



**SACN POSITION PAPER ON THE LOW INCOME DIET AND NUTRITION  
SURVEY (LIDNS)**

**May 2009**

This paper collates the results from the Low Income Diet and Nutrition Survey (LIDNS) report with the views of members of the Scientific Advisory Committee on Nutrition (SACN). The Food Standards Agency has considered the points raised and will continue to work towards reducing socio-economic gradients in diet-related disease through existing policies aimed at improving the diets of the low income/materially deprived population. The Agency encourages others to use the LIDNS data (which are held at the UK national data archive at <http://www.esds.ac.uk>) in their research work, so that this area can be explored in more depth.

## **Background**

1. The Low Income Diet and Nutrition Survey (LIDNS) was commissioned by the Food Standards Agency to provide, for the first time, robust, nationally representative, baseline data on food consumption, nutrient intake and nutritional status, and factors affecting these, in low income/materially deprived consumers in the UK.<sup>1</sup> LIDNS sought to define the nutrient intake and nutritional status of one of the most vulnerable sectors of the population.
2. “Deprivation” is a complex metric defined by factors such as income, employment, housing, health, education, skills and training and access to services. It is also linked to behaviours such as smoking which are themselves important determinants of health. Poor diet has been proposed as a key area for interventions designed to improve the health of the most deprived sector of the population.<sup>2</sup>
3. Although entitled “low income” the survey took a wider view and sought to identify a representative sample defined in terms of material deprivation rather than income alone. The survey aimed to sample from approximately the 15% most deprived households in the population; that is, people whose eating habits and nutritional health are at most risk of being adversely affected by lack of money or by a limiting physical or social environment. A single cut-off point for income alone was not appropriate because it would have been too complex to establish equivalised income<sup>3</sup> on the doorstep when screening potential participants. Therefore a screening questionnaire based on markers of deprivation was developed and tested. This questionnaire identified potential participants on the door step, without unnecessary intrusion and within a reasonable time.<sup>4</sup>
4. The survey collected detailed quantitative information on food consumption. These data were used to assess nutrient intakes of over 3,700 adults and children throughout the UK. Physical measurements (e.g. height, weight, blood pressure) and blood samples for analysis of biochemical markers of nutrition were collected in addition to information on socio-economic, demographic and lifestyle characteristics, food security issues, physical activity and oral health.

## 5. Findings of the Survey

6. The findings reflected dietary concerns relevant to the general population, as illustrated in the National Diet and Nutrition Survey (NDNS), although in most cases the magnitude of concern prompted by the findings of LIDNS was greater. Specific findings of interest were as follows (for further information see the *Summary of key findings* in the survey report, available on the FSA website at: [www.food.gov.uk/science/dietarysurveys/lidnsbranch/](http://www.food.gov.uk/science/dietarysurveys/lidnsbranch/)).

### Diet and Nutrition<sup>5</sup>

No formal statistical comparisons were made between the LIDNS dataset and other datasets representing the general population, such as the National Diet and Nutrition Survey (NDNS). Differences noted below are offered for comparison and may or may not be statistically significant.

- Average consumption of fruit and vegetables in adults (men 2.4 portions, women 2.5 portions) was below UK recommendations (minimum 5 portions a day) and lower than that reported in the general population.
- Mean intakes of non-milk extrinsic sugars (men 14.6% food energy, women 13.1% food energy) exceeded UK recommendations (maximum 11% of food energy) and were greater than that of the general population.
- Mean fat intake (35.9% food energy for men, 35.1% food energy for women) were close to the current UK recommendation (maximum 35% food energy) and were similar to those in the general population.
- Mean saturated fat intake (13.7% food energy for both men and women) exceeded the current UK recommendation (maximum 11% of food energy) and were similar to those in the general population.
- Mean fibre intake (men 12.7g/day, women 10.7g/day) was below UK recommendations (average 18g/day) and lower than that of the general population.
- 24 hour urine collections were not included in this survey in order to reduce respondent burden. It is therefore not possible to make accurate estimates

of sodium, and hence salt intake. Estimates of sodium intake based on food consumption data collected in the survey exclude salt added at the table or in cooking and so almost certainly underestimate actual intakes. Nonetheless for men and boys aged 11-18 years even these intakes exceeded the daily recommendation for the general population of 2400mg sodium (equivalent to 6g/day salt).

- There was evidence of low micronutrient status<sup>6</sup> among adults and teenagers in this materially deprived sub group of the population - specifically; for iron (8% men, 12% women, 13% boys and 3% girls), folate (11% men, 13% women, 21% boys and 20% girls) and vitamin D (20% men, 17% women, 8% boys and 23% girls). Evidence of low biochemical status was found in a greater proportion of the materially deprived group than the general population with the exception of iron in girls, and vitamin D in boys.
- 42% of men and 35% of women had hypertension.<sup>7</sup> This was similar to findings from the most recent national health surveys of the general population in England and Scotland.
- 61% of men and 65% of women had concentrations of serum total cholesterol of 5.0mmol/l or above. This was similar to findings from the most recent Health Survey for England.
- 62% of men and 63% of women were overweight or obese in this materially deprived sub group; greater than that of the general population.
- The proportion of the LIDNS population that were underweight was similar to that of the general population.
- There was a greater prevalence of smoking (45% among men, 40% among women), higher alcohol intake (amongst consumers) (men 4.5units/day, women 2.2units/day), and fewer people met recommendations for physical activity (only 11% men and 8% women met the recommended 30 minutes moderate/vigorous activity at least 5 days a week) compared to the general population.

