

## « IMPACT OF THE ENVIRONMENT ON F&V INTAKE »

### Editorial

#### Why do people eat enough fruits and vegetables? Motivation, abilities and environmental opportunities!

Many Fruit and Vegetable (F&V) promotion efforts are still based on the notion that people's health beliefs and related motivations are the most important drivers of F&V consumption. Such campaigns therefore communicate about the health promoting properties of F&V, implying that when we teach 'the public' that F&V are healthful, they will be sensible enough to eat enough from these food groups. Results from a wealth of health behaviour research show, however, that health beliefs are only one of many drivers of consumption, and most often not the most important one. Research shows that there are three important categories of determinants of health-related behaviours, such as F&V consumption: motivation, ability and opportunity. When people are motivated to eat enough F&V, when they have the abilities to buy, prepare and consume enough F&V, and when their environment offers plenty of opportunities to obtain and eat F&V, chances improve that people will eat more adequate amounts.

Until recently most research aiming to gain insight in the determinants of F&V intakes was focussed on motivational factors. In recent years more attention is being paid to the environmental opportunities that enable or promote F&V intakes, i.e. opportunities that may make the healthy choice the easy or default choice.

Four 'sorts' of 'the environment' have been distinguished in the scientific literature:

1. The physical environment, i.e. environmental factors that influence or determine availability and accessibility.
2. The social-cultural environment, i.e. factors that define what is socially acceptable and appropriate; what one sees others do and what one is encouraged to do by others.
3. The political environment, i.e. the rules and regulations that may influence behaviours such as F&V consumption.
4. The economic environment, i.e. factors that relate to what is affordable.

In this IFAVA newsletter three contributions focus on such potential environmental influences on F&V intakes. Dr. Lukar Thornton presents an

overview of some of the research he conducted with his colleagues at Deakin University, Australia, on physical environmental factors and F&V intakes. His study explored if access to supermarkets and other stores with F&V was associated with F&V intakes in different populations. Only few significant associations were found, but this line of research is still in its early stages, and more research is necessary on a range of availability and accessibility related issues to learn more about the relevance of physical environmental factors.

Dr. Ange Aikenhead of the International Association for the Study of Obesity presents research results regarding the political environment, and more specifically regarding rules and regulations for marketing to children. It has been established in recent reviews of the evidence that marketing of unhealthy foods to children is associated with less healthful diets and more overweight and obesity. Dr. Aikenhead presents results further indicating that the political environment is of great importance to restrict exposure to such marketing in order to promote healthier diets among children.

Finally, Prof. Ritva Prättälä from the National Institute for Health and Welfare in Helsinki, Finland, presents research results regarding the importance of the economic environment. Her research clearly confirms that in many countries, especially in Northern Europe, evident disparities in F&V intakes exist according to socioeconomic position. In other words: the less well-off have lower intakes of F&V. Her studies further show that in the countries where these disparities are apparent, availability of F&V is lower and prices are higher.

These three contributions are important examples of research focussing on disentangling the broad range of potential influences on F&V intake, going beyond mere personal and motivational factors. Such research is necessary to inform more effective F&V promotion.

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# How important is the neighbourhood food environment in influencing fruit and vegetable intakes?

## An Australian perspective

— Lukar Thornton, Kylie Ball, Anna Timperio and David Crawford —

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While a considerable body of research has examined the influence of personal factors (e.g. knowledge, attitudes, beliefs, preferences) and social factors (e.g. social support by family and peers) on Fruit and Vegetable (F&V) intake, less work has focused on factors in the local neighbourhood environment (e.g. access, availability, cost) that might impact on consumption. This is despite the fact that the environment is a potentially strong determinant of eating behaviours.

We have conducted a number of population studies in Victoria, Australia, that have examined the association of environmental factors with F&V consumption among women and children. This paper will present findings from the HEAPS ("Health, Eating and Play Study") (800 children), the SESAW study ("Socioeconomic and neighbourhood inequalities in women's physical activity, diet and obesity") (1,500 women; in HEAPS and SESAW study participants were selected from neighbourhoods across the socioeconomic spectrum), and the READI study ("Resilience for Eating and Activity Despite Inequality") (4,300 women living in disadvantaged neighbourhoods). Each study gathered sociodemographic, behavioural and other data on individual and social variables, and used Geographic Information Systems to objectively assess each participant's neighbourhood food environment. In the SESAW study we also gathered information on the availability and price of F&V in stores.

### The HEAP Study

Analyses of the HEAPS data on children showed that the more fast food outlets and convenience stores there were close to home, the lower was the likelihood of consuming fruit two or more times per day. There was also an inverse relation between density of convenience stores and the likelihood of consuming vegetables three or more times per day. The likelihood of consuming vegetables three or more times per day was greater the further away children lived from a supermarket or a fast food outlet.

### The READI Study

In the READI study we examined whether poorer access to major supermarkets, smaller supermarkets and F&V stores in local neighbourhoods was associated with lower intakes of F&V. Six variables were used to assess access. None of our measures of access were associated with vegetable intake, and only one (greater distance to the nearest F&V store) was associated with lower fruit consumption.

