

Worldwide trends in obesity

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The increased prevalence of obesity during this last half century among higher income countries is acknowledged. Similarly, we face the emergence of obesity as a worldwide phenomena, affecting the rich and middle income countries in similar manners and also affecting countries previously considered to be poor. Most data are presented utilizing a cut-off for adult body mass index of either 25 (grade 1 overweight) or 30 and above (grade II) or using age- and gender-specific cutoffs for children and adolescents. The background environmental factors, in particular the remarkable shifts in both activity and dietary patterns, is reviewed. Patterns and trends in obesity from each region of the world are examined. Many lower and middle income countries have higher prevalence rates of grade 1 and grade 2 obesity than higher income countries. (J. Nutr. Biochem. 9:487–488, 1998) © Elsevier Science Inc. 1998

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Introduction

During the last several decades, a large number of countries that heretofore faced famine and limitation of food supply have attained overall adequacy in diet and have witnessed a marked change in dietary structure. Included have been large increases in the dietary intake of edible oils, sugar, eggs, and dairy and meat products. At the same time, there has been a notable revolution in the physical activity of these same populations. The result is that a large number of lower and middle income countries are facing significant levels of obesity. Moreover, the prevalence of obesity is rapidly increasing and there are already marked effects on health.

The progress of dietary change throughout the world will not necessarily replicate the pattern of nutritional change that has occurred in high income countries. Clearly, the patterns of dietary change over time and space that consti-

tute the nutrition transition have occurred concurrently with demographic, socioeconomic, and epidemiologic changes. The long-term relationships among these factors are complex and heretofore unexplored. What is clear from other papers that have focused on the nutrition transition in Brazil, China, and other countries is that the type of diet that marks most high-income societies today—a high-fat, refined carbohydrate, low-fiber diet—is increasingly being found in more and more countries.^{1–3}

Similarly, the shift in the structure of occupations, the nature of economic activity in each occupation, transportation, and leisure has led to a marked increase in lower levels of activity.

It is the confluence of these two changes—the rapid shift in diet and activity—that combine to lead to an ever increasing level of obesity in many low income countries and in important subpopulations in others. Few countries, except for the very poorest, do not face these increases in obesity.

Elsewhere we have presented detailed information on obesity patterns and trends in lower income countries.^{4,5} Data on the most recent prevalence information show that large proportions of the populations of the Latin America and the Western Pacific regions are highly overweight (BMI) [body mass index 25–29.99] or obese (BMI 30 and over). In Asia, there is considerable overweight (e.g., 25–30% of a BMI equal to or above 25 for Malaysia and 13–19% for the Philippines). In middle eastern and northern Africa prevalence figures place the overweight problem between Asia and Latin America. In sub-Saharan Africa, aside from Mauritius, there are no nationally representative

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surveys in sub-Saharan Africa. The scattered data from South Africa, Mali, and the Congo indicates high levels of obesity in urban sub-Saharan Africa.

REFERENCE LIST

- 1 Monteiro, C.A., Mondini, L. de S.A., Popkin, B.M. (1995). The nutrition transition in Brazil. *Eur. J. Clin. Nutr.* **49**, 105–113
- 2 Popkin, B.M., Ge, K., Zhai, F., Guo, X., Ma, H., Zohoori, N. (1993). The nutrition transition in China: a cross-sectional analysis. *Eur. J. Clin. Nutr.* **47**, 333–346
- 3 Popkin, B.M. (1994). The nutrition transition in low-income countries: an emerging crisis. *Nutr. Rev.* **52**, 285–298
- 4 Popkin, B.M. (1998). The nutrition transition and its health implications in lower income countries. *Publ. Hlth. Nutr.* **1**, 5–21
- 5 Popkin, B.M., Doak, C. (1998). The obesity epidemic is a worldwide phenomenon. *Nutr. Rev.* **56**, 106–114