

Evidences to validate public policies: a review with an international research perspective

Dario Gregori, MA, PhD.⁽¹⁾

Gregori D.
Evidences to validate public policies: a review with
an international research perspective.
Salud Publica Mex 2014;56 suppl 2:S157-S161.

Abstract

Nutrition and related health issues are nowadays topics of general interest. The prevalence of overweight and obesity has increased with alarming speed over the past twenty years, being described by the World Health Organization as a global epidemic. An evidence-based approach to public health interventions should be based on the best available information. Given the substantial investment of society in fundamental and applied health research, and the high expectations of society for reducing the burden of illness, attention to these matters should have high priority. There's an urgent need to foster the development of international standards, such as food labeling and profiling. Considering the complex network involved in obesity development, it is necessary to promote multiple-concurrent interventions, taking into account that by focusing on a single intervention in isolation, all other factors being constant, each individual policy change is likely to appear ineffective.

Key words: policy making; nutrition programs and policies; research policy evaluation

Gregori D.
Evidencia para validar políticas públicas:
una revisión con perspectiva internacional.
Salud Publica Mex 2014;56 suppl 2:S157-S161.

Resumen

El sobrepeso y la obesidad, hoy definidos por la Organización Mundial de la Salud (OMS) como una epidemia global, son un importante problema de salud pública internacional. Su rápida propagación no sólo afecta a los países desarrollados, sino también a los que están en desarrollo, los cuales enfrentan la doble problemática de la desnutrición y el sobrepeso. Dada la importancia de la investigación sanitaria y las grandes expectativas de la sociedad para reducir el impacto de esta enfermedad, la atención de estos asuntos debe ser prioritaria. Existe una necesidad urgente de fomentar el desarrollo de normas internacionales como el etiquetado de alimentos y la elaboración de perfiles. No obstante, al igual que sucede con la medicina individual, los enfoques para intervenir en la salud pública han de fundamentarse en la mejor evidencia disponible. En el caso específico de la obesidad, puesto que se trata de una red compleja de factores, es indispensable promover intervenciones simultáneas. Lo contrario podría derivar en políticas individuales que no logren resultados eficaces. Este artículo propone, desde un punto de vista basado en las evidencias actuales sobre la obesidad y su desarrollo, una nueva perspectiva internacional para enfrentar esta epidemia.

Palabras clave: formulación de políticas; programas y políticas de nutrición y alimentación; evaluación de políticas de investigación

(1) Unit of Biostatistics, Epidemiology and Public Health, Department of Cardiac, Thoracic and Vascular Sciences, University of Padova. Padova, Italy.

Received on: April 24, 2013 • Accepted on: March, 31 2014

Corresponding author: Prof. Dario Gregori. Department of Cardiac, Thoracic and Vascular Sciences. Via Loredan, 18. 35121 Padova, Italy.
E-mail: dario.gregori@unipd.it

The initial conception for what would later become known as evidence-based medicine (EBM) was originated by clinical epidemiologists at McMaster University in Canada.¹ In 1996 Sackett's editorial openly stated the role of EBM for clinicians, public health practitioners, purchasers, planners, and the public.² The author summarized how EBM represented the conscientious, explicit, and judicious use of existing best evidence in making decisions about the care of individual patients. Randomized controlled trials (RCT), especially the systematic review of several RCT, are therefore considered the gold standard of good evidence, followed by cohort studies (CS) and systematic reviews of CS. This methodological approach is considered by its supporters much more adequate to inform practitioners and policy makers; although throughout the years there have been several critics to this method.

Like in medicine, an evidence-based approach to public health interventions should be based on the best available evidence.³ Given the substantial investment of society in fundamental and applied health research, and the high expectations of society for reducing the burden of illness, attention to these matters should have high priority.⁴

Nutrition and related health issues are nowadays a major public health concern. The prevalence of overweight and obesity has increased with alarming speed over the past twenty years, being described by the World Health Organisation (WHO) as a 'global epidemic'. The rapid spread has concerned not only developed countries,⁵⁻⁷ but developing countries,⁸⁻¹¹ that face the double burden of malnutrition and overweight.

