A global response to a global problem: the epidemic of overnutrition

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Abstract It is estimated that by 2020 two-thirds of the global burden of disease will be attributable to chronic noncommunicable diseases, most of them strongly associated with diet. The nutrition transition towards refined foods, foods of animal origin, and increased fats plays a major role in the current global epidemics of obesity, diabetes and cardiovascular diseases, among other noncommunicable conditions. Sedentary lifestyles and the use of tobacco are also significant risk factors. The epidemics cannot be ended simply by encouraging people to reduce their risk factors and adopt healthier lifestyles, although such encouragement is undoubtedly beneficial if the targeted people can respond. Unfortunately, increasingly obesogenic environments, reinforced by many of the cultural changes associated with globalization, make even the adoption of healthy lifestyles, especially by children and adolescents, more and more difficult.

The present paper examines some possible mechanisms for, and WHO's role in, the development of a coordinated global strategy on diet, physical activity and health. The situation presents many countries with unmanageable costs. At the same time there are often continuing problems of undernutrition. A concerted multisectoral approach, involving the use of policy, education and trade mechanisms, is necessary to address these matters.

Keywords: Obesity/epidemiology/prevention and control; Diet; Physical Fitness; Health status; International law; Food industry; Socioeconomic factors; World health; World Health Organization; International agencies; International cooperation; (*source: MeSH, NLM*).

Mots clés: Obésité/épidémiologie/prévention et contrôle; Régime alimentaire; Aptitude physique; Etat sanitaire; Droit international; Industrie alimentaire; Facteur socioéconomique; Santé mondiale; Organisation mondiale de la Santé; Organisation internationale; Coopération internationale; (*source: MeSH, INSERM*).

Palabras clave: Obesidad/epidemiología/prevención y control; Dieta; Aptitud física; Estado de salud; Derecho internacional; Industria de alimentos; Factores socioeconómicos; Salud mundial; Organización Mundial de la Salud; Agencias internacionales; Cooperación internacional; (*fuente: DeCS, BIREME*).

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Introduction

WHO estimates that, within the next few years, noncommunicable diseases will become the principal global causes of morbidity and mortality (*1*). The role of diet in the etiology of most noncommunicable diseases is well established. The shifts towards highly refined foods and towards meat and dairy products containing high levels of saturated fats, i.e. the nutrition transition, now increasingly evident in middle-income and lower-income countries, have, together with reduced energy expenditure, contributed to rises in the incidence of obesity and noncommunicable diseases (*2*).

Because of the global extent of the epidemic, the potential role of international legal mechanisms in promoting healthy diets and preventing overnutrition should be explored. These instruments need not be binding in nature to be effective. The present article outlines the magnitude and determinants of the epidemic, discusses the rationale for using international instruments, briefly describes the available instruments, reviews present approaches, and considers how they might evolve in the future.

Overnutrition, obesity and noncommunicable diseases

The 2002 World Health Report lists the leading ten selected risk factors as percentage causes of disease burdens measured in disability-adjusted life years (DALYs) for high- and low-mortality developing countries and for developed countries. For developed countries and low-mortality developing countries, overweight was listed as the fifth most serious risk factor. Other risk factors, including tobacco and consumption, hypertension, and underweight, rank higher (*3*) While the problem of overweight is an essential risk factor for non-communicable diseases, it is not the single or most deadly one.

Until recently, overnutrition, obesity, and the associated increased risk of noncommunicable diseases such as ischaemic heart disease, diabetes, stroke, and hypertension have generally been perceived as problems of developed countries. In the USA, 55% of adults are overweight and nearly a quarter are obese (*4*). Obesity levels have risen sharply in Australia, Canada and Europe; for example, between 1980 and 1990 in England

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the prevalence of obesity doubled to 16% and continues to increase (*5*, *6*). The epidemic of overweight and obesity inflicts significant disadvantages on both the individual and society, i.e. increased risk of disease and death, health care costs (*7*, *8*) and reduced social status, educational attainment, and employment opportunities (*9*).

