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Lowering blood pressure, cholesterol and blood sugar could halve obesity-related risk of heart disease

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Controlling blood pressure, serum cholesterol, and blood glucose may substantially reduce the risk of heart disease and stroke associated with being overweight or obese, according to a study from a worldwide research consortium led by a team from Harvard School of Public Health (HSPH), Imperial College London, and the University of Sydney. Among the three factors, high blood pressure was found to pose the biggest risk for heart disease, and an even bigger risk for stroke, among overweight or obese participants.

"Our results show that the harmful effects of overweight and obesity on heart disease and stroke partly occur by increasing blood pressure, serum cholesterol and blood glucose. Therefore, if we control these risk factors, for example through better diagnosis and treatment of hypertension, we can prevent some of the harmful effects of overweight and obesity," said senior author Goodarz Danaei, HSPH assistant professor of global health.

The study appears online November 22, 2013 in *The Lancet*.

Worldwide, obesity has nearly doubled since 1980, according to a previous study by the research team, and more than 1.4 billion adults aged 20 and older are overweight or obese. Health consequences of overweight and obesity include heart disease and stroke—the leading causes of death worldwide—diabetes, and several types of cancer. The

researchers had also previously estimated that 3.4 million annual deaths are due to overweight and obesity.

While previous research had indicated that blood pressure, cholesterol, and blood sugar all increase the risk of heart attack and stroke in people who are overweight or obese, this new study—a pooled analysis of 97 prospective studies from around the world that enrolled 1.8 million participants—provides a comprehensive and definitive look by considering blood pressure, cholesterol, and glucose separately and together and in different parts of the world.

The researchers looked at these three factors because they are likely pathways through which obesity increases the risk of heart disease and stroke and because they are of interest to physicians and public health agencies. They found that high blood pressure, serum cholesterol, and blood glucose explain up to half of the increased risk of heart disease and three quarters of the increased risk of stroke among overweight or obese participants. High blood pressure poses the biggest risk of the three metabolic factors examined. It accounted for 31% of the increased risk of heart disease and 65% of the increased risk of stroke among overweight or obese individuals.

Majid Ezzati, a co-author and professor of global environmental health, Imperial College London, said: "Controlling hypertension, cholesterol, and diabetes will be an essential but partial and temporary response to the obesity epidemic. As we use these effective tools, we need to find creative approaches that can curb and reverse the global obesity epidemic."

More information: "Metabolic mediators of the effect of body-mass index, overweight, and obesity on coronary heart disease and stroke: a pooled analysis of 97 prospective cohorts with 1.8 million participants," Yuan Lu, Kaveh Hajifathalian, Majid Ezzati, Mark Woodward, Eric B.

Rimm, and Goodarz Danaei, *The Lancet*, online November 22, 2013