Scientific evidence is fundamental for decision making processes at public health levels, as advocated in several studies.^{12,13} This article aims at observing from an EBM point of view current evidences on obesity and its developments, proposing a new international perspective, intended to tackle the epidemic through new approaches.

Discussion

Obesity: a complex scenario for policies development

Obesity has been gathering massive attention in public health research in the last years,¹⁴ due to its rapid spread and its multifaceted implications in a broad range of public sectors, including health, psychology, economy and politics.¹⁵

Several factors have been identified as playing a role in obesity development. Energy intake role is well established.¹⁶ Swinburn and colleagues' model

explained that for a reversal of body mass index (BMI) a 1970's value, it would be needed a reduction of the increase in energy intake of approximately 500 kcal/day for adults and of 350 kcal/day for children. The authors moreover pointed out the role of physical activity, showing that a large compensatory increase in physical activity or a combination of both, would achieve the same outcome. A positive energy balance is therefore responsible for weight gain, in an obesogenic environment where the net effect of eating behavior and physical activity are modulated by biological traits that are highly prevalent in the population, as described by Bouchard.¹⁷

In a disease where complexity of associations and reciprocal influences appear to be the norm,¹⁸ public health policy makers have identified two main targets of action: individual responsibility, an unexplored field of politics, and the obesogenic environment. When considering personal behavior, intervention programs have been mostly directed towards public awareness campaigns and school-programs.¹⁹ In order to help consumers in making reasoned and healthful choices, food labels are seen as a powerful tool. Clear and easily understandable labels can contribute to increase consumers' awareness about their purchasing choices.

The obesogenic environment, on the other side, has been objective of a broad range of policies at the national level. If childhood obesity is seen as having an environmental component, then policy makers are asked to act to actively reduce high-calories, low-nutrition food available to children. Among the proposed options, four actions seemed to be the most frequently considered:²⁰ a) controlling the conditions of sale; b) restricting advertising on high fat, low-nutrition food; c) subsidizing healthier alternatives such as fruits, and d) restricting or banning some ingredients, such as trans fats.

In 2011, Hawkes and Lobstein reviewed the actions undertaken worldwide around food marketing to children.²¹ The policy environment was described in the 27 member states of the European Union, and in a further 32 countries, among those, three Latin American states (Brazil, Chile and Colombia). Of these 59 countries, 26 had made explicit statements on food marketing to children in strategy documents, and 20 had, or were developing, explicit policies in the form of statutory measures, official guidelines or approved forms of self-regulation. Despite the fact that in developing countries, the issue of childhood obesity is usually not high on government health agendas, several developing countries took action in order to reduce the effect of marketing to children.²¹

Brescoll's article pointed out several actions undertaken,²² among those programs that reduced

marketing to children. When specifically considering leveraging on taxes, it's worth looking at the United States (US) soft drink case. Forty US states currently levy small taxes on soft drinks, potato chips, candy, chewing-gum. These policies have been implemented based on evidence coming from small experimental studies,^{23,24} with inconclusive results when extended to real world investigations.²⁵ Moreover, the evaluation of impact of taxation on such items showed negligible effects and no statistically significant connection between grocery stores and adolescents' BMI.²⁶

Another popular action implemented in several countries was prohibiting sales of targeted food.^{27,28} The term "competitive food" refers to all food and beverages available or sold in schools with the exception of items served through the national school lunch and breakfast programs. A cross-sectional study among 1 088 high school students from 20 schools observed that school food policies that limited access to food high in fats and sugars were related to less frequent student purchases of these foods at school.²⁹ Qualitative studies indicated that competitive food were contributing directly to children's obesity, taken that ready availability of competitive food boosts in-school purchases of soda and snacks, but without effect on BMI and physical activity levels.³⁰

