The Obesity Epidemic: Looking in the Mirror

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This editorial is an invitation to read carefully the issue of Epidemiologic Reviews that accompanies the August 1 issue of the Journal. The focus is obesity. Obesity is an increasingly dominant aspect of the health profiles of adults and children across the globe (1), leading to an urgent need for evidence to support advocacy and for corrective policies and intervention programs targeting an array of societal sectors. The main causes of the epidemic can be stated simplistically: populations are consuming more calories than they are expending and accumulating fat as a result (2). But this story is quite complex. The obesity epidemic has become a metaphor for the adverse health effects of economic and technological advancement. Its multilevel causation extends from genes and individual psychobiology through families to communities to whole societies. Although not of infectious origin as far as we can tell, this epidemic is clearly communicable—moving rapidly in association with globalization within and across populations, of which all appear to be genetically susceptible at some level—and is being transmitted through eating and physical activity, processes indispensable to human survival and social interaction.

Epidemiology has contributed to the current societal recognition of the obesity epidemic and its health consequences. Now we need the combined efforts of epidemiologists with varied interests and methodological bents to identify potentially modifiable pathways within the complex picture. To prevent obesity—a top priority for curbing the epidemic—universal solutions reaching entire populations are needed, augmented by initiatives targeted to high-risk groups and individuals (1, 2). Knowing the causes will not necessarily lead directly to solutions. Many causes of excess food intake and inadequate physical activity are embedded in the way we live. Removing high-calorie foods or automobiles from the landscape would be about as infeasible as trying to return to our lean, hunter-gatherer days. The task is to shift some environmental factors in a direction more favorable to achieving energy balance while also fostering individual behavior changes in the same direction (1, 2).

The obesity-focused issue of Epidemiologic Reviews is a very welcome addition to the discourse about how to meet the challenges posed by the obesity epidemic. The 12 articles in this issue foster reflection on what we know and don’t know and suggest research opportunities. Caballero’s introductory overview (3) places these issues in historical perspective, reminding us of the not too distant past when the focus of international nutrition efforts was on ensuring production of sufficient food to combat hunger and malnutrition worldwide. Now, concern about excess food consumption must also be considered of paramount importance. Caballero traces the societal changes that have led to the emergence of the problem of prevalent obesity in many countries and, in some countries, to the “dual burden” of coexisting obesity and undernutrition in the same households or communities.

Several of the reviews relate to prevention—documenting the status of the problem to clarify what is needed and providing clues about where to look for solutions. Wang and Beydoun (4) quantify a possible future scenario for obesity in the US population. They project that 75 percent of adults will be overweight (body mass index $\geq 25$ kg/m$^2$) or obese (body mass index $\geq 30$ kg/m$^2$) and that 41 percent will be obese by 2015. Projections for children and adolescents are that the body mass index levels of one in four will be at or above the 95th reference percentiles. Childhood obesity causes morbidity during childhood and predisposes to obesity in adulthood.

Kelishadi’s account of the prevalence of obesity and the metabolic syndrome among children in developing countries (5) leaves us with an even greater sense that we must find definitive solutions, and quickly. Obesity prevalence is increasing rapidly among children in many developing...
countries and is associated with markers of the metabolic syndrome. In some of these countries, childhood obesity prevalence exceeds the levels in US or European children. Furthermore, the need for public health action on obesity becomes complicated when undernutrition is also prevalent. The resulting competition of these major public health nutrition problems is tragic. This situation emphasizes that it is critical to differentiate the pathways that lead to undernutrition in some children and obesity in others and to ensure that related interventions are congruent (1, 5). High-quality survey and surveillance data are needed to permit tracking of progress on both undernutrition and obesity and relevant health indicators.

Wang and Beydoun’s detailed characterizations of variations in prevalence and, in some cases, trends by gender, age, socioeconomic status, race/ethnicity, place of birth, and geography (4) identify high-risk subgroups within the United States and suggest, indirectly, why these populations are at higher risk. For example, race and ethnicity, key markers of excess risk of obesity, may reflect any or all of a host of variables and causal pathways. Studying what aspects of energy intake, expenditure, or utilization differ for racial/ethnic groups will provide etiologic clues as well as ideas about what types of interventions will be needed to reduce the excess risk. Racial/ethnic differences are explained primarily by social and environmental factors (6). We can learn from multilevel explorations of the social and environmental contexts of high-risk populations.

Similarly, studies to identify mediators of socioeconomic status gradients in obesity are warranted. McLaren (7) shows that social gradients are usually present but differ by gender; differ in high-, middle-, and low-income countries; and change over time. Drewnowski (8) sees a major role for food cost. The low cost of high-calorie foods that are easy to overconsume predisposes to obesity among the poor. In high-income countries, the gap in obesity levels between high and low socioeconomic status strata may be decreasing (4, 7), an intriguing finding given the persistent socioeconomic disparities in many other health-related variables.

Papas et al. (9) summarize studies that relate direct measures of obesity to direct measures of the built environment. The built environment (in contrast to the natural environment) refers to factors such as community design, location of retail food outlets, recreational facilities, and the transportation infrastructure, which determine the availability and convenience of options for physical activity and food acquisition. The findings generally support the concept that changes in the built environment are a potential strategy for corrective interventions to improve the eating and physical activity patterns of populations. Salmon et al. (10) review the effectiveness of individually focused interventions to promote physical activity among children and adolescents. Such activities are essential for any strategy to prevent population-wide obesity. Several promising strategies or elements of strategies are identified. However, both of these articles conclude that the available literature is limited in size and quality. Obesity prevention research is still in its infancy but is an emerging field with a clear mandate.

For the too-numerous children and adults who are already obese, we need to learn more about how to prevent or delay the development of obesity-related diseases and disability. At the population level, we can probably identify the health risks associated with obesity by assessing body mass index alone, in spite of its lack of sensitivity to differences in body composition or body fat distribution. Vazquez et al. (11) demonstrate this for diabetes incidence using a meta-analysis of studies permitting a head-to-head comparison of relative risks based on body mass index with those based on either waist circumference or waist/hip ratio.

However, understanding the many and different pathways whereby excess body fat may lead to adverse health outcomes requires a much more refined approach. Ideas about how to pursue such approaches are provided in the updates on the genetic epidemiology of obesity (12), the links between obesity and cardiovascular disease (13), the role of obesity in nonalcoholic fatty liver disease (14), and the role of obesity in prostate cancer (15). More specific characterization of obesity phenotypes may also help to reconcile the apparent differences in the evolution of obesity in diverse socioenvironmental and racial/ethnic contexts, for example, variations in the patterns of obesity and related disease in populations undergoing rapid nutrition transitions or in Asian populations (4, 5, 16).

Reading this issue of Epidemiologic Reviews will stimulate reflection on the spectrum of issues posed by the obesity epidemic. The problem is as inescapable as our image in a mirror. That is, these issues affect us collectively, whether or not our own weight is in a healthy range and, increasingly, regardless of where we live. The trajectory and reach of the problem of obesity reflect changes in the societies in which we live and challenge us to identify modifiable pathways that will have sufficient impact to turn this epidemic around for everyone.

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REFERENCES


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