

## Viewpoint

# A holistic food labelling strategy for preventing obesity and dental caries

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Received 17 June 2008; revised 8 November 2008; accepted 18 November 2008

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## Summary

Obesity and dental caries in childhood are among the major public health concerns described as a global pandemic because of their global distribution and severe consequences. A consensus has developed as to a recently emerging and alarming common risk factor that leads to the double burden of dental caries and obesity; energy-dense foods (sugar-coated cereals, high-sugar yogurt, soft drinks) are becoming very popular among children because of their dense marketing, cheaper price, increased supply and variety. Implementation of health-promoting and -supporting marketing strategies for healthy food can be one initial cornerstone for successful application of the common risk factor approach in prevention of obesity and dental caries, as also suggested by World Health Organization. Labelling healthy food with a 'health-friendly' logo, illustrating that the teeth and the heart are both parts of the whole body (standing side by side supporting each other as close friends), both happy and protected because of consumption of healthy food for the whole body, can promote the foods that are friendly to health of the whole body, implementing the common risk factor approach under a single theme. Labelling healthy food as 'health-friendly' based on an international consensus will provide a clear and uniform picture of what is healthy to eat and result in an international integrated programme for prevention of obesity and caries.

**Keywords:** Dental caries, food labelling, health-friendly, obesity.

**obesity reviews** (2009) **10**, 357–361

## Comment

Obesity and dental caries in childhood are among the major public health concerns described as a global pandemic (1,2) because of their global distribution and severe consequences. Both are preventable chronic diseases that have negative impacts on quality of life (3,4) and children's development (5,6).

Besides the contradictory results on the association between dental caries and obesity, current scientific evidence provides a strong and plausible basis to justify the fact that these chronic diseases have common risk factors (7–9), such as poor dietary habits (e.g. a sugar-rich diet, including beverages), increased TV viewing and lower

socioeconomic status (7,10–12). Increased TV viewing seems to act as a mediating agent between poor diet and obesity. Children and adolescents who watch TV for longer hours are more likely to consume more sweetened beverages and snacks high in sugar and fat (12–14), leading to increased calorie consumption either during viewing (15) and/or because of the effects of advertising in daily life (16). These children are, therefore, more likely to be obese (16–18) and are also put at increased risk for dental caries (19,20). This risk can be explained not only because of the sugar content of these energy-dense foods (candies, chocolate sweets, crisps, savoury snacks) and sweetened beverages but also because of their sugar-starch combination (chocolate-filled or plain craft bakery products, industrial

bakery products) and their increased potential for acidification of the oral environment (crisps, savoury snacks), promoted by increased frequency of intake (21). The classical distinction between simple carbohydrates as cariogenic and complex ones as not cariogenic appears less clear-cut because polysaccharides in the food industry are exposed to conditions that can denature and degrade them, making them more vulnerable to attack and acid fermentation by bacteria (21).

Sweetened beverages also have the potential to increase risk for dental caries (22–24) and obesity, as recognized by the World Health Organization (WHO) (9) and earlier found (17,25), most probably because these beverages are rich in sugar and among children constitute over half the energy from sugars (26). Considering that energy-dense foods and sweetened beverages are consumed together in various combinations, in particular, their potential contribution to obesity and caries increases, promoted by increased TV viewing. In the light of all these complex interactions, there is need for adoption of a common risk factor approach to cope with the global pandemic of dental caries and obesity in childhood (27). This is suggested by the WHO for chronic disease prevention as a more cost-effective, affordable and sustainable course of action than the traditional single-level strategies (9).

