Severely obese children may be at higher risk of heart disease and diabetes

September 30 2015

Juan Carreño de Miranda's "La monstrua desnuda" (The Nude Monster) painting.

More than 3 million children in the United States who are severely obese may be at a higher risk of developing heart disease and diabetes than overweight children, according to a new study by researchers at Wake Forest Baptist Medical Center and the University of North Carolina at Chapel Hill. And these medical problems could cost billions.

The study, which is published in the Oct. 1 issue of the *New England*

Journal of Medicine, found that children with the more severe forms of obesity showed early signs of heart disease and diabetes, with the differences most notable in boys.

"Presently we are spending approximately $160 billion a year to take care of obesity-related medical problems in adults," said Joseph Skelton, M.D., associate professor of pediatrics at Wake Forest Baptist and senior author of the study. "If the trend continues and we factor in the growing number of kids with severe obesity, it is estimated to go up to $300 billion by 2030."

In the study, the researchers analyzed data from the National Health and Nutrition Examination Survey of overweight or obese children ages 3 to 19 to assess the prevalence of cardiometabolic risk factors according to the severity of obesity, using new classifications developed over the past few years.

Among 8,579 children with a body-mass index (BMI) at the 85th percentile or higher, 46.9 percent were overweight, 36.4 percent had Class I obesity, 11.9 percent had Class II obesity and 4.8 percent had Class III obesity. The more severe forms of obesity - Class II and Class III - were defined as a BMI greater than 120 percent of the 95th percentile for Class II and greater than 140 percent of the 95th percentile for Class III.

The study showed that the greater the severity of obesity, the higher the risks of a low HDL cholesterol level, high systolic and diastolic blood pressures, and high triglyceride and hemoglobin A1C levels - all markers for heart disease and diabetes.

"Our findings clearly show that children at the higher levels of obesity have higher cardiometabolic risk factors that can lead to future heart disease and diabetes," said Asheley Cockrell Skinner, Ph.D., associate

professor of pediatrics at UNC School of Medicine and lead investigator of the study.

However, the confluence of risks and limited resources leaves many children with severe obesity and established risk factors without effective options, according to the study. Implementing a more complex classification system to identify those at the highest risk could help target interventions and treatments to those children and be more cost effective.

"These findings could change how we screen and treat obese children," Skelton said. "For kids with less severe obesity, perhaps it may not be necessary to put them through drawing blood and testing cholesterol, and instead only screen those at higher levels of obesity and focus treatment on the children at greatest risk."

Provided by Wake Forest University Baptist Medical Center