



LEADING ARTICLE

Obesity epidemics: simple or simplistic answers?

Franco Contaldo*, Fabrizio Pasanisi

Department of Clinical and Experimental Medicine, Interuniversity Center for Obesity and Eating Disorders, University Federico II, Napoli, Italy

Received 29 September 2004; accepted 19 October 2004

KEYWORDS

Obesity epidemics;
Prevention;
Treatment

Summary Among the strategies suggested to face obesity epidemics there is also a mere reduction of only 100–200 kcal day, i.e. less mouthfuls of food and a little more walking every day. Are these proposals “simple and feasible” or, vice versa, “simplistic and unrealistic” solutions? A possible source of such confusion comes firstly from dietary guidelines: the “food pyramid” may easily lead to misinterpretation as low-fat foods enriched in simple sugars produce similar metabolic abnormalities as saturated fat rich foods. Replacement of fruit derived fructose with other fructose-enriched beverages is not adequately considered.

In total, 45–60 min of moderately intense physical activity, instead of “few steps”, daily appears a more realistic evaluation of the role of physical activity in energy balance but is still an unrealistic intervention strategy in many obese individuals requiring a long preliminary rehabilitation period.

Another complaint is the current poor distinction between “preventive, population oriented” and “therapeutic, clinical” intervention strategies possibly due to the long duration of the latent “preclinical” phase of the disease and the scarcity of safe and effective drugs. Obesity may be considered a “culture-bound” disease and as such it requires a proper cultural, political and educational strategies. The number of obesity clinics worldwide is too limited; educational interventions in the crucial period of the developmental age are lacking. The social science content of medical school curricula, and teaching healthy behaviours, needs to be improved.

In conclusion, a deeper reflection from Medical Societies on the relationship between the negative aspects of the “transition diet” and “globalization process” may help to produce really “simple” and more successful strategies against obesity epidemics and its complications.

© 2004 Elsevier Ltd. All rights reserved.

Western and Westernized populations are nowadays in chronic positive Energy Balance: as a matter of fact the US population is regularly gaining 0.8–0.9 kg of body weight each year¹ with an uncontrolled obesity and overweight epidemic² and its associated medical complications.^{3–6}

*Corresponding author. Nutrizione Clinica, Dipartimento di Medicina Clinica e Sperimentale, Facoltà di Medicina e Chirurgia, Università Federico II Napoli, Via Pansini, 80131, Napoli, Italy. Tel.: +39 081 746 3694; fax: +39 081 546 6152.

E-mail address: contaldo@unina.it (F. Contaldo).

Among the strategies suggested to face this epidemic there is also a mere reduction of the Energy Balance by “only” 100–200 kcal (less) day:^{1,7} this solution requiring only less mouthful of food and a little more walking every day⁷ or consuming “half-portions” of the meals as suggested by the Italian Ministry of Health, a physician himself! Can we consider these proposals, now popular in the medical literature, “simple and feasible” or, vice versa, “simplicistic and unrealistic” solutions for a difficult uncontrolled major health hazard?

A possible source of such confusion may even come from Dietary Guidelines or Recommendations, delivered by Scientific Societies. First of all Dietary Guidelines for the general population should now be reconsidered.^{8–10}

The so called “food pyramid” can easily lead to misinterpretations: for instance, the fact that low-fat foods, enriched in simple sugars, produce metabolic abnormalities similar to saturated fat rich foods is poorly stressed.^{10–13} On the other hand, the food industry, in particular the soft drink industry, tends to claim that calories from any refined sugar or other carbohydrates are equivalent and the replacement of fruit-derived fructose with other fructose enriched beverages should not be a major concern.^{14,15} Actually, the increased obesity epidemic parallels the increasing consumption of sugared beverages, as well as the urbanization processes and income changes.^{16–22}

Other recommendations to reconsider might be those for diabetic patients suggesting that: “... the food for people with diabetes should not appreciably differ from that recommended for the entire family ...”.⁸ But what about the increasing habit of eating out both at work and for leisure time? What about the costs (both in terms of time and money) of preparing “dietetic” meals for the whole family?