Obesity and dental caries affect people in lower socioeconomic groups the most, and this in turn contributes to a widening of health and other inequalities (28,29). Both diseases can be prevented by a combination of community, professional and individual measures. However, the annual rate of increase in the prevalence of childhood obesity has been rising steadily and is currently up to 10 times as high as in 1970, underlining the urgent need for new, effective interventions (28). Water fluoridation, professionally applied topical fluorides and dental sealants, and use of fluoride toothpastes have generally improved oral health over the last 30 years; however, tooth decay is still the most common chronic disease of childhood, with wide disparities existing in oral health and access to care and fluoridated water supplies both in developed or developing countries (30). Moreover, new studies show that excessive beverage consumption increases risk for caries among children, even if the correlation between sugar intake and dental health has weakened because of exposure to fluoride (22,31). The studies that found a direct relation between dental caries and obesity (20,31,32) seem to provide further evidence for the need for a common risk factor approach.

A consensus has developed as to a recently emerging and alarming common risk factor that leads to the double burden of dental caries and obesity; energy-dense foods (such as sugar-coated cereals, high-sugar yogurt, soft drinks) are becoming very popular among children because of their dense marketing, cheaper price, increased supply

and variety (33). Marketing strongly influences children's dietary behaviours concerning their preferences, requests and consumption (34,35). Everyday, children are exposed to advertising on TV, websites and in schools and retail stores mostly of unhealthy food, with very little advertising of healthy food (36). The extent of unhealthy food marketing to children varies between countries, with estimates ranging from 49% in Italy to nearly 100% in Denmark and the UK (36).

Parents have the primary responsibility to feed their children and to teach them what is healthy. However, parental authority is undermined by wide discrepancies between what they tell or advise their children to eat and what marketing promotes as desirable to eat. Furthermore, many parents have limited proficiency in and knowledge of nutrition (9,37–39), and mothers may not be well informed about prevention of obesity (40). In addition, companies have extensive expertise in persuasive techniques and also use resources to reinforce children's unhealthy food preferences that parents lack, such as famous cartoon characters from movies, contests, celebrities and giveaways (41).

The WHO's Global Strategy on Diet, Physical Activity and Health (42) reveals the need to ensure that food choices are made by 'fully informed consumers' 'in an environment in which it is easy for people to make healthy decisions about what to eat'. It is questionable how many families around the world are aware of the fact that the consumption of sugar-sweetened or sugar-coated foods (sweetened beverages, yogurts, sugar-coated bars) raises the risk for obesity and dental caries. How many are aware of the negative consequences of obesity, such as cardiovascular diseases and diabetes, as well as of the negative impact of dental caries on child development and its association with cardiovascular diseases? Thus, guiding individuals as to 'what is better to eat' and 'why it is better' is one of the initial keys in reducing the burden of related chronic diseases. It should be considered that what to eat or drink is not just a matter of eating or satisfying hunger or enjoying tastes, it is also a matter of maintaining and improving an individual's good health as well as that of his or her children; a matter of providing physically, socially and mentally healthy futures for children.

Consumer education and communication, including marketing and nutrition labelling, are among the global policies adopted by the WHO (42) in 2004 to reduce the burden of chronic diseases interrelated with unhealthy diets and physical inactivity, including dental caries. Implementation of health-promoting and health-supporting marketing strategies for healthy food can be one initial cornerstone for the successful application of the common risk factor approach in preventing obesity and dental caries. These strategies aim to create an environment in which it is easy for people to make healthy decisions about what to eat by fully informing them and raising awareness



**Figure 1** 'Health-friendly' logo representing healthy smile of the teeth and the heart, standing side by side and supporting each other as close friends, because of consuming healthy food for the whole body.

as to what healthy food is. Labelling healthy foods with 'health-friendly' logos can be one of the major steps in the achievement of this goal; a suggestion compatible with the implication that the need exists for a common definition of 'unhealthy' food in Europe by the European Heart Network (43). This idea has been further supported in the international arena, to be applied in the near future, considering that the adverse dietary trends in societies can be reversed if the obesity-manipulating environment is challenged through price manipulation, public education and clear food labelling (33,36).