However, the problems of overnutrition are increasing even in countries where hunger is endemic. Recent reviews have reported significant increases in the prevalence of overweight and obese individuals in developing countries. Increasing obesity levels and the attendant increased risk of noncommunicable diseases, especially diabetes, are now global problems (*9*–*11*). Levels of overweight and obesity among women in the Eastern Mediterranean Region and North Africa exceed those in the USA; and those in Eastern Europe and Latin America are similar to those in the USA (*12*). In Brazil (*13*) and Mexico (*14*), obesity is ceasing to be associated with relatively high socioeconomic status and is becoming a marker of poverty, as in developed countries. The effects of dietary changes are usually exacerbated by a parallel decline in energy expenditure associated with a reduction in daily physical activity.

In Europe and North America, fat and sugar account for more than half the caloric intake, and consumption of refined grains has largely replaced that of whole grains (in the USA, 98% of wheat flour is refined). Many people in the developing world are abandoning traditional diets that are rich in fibre and grain for diets that include increased levels of sugars, oils, and animal fats. For all developing countries combined, the per capita consumption of beef, mutton, goat, pork, poultry, eggs and milk rose by an average 50% per person between 1973 and 1996 (*15*).

The obesogenic environment

In the USA, 170 000 fast food restaurants and three million soft drink vending machines have changed the country's eating patterns. The same thing is happening in other countries to a greater or lesser degree. A recent survey in the USA found that only 38% of meals were home-made and that many people had never cooked a meal from basic ingredients (*16*); an average restaurant meal provides 1000–2000 kcal, i.e. up to 100% of the recommended daily intake for most adults, and the sizes of portions are increasing (*17*). Moreover, there is a greater tendency to snack between meals. In the United Kingdom, 75% of adults and 91% of children consume a snack food at least once a day (*18*). Such behaviour is encouraged from a young age: there are fast food restaurants in many schools in the USA, and soft drink vending machines are increasingly found in schools worldwide.

More people in developing countries are finding themselves in such environments. In China the process of urbanization has been linked to changes in diet, the penetration of television into homes, and markedly reduced physical activity (*19*). Dietary transitions that took more than five decades in Japan have occurred in less than two decades in China.

Adverse dietary trends can be reversed if the obesogenic environment is challenged through price manipulation, public education, and clear food labelling. Finland and Norway have changed the high-fat, energy-dense diets consumed by their populations and consequently significantly reduced serum cholesterol levels and number of deaths from coronary heart disease (*20*, *21*). Singapore has decreased the levels of some cardiovascular risk factors and of childhood obesity by means of a national intervention programme (*22*). Mauritius administers a comprehensive programme that has reduced mean serum cholesterol levels, hypertension, smoking, and heavy alcohol use. This involves the use of the mass media, pricing policy, widespread educational activity in the community, workplaces and schools, and other legislative and fiscal measures (*23*). However, the ability of countries to formulate comprehensive interventions of this kind is increasingly limited by the norms and trade laws associated with globalization.

Globalization, food, and diet

Food has been traded since the advent of settled agriculture. Today, however, a qualitative change has occurred in this field because of unprecedented quantitative change. The global value of the food trade grew from US$ 224 billion in 1972 to US$ 438 billion in 1998. Food now accounts for 11% of global trade, a proportion higher than that of fuel (*24*). This increase has accompanied the consolidation of agricultural and food companies into large transnational corporations, which have developed global brand names and marketing strategies with adaptation to local tastes. These corporations are characterized by the global sourcing of supplies, the centralization of strategic assets, resources and decision-making, and the maintenance of operations in several countries to serve a more unified global market (*16*).

An important strategy for these corporations when penetrating into new markets involves the purchase of large, often majority, shareholdings in local food producers, wholesalers or retailers. Sales from affiliates of US corporations in South America doubled between 1987 and 1993 and increased by 282% in Mexico. In China, transnational corporations have invested significantly in local companies in order to produce, distribute, and retail both global and locally adapted products (*25*).

Virtually all aspects of the production and processing of food have been transformed in the last three decades. The overproduction of agricultural produce in developed countries is a perennial problem. For example the food supply in the USA contains 3800 kcal for every adult and child. Moreover, the demand for food is relatively inelastic. These factors have made it necessary to add value to raw agricultural products in the manufacture of food. In the USA, farm value has remained almost unchanged in recent years whereas market value, incorporating added value by the manufacture, retail and food services, has doubled and is now three times higher than farm value (*26*). Of the 16 143 new products introduced in supermarkets in the United Kingdom during 1991, over 77% were new types of food (*27*). Sugar and salt are the two most commonly added ingredients, and fats and oils are also added in large amounts. Advantage is thus taken of people's liking for sweet foods and of the tendency to ignore satiety when sweet and fat foods are consumed (*28*).