For these reasons national governments should espouse WHO’s Global Strategy on Diet, Physical Activity and Health²³ aiming at reducing the fat, sugar and salt content of foods (and at increasing physical exercise); in parallel should reconsider the indiscriminate support to food industries^{22,24} similarly for the policies adopted for the tobacco industry. This is socially most important especially if we consider that the main targets of the soft drink industry are children.

Nevertheless a contrasting position to the “few steps” proposal aimed to increase physical exercise to reduce the risk of obesity comes from the first Stock conference held in Bangkok in 2002: “There is compelling evidence that prevention of weight regain in formerly obese individuals (i.e. a significant proportion of the adult population)

requires 60–90 min of moderately intense activity, and approximately 45–60 min/day to prevent the transition to overweight (from normal weight) or from overweight to obesity (an even larger proportion of the population!)... For children even more activity time is recommended...”.²⁵

The latter considerations from the Bangkok conference, confirmed by other studies²⁶ appear to be a more realistic evaluation of the role of physical exercise in energy balance regulation but also an unrealistic intervention strategy at least for some obese individuals! Aside from the danger due to the concomitant cardiovascular risk (just to name one) many obese individuals are unable to perform such a physical activity without a preliminary, long rehabilitation phase: more than 4% of the US adult population has a BMI over 40 kg/m²!³ For these patients, as for many others, the above-mentioned recommendations appear rather unfeasible. Furthermore, it is also necessary to take into account the genetic interindividual variability of the metabolic and energetic response to physical exercise.^{27,28}

The presence of poor-responders to physical exercise in a quite large proportion of the population requires other strategies, not yet available or considered.

Another major complaint while affording the obesity epidemic is the current poor distinction between “preventive, population oriented” and “therapeutic, clinical” interventions or strategies, obviously both necessary in the presence of an epidemic emergency. In the case of obesity the long duration of the latent “preclinical” phase of the disease²⁹ and, in particular, the scarcity of safe and effective drugs favours the confusion between preventive and therapeutic strategies!

“Obesity is a disease! As such it needs drugs!” (from a conversation with a general practitioner).

Obesity is a complex disease consequence of “ancient” and “recent” biological problems of humans.

“Ancient” problems, among others, consist in the ancestral alternating exposure to the periods of feast and famine to which humans have had to adapt through either a relatively efficient (thrifty) genotype and/or a poor satiety control to favour food intake in conditions of food abundance (often gained after a strenuous physical exercise!).^{30,31}

“Recent” problems are all before our eyes: plenty of low-cost tasty foods, rich in fat and/or sugar, a decreased consumption of vegetables and starch that grant gastric fullness, scarcity/absence of physical activity, continuous direct and indirect stimuli to eat.

At this stage what mechanisms of action should an antiobesity drug have? Can we consider safe a drug that increases thermogenesis to counteract a biological system built over a million-year-long evolution to spare energy both in the process of storing (after an occasional "good" and abundant meal) and searching nutrients (with the prolonged, even intense, physical activity to get the food to feed a group, albeit small, and not a single individual)? How can we stop hunger and/or improve satiety without interfering with the regulation of other basic human behaviours and functions?

It appears therefore difficult to have effective and safe antiobesity drugs, at least in our opinion, as was the case with hypertension 25–30 years ago—a disease without drugs as obesity is today. That we should have drugs to counteract the obesity epidemic within the next two decades is, unfortunately, still not sufficiently supported so far by experimental or clinical studies.

Finally the number of obesity clinics worldwide appears too limited to afford the clinical aspects of such an epidemic. Quite remarkable is, for instance, the number of diabetic clinics active in any given territory (i.e. clinical centres for 6–7% of the adult population with diabetes) compared to the number of obesity clinics operating in the same area, considering that about 4% of the adult population is expected to have a BMI > 40.0 kg/m² and about one-third of all adults has a BMI over 30 kg/m²!

Peters et al.,¹ at large, support the idea that nowadays obesity could be considered as a "culture" (or poor-culture) bound disease. This seems to be the case, at least in the Western World, where there is an inverse correlation between educations and "healthy" weight. On the other hand and paradoxically, at any given time, and frequently conditioned by TV or tabloid advice, many people are "on a diet" and many others "exercise" to lose weight.

