

**‘Social stratification in the purchase and consumption of food items and its consequences for public health.’**

**Research within the framework of the programme “social cohesion” of the Belgian  
Federal Public Planning Service Science Policy**

Summary of the final report

---

Christophe Matthys<sup>1</sup>, Renata Januszewska<sup>2</sup>, Stefaan De Henauw<sup>1</sup>

assisted by

Guy De Backer<sup>1</sup>, Jacques Viaene<sup>2</sup>, Dirk De Bacquer<sup>1</sup>, Lea Maes<sup>1</sup>, Xavier Gellynck<sup>2</sup>, Wim Verbeke<sup>2</sup>

<sup>1</sup> Department of Public Health, Ghent University, Belgium

<sup>2</sup> Department of Agricultural Economics, Ghent University, Belgium

## A. Introduction

The impact of social inequality on the life and health expectancy is a field of research that has been growing rapidly during the past decades. Ever since the publication of the so called "Black report" on inequalities in health in the United Kingdom (Townsend *et al*, 1988), the scientific interest in this topic within the industrialised world increased steeply. In a supplement of the Journal Social Science and Medicine in 1990, it has been demonstrated for a large number of European countries that people from higher social classes are healthier and have a higher life expectancy as compared to people from lower social classes (Soc. Science Med., 1990), who in general have a higher incidence of cardiovascular diseases, a number of cancers, obesity, low birth weight etc. Recent calculations in the neighbouring country The Netherlands show that the difference in healthy life expectancy between the highest and lowest social class is approximately 11 years in men and in women (Rijksinstituut voor Volksgezondheid, 1997).

The term "social class" covers however a quite extensive number of mutually interacting variables of demographic, economical, psycho-social and cultural nature, the impact of which can fluctuate over time and space. Marmot (1986) has demonstrated for instance for cardiovascular diseases that - within the Western world - a shift has occurred in the distribution of the incidence across social subgroups during the 20th century with increasing incidence in lower social classes and decreasing incidence in higher social classes. The latter observation is also a convincing argument to assume that the differences in health between social classes are most likely not determined by differences in genetic predisposition, but are determined mostly by a clustering of lifestyle factors. Cardiovascular and nutritional epidemiological research during the past decades has convincingly shown that nutrition (along with smoking and physical inactivity) plays a crucial role in the relation between social class and (ill)health (James *et al*, 1997). The mechanistic background of the relation between nutrition and health is extremely complicated and until today still largely unknown. However, it is clear that - in this relation - macro- and micronutrients, non-nutrients and food-borne contaminants all have their potential contribution. On the basis of the presence of these constituents in food items, these food items can be classified in different categories going from "unhealthy" to "healthy" foods and this classification correlates for most of the food items positively with the price. In the United Kingdom, for instance, it has been shown that food items with a high energy density (rich in fat and sugar) are on average cheaper than food items that are rich in protective nutrients (Leather, 1996) and that the switch towards healthier alternatives within the context of the current eating patterns forces the price of the nutrition budget for families to increase with on average 6-13% (Nelson *et al*, 1993).

An important current topic within this context concerns the question to what extent differences in health behaviour (nutritional behaviour) is determined by economical factors like income or rather by cultural factors that are related to education (Power *et al*, 1991 and Glendinning *et al*, 1994). Prices and incomes have been reported as significant explanatory variables for food purchase in developed countries (Ritson *et al*, 2001). Prices and consumer incomes could account for 97% of variation in the US demand for food (Huang, 1985). This implies that economic factors are key indicators of food choices, particularly in low income groups (Dobson *et al*, 1994). More research is necessary to clarify this. Also the importance of the price of food items - a fortiori when a consumer has a choice between traditional products and more expensive alternatives with specific quality labels - is a topic of special interest (Bansback, 1995).

This kind of information with respect to the determinants of food consumption patterns is of course of utmost importance for the development of policy strategies in the domains of public health, economy and social affairs in the shorter and longer run. According to a recent Dutch report (Rijksinstituut voor Volksgezondheid, 1997), interventions aimed at eliminating socio-economical differences in health within the society are the most crucial steps towards a global increase of the healthy life expectancy for the population at large.

## **B. Objectives**

A network of scientists was developed for the present research project. These scientists are operative in public health sciences (Department of Public Health (UGent)) and in consumer behaviour compared with food items (Department of Agricultural Economics (UGent)). The objectives of the current research are numerous and are dependent on each other.

The start objective of this research exist in identifying differences between social classes in purchase of food items (both in absolute figures and in relative share with regard to the total budget) and in the consumption of food items (quantitative and qualitative) – by means of existing databases – and the impact of this on health. The attention is aimed thereby both on nutritional aspects and at aspects of food safety.

The realisation of the start objective serves as a main point for developing action lines (such as formulating specific nutritional recommendations, implementation of specific health promotion campaigns, economic interventions, etc) that at adapting social inequality with respect to food and health.