Along with the changes in the food supply, the marketing of food has clearly influenced dietary change. As urbanization proceeds, people's preferences are clearly being shaped by the introduction of consumers to aggressive marketing techniques and by increased supplies of domestic and imported goods (*29*). Alarm has been expressed about the rapid spread of the fast food culture, perhaps exemplified most visibly by

McDonald's (*30*). Within a comparatively short period after the introduction of Coca Cola, Pepsi, and Nestlé into China, these brand names were recognized by 65%, 42%, and 40% of the population, respectively (*31*). Global marketing and the systematic moulding of taste by giant corporations is a central feature of the globalization of the food industry (*32*).

The food industry in the USA spends over US$ 30 billion each year on direct advertising and promotions — more than any other industry (*17*). Smaller amounts are devoted to food advertising in developing countries, but advertising is increasing as incomes rise in these countries. In South-east Asia, food advertising expenditures increased from US$ 2 billion to US$ 6 billion between 1984 and 1990. Mexicans now drink more Coca Cola than milk (*33*).

World Trade Organization

The World Trade Organization (WTO) addresses and enforces the rules of trade between countries in order to facilitate increased global trade. The two key principles of the international trade regime, intended to achieve non-discrimination, are those of most-favoured nation treatment and national treatment; the first requiring that a benefit granted to one Member State be granted to all Member States; and the second that imported and domestically produced goods, services, and intellectual property be allowed the same competitive advantages in the markets of importing countries. Thus WTO facilitates market penetration and global advertising in developing countries.

Prevention strategies: the need for a global response

In the USA the cost of medical therapy for screening and reducing serum cholesterol levels is at least US$ 10 000 per life-year saved (*34*), and the direct medical costs of obesity are estimated to be US$ 40 billion (*35*). For developing countries, the prevention of excessive weight gain is the only feasible solution.

A medical model approach has been the dominant paradigm in prevention strategies. This has emphasized identification of various risks and risky behaviour and, consequently, identification of individuals at greatest risk. The International Heart Foundation has focused on the need for individuals to eat less fat and salt. Unfortunately, this approach ignores the repeated and expensive failures to change diets solely through the improvement of knowledge (*36*).

The trading and global marketing of unhealthy commodities such as tobacco have been recognized as transnational factors that may damage health (*37*, *38*). Moreover, globalization is fuelling an epidemic of noncommunicable diseases through the promotion of certain foodstuffs and diets. Against a background of monumental global changes in production, marketing and retailing, the advocacy of changes in individual behaviour has generally failed. Multilateral collective strategies, especially the development of international standards, are essential for protecting and promoting public health against the hazards associated with globalization (*39*). In order to respond to the mounting burden of disease, WHO has adopted a global strategy for the prevention and control of noncommunicable diseases which includes, inter alia, a consideration of unhealthy diets.

WHO strategy

At the Fifty-third World Health Assembly in May 2000, the Director-General of WHO presented a global strategy for the prevention and control of noncommunicable diseases. It focuses on the following major areas of risk in an integrated way: tobacco use, unhealthy diets and inadequate physical activity (*40*). Overnutrition is one piece of this strategy.

Two years later, the Fifty-fifth World Health Assembly considered a report by the WHO Secretariat which explored a framework for action on diet and physical activity as part of the integrated prevention and control of noncommunicable diseases. The report noted that international issues with a major influence on nutrition and physical activity would be identified and addressed, including advertising, mass communication, world trade agreements, food labelling, novel foods, urban planning, and transport. It also indicated that WHO would interact with industry in order to draw attention to the latter's responsibility for the promotion of healthy diets and physical activity (*41*).

WHO is planning a public consultation process with a view to the creation of a global strategy on diet, physical activity, and health. It is intended that an expert committee will produce a report on diet, nutrition, and the prevention of chronic diseases. There will then be extensive consultation with Member States, UN agencies and private and public organizations, after which a reference group will advise WHO on the development of a global strategy. This will be considered by the Executive Board in October 2003 and discussed at the Fifty-seventh World Health Assembly in May 2004.