Now we approach the final question: how to manage the obesity epidemic? It is obviously impossible to "go back in time" but it is possible to modify many of the current habits that, based on apparent cultural and social aims of "safety and well-being," are only negatively conditioning humans.

In this regard it is time for proper cultural and political strategies. If an adolescent (or an adult) remains for 4–6 h daily in front of a TV or a video game (taking that time away from outdoor activities), his cognitive functions and culture will be (at least partially) conditioned. Can such an adolescent (or an adult) be open minded towards positive but

slightly demanding educational proposals? Consequently excessive TV viewing and sedentarism at least in the developmental ages, can have long-lasting adverse effects on health.³²

The suggestion of scientific societies to take a few more steps each day and a glass of mineral water instead of a soft drink clearly appears a "simplicistic" and not "simple" answer. It corresponds to a way of making proposals and offers in favour of an apparently easy choice for what is actually a very difficult task: this is indeed typical of consumerist/globalized societies. A clear example of this phenomenon is an episode that occurred to a nutritionist in charge of monitoring the dietetic composition of school meals in Rome: she was accused by the students' mothers of connivances with school catering services because she had authorized "small (actually regular) size" meals!

If we consider the crucial period of the developmental age, and the related educational interventions, sound political suggestions might be to avoid, when possible, school buses in favour of "protected" walking and bike paths leading to school, increase sport facilities and teaching and remove hypercaloric snack food and soft drinks dispensers from schools.^{33,34} Of course these policies would need adequate family support to be carried out. Another suggestion could be to add to school curricula "health teaching and evaluation" to monitor and improve families' and children's healthy life styles, with particular attention to food habits and regular physical exercise. These educational initiatives could well be twined with ecological programmes aimed to the protection of the territory, to increase the interest and sensitivity of both families and children/adolescents. These are just some of a wide range of proposals, which should be in agreement with local cultures and habits, but any strategy adopted should be carried on for a sufficiently long period of time to have any effect. Also urgent is the need to improve the physician–patient interaction and human relationship possibly by increasing the behavioural and social science content of medical school curricula and teaching healthy behaviours, with particular reference to nutrition and physical exercise.³⁵

In conclusion the obesity epidemic is an uncontrolled phenomenon that we suspect will remain as such for several other years. The absence of specific drugs further complicates all attempts to separate simple but effective preventive interventions from clinical strategies with consequent confusion over the ways, progression and timing of actions.

The existing dietary recommendations or guidelines do not seem to adequately account for the

current life habits and may be easily manipulated by some food industries. The cost of a healthy diet, not only for the single patient but for the whole family, is not sufficiently considered.

The whole field of education, and information, is still lacking. This might also be a consequence of the cultural level of the proposals made and the real awareness of the problem from medical, scientific and political institutions.

A deeper cultural reflection from medical societies on the relationship between the negative aspects of the so called "transition diet" and the "globalization process" could be useful to produce really "simple" and more successful proposals for preventive and therapeutic strategies in the fight against obesity and its complications.