In Europe the EU Platform for Action on Diet, Physical Activity and Health was launched in 2005, with the aim of bringing together EU-level representatives of the food industry, advertisers, retailers, fast food restaurants, the cooperative movement, the consumer movement and health NGOs in order to galvanize EU-wide efforts against obesity, with actions developed in the fields of consumer information and education, the marketing of food products, composition of food, availability of healthy food options, portion sizes and the promotion of physical activity.³¹ The focal areas for these voluntary actions covered promotion for a healthy lifestyle, education, nutritional information and labeling, dissemination, advertising and marketing, product redevelopment, reformulation, portion size and policy development.³² Given the Platform's nature, continuous monitoring and appropriate evaluation were a crucial need to identify best practices; in spite of which there were very limited evaluation and monitoring tasks. In March 2007, for the second anniversary of the Platform, the Second Monitoring Progress Report was published.³³ The research indicated that there were major differences in quality between reports and that 'a significant number of monitoring forms were not entirely adequate'.

In this fragmented yet constantly evolving scenario, the complex situation faced by a policy maker can be well pictured through two fitting examples of different procedural moments. The first one introduces snacking

research, showing the roots of policies meant to tackle children's obesity, while the second one, food labeling, is aimed at presenting issues and actual effects of an implemented strategy.

A controversial snack on consultations' tables

Eating frequency (EF) has been for a long time at the centre of the debates, without reaching a formal consensus.³⁴ The main target of the research has been whether the number of meals external to lunch and dinner would benefit or not in weight management and reduction. Higher EF has been suggested to be more successful in weight management, considering snacks higher in carbohydrate as positively replacing fat.^{35,36} An opposing belief is that a higher EF may lead to weight gain as it provides more opportunities to eat during the day, resulting in an excess daily energy intake.³⁷

All this unclarity in statements and results can be ascribed to a major limitation in meals' frequency and composition research: the lack of standardized definitions.^{35,38} When considering the term snack, two concurrent classes of snack definition, plus some hybrids, are available.³⁸ Based on food categories, consisting in a taxonomy of food, snacks can be identified by their quality and composition,³⁹ while based on the time criterion, every food item consumed between meals is considered to be a snack.⁴⁰ Gregori and Maffei reviewed literature referred in PubMed library between 2003 and 2006 concerning snacking in children.³⁸ Fifty percent of the papers were not specifying the definition snack in studying association with obesity, neglecting the fact that up to 70% of the association eventually found can be attributed to the chosen definition. Together with these methodological considerations, that may affect the accuracy of the information offered as well as the validity of the conclusions proposed,^{38,41} studies performed did not find a clear association between different aspects of dietary intake and the development of obesity in children and adolescents.⁴¹

Labeling: a helpful or a tricky tool?

Nutrition profiling and product labeling are composite tasks, which imply translating nutrients into healthy food and healthy eating patterns and understanding the decision-making process in food choice. Nutrient profiling can be defined as the discipline of characterizing food for specific purposes based on an assessment of their nutrient composition according to scientific and pragmatic principles. Product labeling instead is a panel found on a package of food which contains a variety of

information about the nutritional value of the food item. Current food labels differ in various respects. Labels can be positioned on the front side of the package, the back or the side. There's a wide choice of formats for front of pack (FOP) nutrition labels, e.g. multiple traffic lights labels, nutrition tables, labels based on Guideline Daily Amounts (GDA), and signpost.

Creating a combined nutritional quality index for individual food raises therefore a number of methodological issues, including: a) the selection of index nutrients; b) the choice of reference daily values, and c) the choice of reference amounts: 100 g, 100 kcal, or serving size.⁴² When translating food nutrient profiling into food labeling, once again no standardization is found.⁴³ The choice is clear when the descriptor is "low /lower in A" or even "low/lower in A, B or C" where A, B and C are known nutrients. Things are less clear when the descriptor is 'healthy' or 'unhealthy',⁴⁴ since in this case the number of different combinations of nutrients and food components that could possibly be used for nutritional profiling is considerable⁴⁵ and terms like "healthy" need different and proper definitions.⁴⁶ This is reflected in the production of food profiles, as is the case of a WHO Report,⁴⁷ that listed 37 nutrients and other food components linked to chronic disease, and the EU Directive on nutrition labeling, where 31 nutrients were included within the nutrition labeling panel.⁴⁸ The existence of alternative schemes inevitably leads to uncertainty and geographical heterogeneity in their application, with a consequent creation of irrationality for nutrients classified as 'healthy' according to one system and 'unhealthy' according to another.⁴⁹

In this sense, nutrient profiling necessarily involves prioritization of nutrients.^{43,50} In framing the EU Directive for nutrition labeling,⁴⁸ two types of nutrition label content were permitted, if nutrition labeling was provided for food packaging: energy, protein, fat and carbohydrate (the Big 4) or energy value, amounts of protein, carbohydrate, sugars, fats, saturates, fibre and sodium (the Big 8).