WHO's Global Strategy on Diet, Physical Activity and Health recognizes the need for private as well as public sector involvement to address relevant public health issues. Although WHO is a public international organization with the aims of protecting and promoting public health, it shares certain goals with the private sector and believes that both public and private sectors can agree on certain issues such as adding fruits and vegetables to diets, increasing physical activity, more availability and affordability of health foods, and encouraging the maintenance of healthy body weights. WHO also admits that certain issues may be more contentious: the promotion of smaller portions; limitations on amounts of fat, salt and sugar in foods; simpler and more comprehensive labelling of benefits and potential harmful effects of foods; and reassessment of marketing to young children. The Global Strategy endorses personal choice, and aims to ensure "that these choices are made by fully informed consumers" and that choices are "made in an environment in which it is easy for people to make healthy decisions about what to eat and how much physical activity they get" (*42*).

The WHO Process for a Global Strategy on Diet, Physical Activity and Health draws distinctions between tobacco and food, noting that unlike tobacco, which kills half its regular users if consumed as intended, "foods are not deadly products ... . We all need food for living and we all want to enjoy the food we eat"(*42*). In stark opposition to the Framework Convention on Tobacco Control currently under negotiation at WHO, the Organization considers the industry an ally, and notes that "The food, sports, insurance, advertising and many other sectors can endorse and assist in dissemination of nutrition messages, and improve their products across the

board to be healthier and contain less harmful nutrition components"(*42*).

Contribution of international instruments

A central component of enhanced multilateral cooperation in support of public health is the expanded use of international instruments. In order to achieve national objectives for the protection and promotion of public health, governments have found it increasingly necessary to cooperate in order to impact the cross-border factors that affect their populations (*43*).

Current international law

The instruments discussed below constitute the current international law related to food policy.

Codex Alimentarius

WHO and the Food and Agricultural Organization (FAO) have worked together since 1963 to administer the Codex Alimentarius Programme. The Codex Alimentarius contains standards, recommended codes of practice and guidelines on food safety aimed at protecting consumers' health and ensuring fair practices in the trading of food (*44*). During the WTO Uruguay Round in 1995, the Codex Alimentarius standards were accepted as the basis for food trading in the Agreement on Sanitary and Phytosanitary Measures and on Technical Barriers to Trade. The role of the FAO/WHO food guidelines within the international trade regime was thus formalized (*45*).

Certain Codex Committees are especially relevant to the area of overnutrition. Among the General Subject Committees are the Committee on Food Labelling and the Committee on Nutrition and Foods for Special Dietary Uses. The Commodity Committees are responsible for developing standards for specific foods or classes of foods, and they address such areas as fats and oils, sugars and processed fruits and vegetables (*45*).

The Codex Alimentarius could be a valuable international mechanism for producing standards and guidelines relating to overnutrition. However, to date it has restricted itself to matters of food safety. A draft FAO/WHO report also notes that the Codex "would need to move beyond the toxicological aspects of food to an understanding of the role of food choices in the development of chronic disease" (*46*). Perhaps one reason for its reluctance to tackle matters of public health more forcefully is the domination of its committees by representatives of industry. In 1993 its committees included only 26 representatives of public interest groups, whereas there were 662 industry representatives. Only 7% and 10% of representatives came from Africa and Latin America, respectively, whereas over 60% were from Europe and North America. Of the participants on the working group on standards for food additives and contaminants, 39% represented transnational corporations or industry federations, including 61 representatives from the largest food and agrochemical companies in the world (*47*). A review in 1997 concluded that little had changed in this respect (*48*).

Codes of conduct

Another possible approach involves adopting codes of conduct which could specify control of the marketing of and trading in certain foods. For example, the International Code of Conduct on Breast-feeding Substitutes, a non-binding recommendation adopted by the World Health Assembly in 1981, aimed to promote breast-feeding and regulation of the marketing of breast-milk substitutes. Various infringements of the Code have occurred and national governments have been urged to enact legislation for its enforcement (*49*, *50*). There is a critical role for strong non-governmental organizations in monitoring and reporting upon the implementation of the Code.

