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# Inequalities in diet and physical activity in Europe

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## Abstract

The contribution of food, nutrition and physical activity to inequalities in health across Europe is largely unexplored. This paper summarizes cross sectional survey data on food patterns and nutrient intakes, and briefer data on physical activity, by various indicators of socio-economic status for countries across Europe. Factors are examined which underlie the outcome data seen. These include structural and material conditions and circumstances which contribute to excluding socio-demographic groups from participating in mainstream patterns of living. Trends in social and economic conditions, and their implications for nutritional and physical wellbeing are briefly outlined.

**Keywords**  
 Inequalities  
 Poverty  
 SES  
 Nutrient intakes  
 Food access  
 Physical activity  
 Europe  
 Diet

## Introduction

*‘... social and contextual pressure make the exercise of individual choice more difficult for some people than others. This is inequitable. If this inequity results in their making choices which may lead to ill health, there is a duty to address this as an avoidable inequality. [...] Inequalities resulting from certain lifestyle behaviours, although classed as avoidable, are only so if the circumstances in which such choices are made are understood. To change such behaviours requires attention to these circumstances and action from national and local government’<sup>1</sup>.*

Inequalities in health and wellbeing have risen in the public and research agenda in many countries over the last decades. Measurable differences in health profiles and mortality outcomes between groups, defined in various ways, within and between countries, have been widely documented (almost every issue of a journal such as European Journal of Public Health, or the Journal of Epidemiology and Community Health, now contains one or more articles on health inequalities), and the processes by which such inequalities are created and maintained, have been examined<sup>2–4</sup>. Strategies to tackle inequalities have been reviewed at national and European levels<sup>5–8</sup>.

Among the causes and potential areas for policy responses are nutrition, diet and physical activity. Their role in contributing to inequalities in health has been examined in a number of studies and reviews<sup>9–13</sup>. There is as yet no overview of the variation in nutrition and diet, or in physical activity, by socio-economic factors for all EU member states. However, many who work with low income households, whether in the statutory or voluntary sectors, and those who carry out research at national or

subnational levels, have investigated conditions for such families in relation to food. A number presented findings at an AGEV (Arbeitsgemeinschaft Ernährungsverhalten e.V.: ‘Working Association for Nutrition Behaviour’) conference on *Poverty and Food in Welfare Societies* in 1995<sup>14</sup>. The WHO European Office recognized the role that food inequality plays in contributing to mortality in the region in the meeting of representatives from WHO member states in November 1999<sup>15</sup>, and in the forthcoming Action Plan for Food and Nutrition Policy<sup>16</sup>. There has perhaps been rather less focused work on physical activity, and the barriers to participation among low income groups.

This paper is a review of current understanding about food, nutrition and physical activity in relation to inequalities in health, and includes summary and interpretation of some of the data as could readily be found. It was written in the context of work on implementing food based dietary guidelines, to highlight key issues in addressing inequalities. It is also intended to stimulate further research, both to establish the existence and patterns of inequalities, and to generate better understanding of the reasons for observed associations.

## The role of diet and nutrition, and physical activity, in health inequalities

Diet and physical activity are frequently mentioned under the rubric ‘lifestyle factors’ associated with health inequalities. Put briefly, most surveys show that those who are poorer in material or social conditions, are likely to eat less healthily and take less exercise; they are probably also more likely to smoke. All these, it is argued, contribute to ‘unhealthy lifestyles’, which in turn generate

the inequalities observed in morbidity and mortality from a wide range of causes. The implication is that people are able to exert personal choice over what they eat, or whether they walk/cycle or undertake active exercise, rather than leading a sedentary life, and that the role of those implementing health promotion is to encourage or enable them to make 'the right' choices. However, research from the food/social policy or sociological perspectives challenges this notion of individualist control as being too narrow and misleading in terms of policy responses. In practice, choices in relation to food and activity are not solely individual matters, unconstrained by family, neighbourhood or material conditions. The evidence is that structural and social issues, such as the amount of time and money people can devote to pursuit of good food and active living, the cost and accessibility of each of them, the physical area where households are located, and the general social circumstances of the lives of those classified as lower classes by whatever indicators, constrain and govern choice to a considerable extent. Furthermore, outcomes such as birth weight and child growth (which are not covered here) or obesity (which is mentioned only briefly) are also conditioned by material circumstances and the cumulative impact of childhood and adulthood experience.