Food labeling has been implemented in a voluntary basis in several EU countries. On average, 85% of the products contained back of pack (BOP) nutrition labeling or related information, versus 48% for FOP information.

Several studies⁵¹⁻⁵³ on consumers' understanding have been conducted to clarify labeling issues facing consumers and to make the existing point-of-purchase environment more conducive to select healthy choices. Nevertheless, there is no convincing evidence that food labels are an effective means to achieve the desired effect at population level.

Conclusions

The worldwide epidemic of diabetes and obesity urges quality studies to address efficacy and effectiveness of child and adolescent nutrition interventions.⁵⁴ As pointed out from several sources cited in this paper, there's a urgent need to foster the development of international standards, such as food labeling and profiling. Considering the complex network involved in obesity development, it is necessary to promote multiple-concurrent interventions, considering that by focusing on a single intervention in isolation, all other factors being constant, each individual policy change is likely to appear ineffective.⁵⁵

Declaration of conflict of interests. The author declares not to have conflict of interests.

Referencias

1. Evidence-Based Medicine Working Group. A new approach to teaching the practice of medicine. *JAMA* 1992;268(17):2420-2425.
2. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ* 1996;312(7023):71-72.
3. Gerhardus A, Breckenkamp J, Razum O. Evidence-based public health. Prevention and health promotion in the context of science, values and (vested) interests. *Med Klin (Munich)* 2008;103(6):406-412.
4. Haynes RB. What kind of evidence is it that Evidence-Based Medicine advocates want health care providers and consumers to pay attention to? *BMC Health Serv Res* 2002;2:3.
5. Jackson-Leach R, Lobstein T. Estimated burden of paediatric obesity and co-morbidities in Europe. Part 1. The increase in the prevalence of child obesity in Europe is itself increasing. *Int J Pediatr Obes* 2006;1(1):26-32.
6. Lobstein T, Jackson-Leach R. Estimated burden of paediatric obesity and co-morbidities in Europe. Part 2. Numbers of children with indicators of obesity-related disease. *Int J Pediatr Obes* 2006;1(1):33-41.
7. Lobstein T, Jackson-Leach R. Child overweight and obesity in the USA: prevalence rates according to IOTF definitions. *Int J Pediatr Obes* 2007;2(1):62-64.
8. Jafar TH, Qadri Z, Islam M, Hatcher J, Bhutta ZA, Chaturvedi N. Rise in childhood obesity with persistently high rates of undernutrition among urban school-aged Indo-Asian children. *Arch Dis Child* 2008;93(5):373-378.
9. Du Toit G, Van der Merwe MT. The epidemic of childhood obesity. *S Afr Med J* 2003;93(1):49-50.
10. Uauy R, Albala C, Kain J. Obesity trends in Latin America: transiting from under- to overweight. *J Nutr* 2001;131(3):893S-899S.
11. Wijesinghe PR. Obesity is a wake up call for developing world too. *BMJ* 2006;333(7572):809.
12. Hebert JR, Allison DB, Archer E, Lavie CJ, Blair SN. Scientific decision making, policy decisions, and the obesity pandemic. *Mayo Clin Proc* 2013;88(6):593-604.
13. Rivera JA. Improving nutrition in Mexico: the use of research for decision making. *Nutr Rev* 2009;67(Suppl 1):S62-S65.
14. Webster PC. UN summit urges more accountability within food and beverage industry. *CMAJ* 2011;183(15):E1101-E1102.