Trade law

There are important interactions between the World Trade Organization and health issues related to food; principally with respect to foodborne infectious disease and the International Health Regulations and certain issues relating to food safety under the Agreement on Sanitary and Phytosanitary Measures. WTO plays a role in facilitating the penetration of food products, retailers, and advertising. Limited exceptions are made in the interest of public health. The relationship between health and trade, and exceptions to WTO agreements relating to health, have been subjects of considerable interest in recent years (*51*).

It is possible that WTO agreements could limit the trade-related provisions of international instruments in the service of public health. This may happen, for example, in connection with a government's ability to establish and maintain legitimate non-discriminatory policies on food safety and food labelling to inform consumers (*52*). Among the drawbacks of relying on WTO exemptions are economic disincentives associated with the violation of WTO rules, which may prevent countries from giving priority to public health when conflicts arise and may impede the negotiation, ratification, and implementation of international public health instruments (*39*).

Binding and non-binding legal instruments

International instruments can be generally classified as non-binding international resolutions; and legally binding instruments. Non-binding instruments can be further classified into intergovernmental resolutions and intergovernmental codes of conduct; legally binding instruments include comprehensive treaties or conventions, the convention-protocol approach, and international regulations (*53*). Both binding and non-binding international legal instruments provide an essential basis for multilateral cooperation. Non-binding instruments, or "soft law" may be especially valuable in this endeavour given that these may involve greater participation of non-state stakeholders in the creation of international norms, which will correspondingly increase compliance (*54*). Additionally, there is the idea that in order to assure the effectiveness of soft law, "it must be drawn up with the involvement of all concerned (enterprises, consumers, independent individuals)"(*55*).

Legally binding instruments have the advantage that countries generally comply with them. However, they have the disadvantage of protracted processes and the need for global political support for single solutions. Approaches based on binding international instruments concerning food-related health issues have been limited to food safety and security and, more recently, to discussions on undernutrition in relation to human rights.

Non-binding intergovernmental resolutions have the advantage of flexibility. The enormous advantage of a "soft-

law" approach is that it allows countries to tackle problems collectively when they do not want to restrict their freedom of action unduly (*56*). International standards and instruments in this area could conceivably address such issues as marketing restrictions for unhealthy food products, restrictions on the advertising and availability of unhealthy products in schools, the standard packaging and labelling of food products, potential price or tax measures to reduce the demand for unhealthy products, concerns about aggressive transnational marketing strategies and, in reaction to these strategies, international coordination in education, training, and public awareness on diet and exercise. The public attention surrounding the drafting of such instruments is beneficial, and they may set general standards for corporate conduct without being politically unacceptable (*53*).

Non-binding instruments are also informal; there is no obligation to implement provisions and little pressure to comply with them. Non-compliance with the International Code on the Marketing of Breast-milk Substitutes illustrates this problem.

The political feasibility of international instruments addressing the problem of overnutrition must be considered, as the support of Member States and increasing political commitment are prerequisites. Because the problems are so closely linked with the growth of transnational food corporations and aggressive marketing, the development of such instruments could encounter significant opposition from industry. The problems encountered by WHO in the development of strategy on tobacco control demonstrate the potentially disruptive effect of organized opposition by industry to international regulation (*57*). The food and beverage corporations have even greater global penetration and are therefore even more likely to resist restrictions on the international marketing of their products.

One option for an international organization is the promotion of global support for non-binding instruments followed by the progressive development of binding national legal commitments on the same issues. The current WHO corporate strategy in this area includes the promotion of non-binding international legal instruments through resolutions of the World Health Assembly (WHA) (*58*). However, WHO envisages no binding international mechanisms at this stage "... given that WHO is developing its first treaty, the convention on tobacco control, they [the industry] were concerned we would take a similar approach to problems of diet and food ... . We made clear that these problems were in orders of magnitude more complex and multilayered than anything we had done in tobacco ... . More specifically, the solution to obesity would not lie in a treaty" (*59*).