The implications for professionals and public alike in making use of food-based dietary guidelines are profound. The focus of attention needs to be firstly, on accessibility, affordability, practicality. Secondly, there is the challenge of relevance and motivation: how to enable participation and ownership of practices and activities whose purpose is often future wellbeing, as well as present pleasure, for those whose main focus is survival, both of the household unit, and in terms of daily living. Finally, there are issues of social justice and inclusion, particularly in relation to food: policy intervention readily focuses on community based projects, which rely on self-help and/or volunteering, or the distribution of free or cheap food through building based outlets, from surpluses generated within the national or international food system. Both are widely used in the United States and Canada to address food inequalities. Food-based dietary guidelines could readily be used to guide and assess their contributions. Further debate will be essential on whether this represents the kind of society we would want to see perpetuated across Europe in the new century.

Three years ago we (Dowler and Dobson) presented an overview of nutrition and poverty in Europe at a Nutrition Society meeting symposium on nutrition and poverty in industrialized countries<sup>17</sup>. In brief, we reviewed the definitions of poverty in use in Europe and the part nutrition plays in operationalizing them, and summarized data on numbers and conditions of those living in poverty at the time, and such nutrition data as we could find. Research since then in the health inequalities field has developed along a number of directions. For instance,

there is more on spatial examination of inequality, in terms of social conditions and health outcomes<sup>18</sup>; much more is being published on life course analysis<sup>19</sup>; and the relationship between social organization and engagement in social life and networks, and health is being investigated<sup>20</sup>. In all these food, diet and physical activity play a part. The potential for explaining health differentials and in contributing to policy solutions may be considerable.

This paper again summarizes such survey data as are to hand of food patterns or nutrient intakes in terms of various socio-economic indicators across Europe. Data on birthweight, or breast-feeding practices are not included, although both are known to be inversely related to social class. There are fewer data available on physical activity in relation to socio-economic indicators. It has been harder to obtain the information needed to interpret the wider, structural reasons for the outcome data found. Details of the balance of living costs and expenditure in different household types at risk of ill-health, on the physical and social circumstances typically faced by such households, or the implications of trends in retailing, transport or housing policies, are less easily found and less readily generalizable between countries. I have therefore summarized the situation as I understand it for the UK, with pointers to parallels in other European member states. The UK is well known for having more extreme levels of poverty and greater increases in inequality than elsewhere in Europe, although other countries, such as Norway, Sweden and Germany, have experienced rising inequality in recent years<sup>21</sup>. Nonetheless, some of the economic forces producing income inequality apply throughout Europe. The implications for health inequalities are under review; to my knowledge few are examining in detail the consequences of the forces generating inequalities for food, nutrition and physical activity, across Europe<sup>22,23</sup>.

### **Indicators of food, nutrition and physical activity across Europe**

#### ***Sources of data***

Nutritionists usually use indicators of food patterns or nutrient intakes at household or individual level as outcome measures of the process of acquiring food. The main data source used for food in this instance was a recent review of research on food habits in 15 European Countries, published by the National Public Health Institute of Helsinki. This review drew on national dietary surveys, household budget surveys, including that from the Data Food Networking (DAFNE) initiative; and health behaviour surveys. This material is supplemented by additional national and sub-national surveys of food habits and nutrient intakes which were not included in the Helsinki group's review. The sources for physical activity and obesity were largely papers from a pan-European

questionnaire survey on consumer attitudes to physical activity, body weight and health, by the Institute of European Food Studies.

