

# Impact of bariatric surgery on health depends on type of surgery, patient characteristics

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The impact of bariatric surgery on risk factors for cardiovascular disease depends on a variety of factors, including the type of surgery, sex of the patient, ethnic background, and pre-surgery body mass index, according to a Kaiser Permanente study published today in *Annals of Surgery*.

Researchers examined the electronic health records of more than 4,000 Kaiser Permanente patients in Southern California who had [bariatric surgery](#) for [weight loss](#) between 2009 and 2011 to determine what factors led to remission— or reduction – of [metabolic syndrome](#) after surgery. Metabolic syndrome is a group of health conditions that increase a person's risk of [coronary artery disease](#), stroke and type 2 diabetes. Patients were studied for up to two years after their bariatric surgery to determine if their metabolic syndrome improved.

Researchers found that non-Hispanic black and Hispanic patients were less likely than non-Hispanic white patients to experience metabolic syndrome remission. These differences in remission were not a result of greater weight loss during the follow-up period; racial and ethnic differences persisted even when researchers controlled for the rate of weight loss.

"Although we do not know the reasons for the racial and ethnic differences we saw, one explanation could be that the black and Hispanic patients had surgery when they are much heavier and sicker

than the non-Hispanic white patients," said study lead author, Karen J. Coleman, PhD, of the Kaiser Permanente Department of Research & Evaluation in Pasadena, Calif. "Our study highlights that surgery may be an important intervention tool for people earlier in their weight gain trajectory. The heavier they become, the less likely that surgery will be successful at reducing these cardiovascular disease risk factors."

Researchers also found:

- Women were more likely than men to experience remission,
- Patients who were heavier at the time of their surgery were less likely to experience remission than those who were lighter, and
- Patients who received the gastric sleeve, which is the fastest growing new bariatric procedure, were less likely to experience metabolic syndrome remission than patients who had a traditional gastric bypass.

According to the American Heart Association, 35 percent of Americans are affected by metabolic syndrome. People with metabolic syndrome have a two-fold risk for heart attack or stroke, and a five-fold increased risk for developing diabetes compared to individuals who do not have the condition. The AHA predicts that the cost to treat Americans with heart failure will increase to \$53 billion annually by 2030.

Some individual markers of cardiovascular health were more likely to improve than others following bariatric surgery. For example, about 4 in 10 patients (44 percent) lost enough weight following surgery to no longer be considered obese, and a significant majority (85 percent) of patients' blood pressure returned to healthy levels.

"In the majority of patients, bariatric surgery may result in the remission of many cardiovascular disease risk factors, which could prevent those patients from experiencing more serious health conditions, such as heart

attack and stroke," Coleman said. "The benefits of bariatric surgery are different for men and women and different racial/ethnic groups. This study highlights the importance of designing post-operative care models to address the unique challenges different genders and ethnic/racial groups face following bariatric surgery."

With more than 4,000 patients, this study had one of the largest sample sizes for bariatric surgery procedures, and included follow-up information on weight, blood pressure, quality of life, and laboratory and pharmacy data on the majority of patients in the sample. Previous studies in the area had sample sizes of 50 to 200 patients, most of whom were non-Hispanic white. Nearly half (49 percent) of the Kaiser Permanente study's sample were either Hispanic or non-Hispanic black, providing a unique opportunity to study the effect of bariatric [surgery](#) on metabolic syndrome in different racial/ethnic groups. In addition, this is one of the largest studies to examine the impact of the fastest growing bariatric procedure, the gastric sleeve, on patient health outcomes.

This study is part of Kaiser Permanente's ongoing efforts to understand the impacts of obesity and obesity-related conditions, such as type-2 diabetes, on a person's health. A Kaiser Permanente study published last year found almost half of adults with type 2 diabetes report acute and chronic pain, and close to one quarter report neuropathy, fatigue, depression, sleep disturbance, and physical or emotional disability. Another Kaiser Permanente study published in early 2012 found [electronic health records](#) and embedded tools can alert and direct pediatricians so they can better manage their young [patients'](#) weight.

Provided by Kaiser Permanente

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