the pipe body where it passes through the water before being inhaled through the hose.

A study led by Barnett showed that 11 percent of Florida high school students and 4 percent of middle school students surveyed in 2007 had tried hookah smoking. It is especially popular among college students. A University of Memphis study estimated that 10 percent to 20 percent of

some young adult populations are current hookah users.

The new UF study is the first to measure [carbon monoxide](#) levels of hookah smokers “in the field.”

“Our study is unique because we were actually getting participants as they were leaving these establishments,” Barnett said. “There’s been a lot of great lab work on hookah and carbon monoxide levels, but doing a behavior in the lab is not the same as when young adults are out with their friends in an environment where there’s also drinking and socializing, so with this study we were catching them in a real-world moment as best we could.”

Study data were collected in April, September, October and November 2009 outside Gainesville establishments. Using a breath carbon monoxide tester, researchers measured the carbon monoxide levels of 173 hookah café patrons and 198 patrons of traditional bars that allow smoking. Under Florida’s Clean Indoor Air Act, smoking is permitted in establishments that generate less than 10 percent of revenue from food sales.

The average carbon monoxide level of hookah patrons was 30.8 parts per million while traditional bar-goers had an average carbon monoxide reading of 8.9 ppm. Even hookah café patrons who reported not engaging in hookah smoking while in the café demonstrated elevated carbon monoxide levels: on average 11.5 ppm, an amount comparable to a carbon monoxide level of a regular cigarette smoker.

The Occupational Safety and Health Administration’s maximum level for carbon monoxide exposure is 50 ppm over an eight-hour period.

The average carbon monoxide levels of the hookah café patrons in the UF study were similar to previous lab studies of hookah smokers, but the

upper ranges of carbon monoxide levels reached by study participants exceeded those in lab studies, Barnett said.

In the UF study, 18 percent of hookah café patrons had carbon monoxide levels above 50 ppm compared with 1.5 percent of traditional bar patrons. Eight hookah café patrons involved in the study, or 5 percent, tested above 90 ppm. People may experience symptoms of carbon monoxide poisoning, such as headache, fatigue and nausea, at 70 ppm and sustained exposure at 150 ppm to 200 ppm leads to disorientation and unconsciousness, according to the U.S. Consumer Product Safety Commission.

The high levels of carbon monoxide associated with hookah smoking can be attributed to the tobacco, the piece of burning charcoal used to warm the tobacco, and the nature of hookah use, in which users may smoke continuously for an hour or more, Barnett said.

“This study underlies the importance of understanding harmful exposures associated with water pipe smoking venues and calls for the need to close existing loopholes in clean indoor air laws,” said Dr. Wasim Maziak, a professor at the University of Memphis School of Public Health and director of the Syrian Center for Tobacco Studies, who was not involved in the UF study. “The next step would be to demonstrate harmful exposures in those working in non-smoke free venues or patrons of such venues who are nonsmokers.”

Future studies on carbon monoxide levels and hookah smoking should include collecting information on how long hookah smokers stay in the cafés and understanding how carbon monoxide and alcohol possibly interact, Barnett said.

“A third goal is to start educating users who say hookah smoking is not harmful,” she said. “This study demonstrates that even one [hookah](#)

smoking session is exposing participants to high levels of carbon monoxide. There is no safe way to use tobacco.”

The study’s other authors include Barbara Curbow, chair of the department of behavioral science and community health, Eric Soule Jr., a UF public health graduate student, Scott Tomar, a professor in UF’s College of Dentistry, and Dennis Thombs, of the University of North Texas Health Science Center.

Provided by University of Florida

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