15. Avenell A, Broom J, Brown TJ, Poobalan A, Aucutt L, Stearns SC, et al. Systematic review of the long-term effects and economic consequences of treatments for obesity and implications for health improvement. *Health Technol Assess* 2004;8(21):iii-iv, 1-182.
16. Swinburn B, Sacks G, Ravussin E. Increased food energy supply is more than sufficient to explain the US epidemic of obesity. *Am J Clin Nutr* 2009;90(6):1453-1456.
17. Bouchard C. The biological predisposition to obesity: beyond the thrifty genotype scenario. *Int J Obes (Lond)* 2007;31(9):1337-1339.
18. Monasta L, Batty GD, Cattaneo A, Lutje V, Ronfani L, Van Lenthe FJ, Brug J. Early-life determinants of overweight and obesity: a review of systematic reviews. *Obes Rev* 2010;11(10):695-708.
19. Alff F, Markert J, Zschaler S, Gausche R, Kiess W, Blüher S. Reasons for (non)participating in a telephone-based intervention program for families with overweight children. *PLoS One* 2012;7(4):e34580.
20. Hawkes C. Regulating and litigating in the public interest: regulating food marketing to young people worldwide: trends and policy drivers. *Am J Public Health* 2007;97(11):1962-1973.
21. Hawkes C, Lobstein T. Regulating the commercial promotion of food to children: a survey of actions worldwide. *Int J Pediatr Obes* 2011;6(2):83-94.
22. Brescoll VL, Kersh R, Brownell KD. Assessing the Feasibility and Impact of Federal Childhood Obesity Policies. *Ann Am Acad Poli Soc Sci* 2008;615(1):178-194.
23. French SA, Jeffery RW, Story M, Hannan P, Snyder MP. A pricing strategy to promote low-fat snack choices through vending machines. *Am J Public Health* 1997;87(5):849-851.
24. French SA, Story M, Jeffery RW, Snyder P, Eisenberg M, Sidebottom A, Murray D. Pricing strategy to promote fruit and vegetable purchase in high school cafeterias. *J Am Diet Assoc* 1997;97(9):1008-1010.
25. Powell LM, Chaloupka FJ. Food prices and obesity: evidence and policy implications for taxes and subsidies. *Milbank Q* 2009;87(1):229-257.
26. Powell LM, Han E, Chaloupka FJ. Economic contextual factors, food consumption, and obesity among U.S. adolescents. *J Nutr* 2010;140(6):1175-1180.
27. Han-Markey TL, Wang L, Schlotterbeck S, Jackson EA, Gurm R, Leidal A, Eagle K. A public school district's vending machine policy and changes over a 4-year period: implementation of a national wellness policy. *Public Health* 2012;126(4):335-337.
28. Kocken PL, Eeuwijk J, Van Kesteren NM, Dusseldorp E, Buijs G, Bassa-Dafesh Z, Snel J. Promoting the purchase of low-calorie foods from school vending machines: a cluster-randomized controlled study. *J Sch Health* 2012;82(3):115-122.
29. Neumark-Sztainer D, French SA, Hannan PJ, Story M, Fulkerson JA. School lunch and snacking patterns among high school students: associations with school food environment and policies. *Int J Behav Nutr Phys Act* 2005;2(1):14.
30. Datar A, Nicosia N. Junk Foods in School and Childhood Obesity: Much Ado About Nothing? Santa Monica: RAND Corporation, 2009.
31. Comisión Europea, Dirección General de Salud y Consumidores. Fight against obesity in the EU: European Commission catalyses voluntary action by stakeholders. *Health & Consumer Voice* 2005.
32. Fussenegger D, Pietrobelli A, Widhalm K. Childhood obesity: political developments in Europe and related perspectives for future action on prevention. *Obes Rev* 2008;9(1):76-82.
33. EU Platform on Diet, Physical Activity and Health. Synopsis Commitments. Annual Report 2007. 2007.
34. Palmer MA, Capra S, Baines SK. Association between eating frequency, weight, and health. *Nutr Rev* 2009;67(7):379-390.