These surveys use different indicators, not only of food and nutritional outcomes (nutrient data come from weighed intakes, Food Frequency Questionnaires, and household expenditure surveys), but also of socio-economic status (SES). Few countries publish data by income group (the UK National Household Food Consumption and Expenditure survey is an exception); income is not generally perceived as a useful social indicator for 'lifestyle' surveys or cross country comparisons because it is hard to measure and interpret systematically for individuals or households, between countries and over time. Nonetheless, income itself is likely to be an important indicator for predicting health or mortality differentials<sup>24</sup>. Some surveys use indicators derived from occupational social class, which again can be difficult to interpret across countries, and may omit those not economically active, whether retired, students, or permanently or temporarily unemployed. Defining household SES in terms of income or occupation of household head also hampers measuring or interpreting gendered or parent/child inequalities in behaviour. Intra-household distribution is not discussed in this paper, although it is not unimportant in relation to food. There is evidence from the UK and elsewhere that parents/women go without food, or without specific items (such as meat, or fruit) in order to meet the needs of children/men, particularly where budgets are tight<sup>25,26</sup>. Many surveys use educational level of household head as proxy indicators of social and economic circumstances, which means males and females can be classified separately, although the relation between income and educational level is not constant between men and women: in the EU15 pay differences increase with the education level<sup>27</sup>. Advantages of using education level as a proxy indicator of SES are that an individual's level is likely to remain more constant over time than their income or occupation, and, despite skewed population distribution, education can be measured on an ordinal scale. For these reasons the Helsinki review used education level where it was available, and income or occupation where it was not.

### **Findings on diet and nutrition**

The Helsinki review employed systematic qualitative classification and tabulation, with limited meta-analysis of food groups and energy intakes. The survey took in 33 national studies from 15 countries in Europe, including four from Eastern Europe. Of these studies, 13 were dietary surveys, nine were household budget surveys, and 11 were health behaviour surveys. Details of the methodology are given in the published report<sup>28</sup>. Patterns of food intakes, unsurprisingly, were different both between countries and regions of Europe. However, the

general picture was that those with higher levels of education tend to consume more fruits and vegetables, vegetable fat, low fat milk products and cheese, and less meat, than those with lower education levels, particularly in the northern and western countries. The differences in fat consumption were equivocal (no significant relationships in the qualitative analyses; in the meta-analyses, there was a tendency that those with higher education had lower energy adjusted intakes of fat, and higher alcohol intakes, than those with lower education). Given the likely biases from potential under-reporting and non-response, the authors considered the differences between SES groups were probably larger in reality than reported.

The Helsinki review, currently published DAFNE data<sup>29</sup>, and surveys from Spain, suggest that the relationship between socio-economic status and fruit or vegetable consumption is less predictable in the southern Mediterranean countries. Those with higher education, or with higher SES, may consume less than those with lower SES of food groups regarded as traditional – which is the case for fresh fruits, fresh vegetables and possibly vegetable oils. However, recent findings from the European Prospective Investigation into Cancer (EPIC) group in Spain suggest fruit and vegetable intake does increase with education level: that is, those of higher SES eat more fruit and vegetables than those with lower SES<sup>30</sup>.

Other reviews of food patterns and nutrient consumption conclude that there is more variation by SES in food than in resulting nutrients (again, perhaps unsurprisingly, for most nutrients are found in a variety of foods, and most foodstuffs contain many different nutrients). For instance, Prättälä found that, in Nordic countries, higher social classes consume more fruit, vegetables and cheese than lower social classes, but that there were few differences in macro-nutrient intakes<sup>31</sup>. Hupkens and colleagues, in a study across northern European countries, found an inconsistent association between education level and consumption of fresh fruit and vegetables: a positive association in the Netherlands and one region of France, a trend in Germany and no association in Belgium<sup>32</sup>. Findings from the Norwegian Women and Cancer Study showed that years of education and income were both significantly negatively related to percent energy from fat, and positively related to dietary fibre density and to intake of fruit and vegetables<sup>33</sup>. These associations were not as strong as those with age (older women ate healthier diets), and whether or not the women smoked or undertook physical activity. In common with findings in many other surveys, a less healthy diet was consumed by smokers than by those who had given up or never smoked; smoking in most countries is strongly inversely related to social class. Physically active women tended to eat more healthily.

There have been a number of surveys in the UK in addition to the National Diet and Nutrition Survey of Adults, whose data were used in the Helsinki review.

