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Symposium on 'Behavioural nutrition and energy balance in the young'

Child obesity: what can be done and who will do it?

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Among the measures recommended by the WHO to reduce the risk of obesity and non-communicable disease, the consumption of a diet rich in micronutrients but with a relatively-low energy density features prominently. However, only a small percentage of the UK population (<1) appears to be consuming the recommended diet. Dietary behaviour is strongly influenced by the dietary environment, shaped by food supplies, investment policies and advertising, to create an obesogenic food market. Substantial resources have been invested in food production of a sort that does not promote better health; agriculture and food supply sectors have benefited from decades of public-sector support, but this practice has encouraged the production of meat, dairy, oils and sugar and the withdrawal from sale of fruit, vegetables and fish. The result is an 'obesogenic economy', i.e. a market economy that encourages weight gain, in which children are a prime target. Interventions in the obesogenic market need to be considered and several opportunities are described in the present paper. Recent moves to strengthen national and international food policies aimed to promote healthier behaviour have been undertaken, but they will need political support if they are to be fully implemented. Alliances of public health interests can help to create that political support and promote health-enhancing environments.

Food supplies: Economics: Policy: Public health

The present paper argues that current dietary patterns are falling far short of those needed for health, and that market mechanisms do not encourage industry to make the major investments needed to ensure that populations are able to meet healthy eating targets. Policy interventions are required that can change the food supply through influencing the market. A focus on children can help to persuade policy-makers to take action.

Although the extent of the change required is not easy to establish, analyses of food balance sheets from twenty-nine Organization for Economic Cooperation and Development developed economies[1,2] indicate that only approximately one-quarter of countries are likely to meet the WHO recommendations[3] for adult population intakes for fat, or for sugar, or for fruit and vegetables (see Table 1).

Food balance sheets report what is marketed for consumption (rather than what is actually consumed) but nutrient intake surveys also indicate that only a small proportion of adults are meeting population targets. Typically, when one dietary target is being reached, such as that for fat, individuals may fail to achieve another target, such as that for sugar; i.e. the 'Jack Sprat' problem:

> '*Jack Sprat would eat no fat*
> *His wife would eat no lean*
> *And so betwixt the two of them*
> *They meet the recommended adult population mean!*'
>
> *Anonymous*

In the 1987 survey of UK dietary intakes of British adults, fewer than one per 1000 was meeting four dietary targets (for fat, saturated fat, sugar and dietary fibre)[4]. Data from the UK National Diet and Nutrition Survey of Adults, 2000–2001[5], show an improvement; however, further analysis shows that seven adults per 1000 were likely to be eating a diet that met the recommendations for health in terms of five specific criteria (see Table 2).

Trends in food supplies are only partially encouraging. The supply of fruit and vegetables is rising in many developed countries, but the supply of fats and overall food

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Table 1. Levels of fat, sugar and fruit and vegetable consumption in Organization for Economic Cooperation and Development countries (data from Srinivasan *et al.*[1] and Food and Agriculture Organization[2])

	Energy from fat (% total supplied dietary energy)	Energy from sugar (% total supplied dietary energy)	Supplies of fruit and vegetables (g *per capita* per d)
Australia	39·0	12·9	521
Austria	38·8	12·0	597
Belgium–Luxembourg	38·9	13·3	676
Canada	35·9	13·1	673
Czech Republic	33·0	13·4	389
Denmark	36·5	12·6	536
Finland	34·3	12·0	449
France	41·9	10·6	623
Germany	39·3	11·9	611
Greece	36·4	8·5*	1144*
Hungary	37·3	13·3	515
Iceland	36·7	16·6	442
Ireland	33·3	12·2	494
Italy	38·0	8·0*	903*
Japan	27·1*	9·5*	449
Korea	22·3*	10·0	821*
Mexico	24·6*	15·0	495
The Netherlands	39·0	13·5	582
New Zealand	32·8	17·2	716
Norway	35·9	13·0	474
Poland	29·8*	12·3	477
Portugal	33·1	8·5*	875*
Slovakia	32·2	11·2	368
Spain	40·3	9·0*	753
Sweden	35·9	14·7	482
Switzerland	39·4	14·6	518
Turkey	24·5*	9·3*	905*
UK	38·0	10·1	460
USA	36·4	18·0	652

*Values are those achieving dietary guidelines: <30% dietary energy from fat; <10% dietary energy from sugars, >780 g *per capita* per d supplied fruit and vegetables (equivalent to consumption of >400 g *per capita* per d[6]); <61 g animal fat *per capita* per d (equivalent to saturated fat consumption of <10% dietary energy[6]).

