Malnutrition is defined as “faulty nutrition due to inadequate or unbalanced intake of nutrients or their impaired assimilation or utilization” (1). Even in the current age, millions of people around the world continue to experience malnutrition. Malnutrition is often perceived as an illness due to undernutrition and, therefore, is thought to only affect people who are underweight. In fact, a large burden of malnutrition exists in the overweight and obese population because of inadequate micronutrient consumption and poor food quality. The World Health Organization states that worldwide, there are almost 2 billion people who are overweight or obese and 462 million people who are underweight, all of whom are considered malnourished (2). Recent studies have shown that malnutrition is associated with poor prognosis, and it has been correlated with poor prognosis in heart failure, valvular heart disease, and atrial fibrillation (3–5).

To our knowledge, the associations between malnutrition and acute coronary syndrome (ACS) had not been systematically addressed until the paper by Raposeiras Roubín et al. (6) in this issue of the Journal, which highlights the importance of understanding malnutrition and its prevalence in patients with ACS (6).

This study was a retrospective, observational registry study conducted at the University of Vigo, Spain, that looked at 5,062 patients with ACS, of whom 49% of patients were classified as having non-ST-segment elevation myocardial infarction and 40% as having ST-segment elevation myocardial infarction. The remainder were classified as having unstable angina.

Body mass index (BMI) was calculated for all individuals, and 3 nutritional screening indexes were used (the Controlling Nutritional Status Score, Nutritional Risk Index, and Prognostic Nutritional Index Score). Each nutritional score factors in values such as BMI, albumin level, total lymphocyte count, and/or cholesterol level. Based on these scores, comparison to BMI, and subsequent event rate, strong correlations were found. There are 3 important points that were emphasized in this study. The first notable point is that malnutrition is very prevalent in patients with ACS and is a real issue in the new millennium, despite BMI, left ventricular function, or coronary revascularization. According to the 3 nutritional risk indices, 50% to 60% of the individuals in this study were classified as malnourished, and between 8.9% and 39.5% of the individuals were classified as moderate-severely malnourished. The second key point is that of the patients who were malnourished, 48% to 58% were overweight or obese (BMI ≥25 kg/m²), reminding clinicians that more weight does not correlate with food quality and that even these patients are at risk for malnutrition. This is an important concept that needs to be further examined, because this is less widely known. The third message is that malnutrition, regardless of BMI and other risk factors, is associated with increased all-cause mortality and increased major adverse cardiovascular events.
Malnutrition is a largely under-recognized and undertreated condition by clinicians, especially in patients with normal or increased BMI. People often see increased abdominal girth as overnutrition rather than undernutrition. However, poor nutrient quality is an important source of malnutrition and is associated with increased mortality in patients with ACS. Raposeiras Roubín et al. (6) consider a potential mechanism that nutritional status may be a proxy indicator for inflammation and a trigger for increasing atherosclerotic burden and higher risk of plaque rupture and ACS. We applaud Raposeiras Roubín et al. (6) for bringing this important issue to light. Recognizing that overweight patients often have poor diet quality can help shift the conversation in the patient-physician visit toward improving nutritional status. Studies have previously shown that eating whole grains, legumes, fruits, vegetables, nuts, and seeds is beneficial in primary and secondary prevention patients in reducing blood pressure (7), blood glucose (8), cholesterol (9), and inflammatory markers (10). Additional studies have shown that diets rich in these foods can decrease angina (11) and perfusion defects (12) and potentially cause plaque regression (13). Treatment, then, of a patient at risk must include a nutritional status assessment and counseling on how to shift toward a diet that is rich in these healthier food options. In fact, many of these index hospitalizations for life-threatening events can prove valuable as teaching moments to truly affect care and change treatment trajectories.

In outpatient clinic visits where time is limited, surveys such as the 14-point Mediterranean diet survey (14), Starting the Conversation survey (15), and 5-question Healthy Eating Vital Sign (16) will help providers recognize malnutrition and poor nutrient quality quickly. Making use of the care team including dieticians, personalized counseling,
and community support groups and nutrition educational programs could then be initiated.

As has been reported on several occasions (17,18), most cardiologists and cardiology care team clinicians lack education and knowledge in nutrition and are therefore less prepared to discuss nutrition and lifestyle measures at the bedside or in the clinic. Paying lip service with the usual phrases, such as “Be sure to exercise and eat right,” simply doesn’t cut it. It behooves us as a profession to ensure adequate training and competency in the delivery of care in the lifestyle space. Clinicians should be well versed in the dietary patterns known to reduce or even reverse cardiovascular disease (CVD) burden, physical activity guidelines, and the literature and the practice of self-care in the domains of stress relief/mindfulness; connectedness and support; and adequate, good-quality sleep. With each of these lifestyle components, marked improvements in many chronic diseases are possible with minimal cost.

This study does have some minor weaknesses. Although validated, the nutrition biomarker indexes are variable and do not always correlate with each other. Furthermore, food questionnaires or diaries were not readily available to understand the overall dietary patterns of the participants. Despite these minor shortcomings, the signal in the data is clear, with a strong association between poor nutritional status and worsened outcomes in ACS.

In sum, Raposeiras-Roubín et al. (6) highlight the vast prevalence of malnutrition in patients with ACS. In patients with ACS who experience malnutrition, the rates of mortality are high independent of elevated BMI, ejection fraction, and coronary angiographic findings. These findings should alert clinicians to recognize and assess malnutrition (Figure 1) in patients who are overweight/obese. Then, helping these identified patients receive adequate education and coaching on fundamental nutrition concepts will help decrease their mortality risk. Furthermore, this paper is yet another urgent call to action: it is time for the CVD profession to arm itself with the most cost-effective and powerful tool in the battle against CVD: nutrition and lifestyle medicine.

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