**Table 1** UK lone parents: adequacy of nutrient, fat and nsp intakes, by the material poverty index\*

Nutrient (se)	Poverty index = 0 <i>n</i> = 59	Poverty index = 1 <i>n</i> = 35	Poverty index = 2 <i>n</i> = 24	<i>p</i> value ANOVA
Protein %RNI	158 (6.2)	143 (6.5)	127 (7.6)	<0.02
Total fat g	83 (3.5)	77 (4.2)	70 (5.1)	ns
Iron %RNI	90 (4.5)	66 (4.3)	56 (4.6)	<0.0001
Calcium %RNI	111 (5.6)	93 (5.7)	83 (7.6)	<0.01
NSP %EAR	66 (4.6)	54 (6.9)	44 (8.1)	<0.001
Zinc %RNI	122 (5.9)	106 (6.0)	96 (7.7)	<0.02
Folate %RNI	114 (6.4)	83 (4.3)	76 (6.5)	<0.0001
Vit C %RNI	149	101	74	<0.002
Vit A (ret.eq.) %RNI	129	99	79	<0.03
Vit E %safe intake	188	168	148	ns

\* Poverty Index: those in categories A or B, or in both.

Category A = those in local authority/private rented housing, with no job, no holiday, for more than 1 year.

Category B = those with rent/fuel automatically deducted from benefits or paid through key meter

Poverty Index: 0 = not in either category; 1 = in one category (A or B) only; 2 = in both categories (A and B)

NSP = non-starch polysaccharide; ret.equiv. = retinol equivalent; na = not applicable

Figures shown are the arithmetic mean of nutrients and % RNI (reference nutrient intake), % EAR (estimated average requirement) or % safe level; except fat, for which g/day are given. Standard errors are given in brackets, taken from ONEWAY or ANOVA. For vitamins A, C, and E, the geometric mean is shown and no standard error can be presented. (Data from Dowler and Calvert<sup>39</sup>)

National surveys of nutrition and diet, using weighed intakes, in different age groups, have used a variety of SES indicators (but not level of education). They have shown that older people, school children and pre-school children from manual social classes, or households claiming state benefits, or (children) from lone-parent families, have much lower intakes and blood levels of most vitamins and minerals than those not in these circumstances<sup>34–36</sup>. The annual National Household Food and Expenditure Survey (household budget) shows intakes of vitamin C, folate, iron, zinc, and magnesium are well below reference levels in those with incomes below £150 a week (the lowest income cut-off), or in households with more than three children, or headed by a lone parent<sup>37</sup>. Intakes among the poorest fifth of families has declined over the last 15 years: vitamin C by 23% and  $\beta$ -carotene by 47%<sup>38</sup>. Patterns of food intakes mirror the findings from surveys elsewhere: those in lower SES eat less fresh fruit and vegetables, lean meat, wholemeal products or fish, than those in higher SES.

These are all rather 'broad brush' surveys. An in-depth survey of food and nutrition among those known to live on low incomes and likely to be living in difficult

neighbourhoods, namely lone-parent households, showed marked differences in food patterns and nutrient intakes between those in receipt of state benefits (which are at minimal subsistence levels) and those who were in employment, albeit for below average wages<sup>39</sup>. Furthermore, many of those who claimed state benefits had been doing so for more than a year, and were consequently in arrears for payment of rent or fuel bills. Parents in these financial circumstances had very restricted diets indeed, with hardly any fruit or fresh produce at all; their intakes of vitamins A, C, iron and calcium were nearly half those of parents not living in such circumstances<sup>40</sup>. The intakes of smokers were even lower, although it was only the diets of poor smokers that were significantly below reference levels. These data are shown in Tables 1 and 2. Children's diets were less affected, which suggested that parents were successfully protecting their children's diets from the consequences of poverty.

Few large scale surveys collect information on the length of time people have lived in current circumstances, the immediate geographical area, or their general financial situation, yet it is clear from the lone-parent household survey that duration and geography are

**Table 2** Lone parents: % dietary reference values for iron, folate, vitamin c and nsp intakes of smokers and non-smokers by the material poverty index\*

Nutrients	Smokers/non-smokers	Poverty index 0 ( <i>n</i> = 15/44)	Poverty index 1 and 2 ( <i>n</i> = 30/29)	ANOVA <i>p</i> values
Iron (% RNI)	Smokers	73	58	Poverty <i>p</i> < 0.0001 Smoking <i>p</i> < 0.01
	Non-smokers	96	66	
Folate (% RNI)	Smokers	102	72	Poverty <i>p</i> < 0.001 Smoking <i>p</i> < 0.05
	Non-smokers	119	89	
Vitamin C (% RNI)	Smokers	123	62	Poverty <i>p</i> < 0.07 Smoking <i>p</i> < 0.002
	Non-smokers	159	130	
NSP (% EAR)	Smokers	63	44	Poverty <i>p</i> < 0.001 Smoking NS
	Non-smokers	67	56	
NSP (total g)	Smokers	11.4	7.9	Poverty <i>p</i> < 0.001 Smoking NS
	Non-smokers	12.1	10.1	

