Does global obesity represent a global public health challenge?1–3

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Over the past 2 decades a major shift has occurred in the prevalence and speed of change in the way people in low- and middle-income countries eat, drink, and move (1). Related to these changes are a large increase in energy imbalance and a large rightward shift in the body mass index (BMI) distribution across all ages, but particularly among adults (2). Furthermore, we are beginning to see some of these changes even at the highest levels of BMI (ie, the 95th centile) (3). Today, many low- and middle-income countries have obesity and overweight patterns among adults or children that match those found in the United States. Many descriptive studies document the increasingly high prevalence of overweight and obesity and the growing cardiometabolic burden linked with this higher prevalence (4–7). Possibly most telling was the huge systematic meta-analysis across all cancer sites for preventable causes of these cancers that pointed out that obesity and abdominal obesity represent the major preventable cause of most cancers along with smoking (8).

The question that faces scholars is not whether obesity across the globe represents a major threat to the health of the world’s population but whether it is a problem of the rich or the poor. The World Health Organization has shown in a large number of documents the rapid increase in problems of obesity among low- and middle-income countries (9, 10). As a result, the World Health Assembly voted that improving the diet and activity patterns of these lower-and middle-income countries was a major global goal. If this problem is found only among the rich in lower- and middle-income countries, the reasoning is often that governments can let the private sector address this problem. We want the rich-poor gap (disparity) in measures of good health to be small, and we state we do not want the burden of obesity to be higher among the poor.

Many of the reasons we study the social burden of many diseases in the United States or Europe or across the globe relate to an understanding of disparities in access to resources that allow one to be healthy. The reasoning usually leads to a call to change the environment and improve the education and welfare of the poor in a vast array of areas. In the United States, the understanding and removal of disparities in access to health care and in other ways that affect health represent a major research and policy agenda for many.

The article by Subramanian et al (11) in this issue of the Journal represents an admirable step toward looking at this question in low- and middle-income countries. It uses a major set of nationally representative surveys collected with US government funding. These are officially called Measure DHS (Demographic and Health Surveys) and were funded to address concerns about fertility and child health. Over the years, they have expanded to collect weight and height data not only on preschoolers but also on women. Initially, they focused on women of child-bearing age with children, but this has expanded in many countries to now include all women of child-bearing age. The differences in the results from including all or selected subsets of women in the surveys is addressed elsewhere (12) and ignored in Subramanian et al’s article. What is remarkable about these surveys is the impeccable sampling design developed and followed very rigorously by the Measure DHS team, the exact same instruments and training across the globe, and the ability to examine nationally representative studies.

The authors build on earlier work with the same data in a fairly complex multilevel study (13, 14). Those authors found that in countries with higher national income [measured by official gross national product (GNP) data] the likelihood of obesity among the low educated was greater than that among the better educated. Subramaniam et al (11) did not include some of the key countries such as China and included an earlier measure of obesity in Brazil from 1996 rather than national surveys undertaken recently. Brazil today faces a much higher burden of obesity among the poor (15, 16).

Subramanian et al (11) use a crude index of wealth as the main exposure (instead of measures of maternal education) and look at the question in a different way. Subramanium et al state that wealth is a better index, and they present somewhat different results compared with other studies (12, 14). One could examine methodologic differences such as age adjustment by standardization, the use of sample weights by the other studies, uses of different explanatory variables, use of a data set with fewer middle-income countries, and even the use of obesity rather than overweight as the outcome and their shift in the burden of obesity at a very much higher GNP per capita level ($5500 compared with $2500 for Monteiro et al), but this is beside the point. The key question asked by Subramanian et al (11) and many others (13, 14) has been “Does the social burden of obesity answer the key question?” We know, of course, from thorough research conducted in a few countries such as Brazil and

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China (17, 18) that many countries face a greater burden of obesity among the poor and that obesity is growing faster among the poor than among the rich (19, 20) and, for China, dietary change among the poor is a key explanatory factor of this shifting burden (21).

Perhaps what we should be asking is “Is obesity growing among the poor in a country?” If it is, is this linked with a rightward shift in the entire body composition such that the government needs to examine its food and other nutrition-related programs to ensure that it is not enhancing obesity by targeting the wrong sample or by using the wrong foods to assist the poor? And furthermore, if the problem is growing among the poor, does this represent a problem large enough to merit attention?

Low and middle incomes face a very complex balancing action between concerns of undernutrition and obesity. We know from research undertaken in Chile and Mexico that well-intentioned programs targeted at hunger and poverty might actually increase obesity at a certain point in the shift toward a pattern of living associated with nutrition-related noncommunicable diseases (22–24). This shift from a regimen of under- to overnutrition comes with many problems and paradoxes such as with double-burden families with both obese and malnourished individuals in the same family (25, 26).

Poverty and hunger have grown during the past 4 y of global food price increases and recession, but the weight of global evidence shows an ever-expanding prevalence of obesity. The ratio of undernutrition to obesity has reversed remarkably so that the prevalence of obesity is double that of undernutrition.

To me the key issue is “Is the obesity problem a threat to this country’s poor and is it growing among the poor” (12, 23). To that extent, whether there are more overweight or obese rich or better educated adults might not be as important as the size of the problem among the poor and the rate of change of disease burden facing the poor. Both of these issues need further exploration before we can fully understand how to place Subramanian et al’s (11) contribution in its full context and how to interpret and use its important results. Detailed analysis and use of these data published in their article and its overall analysis represent a step forward as we try to understand global obesity.

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REFERENCES