Labelling healthy food with a 'health-friendly' logo – illustrating that the teeth and the heart are both parts of the whole body (standing side by side supporting each other as close friends), both happy and protected because of consumption of healthy food for the whole body (Fig. 1) – can serve as a tool for observational learning and reinforcement, which are the basic mechanisms in behaviour modification (44). In front of these two figures is a text in green, including the heart impulse, to promote the foods that are friendly to health of the whole body. Green represents, as well, the colour of a green traffic light to help people in distinguishing healthy foods and encouraging increased consumption of these foods. Such action has been successful in terms of labelling sugar-free confectionery (chewing gums, sweets) as 'tooth-friendly' so that people, especially children, are acknowledged and are motivated to choose these sugar-free products (45,46). Further evidence comes from the tobacco epidemic, which provides a valid model; policy and marketing approaches in modification of behaviour and creation of supportive environments (labelling, taxation, regulation of packaging and sale) have been successful in reducing the burden of smoking and its negative consequences (47).

The success of advertising energy-dense food lies mostly in the use of brand-name logos that are well recognizable and easy to remember (48–50) such that even 3- to 5-year-olds can easily recognize them (48). Study findings suggest that, like tobacco companies, many other companies adver-

tising energy-dense food employ marketing strategies that effectively engage the attention of young children and stimulate the appeal of promotional items (48–50) and even shape the taste preferences of children at a very early age by these well-known and easily recognizable brands (51). Children starting from the age of 2–6 years can recognize familiar brand names, packaging, logos and characters and associate them with products (50,52,53), especially if the brands use salient features such as bright colours, pictures and cartoon characters (53). Even among very young children, awareness and recognition translate into product requests, leading to begging and nagging for specific product names and brands and developing purchase requests and negotiation strategies (50). Therefore, there is a need to use marketing strategies to change the food advertising environment to one where healthy foods are promoted and junk foods are not presented (43,54). One approach to such an environment can be promoting and reinforcing healthy eating by simple and concrete logos that children can easily recognize, understand and remember, in the light of empirical research (48–54) and proposals of international health organizations (42,43).

When visuals are associated with the target information (such as a brand name), then memory for the brand is enhanced, and memory will be greater for brand names that are prior and/or visually linked to existing memory pathways (53,55). Our 'health-friendly' logo, targeting the message for health-friendly food for the whole body, is simple in presentation, composed of smiling tooth and heart characters, which children have already learned from earlier experience or exposure in daily life. The wide range of label for foods in the market leaves consumers in confusion (56); however, this 'health-friendly' logo encompasses a wide range of food under one 'brand' – health-friendly, implementing the complex common risk factor approach under a single theme. Recognizing the importance of a global strategy for health for prevention and control of chronic diseases, including support of healthy lifestyles and facilitation of healthier environments, the WHO calls for the need to develop and implement global action plans to promote healthy eating (such as development of appropriate approaches for marketing healthy food to children) and to provide accurate, standardized, comprehensible information and positive health messages on the food items for the healthy choices (42). A 'health-friendly' logo can be presented as a simple, comprehensive and utilizable holistic approach to be further discussed and evaluated in international forums that aim to discuss and set the criteria for health-promoting activities on an international level to reduce the obesity and dental caries pandemic.

Labelling healthy food as 'health-friendly' based on an international consensus will provide a clear and uniform picture of what is healthy to eat and result in an international integrated programme for prevention of obesity and

caries. Such a programme can prove an effective holistic tool in tackling the global pandemic of obesity and dental caries because it serves the main health-promotion policies prescribed by the *Ottawa Charter* (57) that have led to great progress in prevention of chronic diseases: 'creating supportive environments', 'building healthy public policies', 'developing personal skills' and 'strengthening community action'. Furthermore, it can serve as a useful strategy to achieve the global policies adopted by the WHO (42) in 2004 to tackle the burden of chronic diseases, including obesity and dental caries.

### Conflict of Interest Statement

No conflict of interest was declared.

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