References

- Peters JC, Wyatt HR, Donahoo WT, Hill JO. From instinct to intellect: the challenge of maintaining healthy weight in the modern world. *Obesity Rev* 2002;3:69–74.
- James WPT, Leach R, Kalamara R, Shayeghi M. The worldwide obesity epidemic. *Obesity Res* 2001;9:2285–233.
- Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999–2000. *JAMA* 2002;288:1723–7.
- Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999–2000. *J Am Med Ass* 2002;288:1728–32.
- Lobstein T, Frelut ML. Prevalence of overweight among children in Europe. *Obesity Rev* 2003;4:195–200.
- Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors. *JAMA* 2003;289:76–9.
- Hill JO, Wjatt HR, Reed JW, Peters JC. Obesity and the environment: where do we go from here? *Science* 2003;299:853–5.
- The Diabetes and Nutrition Study group DNSG of the European Association for the Study of Diabetes (EASD). Recommendations for the nutritional management of patients with diabetes mellitus. *Eur J Clin Nutr* 2000;54:353–5.
- Contaldo F, Pasanisi F, Mancini M. Beyond the traditional interpretation of Mediterranean diet. *Nutr Metab Cardiovasc Dis* 2003;13:117–9.
- Contaldo F, Scalfi L, Pasanisi F. Ancel Keys centenary and the definition of healthy diet (letter). *Clin Nutr* 2004;23:435–6.
- Willett W, Manson J, Liu S. Glycemic index, glycemic load, and risk of type 2 diabetes. *Am J Clin Nutr* 2002;76:274S–280.
- Brand-Miller JC, Holt SHA, Pawlak DB, McMillan J. Glycemic index and obesity. *Am J Clin Nutr* 2002;76:281S–285.
- Contaldo F, Pasanisi F. Obesity epidemics: secular trend or globalization consequence? Beyond the interaction between genetic and environmental factors. *Clin Nutr* 2004;23:289–91.
- International Life Science Institute. Workshop on the Evaluation of the Nutritional and Health Aspects of Sugars. *Am J Clin Nutr* 1995;62:161–296.
- Fleck F. WHO challenges food industry in report on diet and health. *BMI* 2003;326:515.
- Drewnowski A, Popkin BM. The nutrition transition: new trends in the Global Diet. *Nutr Rev* 1997;55(2):31–43.
- Popkin BM, Nielsen SJ. The sweetening of the world's diet. *Obesity Res* 2003;11(11):1325–32.
- Bray GA, Nielsen SJ, Popkin BM. Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity. *Am J Clin Nutr* 2004;79:537–43.
- Schulze MB, Manson JE, Ludwig DS, et al. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. *JAMA* 2004;292(8):927–34.
- Apovian CM. Sugar-sweetened soft drinks, obesity, and type 2 diabetes. *JAMA* 2004;292(8):978–9.
- Monteiro CA, Conde WL, Popkin BM. The burden of disease from undernutrition and overnutrition in countries undergoing rapid nutrition transition. *Am J Public Health* 2004;94(3):433–5.
- Mann J. Free sugars and human health: sufficient evidence for action? *Lancet* 2004;363:433–5.
- Joint WHO/FAO Expert Consultation. Diet, nutrition and the prevention of chronic diseases. *WHO Technical Report Series*, No. 916, Geneva, 2003.
- Editorial. Who pays in the obesity war. *Lancet* 2004;363:9406,339.
- Saris WHM, Blair SN, val Baak MA, et al. How much physical activity is enough to prevent unhealthy weight gain? outcome of the IASO 1st Stock conference and consensus statement. *Obesity Rev* 2003;4:101–14.
- Morabia A, Costanza MC. Does walking 15 min per day keep the Obesity Epidemic away? Simulation of the efficacy of a populationwide campaign. *Am J Public Health* 2004;94(3):437–40.
- Lakka TA, Rankinen T, Weisnagel SJ, et al. A quantitative trait locus on 7q31 for the changes in plasma Insulin in response to exercise training. *Heritage Fam Study Diabetes* 2003;52:1583–7.
- Lakka TA, Rankinene T, Weisnagel SJ, et al. Leptin and Leptin receptor gene polymorphisms and changes in glucose homeostasis in response to regular exercise in non diabetic individuals. *Heritage Fam Study Diabetes* 2004;53:1603–8.
- Devereux RB, Alderman MH. Role of preclinical cardiovascular disease in the evolution from risk factor exposure to development of morbid events. *Circulation* 1993;88:1444–55.
- Diamond J. The double puzzle of diabetes. *Nature* 2003;423:599–602.
- Contaldo F, Pasanisi F, Xhooxham. The young lady of a bushman tribe and globesity. *Nutrition* 2004;20(10):949–55.
- Hancox RJ, Milne BJ, Poulton R. Association between child and adolescent television viewing and adult health: a longitudinal birth cohort study. *Lancet* 2004;364:257–62.
- Brownell KD. Fast food and obesity in children. *Pediatrics* 2004;113(1):132.
- James J, Thomas P, Cavan D, Kerr D. Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomized controlled trials. *BMI* 2004;328:1237–41.
- Editorial. The soft science of medicine. *Lancet* 2004;363:1247.