For more and further detailed information on the specific objectives of this research project, the authors referred to the basis protocol.

The present project is a phased research, consequently the implementation of the different phases has been conditioned to the results of the preceding phase.

## **C. Methodology consumption databases**

### ***Study Population***

As mentioned earlier, the substrate of the present study is constituted by an extensive series of existing databases. The research team had the intention to cover the whole Belgian population. Therefore four available studies were withdrawn, namely: the pre-school children study, the teenager-study, Belgian Interuniversity Research on Nutrition and Health (BIRNH) and the Quality of Life study. Those four databases cover the Belgian population starting at the age of three. The data available for pre-school children and teenagers cover only Flandres. The BIRNH-study dates from begin the eighties, so the food pattern is probably not anymore representative for the present pattern. Nevertheless the data is still valuable to describe differences in the consumption pattern according to social class.

### ***Social class***

The term "social class" could be interpreted very broadly (on the basis of current scientific insights with respect to classifications) as a complex dynamic whole of mutually interacting person-specific characteristics of demographic, economical, psycho-social and cultural nature.

The used consumption databases possess a broad arsenal of variables that could be used as indicators of social class, although those variables were measured in a different way and indicated different aspects of social class.

The relevance of all variables could be summarised to the four main aspects of social class, namely income, educational level, profession and cultural aspects. Income was in none of the four studies measured and could be seen as a disadvantage of those studies. Nevertheless Popkin *et al* (2003) found that income is questionable as indicator of social class to find differences in the consumption pattern of different social classes.

## **D. Results**

Hereafter a short summary of the results of the project follows.

### ***Social inequalities in the consumption of food items and nutrients***

#### *Pre-school children*

From the results it seems that 3 – 6 years old children of whom both parents studied further have a more healthy food pattern than the other children. Based on the indicator 'educational level of the parents' the biggest differences were seen between the different social classes.

#### *Teenagers*

In general the authors could conclude that there are not always statistically significant differences observed in the food pattern of the teenagers because of a lack of power or because there were no differences.

Nevertheless the results indicate that there were no differences in the intake of macronutrients. One can conclude that in all social classes all individuals have an adequate energy intake. Differences in the micronutrient intake were found between social classes. Lower social classes (a lower educational level, not active work status) had a lower intake of calcium and iron, not only on group level but also on individual level. A higher proportion of subjects of the lower social classes did not reach the recommendations. People from the lower social classes are more vulnerable than teenagers of higher social classes. Similar results were obtained for the intake of food items.

#### *Adults*

In adults, one could conclude that persons of higher social classes (active work status, higher educational level) had a more healthy food pattern than their counterparts. This conclusion is valuable for men and women in Flandres and Walloon. Differences in the food pattern were found on the level of food items and micronutrients. The intake of both is lower in the lower social classes. Nevertheless the consumption of alcohol is higher in the highest social classes. Although attention has to be paid on the reliability of the indicators of social class given the circumstances.

## *Elderly*

A similar pattern as in the analyses of the adults was obtained in the elderly.

## *Scenario-analyses to avoid social differences*

From the simulations one could conclude that only enrichment or fortification of food items is not enough to reduce the shortcomings in the current food pattern. A more global food policy and prevention are necessary to enhance the global food pattern of the different social classes.

## *Social stratification in purchase of food items*

The three conclusions from this study correspond to the hypotheses.

First, the food purchase per person in the low income class is not significantly lower than for medium and high income classes. People from low income groups purchase less fish, dairy products, vegetables and fruit.

Second, the budget share in food expenditure is higher for the poor and low income classes than for medium and high income classes. Thus, two last groups focus more on quality and variation while purchasing food items.

Third, socio-economic variables have a limited influence on food purchase and food expenditure patterns in different income classes. The only significant variable is age, which is important in all income classes. Additionally, for the low income classes, the expenditure for food is significantly influenced by the income.

The comprehensive statistical data of LEI, GfK and NIS related to purchase and expenditure for food items give indication and insight in the fact that the low income classes purchase less fish, dairy products, vegetables and fruit. These are food products, which are considered generally as “healthy” food. In this perspective, it is clear that people from the low income classes have less healthy food consumption behaviour.

Further, the extended statistical databases do not generate relevant conclusions over the unhealthy food consumption pattern. More specific data are recommended and necessary to find the relation between low income and a less healthy consumption pattern with the aim to formulate an adapted communication strategy.

## **E. Conclusions**

In general, one have to conclude that – in the total population – the intake of healthy food items (fruit, vegetables) and some micronutrient does not reach the Belgian recommendations. Looking at the social differences in the food pattern of the Belgian population, remarkable is that persons characterised by a higher social class have a more healthy food pattern than persons belonging to the social lower class. These inequalities are reflected by a lower intake of unsaturated fatty acids, higher intake of micronutrients and a higher intake of more healthy

food items (fruit and vegetables) by respondents of the higher social class. Remarkable is that most significant differences were found when the indicator 'education' was used.