\* For explanation of abbreviations, see Table 1.

important in interpreting the outcome data – in this instance, on nutrition and food. There have been a number of other small scale studies in the UK and elsewhere, which have shown similar food and nutritional outcomes for people living on state benefits or low incomes for some time<sup>41–44</sup>. These surveys also show that food patterns can be very different from those in better-off households: meals are missed, and people rely on snacks, sometimes with cigarettes to dull hunger. The range and variety of foodstuffs is greatly reduced so the food base is considerably less diverse.

### ***Findings on physical activity and obesity***

There are few surveys across Europe of physical activity which clearly separate domestic or work related activities, as well as leisure or taking part in exercise. This makes interpreting national data sets in relation to SES difficult. A National Fitness Survey in England found that while inequalities in all levels of physical activity were less straightforward when examined by social class based on occupation, clear differences were evident in relation to education, housing tenure and employment indicators. Those with higher education levels, or owner occupiers, were more likely to be moderately active<sup>45</sup>. Higher proportions of unemployed men, and to some extent women, were sedentary and lower proportions regularly active, than those in employment<sup>46</sup>. Professional people were twice as likely as unskilled manual workers, or the economically inactive, to take part in sports or other leisure time physical activities. The differences in overall activity levels between SES by occupation are much smaller in men, both because some in lower social classes have manual jobs and a minority were above average in their frequency and intensity activity level, mostly through their work, and because many with lower SES do not own cars, so walk, cycle or make more use of public transport. Among women there was no sub-group in the manual classes who undertook frequent vigorous activity. For both men and women, some of the differences by occupational SES were explained by different age profiles in the groups: there was a higher prevalence of older people in the manual groups, and the intensity and frequency of vigorous activity declined sharply among those aged 55–74 years.

In school children, similar associations with SES have been observed, in that children from lower SES report taking less exercise on average than other children, and in the UK and Germany at least, undertake less physical activity outside school<sup>47,48</sup>. In the UK, there were few differences by SES in participation in school sports<sup>49</sup>.

In several of the surveys mentioned earlier body mass index (BMI), which is bodyweight (kg) divided by height (m<sup>2</sup>), was also measured and used as an indicator of obesity. An inverse relationship between SES and obesity has often been observed in women; the relationship in men, less clear in earlier reviews<sup>50</sup>, seems now in Europe

to be similar to that in women. In the pan-EU consumer survey, in which BMI was calculated from subjects' own reported height and weight, there was a strong association between levels of obesity and SES (education levels). Obesity was more prevalent among the older age groups for all levels of education, especially amongst those with the lowest levels of education, and particularly among women<sup>51</sup>. The same survey suggested that those who were older and with only primary education were the least likely to take part in physical exercise, and were also the least likely think such activity necessary for health. The evidence was that, when not at work, the lowest SES groups spent more time relaxing rather than active, although they were also more likely to have physically active jobs<sup>52</sup>. The relationship between SES, physical activity and obesity is discussed in some detail in the paper.

A recent longitudinal study in Sweden examined the relationship with age and SES (education level) in more detail, to clarify the confounding effect of ethnicity (defined by country of birth) while adjusting for exercise and smoking<sup>53</sup>. SES and ethnicity were independently related to increased BMI, as was not taking exercise, adjusted for smoking, in men and women. The relationship was graded for men; only low status women had higher BMI.

### ***Interpretation of findings on food and nutrition***

We would expect that what people eat, and how they eat it, would vary across social classes, region and nations, and by gender and age. In the literature and at the AGEV conference referred to above, this diversity in food choice and patterns is observed to remain even when resources available to the household or an individual are limited. Nonetheless, it is remarkable how consistently national survey data show similar findings across very diverse societies in terms of differences in food patterns and nutrient intakes by socio-economic conditions. [People with lower SES consume nutrients from a less diverse food base: they eat monotonous diets with little variety. There are few differences in energy, protein, fat or carbohydrate by SES, but often marked differences in micro-nutrient intake and status.]

