Secondhand smoke is linked to Type 2 diabetes and obesity

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Adults who are exposed to secondhand smoke have higher rates of obesity and Type 2 diabetes than do nonsmokers without environmental exposure to tobacco smoke, a new study shows. The results will be presented at The Endocrine Society's 94th Annual Meeting in Houston.

"More effort needs to be made to reduce exposure of individuals to secondhand smoke," said study co-author Theodore C. Friedman, MD, PhD, chairman of the Department of Internal Medicine at Charles R. Drew University, Los Angeles.

Studies have shown an association between cigarette smoking and an increased rate of Type 2 diabetes despite the fact that most smokers are leaner than nonsmokers and obesity is a risk factor for Type 2 diabetes. Although some studies have suggested a relationship between Type 2 diabetes and passive, or secondhand, smoking, Friedman said these studies have not verified exposure to secondhand smoke through serum (blood) levels of cotinine. Cotinine is a metabolite of nicotine, and serum cotinine measures a person's exposure to tobacco smoke.

In their current study, Friedman and his fellow researchers used serum cotinine levels to verify passive smoking. They examined data from more than 6,300 adults who participated from 2001 to 2006 in the National Health and Nutrition Examination Survey (NHANES), a nationally representative sample of the U.S. population.

The investigators defined current smokers, which made up 25 percent of

the sample, as survey participants who reported that they smoke cigarettes and who had a measured serum cotinine level greater than 3 nanograms per milliliter (ng/mL). Nonsmokers (41 percent of the sample) were those who answered "no" to the question "Do you smoke cigarettes?" and who had a cotinine level below 0.05 ng/mL. Participants who answered "no" to this question but whose cotinine level was above 0.05 ng/mL were defined as secondhand "smokers" (34 percent).

In analyzing these groups, the researchers controlled for age, sex, race, alcohol consumption and physical activity. They found that, compared with nonsmokers, secondhand smokers had a higher measure of insulin resistance, a condition that can lead to Type 2 diabetes; higher levels of fasting blood glucose, or blood sugar; and a higher hemoglobin A1c, a measure of blood sugar control over the past three months.

Secondhand smokers also had a higher rate of Type 2 diabetes, as defined by a hemoglobin A1c greater than 6.5 percent. Secondhand smokers had a similar rate of diabetes to that of current smokers, according to Friedman.

Secondhand smokers also had a higher body mass index (BMI), a measure of body fat, compared with nonsmokers, Friedman reported. Current smokers had a lower BMI than nonsmokers but a higher hemoglobin A1c. When the researchers controlled for BMI, they found that secondhand smokers and current smokers still had a higher hemoglobin A1c than did nonsmokers.

"This finding shows that the association between secondhand smoke and Type 2 diabetes was not due to obesity," Friedman said. "More studies are needed to show whether secondhand smoke is a cause of diabetes."

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