Table 2. Percentage of UK adults eating healthy diets (from Food Standards Agency and National Statistical Office[5])

	Men	Women
NME sugars <10% energy	32	48
Total fat <30% energy	23	28
Saturated fat <10% energy	17	19
Fruit and vegetables >400 g/d	10	14
Na <2000 mg/d	8	43
All criteria together	0·4	1·2

NME, non-milk extrinsic.

energy is also rising, to the detriment of traditionally-healthy diets, such as the Mediterranean diet. For example, food supplies in Italy in 1965 provided (g *per capita* per d) approximately 720 fruit and vegetables, 38 saturated fat and 90 total fat[6], which reflects a Mediterranean diet with adequate fruit and vegetables and relatively low levels of fats. By the year 2000, Italy enjoyed a fruit and vegetable supply of 860 g *per capita* per d, but the animal-fat supply had risen dramatically to 70 g *per capita* per d and the total fat to 152 g *per capita* per d. Health policy-makers can immediately see that this trend is in the wrong direction. For health services, it may be time to train more heart surgeons!

An obesogenic economy

In a perfect market economists might argue that food supplies would be completely 'demand-led', meaning that the supply chain would reflect the changing tastes and demands of consumers. Fat and sugar supplies would rise simply because individuals want more sweet and fatty products in their diet. The economists might say that they only supply what the consumers want, but there are several reasons why the market is not that simple. The first is that food companies spend a large amount of their income trying to influence what the consumer wants. Data from the UK in 2003 show that food companies spent $>£740 \times 10^6$ on marketing their products[7], mostly high in fats, sugar and/or salt, and low in fresh fruit or vegetables. On the other hand, only approximately $£7 \times 10^6$ was spent by government on promoting healthy diets.

Second, there is considerable government funding to support, and hence distort, the food marketplace. In Europe, for example, the Common Agricultural Policy has been spending between $€30 \times 10^9$ and $€40 \times 10^9$ annually

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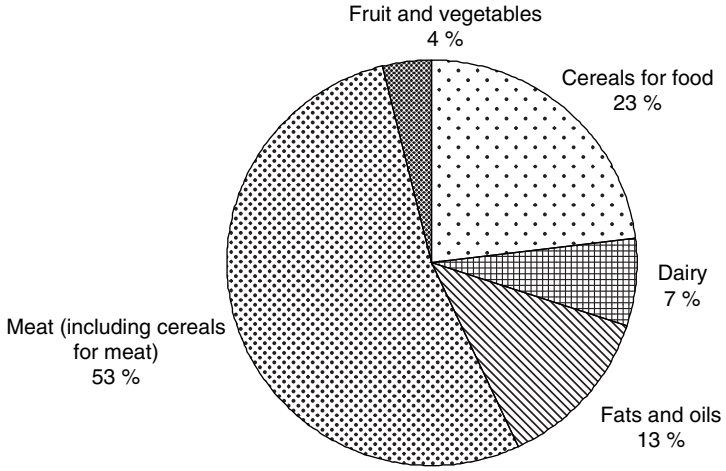


Fig. 1. The distribution of Common Agricultural Policy funds across food sectors. (From European Commission[27].)

for four decades, much of which has been used to ensure high levels of production of meat, grain for animal feed, milk, butter and cheese, sugar and oil (see Fig. 1)[8]. The relatively small budget for fruit and vegetable production is partly used to pay for the destruction of fruit and vegetables (through market withdrawal, green harvesting and non-harvesting) to protect producers and maintain high market prices[9]. A similar policy operates for fish, whereby much of the catch may be destroyed to protect markets[10].

Food industries are the main purchasers of these commodities from agriculture. They have the role of developing the commodities into profitable goods and promoting these goods on the market. Large investments are put into the production and distribution of these types of foods, such as bottling plants for soft drinks, distributed through refrigerated cabinets in every corner shop and chains of fast-food outlets. The process is easily seen when new opportunities arise as they did in Eastern Europe in the 1990s. There, approximately US $\$5 \times 10^9$ investment capital from the big international companies was spent on developing the food sector in the late 1990s, of which 60% was for soft drinks and confectionery[11].