The importance of WHO standards in bringing about changes in national behaviour should not be underrated. WHO's advancement of national and international public health law and supervisory institutions is critical to furthering the realization of the right to health. Encouraging countries to develop specific legally binding obligations related to the right to health, and publicizing their compliance or non-compliance, can be powerful influences on countries to rethink their priorities *(60)*. Furthermore, the role of WHA resolutions in generating consensus in this area should not be overlooked. Such activity can be expected to have a significant effect on the development of global cooperation against the epidemic of overnutrition.

Conclusions

The prohibitive costs of treating the consequences of overnutrition require that increased attention be given to preventive measures. Parallels exist between these requirements and the initiatives taken to control tobacco consumption, from which important lessons can be learnt, especially with respect to the use of international legal instruments. However, because some of the largest multinational companies are heavily involved in the creation and marketing of unhealthy foods, the control of these activities presents a formidable challenge. There is a growing recognition that prevention demands public health actions at both the national and global levels, ranging from more health education to improved food labelling and controls on the marketing of certain foods and soft drinks. This will require innovative and committed collaboration by all concerned. ■

Conflicts of interest: none declared.

Résumé

A problème mondial, réponse mondiale : l'épidémie de suralimentation

On estime que d'ici 2020 les deux tiers de la charge mondiale de morbidité seront imputables à des maladies non transmissibles chroniques, pour la plupart nettement associées au régime alimentaire. Le passage à une alimentation comportant davantage de denrées alimentaires raffinées, d'aliments d'origine animale et de graisses joue un rôle majeur dans l'épidémie mondiale actuelle d'obésité, de diabète et de maladies cardio-vasculaires, entre autres affections non transmissibles. La sédentarité et le tabagisme sont également des facteurs de risque significatifs. Il n'est pas possible de stopper cette épidémie en encourageant simplement les gens à réduire leurs facteurs de risque et à adopter des modes de vie plus sains, bien qu'un tel encouragement soit sans aucun doute bénéfique si les personnes visées sont en mesure d'y répondre. Malheureusement, les environnements générateurs d'obésité, renforcés par nombre des changements culturels associés à la mondialisation, rendent de plus en plus difficile l'adoption de modes de vie plus sains, surtout parmi les enfants et les adolescents.

Le présent article examine quelques mécanismes possibles, ainsi que le rôle de l'OMS, en vue de l'élaboration d'une stratégie coordonnée à l'échelle mondiale dans le domaine de l'alimentation, de l'activité physique et de la santé. Dans la situation actuelle, de nombreux pays sont confrontés à des coûts qu'ils ne peuvent assumer. De plus, il existe souvent par ailleurs des problèmes récurrents de sous-alimentation. Une approche multisectorielle concertée, faisant appel à des mécanismes politiques, éducatifs et commerciaux, est nécessaire pour répondre à ces questions.

Resumen

Respuesta mundial a un problema mundial: la epidemia de sobrenutrición

Se estima que para 2020 unas dos terceras partes de la carga mundial de morbilidad serán atribuibles a enfermedades no transmisibles crónicas, la mayoría de ellas estrechamente relacionadas con la dieta. La transición nutricional hacia los alimentos refinados, los alimentos de origen animal y una mayor cantidad de grasas está contribuyendo marcadamente a impulsar las actuales epidemias mundiales de obesidad, diabetes y enfermedades cardiovasculares, entre otras afecciones no transmisibles. Los modos de vida sedentarios y el consumo de tabaco son también factores de riesgo importantes. Estas epidemias no pueden atajarse mediante el simple expediente de alentar a las personas a evitar en lo posible los factores de riesgo y adoptar modos de vida más sanos, aunque tal estímulo es sin duda deseable cuando las personas destinatarias pueden reaccionar en consecuencia. Lamentablemente, los entornos crecientemente obesógenos, reforzados por muchos de los cambios culturales asociados a la globalización, dificultan cada vez más la adopción de modos de vida sanos, especialmente en el caso de los niños y adolescentes.

En el presente artículo se analizan algunos mecanismos posibles para el desarrollo de una estrategia mundial coordinada en materia de alimentación, actividad física y salud, así como el papel de la OMS en ese sentido. La situación enfrenta a muchos países a costos indomeñables. Al mismo tiempo, a menudo persisten los problemas de desnutrición. Para abordar estas cuestiones se requiere un enfoque multisectorial concertado, que incluya el recurso a políticas, iniciativas de educación y mecanismos comerciales.

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