

## All Calories Are Not Equal

In response to the letter by Seshadri,<sup>1</sup> we agree that emphasis on intake of complex carbohydrates over simple carbohydrates may be preferred in fat-reduced diets owing to their greater effects on satiety<sup>2</sup>; however, we believe that certain points regarding our article<sup>3</sup> and study have been misinterpreted. We examined the effects of an ad libitum high-complex carbohydrate diet on body weight and body composition. The subjects in this study were provided 150% of estimated energy needs, not estimated prestudy energy intake; that is, our goal was to provide a surfeit of food that would not be consumed in its entirety. In this way, we were able to measure actual food intake by weighing all food provided to each subject before and after each day. Assessment of free-living energy intake is difficult due to frequent underreporting,<sup>4</sup> and as described in our results, the apparent 1000 kcal/d increase in intake during the intervention compared with baseline in the control subjects was likely due to methodologic differences between the 2 measurement periods (ie, food records vs measured weight of consumed food). The important conclusion of this study was that weight loss was experienced by subjects consuming an ad libitum high-carbohydrate diet with no attempt at energy restriction. Our results also indicated that subjects lost weight with no significant reduction in energy intake. The human body is not a bomb calorimeter, and the notion that all macronutrients are metabolized in an equivalent fashion is untenable. For example, classic studies by Sims and Danforth<sup>5</sup> demonstrated that weight gain is accomplished with almost 5-fold fewer kilocalories on a high fat vs mixed diet. The metabolic fate of ingested carbohydrate is glycogen storage and oxidation<sup>6</sup> with a trivial amount directed toward de novo lipogenesis, while the storage of dietary fat as fat is remarkably efficient. The data from this study strongly supports the hypothesis<sup>7</sup> that fat balance is maintained by fat oxidation and fat consumption. The reduction of fat intake with no change in the rate of fat oxidation can result in the loss of body fat even when total energy intake is unchanged.

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## Asians Need Different Criteria for Defining Overweight and Obesity

In an article published in the ARCHIVES, Kim et al<sup>1</sup> have shown that nonalcoholic fatty liver disease (NAFLD) is closely associated with metabolic disorders, even in nonobese, nondiabetic subjects. Thus, NAFLD can be considered an early predictor of metabolic disorders, particularly in the normal-weight population.

However, this study was severely flawed by taking the criteria for overweight and obesity that is not representative of people living in the Asia-Pacific region. While the authors chose to take the values to define the waist circumference in Asians according to the World Health Organization (WHO) perspective on the western Pacific region for Asians,<sup>2</sup> they, however, did not take the values to define overweight and obesity laid down by the same steering committee.<sup>2</sup>

Body composition of people living in the Asia-Pacific region is different from other ethnic populations. For example, Asians have a more centralized distribution of body fat (visceral fat), with thick trunk skinfolds and markedly higher mean waist-hip ratios for a given level of body mass index (BMI; calculated as weight in kilograms divided by the square of height in meters) compared with white subjects with the same BMI.<sup>3</sup> In the Asian population, morbidity and mortality occur in people with lower BMIs and smaller waist circumferences because they tend to accumulate intra-abdominal fat without developing generalized obesity. The role of central obesity is crucial in the development of fatty liver, with splanchnic fat being an important source of increased triglyceride levels leading to steatosis.<sup>4</sup> For a given BMI, Asians have a higher percentage of body fat and more visceral fat compared with other populations. In Chinese individuals living in Hong Kong, the risk of diabetes, hypertension, dyslipidemia and albuminuria starts increasing at a BMI of about 23,<sup>5</sup> which is lower than the current WHO BMI cut-off used to define an increase in morbidity among Europeans.