Most of the data reviewed are static, cross-sectional surveys; few have attempted to analyse trends over time by SES or for particular groups such as lone parents or older people without occupational pensions. In some respects, that is an indictment of the nutrition profession – perhaps so concerned with measuring what people do and think about food, and trying to find ways of changing both, that on the whole they have not looked at how people manage when their social and economic circumstances deteriorate. This deterioration comes about in different ways in different places and times, which is one reason it is hard to interpret the general, national level findings in a useful way for policy.

However, there are striking similarities across cultures and societies in how people live when they are poor. One common finding is that people end up in physically poorer environments: in low quality housing, which is crowded or damp, with limited domestic equipment; in residential districts with inadequate infra-structural support; low access to shopping facilities and insufficient public transport, which affects the poor more because they are least likely to have cars. In the UK, for instance, policy on housing and planning has combined over the last two decades to concentrate many who are poor in local authority housing in inner cities, especially older industrial areas, and peri-urban estates, where major sources of employment have closed. Shops and banks have withdrawn from these places, partly because the inhabitants spend little, and partly because of retail concentration in out-of-town and large superstores<sup>54,55</sup>. In many places, the poorest have to use discount stores, which may carry more limited ranges and little fresh produce, or small local supermarkets and corner shops, whose operating margins are such that their food is often relatively expensive. Food budget studies, using prices typical of a major supermarket, show that a healthy food basket would cost a much higher proportion than could possibly be spent from benefit income<sup>56</sup>, particularly if the higher costs typical of the shops generally found where poorer people live are used<sup>57</sup>. Not all the poor live in poor areas, and some have reasonable access to cheaper shops, but the role of food access in generating the differentials in nutrient intakes and food patterns needs further investigation and policy response<sup>58–61</sup>.

Differences of culture and practice need to be understood to interpret the findings<sup>62,63</sup>. The limitations of an approach of 'unwise lifestyle choice' has already been discussed: that those who are poor, for whatever reasons, somehow choose to live in ways which damage their present wellbeing, or fail to invest in future health. One additional response which is often claimed is that people cannot, or do not, budget or cook properly. The evidence that either makes a substantial contribution to the food or nutrient differentials described is equivocal. In the UK at least, those living on low incomes are very skilled at budgeting, of necessity, to keep the household intact<sup>64</sup>. Food is often the only flexible item of household expenditure: where money is tight people put a higher priority on paying bills than buying fruit<sup>65</sup>. Spending priorities and patterns will vary from country to country, but it is likely that parallels with UK experience will be found elsewhere in Europe. Surveys of cooking skills have found that, on the whole, it is the middle classes rather than the poorest, who spend less time preparing food, relying more on ready-prepared dishes<sup>66,67</sup>. Campaigns to improve cooking skills and confidence among those on low incomes have reported some success, but only among households where their lack was already a significant problem<sup>68</sup>.

### ***Interpretation of findings on physical activity***

The main structural barriers to walking and cycling relate to safety, attitudes and unpleasant environments: fear of traffic or damaged pavements/road surfaces; bad weather; risk of theft or abuse; social group attitudes; and cost<sup>69</sup>. Those on low incomes may not be able to take up leisure physical activities because they do not live where sports centres are sited, or lack transport or sufficient spare cash to use them. Where potential activities are free or cheap, people may still live in places where crime rates, or the risk of crime, are inhibiting. People with disabilities, who may be living on low incomes, are also less likely to take part in physical activities.

All these factors have implications for policy responses. Developing appropriate group physical activity programmes can promote social interaction and reduce isolation; focusing activity schemes on groups such as young offenders can tackle boredom and alienation, as well as reducing local crime rates<sup>70</sup>. As with food access problems, strategies can be designed to improve the physical environment, transport, community safety and mobility (people could walk or cycle to decent shops) and develop real opportunities for recreation in difficult environments (such as deprived inner city areas, or isolated rural communities). The UK Allied Dunbar National Fitness Survey recommended targeting by type of area and housing, rather than simply by social class, since the differences in activity levels between groups were small.

