

Love handles put the squeeze on lungs

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There's more bad news for people who carry excess weight around their waists: Not only is abdominal obesity associated with diabetes, hypertension, cardiovascular disease and a host of other health problems collectively known as "metabolic syndrome," a new study has found that a high waist circumference is strongly associated with decreased lung function—independent of smoking history, sex, body mass index (BMI) and other complicating factors.

The study analyzed health information on more than 120,000 people from the Paris Investigations Preventives et Cliniques Center, and assessed demographic background, smoking history, alcohol consumption, as well as lung function, including FEV1 (forced expiratory volume in one second) and FVC (forced vital capacity, or the total expiratory volume) with respect to BMI, waist circumference and other measures of metabolic health.

The results were published in the second issue for March of the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

"After adjustment for age, sex, BMI, smoking status, alcohol consumption, leisure time physical activity and cardiovascular history, metabolic syndrome remained independently associated with lung function impairment," wrote lead author Natalie Leone, M.D., of French National Institute for Health and Medical Research. "We found a positive independent relationship between lung function impairment and metabolic syndrome due mainly to abdominal obesity."

Abdominal obesity was defined as having a waist circumference of greater than 35 inches for women and 40 inches for men.

"[This] study demonstrated that only mild abdominal adiposity, even with a normal body mass index (BMI), is associated with lower FVC," said Paul Enright, M.D., of the University of Arizona, in an accompanying editorial.

While the cross-sectional study was not able to address causality or temporal associations, the authors posit several possible mechanisms by which excess abdominal fat may limit or decrease lung function.

"This association may result from the mechanical effects of truncal obesity and/or the metabolic effects of adipose tissue," wrote Dr. Leone. "Abdominal obesity may mechanically affect the diaphragm and chest wall compliance with decreased lung volumes."

Moreover, adipose tissue itself is known to be involved in a complex metabolic feedback cycle—the mass of adipose tissue in one's body directly and positively correlates with pro-inflammatory markers and negatively correlates with anti-inflammatory markers.

"[A]dipose tissue may act as an additional source of systemic inflammation," wrote Dr. Leone.

The researchers also found a significant interaction between metabolic syndrome and smoking status, with estimated lung function impairment risk in current and former smokers being higher than in those who never smoked.

"Prospective studies are needed to determine the temporal relationship between lung function impairment and metabolic syndrome, including abdominal adiposity in particular. Mechanistic studies are also required

to clarify the underlying physiopathological pathways," concluded Dr. Leone.

While more research will undoubtedly shed light on the underlying mechanisms linking abdominal fat to lowered lung function, there is an immediate clinical consideration:

"I believe there is now enough evidence to recommend that waist circumference always be measured before spirometry tests. Abdominal obesity could then be highlighted on the printed report so that the physician interpreting the report could take the effect of obesity into account," wrote Dr. Enright.

Source: American Thoracic Society

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