Capital investment in farming and food production is tax deductible, and so are the marketing costs for promoting mass-produced foods and beverages. Producers do not pay for the environmental pollution costs, road or airport construction costs or the costs of traffic accidents and injuries resulting from the extensive freighting of food commodities, nor the environmental costs from food packaging and waste disposal, nor many of the regulatory costs (e.g. veterinary control measures, food inspections) and a host of other consequential costs[12]. This externalisation of production and marketing costs generally brings greatest benefit to the larger-scale 'factory' farmers and mass-producers of more-processed lower-nutrient foods in place of fresh local produce[13].

Furthermore, the marketplace is not a balanced one between the producer and the consumer. When it comes to purchasing power, some consumers have more power than others; for example, the manufacturers of processed food are the 'consumers' of much of the primary agricultural produce from farmers and from commodity importers. The supermarket chains are also the 'consumers' of the products of farms as well as purchasing the output of processed food manufacturers. Between them, manufacturers and retailers make their corporate purchasing choices based on price and volume, not nutritional quality; indeed, most companies are legally bound to pursue financial competitive success and to provide investment returns on behalf of their shareholders before any consideration of wider social policies[14].

Similar arguments apply to catering outlets, including restaurants and fast-food chains, but also caterers in the workplace and public sector services, who purchase substantial quantities of the food passing along the food chain, choosing what they put on their menus and basing their choices on economic rather than nutritional criteria.

Even at household level, the individual who does the shopping may be making choices for several other members of the household, particularly when it comes to children's food, and may need to take account of price and availability, cultural and personal needs as well as purely nutritional criteria when making purchasing choices. Thus, the actual 'consumer', the individual who eats the food, plays only a minor role in shaping what is available to them and may have little or no influence on the nutritional qualities of the food coming from the farmers and growers. This situation is especially true for children.

Other distortions can also be noted. From the farmers' point of view, the best income is received from crops and livestock that have high yields, are disease-resistant, can be harvested easily and have other technical advantages[15]. Subsidies aside, farmers are rewarded for the market value of what they produce, not for the nutritional quality of their products[16].

Food technologies can give advantages to processed foods over fresh foods. Food preservation techniques, once a valuable means of ensuring food supplies during times of scarcity, are widely used by manufacturers to supply food at a lower cost and with a longer shelf-life compared with fresh perishable food[17]. This practice reduces the price of

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mass-produced food and can give such food a market advantage. Similarly, colouring and flavouring agents are used to increase the attractiveness of foods; these cosmetic additives are particularly appealing to children and are found in many foods that are marketed to children[18], but they may also provide a potentially unfair marketing advantage to the manufacturers of processed foods over the suppliers of fresh less-processed foods.

These distortions in the market put important barriers between the supplier of healthier foods and the consumer who might want to eat them. They add to the difficulties consumers face, making it hard for 'the healthiest choices to be the easiest choices'. These market distortions must be tackled if dietary health is to be taken seriously. Several measures can be suggested to help to balance the marketplace more fairly in favour of healthier nutrition.

Steps to counter the obesogenic marketplace

Many policies can be implemented to help change the current food supply trends to encourage better health. Some examples are:

1. review the assistance provided from the public purse for food research and technology. In particular, prioritise research into improved nutritional profiles of agricultural produce, and prioritise the supply of fresh perishable foods so that they can better compete with highly-processed long-shelf-life foods, e.g. by increasing production in localised small horticultural units, improve the development of cold chains and small food preparation units;
2. internalise the externalised costs of production; for example, requiring the producers to bear the full costs of environmental pollution caused by intensive farming practices and long-haul food miles, which are currently paid from public funds;
3. remove tax-deductible marketing expenses for energy-dense micronutrient-poor foods, to ensure that companies pay full costs for the promotion of these foods. This measure should be designed to help smaller producers of more-nutritious foods to gain access to the market;
4. improve market feedback. The long food chain from farmer to processor to supermarket to shopper prevents effective feedback. For farmers to be more aware of consumers' needs and preferences there needs to be better support for consumer advocacy agencies; from public funds if necessary;
5. introduce clear front-of-pack 'traffic light' labelling information to ensure that consumers are making properly informed decisions. The move may initially need public support for consumer education;
6. make greater use of public purchasing power. Local and national authorities purchase $\leq 25\%$ of all food and have sufficient contractual power to improve food quality for their clients, and thereby reduce the production costs of better food products, strengthening their position in the market;
7. provide explicit marketing advantages for better products; for example, by sponsoring health award schemes, promoting nutrition-friendly schools' suppliers and identifying better private-sector caterers. Equally, poorly-performing suppliers and caterers can be named-and-shamed; for example, on dedicated web sites;
8. review the use of non-nutritive additives in foods. The claim that a colouring or flavouring provides a 'technological purpose' simply because it gives a marketing advantage to a product should not be allowed as a justification for the use of a non-nutritive additive;
9. control investment in food supplies; for example, consider whether any categories of food can be designated as special national, regional or local dishes or components so that they might be protected from competing products with lower standards;
10. consider the opportunities within the Sanitary and Phytosanitary Instruments that can be invoked under the World Trade Organization Agreement, which permits the restriction of food imports if they pose a possible threat to health, justifiable scientifically[19]. Products containing high levels of salt, saturated fats or *trans*-fats might be susceptible to this approach;
11. review development aid; consider withholding local, regional or external development assistance to projects that undermine nutrition and physical activity policies. Consider providing development aid to investment programmes that promote healthier food supplies;
12. use Codex (an international regulating body set up jointly by the WHO and FAO to assist trade in food products) to improve international trading standards[20]. For example, ensure Codex standard-setting activities support high-quality food supplies, do not undermine national standards, accept precautionary principles for health protection and promote labelling requirements that assist healthy choices;
13. strengthen moves by the WHO to implement healthier food supplies. The regional Food and Nutrition Action Plan[21] and Obesity Charter[22] have been accepted by all governments, but need political support to be implemented;
14. control advertising to children so that health messages are consistent with public health policies. UK regulations on TV advertising need strengthening and new measures on non-broadcast advertising need to be introduced;
15. strengthen children's rights; support moves to extend the Rights of the Child[23] to include freedom from commercial inducements that are detrimental to good health.

Alliances for health

The current economic and political climate has emphasised relatively unrestricted economic growth and free producer access to markets with little concern for the health effects of these economic policies. Political pressure is needed to change the status quo, and political pressure increases if organisations can form alliances to achieve their ends.

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In support of the WHO's moves to protect children's health and promote the regional obesity strategy, the International Association for the Study of Obesity, in alliance with Consumers International, has proposed an International Code of Marketing Food and Beverages to Children[24]. Further alliances of health professionals and other bodies are also being sought, e.g. with paediatricians, nutritionists, diabetologists and cardiologists. The intention is to develop common strategies and action plans at local as well as global level.

Broader alliances can also be considered. The changes in diet needed to meet the WHO guidelines[3] (e.g. reduced meat consumption and greater consumption of plant-based foods) bear close similarities to those promoted by environmental specialists and proponents of more-sustainable agricultural production[25]. It also complies with the changes called for by organisations promoting animal welfare[26], while greater reliance on local production can support rural development and reduce road use. The opportunities for a coherent movement to promote public health are numerous, and everyone can play a role in building that movement.

Last, the present paper has focused on food supplies, but similar arguments could be made for the built environment, which can also be described in terms of an obesogenic marketplace. Interventions can be considered in various forms; for example, by looking at transport subsidies, the hidden costs of road use (accidents, pollution, lost amenities), car taxation and bicycle subsidisation. A child's environment contains many incentives for sedentary behaviour, including multiple television channels, video games, home movies and use of the internet, and market interventions here may be justified. Parts of the built environment are not directly market-driven, and in this respect interventions can be made directly; for example, grants for active-transport-friendly redesign of junctions, pedestrianisation of neighbourhoods and the creation and improvement of open spaces.

In conclusion, it can be seen that the present-day environment for children and adults alike is rich with inducements for sedentary behaviour and for the consumption of processed energy-dense foods and less fresh food. Policy-makers have certain tools available to change these environments, and a focus on children's limited ability to select the healthier choices for themselves creates a political pressure for change. Advocacy organisations concerned with public health, consumer and family issues, in conjunction perhaps with those groups seeking greener environments and less meat production, may find common cause through the promotion of children's wellbeing and convince policy-makers of the need to act.

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