### **Social trends across Europe and their implications for inequalities in food and nutrition**

In a brief review there is no space for a full account of social trends within and between European countries producing inequalities in social conditions, and increasing numbers living in poverty. In 1993 there were almost 23 million poor households in EU12, containing about 57 million people<sup>71</sup> (these figures are produced by Eurostat, using Purchasing Power Parities (PPP) to convert national currencies into monetary units with the same purchasing power so that inter-country comparisons can be made; the poverty threshold used was 50% of average equivalised net monthly income); of these, 13 million were children (20% all children in the EU). The most common household type defined as poor contained a single person over 65 yrs, but the risk of being poor was highest for lone-parent households. Indeed, increasing poverty in Europe is attributed to instability of family life, along with unemployment, homelessness and migrancy asylum seeking. These are the trends cited as causing the 'new' poverty, which is experienced by the able-bodied of working age, some of whom are in the labour market<sup>72</sup>. As we said in our previous paper, spells of unemployment or as a lone parent do not necessarily lead to poverty: it depends what income sources are available, how quickly

people are re-employed or repartner. Social protection measures and their implementation vary throughout Europe, but the increase in unemployment over the last 18 years has produced a growing proportion of unemployed people not covered by contributory benefits and ever larger numbers needing a minimum income from social security payments. The need to control budget deficits and inflation has led many EC member states to reduce social welfare programmes when demand for them is rising, either because social insurance cover has expired, or because employment records were insufficient to qualify.

One implication of these trends is that nutrition surveillance systems need to be structured so that conditions and outcomes in households at risk of poverty and inequality can be measured and monitored. This is quite a challenging requirement for survey design<sup>73</sup>. Furthermore, those who work on area social regeneration strategies, or in health or community development projects need to collaborate with public health nutritionists in problem definition and identification of solutions.

There is considerable interest in initiating community or school based food projects to address problems in low income areas of food access, skills and decline in 'social capital'. These are currently being promoted by the voluntary and government sectors alike, sometimes with support from the private retail or farming sectors, as a contribution to reducing inequalities<sup>74-76</sup>. Community initiatives can help to overcome social isolation, give people a sense of worth and control of their own health and welfare, as well as improving food access and promoting healthier eating. The former aspects of community projects have often been overlooked; they are difficult to evaluate and value. A recent review of how food projects work, and factors affecting sustainability, highlighted the difficulty of systematically characterizing community initiatives over activities, management structure or approach, or of predicting measurable nutritional outcomes<sup>77</sup>. The policy implications identified were that professionals, volunteers and local people need training and flexible, realistic support; committed back-up; and access to funding that is not merely short-term. However, the problem of health and social inequalities cannot be solved by community led initiatives alone. Where local people participate fully in problem identification, strategy formation and implementation, serious challenges are posed to the direction of mainstream initiatives by local and national governments<sup>78</sup>.

Entitlement to and levels of social security for those without work, and minimum wages for those with, become increasingly important in determining the numbers of people living on low incomes, who may or may not also fall into the category defined as 'poverty'. One potential role of food-based dietary guidelines is in contributing to budget standard studies, which lead to

generation and updating of minimum income standards<sup>79</sup>. These can then legitimately be based on requirements for appropriate food for public health<sup>80</sup>.

Conditions of living for those who are homeless, migrant, refugees or asylum seekers vary considerably across member states. Increasing numbers of people make use of food banks throughout Europe; *that is 'a centralized warehouse or clearing house registered as a non-profit organization for collecting, storing and distributing surplus food, free of charge, to front-line agencies which provide supplementary food and meals to the hungry'*<sup>81</sup>. In countries such as France, where no national nutrition survey data exist, or Canada or the US, where usage is widespread, patronage or numbers using food banks are used as a proxy indicators of inequalities in nutrition<sup>82-84</sup>. There is a strong tradition of promoting the use of food banks in the US and Canada as a strategy for dealing with inequality. The approach seems to be spreading in Europe, with the proliferation of such institutions. Recent publications highlight the need for wider discussion on the social acceptability of food banks, which both institutionalize the usage of surplus foods, and potentially contribute to marginalizing problems of hunger in welfare societies<sup>85,86</sup>.

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