35. Drummond S, Crombie N, Kirk T. A critique of the effects of snacking on body weight status. *Eur J Clin Nutr* 1996;50(12):779-783.
36. Keast DR, Nicklas TA, O'Neil CE. Snacking is associated with reduced risk of overweight and reduced abdominal obesity in adolescents: National Health and Nutrition Examination Survey (NHANES) 1999-2004. *Am J Clin Nutr* 2010;92(2):428-435.
37. Jenkins DJ, Ocana A, Jenkins AL, Wolever TM, Vuksan V, Katzman L, et al. Metabolic advantages of spreading the nutrient load: effects of increased meal frequency in non-insulin-dependent diabetes. *Am J Clin Nutr* 1992;55(2):461-467.
38. Gregori D, Maffei C. Snacking and obesity: urgency of a definition to explore such a relationship. *J Am Diet Assoc* 2007;107(4):562-563.
39. Wurtman J, Wurtman R, Berry E, Gleason R, Goldberg H, McDermott J, et al. Dextrofenfluramine, fluoxetine, and weight loss among female carbohydrate cravers. *Neuropsychopharmacology* 1993;9(3):201-210.
40. Toornvliet AC, Pijl H, Hopman E, Elte-de Wever BM, Meinders AE. Serotonergic drug-induced weight loss in carbohydrate craving obese patients. *Int J Obes Relat Metab Disord* 1996;20(10):917-920.
41. Lanfer A, Hebestreit A, Ahrens W. Diet and eating habits in relation to the development of obesity in children and adolescents. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* 2010;53(7):690-698.
42. Drewnowski A, Fulgoni V 3rd. Nutrient profiling of foods: creating a nutrient-rich food index. *Nutr Rev* 2008;66(1):23-39.
43. Matthys C, Bucchini L, Busstra MC, Cavelaars AE, Eleftheriou P, Garcia-Alvarez A. EURRECA: development of tools to improve the alignment of micronutrient recommendations. *Eur J Clin Nutr* 2010;64(Suppl 3):S26-S31.
44. Lobstein T, Davies S. Defining and labelling 'healthy' and 'unhealthy' food. *Public Health Nutr* 2009;12(3):331-340.
45. Foltran F, Verduci E, Ghidina M, Campoy C, Jany KD, Widhalm K, et al. Nutritional profiles in a public health perspective: a critical review. *J Int Med Res* 2010;38(2):318-385.
46. Ware JE Jr, Brook RH, Davies AR, Lohr KN. Choosing measures of health status for individuals in general populations. *Am J Public Health* 1981;71(6):620-625.
47. Robertson A, Tirado C, Lobstein T, Jermini M, Knai C, Jensen JH. Food and health in Europe: a new basis for action. *WHO Reg Publ Eur Ser* 2004;96:i-xvi, 1-385.
48. Council Directive 90/496 of 24 September 1990 on Nutrition Labelling for Foodstuffs. *Official Journal L* 276 1990:40-44.
49. Garsetti M, de Vries J, Smith M, Amosse A, Rolf-Pedersen N. Nutrient profiling schemes: overview and comparative analysis. *Eur J Nutr* 2007;46(Suppl 2):15-28.
50. Lambert JP, Ashwell M. Developing micronutrient reference values: prioritization of tool development by the EURRECA Network of Excellence. *Eur J Clin Nutr* 2010;64(Suppl 2):S11-S18.
51. Bonsmann SS, Celemin LF, Grunert KG. Food labelling to advance better education for life. *Eur J Clin Nutr* 2010;64(Suppl 3):S14-S19.
52. Grunert KG, Wills JM, Fernandez-Celemin L. Nutrition knowledge, and use and understanding of nutrition information on food labels among consumers in the UK. *Appetite* 2010;55(2):177-189.
53. van Trijp HC. Consumer understanding and nutritional communication: key issues in the context of the new EU legislation. *Eur J Nutr* 2009;48(Suppl 1):S41-S48.
54. Collins CE, Warren JM, Neve M, McCoy P, Stokes B. Systematic review of interventions in the management of overweight and obese children which include a dietary component. *Int J Evid Based Healthc* 2007;5(1):2-53.
55. Kersh R, Stroup DF, Taylor WC. Childhood obesity: a framework for policy approaches and ethical considerations. *Prev Chronic Dis* 2011;8(5):A93.