

Study finds strong relationship between high body mass index, pancreatic cancer

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In reviewing the weight history of pancreatic cancer patients across their life spans, researchers at The University of Texas M. D. Anderson Cancer Center have determined that a high body mass index in early adulthood may play a significant role in an individual developing the disease at an earlier age.

The study, published in the June 24 issue of the [Journal of the American Medical Association](#), also found that [patients](#) who are obese the year before diagnosis have a poorer outcome than those who are not.

While excess weight is a known risk factor associated with pancreatic cancer, before now, few studies have looked at patients' body mass index (BMI) throughout their lifetime rather than simply at adulthood and/or year of disease diagnosis.

"This is the first study to explore at which ages excess [body weight](#) predisposes an individual to pancreatic cancer," said Donghui Li, Ph.D., professor in M. D. Anderson's Department of Gastrointestinal Medical Oncology and the study's corresponding author. "With our epidemiological research, we aimed to demonstrate the relationship between BMI and risk of pancreatic cancer across a patient's life span and determine if there was a time period that specifically predisposes an individual to the disease, as well as the link between BMI and cancer occurrence and overall survival of the disease."

Pancreatic cancer is the fourth leading cause of cancer death in men and

women in this country. It is a highly lethal disease - according to the American Cancer Society, more than 42,470 persons will be diagnosed and 35,240 will likely die from the disease in 2009. The median survival for patients with the disease is less than 10 months and the five-year survival rate is less than five percent.

Obesity and smoking are the major modifiable risk factors associated with the disease; it's estimated that 25 percent of the pancreatic cancer cases are associated with the former and 27 percent with the latter, said Li. While the number of adults smoking is on the decline, the number of adults dangerously overweight is on the rise. In the U.S., obesity in adults has increased by 60 percent in the last 20 years, and is considered an epidemic by the Centers for Disease Control.

"With our study, we hoped to better understand the cause-and-effect relationship between this modifiable risk factor that contributes to the development of pancreatic cancer, in hopes that high-risk individuals can be identified and preventive measures discovered for this lethal disease," said Li.

For the case-control study, the researchers enrolled 1,595 individuals - 841 pancreatic adenocarcinoma patients treated at M. D. Anderson for their disease between 2004 and 2008, compared to 754 cancer-free individuals, all companions of M. D. Anderson patients. The groups were matched by age, race and sex. Using a detailed questionnaire, personal interviews were conducted to collect such information as their: smoking history; family history of cancer; alcohol use and general medical history. Participants also were asked to recall their height and body weights at ages 14-19; 20s; 30s; 40s; 50s; 60s; 70s; and the year prior to pancreatic cancer diagnosis or enrollment in the study.

Participants' BMI were then calculated at each age period and then classified by World Health Organization guidelines as either normal,

overweight (greater than or equal to a score of 25, but less than 30) or obese (30 or greater). The researchers then compared the prevalence of overweight and obesity between both the patients and the controls. Among the cancer patients, they also compared the mean or median age of pancreatic cancer diagnosis and the overall survival time between those that were of normal weight, overweight and obese,.

While the research reconfirmed an association with obesity and pancreatic cancer, the study also found an association that excess at younger ages had a stronger association with increased risk of pancreatic cancer than subsequent increases in BMI. For example, individuals overweight at 14-19 and/or in their 30s had a 60 percent increased risk of the disease. Those obese at age 20s-40s were found to have a 2-3 times higher risk of pancreatic cancer. The risk of developing the disease appeared to level off for those that gained excess weight in their 40s; and after age of 50, the risk for the disease was not statistically significant.

Another major finding was the association between excess weight and earlier onset of pancreatic cancer. The study found a median age at diagnosis of 64 for those at normal weight, compared to 61 and 59 for overweight and obese patients respectively.

"This is one of the most surprising findings," said Li "On average, overweight pancreatic cancer patients were diagnosed two to three years earlier, and obese patients were diagnosed five to six years earlier, which underscores the impact of obesity on loss of life - especially in productive years."

The researchers also found that obesity later in life, especially within a year prior to a patient's cancer diagnosis, was associated with a reduced overall survival time. For example, said Li, in the study population, patients with a healthy body weight had an average survival time of 18

months, compared to 13 months for both overweight and obese patients.

"As we see obesity dangerously on the rise in the country, this study has true public health implications. Like smoking, obesity is a modifiable risk factor," said James Abbruzzese, M.D., professor and chair of the Department of Gastrointestinal Medical Oncology and the last author on the study. "Our study suggests that weight control at a younger age should be the primary preventive strategy to reduce the risk of pancreatic cancer."

The study may even have clinical implications, especially in regard to poor survival and obesity the year before diagnosis, as this association could affect pancreatic cancer clinical trial stratification in the future, explained Abbruzzese.

As future research, the researchers plan to further investigate the link between obesity, [pancreatic cancer](#) and poor outcome, looking at insulin resistance as a possible mechanism. Li and her team will also research what factors - genetic, dietary or others - modify the risk between excess body weight and the disease, in hopes of one day developing preventive strategies and discovering biomarkers for early detection of the disease.

Source: University of Texas M. D. Anderson Cancer Center ([news](#) : [web](#))

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