# Low BMI and death after heart attack

April 19 2016

This is an image of a weight scale. Credit: CDC/Debora Cartagena

Low body mass index increases risk mortality after acute myocardial infarction (AMI), even after adjustment for other health factors that affect body weight, according to a study this week in *PLOS Medicine*. Emily Bucholz, Hannah Krumholz, and Harlan Krumholz of Yale University conducted a prospective cohort study of elderly patients hospitalized for AMI, analyzing short- and long-term mortality among underweight and normal weight patients (as measured by body mass index, BMI) while controlling for comorbid illness and frailty.

The researchers used data from the Cooperative Cardiovascular Project, a US quality improvement initiative in which Medicare beneficiaries hospitalized for AMI were followed for many years. They included 57,574 underweight and normal weight patients (excluding overweight and obese patients). Crude mortality (deaths from all causes without adjustment for other factors likely to affect the risk of death) was higher among underweight patients than among normal weight patients at 30 days and 1, 5, and 17 years after AMI. After adjustment for comorbidities that cause cachexia (for example, cancer and chronic liver disease), variables reflecting frailty (such as mobility), and two laboratory measures of nutritional status, underweight patients had a 13% higher risk of death at 30 days and a 26% higher risk of death over 17 years than normal weight patients. Among patients without comorbidity, underweight patients had a 21% higher risk of death over 17 years than normal weight patients.

While the association between being underweight and mortality after AMI was known previously, it was not clear whether this risk was a linked to the low BMI or medical conditions that lead to patients being underweight. Though the authors point out that they were unable to directly measure cachexia and were unable to determine the primary cause of low BMI in underweight patients, these findings suggest that while coexisting illnesses that contribute to cachexia may contribute additional risk, being underweight on its own is an important independent risk factor for death after AMI, even years later.

They note that their findings "highlight the need for additional research in underweight patients, who are frequently excluded from studies evaluating BMI in patients with CAD" and that "Clinically, these findings suggest that strategies to promote weight gain in underweight patients after AMI are worthy of testing."

**More information:** Bucholz EM, Krumholz HA, Krumholz HM

(2016) Underweight, Markers of Cachexia, and Mortality in Acute Myocardial Infarction: A Prospective Cohort Study of Elderly Medicare Beneficiaries. PLoS Med 13(4): e1001998. DOI: 10.1371/journal.pmed.1001998