Whether the population included in the analyses is representative for the whole Belgian population could be questioned. The population that participated in all the studies is probably biased. It is well known that individuals belonging to social lower classes participate less in research projects.

The validity of the indicators 'educational level' and 'work status' could be questioned. The big time difference between the adult study (1980) and the pre-school children study (2002) could introduce a bias of interpretation of those indicators.

On the other hand there was no information available of the income of the population.

Finally, one can conclude that:

An important disadvantage of the present project is working with existing databases which were not developed to analyses social differences in the food pattern and this could bias the results.

Other methodological considerations were:

- low participation rate is a source of concern about the representativity of the study population
- databases were not developed to analyses social differences
- selection bias: is the distribution of educational level and work status in the study population equal to the Belgian population?
- Probably a much more lower participation in the social lower classes.

Important keymessages of the present study:

- One could establish that the total population do not reach the recommendation, but the situation is worst in social lower classes.
- One could establish that the differences in the social classes where similar in all age categories.
- Similar results were obtained in men and women.
- Similar results were obtained in Flandres and Walloonian.

## Literature

Bansback R. Towards a broader understanding of meat demand. *Journal of Agricultural Economics* 1995;46:287-308.

Dobson, B., Beardsworth, A., Keil, T. and Walker, R. Diet, choice and poverty: social, cultural and nutritional aspects of food consumption among low-income families. 1994. Family Policy Studies Centre, London.

Duncan, G.J., Daly, M.C., McDonough, P. and Williams, D.R. Optimal indicators of socioeconomic status for health research. *Am. Jour. Pub. Health* 2002; 92(7), 1151-1157.

EURODIET group. EURODIET reports and Proceedings. *Public Health Nutrition* 2001; 4 (2A – special issue).

EURODIET group. Nutrition and Diet for Healthy Lifestyles in Europe: the EURODIET evidence. *Public Health Nutrition* 2001; 4 (2B – special issue).

Glendinning A. et al. Social class and adolescent smoking behaviour. *Social science and Medicine* 1994, 38(10), 1449-1460.

Huang, K.S. US demand for food: a complete system of price and income effects. *Technical Bulletin No. 1714*, 1985. Washington DC., Economic Resources Service, US Department of Agriculture.

Irala-Estevez, J.D., Groth, M., Johansson, L., Oltersdorf, U., Prättälä, R. and Martinez-Gonzalez, M.A. A systematic review of socio-economic differences in food habits in Europe: consumption of fruit and vegetables. *Eur. J. Clin. Nutr.* 2000 ; 54(9), 706-14.

James WP, Nelson M, Ralph A and Leather S. Socioeconomic determinants of health. The contribution of nutrition to inequalities in health. *BMJ* 1997;314(7093):1545-9

Lang T. Access to healthy foods: part II. Food poverty and shopping deserts: what are the implications for health promotion policy and practice. *Health Education Journal*, 1998, 57, 202-211.

Leather S. The making of modern malnutrition. An overview of food poverty in the UK. London: Caroline Walker Trust, 1996.

Mackenbach JP, Bakker MJ, Kunst AE, Diderichsen F. Socioeconomic inequalities in health in Europe. An overview. In “Mackenbach JP and Bakker M eds. “Reducing inequalities in health. A European perspective” Routledge, London, 2002.

Marmot MG, McDowell MG. Mortality decline and widening social inequalities. *Lancet* 1986;I:274-6.

Nelson M, Mayer AB, Manley P. The food budget. In: Bradshaw GH, ed. Budget standards for the United Kingdom. Aldershot: Avebury, 1993.

Popkin BM, Zizza C, Siega-Riz AM. Who is leading the change?. U.S. dietary quality comparison between 1965 and 1996. *Am J Prev Med.* 2003 Jul;25(1):1-8.

Power C., Manor O, Fox J. *Health and class: the early years.* Chapman and Hall. London. 1991.

Rijksinstituut voor Volksgezondheid en Milieu. *Volksgezondheid Toekomst Verkenning 1997. De som der delen.* Utrecht: Elsevier/De Tijdstroom.

Ritson, C. and Petrovici, D. The economics of food choice: is price important? *In: Food Availability and the European Consumer*, 2001; 339-363.

Roos, G. and Prättälä, R. FAIR-97-3096 Disparities Group (tasks 4 and 5). *Disparities in food habits: review of research in 15 European countries.* 1999. Publications of the National Public Health Institute B24/1999, Helsinki.

Townsend P, Davidson S, Whitehead M. *Inequalities in health.* London: Penguin, 1988. *Social Science and Medicine*, Volume 31, Number 3; 1990.

Verbeke, W. & Ward, R. (2001). A fresh meat almost ideal demand system incorporating negative TV press and advertising impact. *Agricultural Economics*, 25 (2/3): 359-374.