

OBESITY: A Major Global Public Health Problem

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INTRODUCTION

Obesity is the most common nutrition disorder in the United States and other developed countries today (17, 29). Clinical observations have long suggested a connection between obesity, particularly in its extreme forms, and a variety of chronic diseases (15). The strongest evidence that obesity has an adverse effect on physical health comes from population-based prevalence and cohort studies. Obesity and its comorbid conditions place a tremendous burden on health care systems and indirectly account for more than \$99.2 billion in health care costs in the United States alone (27).

GLOBAL PREVALENCE AND PATTERNS OF OBESITY

In the United States between 1988 and 1994, the prevalence of obesity (body mass index ≥ 30 kg/m²) was 22.5% of adults 20 years of age and older; between the 1976/1980 and the 1988/1994 National Health and Nutrition Examination Surveys, it increased 8% (4). Furthermore, the secular trends in weight observed in the US population could be explained by very small changes in energy balance. For example, it was calculated that for 35-year-old adults, a daily increase

of only 3.7 kcal above maintenance energy requirements for men and 12.7 kcal above that for women could result in the respective 5.4- and 18.6-lb increase in average body weights observed between 1980 and 1994 (WH Dietz, personal communication). Acknowledging that the etiology of obesity is complex and multifactorial, the implications of this simple calculation are ominous when considered at the population level.

Since 1963, the number of overweight children and adolescents in the United States has also increased, with the largest increase occurring, as it did for US adults, between the 1976/1980 and the 1988/1994 National Health and Nutrition Examination Surveys. Troiano & Flegal (25) showed that approximately 11% of US children and adolescents were overweight in 1988/1994. Furthermore, childhood obesity has a substantive impact on precursors of chronic disease in adults, as documented by two decades of longitudinal data from the Bogalusa Heart Study (5, 6) and others (3).

Beyond the United States and other developed countries, the prevalence of obesity in developing countries is increasing at an alarming rate (29). This is compounded by obesity-related chronic diseases, such as diabetes mellitus, arthritis, hypertension, dyslipidemia, coronary artery disease, and some cancers (23), and by increased mortality from chronic disease (2, 21, 24). Furthermore, obesity in developing countries coexists with the substantial problems of undernutrition, including deficiencies such as protein-energy malnutrition, iron deficiency anemia, and vitamin A and iodine deficiencies (1). This situation is further complicated by the limited resources available to address the total spectrum of health problems in these countries.

Available studies on the prevalence of obesity in developing countries permit a few generalizations about its patterns and distribution. Obesity is rare in very poor societies, particularly in low socioeconomic groups, and when found, it is a mark of wealth. In affluent societies, obesity is common but the poor are fatter than the rich (22, 28). The WHO report (28) notes the limited availability of nationally representative data, particularly about trends, to document the epidemic of obesity. Martorell et al (8) have described the patterns of obesity in women and children in Latin America and have extended their investigation to describe obesity in reproductive-age women from developing countries using 37 nationally representative samples collected since 1992 (R Martorell, L Kettel Khan, M Hughes & L Grummer-Strawn, submitted for publication). In very poor countries, such as those of sub-Saharan Africa, obesity was highly concentrated among urban women and women with higher educations. In more developed countries, such as those in Latin America and the European Economic Community/Commonwealth of Independent States, obesity was more equally distributed.

PUBLIC HEALTH DILEMMA

The WHO notes that current information about the prevalence and health impact of obesity worldwide is needed to inform policy makers and health planners who set priorities and allocate resources to programs (29). However, public health has a dilemma: Describing the patterns of obesity is beneficial for targeting high-risk populations and subgroups, but there is little evidence that intervention strategies prevent obesity in high-risk groups or the general population (10–12).

In 1990 in the United States, an ambitious national health objective was established for the year 2000: to reduce the prevalence of obesity (body mass index ≥ 30) to less than 20% (17). The persistence and growth (from 14.5% to 22.5%) rather than decline in the prevalence of obesity have led to the development of weight maintenance as a proposed objective for the year 2010 (18). We clearly cannot expect individual weight control efforts to solve the public health problem of obesity, given experience with clinical treatment, including drug therapy, commercial weight loss services, alternative therapy, low-fat foods, and fat substitutes. Current strategy and programs must emphasize weight gain prevention not only at the individual level, but also at the societal level.

CONCLUSION

Obesity is a multifaceted problem. If weight gain prevention is to be successful, changes must be made at the individual, community, and policy levels. Primary prevention of obesity must include environmental strategies that address the many societal factors that influence energy imbalance, specifically diet and physical activity. The effects of physical activity on health are well established (26). Although the most promising interventions focus on increasing physical activity rather than dietary change, the infrastructure of our communities does not promote and support physical activity. The workplace, lack of recreational facilities and parks, minimal physical education in the school curriculum, use of food as rewards in classrooms, and lack of alternatives to single-passenger transportation to work and school are just a few examples of infrastructure that reinforce positive energy imbalance.

Many environmental and policy interventions hold promise for promoting physical activity because each influences the community as a whole (7, 19, 20). Canada's Public Health Association provides a sound framework in the Ottawa Charter for Health Promotion (2a). The Centers for Disease Control and Prevention School Health Index Project provides specific guidance and criteria for public schools to perform self-evaluations of their health, nutrition, and physical activity efforts (9). And multisectoral collaborations such as The

Partnership for Healthy Weight Management, which involves academia, public advocacy groups, prominent members of the weight loss industry, and the federal government (Federal Trade Commission, Centers for Disease Control and Prevention, and National Institutes of Health) (14), promote safe practices for weight loss. More effort is needed to influence the outlook and approach of health care providers and recipients, employers, educators, and public officials so that weight gain prevention will be seen as an important priority to be addressed through policies, programs, and direct services to individuals and communities.

The challenge of the obesity epidemic is not limited to the United States and other developed countries. Obesity is a global challenge. Much of the developing world still suffers from limited resources, but it does have the advantage of learning from the experience of others. For example, Prentice & Jebb (16) argue that obesity in Britain is not caused by gluttony but by sloth. Average caloric intakes have declined in Britain. Applying the simple mathematics of energy balance, they conclude that "...modern inactive lifestyles are at least as important as diet in the aetiology of obesity and possibly represent the dominant factor" (16).

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