

As girth grows, risk of sudden cardiac death shrinks

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Obesity has long been identified as a risk factor for cardiovascular disease and heart failure. But, a new study conducted by researchers at the University of Rochester Medical Center found that being skinny confers no advantage when it comes to the risk of dying suddenly from cardiac causes.

Scientists found that non-obese [heart failure](#) patients - including overweight, normal and underweight patients - had a 76 percent increase in risk of sudden cardiac death compared to obese heart failure patients. Normal and underweight patients showed a startling 99 percent increase in risk for sudden cardiac death compared to obese patients.

The results are being presented today at the American College of Cardiology Annual Scientific Session in Atlanta. The study, by researchers from one of the world's leading groups on sudden cardiac death, is the first to assess the relation between BMI and the risk of sudden cardiac death.

"This study is important because it not only answers questions regarding the risk of sudden cardiac death in different types of heart failure patients, but poses several new questions that need to be explored," said corresponding study author Dr. Ilan Goldenberg, research associate professor of Medicine in the Cardiology Division. "Why do obese heart failure patients see a risk advantage? Why do normal weight patients have a significantly different risk profile than those who are slightly overweight? These are important questions that may have treatment

implications in the future."

The researchers at the University's Heart Research Follow-Up Program examined the risk of sudden cardiac death in 1,231 patients who had suffered at least one prior [heart attack](#) and had been diagnosed with a low ejection fraction, a measurement of how much blood is pumped from the heart with each beat. Their analysis found that decreased BMI or [body mass index](#) was associated with a large increase in the risk of sudden cardiac death. These findings highlight the "obesity paradox," a phenomenon long recognized by cardiologists that, once afflicted, obese heart failure patients fare better than their slimmer counterparts. This study adds to a growing body of conflicting data regarding the relation of BMI to outcome in patients with heart failure.

"When we started this study we were hoping the data would disprove the 'obesity paradox,'" said Bonnie Choy, co-lead author and a second year medical student at the University's School of Medicine and Dentistry. "Our study is the first to create and analyze subcategories within non-obese patients, looking at overweight, normal and underweight patients, but even with this advanced analysis we still saw an inverse relationship between BMI and sudden cardiac death."

The science behind the obesity paradox in the heart failure population is unresolved, but some researchers believe timing may have something to do with it. One possible explanation is that the long-term negative effects of conventional risk factors, such as increased BMI, may be overwhelmed by the short-term effects of other factors on heart failure mortality. In addition, survival advantages that exist in obese patients with heart failure may, in the short term, outweigh the harmful effects of increased BMI.

"Obese patients are hard on their bodies; many don't eat right, don't exercise, and many smoke," explained Eric Hansen, co-lead author and

also a second year medical student at the University of Rochester. "If their bodies are surviving this bad treatment then perhaps they are better equipped, from a genetic standpoint, to live with heart failure."

Compared to the overweight, normal and underweight patients, obese patients were younger, had a higher ejection fraction, higher blood pressure, diabetes and were more likely to be smokers. BMI was calculated as weight in kilograms divided by the square of height in meters for all study participants. The clinical definition of obesity - BMI ≥ 30 kg/m² - was used. Overweight patients fell into the 25 to 29 kg/m² range of BMI values and normal/underweight patients fell into the

In addition to evaluating the relationship between BMI and sudden cardiac death, researchers assessed the effect of BMI on the benefit of implantable cardioverter defibrillator (ICD) therapy. An implantable cardioverter defibrillator is a medical device about the size of a pager that is surgically implanted in the chest under local anesthesia. The device detects irregular and potentially fatal heart rhythms (arrhythmias), which often lead to sudden cardiac death, and shocks the heart back into a normal rhythm. Researchers found that implantable cardioverter defibrillator therapy was more effective in the non-obese patients with lower BMI values who were at higher risk for sudden cardiac death. These findings may help identify patients who would get the most benefit from an ICD - patients with a lower [BMI](#).

Sudden cardiac death claims up to 330,000 American lives every year, accounting for about half of all cardiac deaths. Sudden cardiac arrest, a condition in which the heart suddenly and unexpectedly stops beating, leads to [sudden cardiac death](#) if it is not treated within minutes. Most cases of sudden cardiac arrest are due to abnormal heart rhythms that can result from blockage of coronary arteries or scarring from a prior heart attack. Certain drugs can also trigger abnormal rhythms and death.

Provided by University of Rochester

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