### The SESAW Study

In the SESAW study we examined the role of individual, social and neighbourhood factors as mediators of the relationship between SocioEconomic Status (SES) and F&V consumption. We found that while a number of the individual and social variables partly explained SES differences in consumption, store density did not mediate the relation between SES and F&V intakes.

In the SESAW study we also considered whether differences in intake across socioeconomically diverse neighbourhoods could be explained by the availability and price of F&V in those neighbourhoods, or by store opening hours. Fruit intake did not vary by neighbourhood, while vegetable intake was lower among women living in disadvantaged neighbourhoods. However the availability and price of vegetables and store opening hours did not explain neighbourhood differences in vegetable intake.

### The complexity of understanding the role of neighbourhood food environments as a determinant of F&V consumption

So what we're starting to see in the published data, is the kind of relations we might expect to exist based on what we believe about the environment, are just not being borne out in the objective data. These findings highlight the complexity of understanding the role of neighbourhood food environments as a determinant of F&V consumption. Further, findings that we might see from one country will not, probably, apply in another country because of these contextual factors. The cultures are different, the environments are different, the way that people think about food, the way they eat food, are different. And we have to bear that in mind when we are trying to take the findings from one country, and try to apply them to our own.

Future research, and policies and programs aimed at understanding and influencing the food environment, need to consider a broader range of contextual factors that impact on food choice and to better understand the ways in which individuals interact with their local environments. We need to create a better evidence base, understand what it is about the environment that is important, and what is not important. If we've got limited dollars to invest in influencing the environment, we have to invest wisely.



# Food advertising to children who wants tougher regulation?

— Ange Aikenhead —

International Association for the Study of Obesity, London, UK

## Environmental risk factors for obesity

Excess body weight affects more than a quarter of all children in developed economies<sup>1</sup>, and is now appearing at a dramatic rate in less developed economies among children experiencing rapid urbanisation and exposure to western forms of food supply<sup>2,3</sup>.

Successful interventions to tackle childhood obesity have proved elusive, prompting an increased focus on environmental influences. The 'heavy marketing of energy dense foods and fast food outlets' is a 'probable risk factor' for obesity<sup>4</sup>. The European Commission's 2007 White Paper Strategy on Overweight and Obesity urged industry to take voluntary action on this issue, with a plan to reassess this position in 2010-2011<sup>5</sup>.

The PolMark (POLicies on MARKeting of foods and beverages to children) project is designed to strengthen the evidence base available to policy-makers.

## Analysis of the European environment

An updated review of current controls and regulations on marketing to children in all 27 European Union member states, last undertaken by the World Health Organization in 2005-6, was conducted for almost all European countries (as defined by the WHO European Region of 53 countries).

Leading representatives of the food industry, advertising agencies, media, government departments, public health bodies, consumer group, children's groups and researchers were interviewed in 11 EU member states, for a total of 169 interviews. Interview questions assessed stakeholders' views on marketing food and beverages to children, and the likely opportunities and barriers which exist in developing policies in this area.

A health impact assessment was conducted using stakeholder estimates of the effects of exposure to marketing messages (a proxy for exposure to health risk) on food choices and food consumption behaviour (a proxy for impact on health). Responses were analysed in the context of other stakeholder responses to map the relationship across dimensions of stakeholder interest (i.e. pro-commerce, neutral or pro-child) and power (as defined by annual turnover, head office employees, media department budget, number of media staff, and advocacy and lobbying budget).

## Emergence of statutory approaches

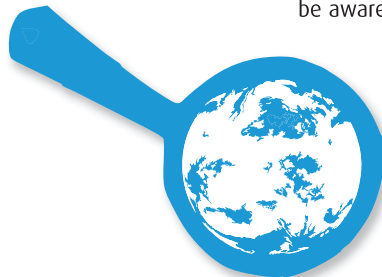
Two thirds of WHO European countries now have statements on marketing to children in their national health policies or strategies, or proposals for action. While voluntary and self-regulation lead the policy response in many countries, statutory approaches are emerging.

Interviews revealed that two-thirds of stakeholders believed current controls in their country were not sufficient. Statutory regulations were preferred across all stakeholder groups with the exception of government officials, the food industry and advertising agencies.

Stakeholder views are prone to bias according to their organisation's interests and power to influence policies. Stakeholders from high-power organisations with commercial interests were more moderate in their estimation of effects of various marketing techniques on purchase and consumption compared to stakeholders from lower-power organisations and those with health and consumer-focused interests. Stakeholders from organisations with less power tended to perceive current regulations on risk exposure as being weaker than needed, while stakeholders from more powerful organisations tended to perceive current levels of regulation as adequate.

## Pressure to act

If governments wish to reduce children's exposure to unhealthy food marketing, they need to maintain pressure for action on industry and on the more resistant parts of government. Whether the controls are statutory or self-regulatory, governments need to specify the policy objectives, define the indicators that demonstrate achievement and hold relevant stakeholders accountable for making progress. Companies are competitive and will use opportunities to market their products to children using traditional and modern media; the latter allowing them to access children without parental control. The opportunities for finding common ground – e.g., finding standards for co-regulation across the food industry and across European borders – need to be increased. By definition, less powerful organisations do not have the institutional resources to influence policy-makers which more powerful organisations can command, resulting in a potential imbalance in the democratic process which policy-makers should be aware of.



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# Vegetable consumption: what makes the difference, education or geography?

— Ritva Prättälä —

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## Individual studies have demonstrated socioeconomic differences in the consumption of fruit and vegetables

Previous studies have shown socioeconomic differences in the consumption of Fruit and Vegetables (F&V): those in lower socioeconomic groups use less F&V. The studies have predominantly covered only one country or region, whereas international comparisons on the patterns and magnitude of the differences are few. However, some systematic reviews based on existing published studies have suggested that in the southern part of Europe the educational differences are not as systematic as they are in the northern Europe. Very little is known about the background of the varying educational patterns.

## Are socioeconomic differences similar everywhere in Europe?

We examined the relationship of socio-economic position and vegetable consumption in nine European countries. The first aim was to analyse whether the pattern of socio-economic variation in regard to vegetable consumption was similar in all the studied countries. A second aim was to explore whether education had an independent effect on vegetable consumption when the other determinants of socioeconomic status, that is, occupation and place of residence had been taken into account. And finally, we analysed socio-economic variation within the countries in relation to the availability or affordability of vegetables in that specific country. "Availability" referred to the supply of foods as measured by food balance sheets, the consumption statistics. "Affordability" referred to the relative the price of vegetables.

In connection of the Eurothine-project (coordinated by Prof. Johan Mackenbach from the Erasmus University of Rotterdam, the Netherlands), we had a possibility to analyze data obtained from nationally representative surveys on health behaviors and health. Altogether, nine countries had sent to the Eurothine data center comparable survey data on the consumption of vegetables and, on the other hand, on educational level, occupational status and place of residence of the survey participants. Individual level data on vegetable consumption was obtained from national surveys conducted in Finland, Denmark, Germany, Estonia, Latvia, Lithuania, France, Italy, and Spain in 1998 or later. These surveys included comparable data on the frequency of consumption of vegetables. A detailed description of the study has been published earlier (Prättälä & al. 2009).

## Availability and affordability of vegetables in nine European countries

According to FAO's Food Balance Sheets from 1993 to 2003, the Southern European countries, France, Italy and Spain, showed high availability of vegetables. In Finland, Denmark, Germany and the Baltic countries, the availability was lower but increased from 1993 to 2003 more than in the South.

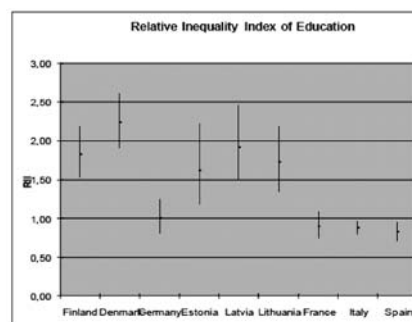
Data on vegetable prices in the nine studied countries were obtained from EU-statistics. To be able to compare the affordability figures between the countries, we focused on relative prices and used Price Level Index divided by Gross Domestic Product. The relative prices were lowest in the Mediterranean countries and Germany and highest in the Baltic countries.

## Socioeconomic differences were not similar in every country

The pattern of socio-economic variation in relation to vegetable consumption

differed by country. The Figure presents the relative inequality indices of education, that is, the relative difference in vegetable consumption between educational groups in the studied countries. If the index is 1, there are no educational differences in vegetable consumption in that country. If the index is above 1, the higher educational groups in that country consume vegetables significantly more often. If the index is below 1, then the lower educational groups consume vegetables more often. The index figure presents the educational differences when the place of residence and the occupational status have been taken into account. Thus, it shows the independent effect of education on the use of vegetables.

The most obvious difference in educational patterns was observed between the Mediterranean and the Northern European countries. In France, Spain and Italy, educational level had only a weak effect on the use of vegetables. After adjusting this level for place of residence and occupation, those having a higher educational level were found to consume slightly less vegetables than those with a lower educational level. In the Nordic and Baltic countries, the educational differences were greater and their direction was different. Those with a higher educational level were more often daily users of vegetables. In Germany no significant educational differences were observed.



## Both education and geography make the difference

Our results support the assumption that a positive association between educational level and vegetable consumption is related to the availability and affordability of vegetables. The positive association was observed in countries with a low availability and high prices, as compared to countries where the availability and affordability were higher.

Availability and affordability cannot be the only explanations for the varying educational patterns observed in regard to vegetable consumption. Cultural factors expressed in dietary traditions can also have an impact. In the Mediterranean countries, local production of vegetables has a long history. Local products were available throughout the year and therefore even the lower socio-economic groups could use them as an essential part of everyday cooking. In Northern Europe, vegetables were available only during summer, while in spring and winter imported products would occasionally be available, but at a high price. Therefore, Northern Europeans have not developed a tradition of using vegetables on a daily basis. When more vegetables entered the market, the higher socio-economic groups were the first to buy them.

Both education and geography make the difference in vegetable consumption. In order to increase the use of vegetables among the lower socio-economic groups multiple measures reaching from price policies to nutrition education are needed.

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