## Social Aspects

- Over half (55%) of adults participating in the survey had a self-reported long term illness, in 41% of participants this was limiting (i.e. the respondent needed to cut down on activities as a result of the illness). This was greater than that of the general population.
- Men and women with lower levels of educational achievement tended to have lower intakes of some nutrients. For example, within the survey sample, 17% of those with evidence of educational attainment to at least GCSE level<sup>8</sup> had intakes of magnesium below the LRNI compared to 33% in those who did not achieve this level of education.
- The nutrient intake of those living in urban areas tended to be lower than those in suburban areas.<sup>9</sup> For example, a statistically significantly higher proportion of men and women in urban areas had intakes below the LRNI for riboflavin (men 22% vs. 6%, women 28% vs. 12%); potassium (men 36% vs. 14%, women 45% vs. 32%); and calcium (men 19% vs. 4%, women 24% vs. 8%).
- The materially deprived population sampled by LIDNS was not confined to the most deprived areas, as defined by the index of multiple deprivation (IMD). For example, 2% of survey participants in England, 5% in Wales and 14% in Northern Ireland lived in the 1<sup>st</sup> quintile (least deprived) areas. Low nutrient intakes were often seen in survey participants living in the most deprived areas (as defined by IMD) compared with participants living in other areas.
- Prevalence of reported food insecurity<sup>10</sup> was highest in adults of working age living alone (23% of men and of 25% women) and single adult households with children (15% of men and 23% of women).
- The most important influences on food choice reported by adults aged 19-49 years were the price or value of food and money available to purchase.
- 71% of men and 81% of women reported that they considered

“healthy eating” to be very or fairly important.

- 35% of men and 44% of women reported that they would like to change their diet. The factors most commonly perceived to facilitate change were the availability of cheaper, healthier foods or more money available for purchasing food.
- Social factors, such as access to cooking facilities and food shops, did not seem to constrain either food consumption or nutrient intake.
- Within the survey population, few significant differences in dietary patterns were observed that could be attributed to differences in income alone.

## **Discussion**

7. The sample for the LIDNS survey was heterogeneous, incorporating a relatively high proportion of females (60%), people over 65 years of age (21%), children aged 2-18 (32%), ethnic minorities (13%) and especially those reporting a long term chronic illness (55%). This sample accurately reflects the heterogeneous nature of deprivation in the UK, but it adds to the difficulty of identifying causal relationships between particular aspects of deprivation and diet and health. For example, it is possible that a low income and poor diet are each the outcome of factors rather than being cause and affect.
8. It is suggested therefore, that any further research on the links between deprivation, diet and health should include an analysis of the physical and social environment mentioned under paragraph 3 and other factors not investigated in LIDNS, such as the effect of smoking, and the effect of long term medical conditions on diet. Identification of the pathways of causality linking deprivation, diet and health are critical to understanding of the clustering of diet-related disease, and the development of targeted interventions designed to lessen inequalities in diet related ill health in the UK. Although similar dietary concerns as in the general population were identified in the low income group, different approaches might be needed to achieve effective changes.

9. A detailed secondary analysis of the LIDNS data is not justified at this time and is not proposed here. Nevertheless, the survey data are available through the national data archive and further work by other researchers is encouraged.

### **Does LIDNS tell us anything new?**

10. NDNS data suggested individuals on a low income (determined by receipt of benefits) have poorer diets than the general population; LIDNS presents a picture consistent with these differences. However, within this materially deprived sub-group of the population, income alone did not appear to be a strong constraint to achieving dietary recommendations. LIDNS also illustrated that a number of potential barriers to healthy eating (such as availability of supermarkets and cooking facilities) did not appear to restrict dietary choices within this sub-group of the population.

### **Summary**

11. This materially deprived subgroup of the population has a poor diet. The dietary issues of concern in the general population were largely repeated in this materially deprived group, although often more accentuated. The implications of these results should therefore be considered within the framework of delivering nutritional objectives and advice to the national population.
12. A combination of other factors, in addition to diet, is likely to affect the health of this population group which is already characterised by a high level of long standing illness. These include high prevalence of smoking, alcohol intakes above guideline amounts and low levels of physical activity. In combination with the potential impact on dietary choices of living on a low income, these behaviours greatly increase the risk of ill health. There will also be other potential underlying factors not amenable to broad socio-economic assessments (and therefore not picked up within this survey) such as the impact over time of changes in food composition or7 population-wide changes in eating habits.

It has not been possible through LIDNS to identify whether factors such as these have a different effect within the low income compared to the general population.

## **Endnotes**

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<sup>1</sup> Excluding the islands of Scotland

<sup>2</sup> Acheson D. Report of the independent inquiry into inequalities in health. London: The Stationery Office; 1998.

<sup>3</sup> Equalised income is income adjusted for household composition.

<sup>4</sup> The sample selection was as follows: Deprived wards (defined using information from current Government deprivation indicators) were over sampled relative to other wards. Addresses were then randomly selected from each ward using the Post Office “small users” postcode address file, i.e. those receiving fewer than 25 articles of post per day. A doorstep screening questionnaire was used to establish eligibility of households for inclusion in the survey, based of markers of deprivation including: receipt of benefits, household composition, home ownership, car ownership and employment status as well as net income for the household. See full report for more details.

<sup>5</sup> As with any survey there were limitations due to reporting bias. In a similar way to the National Diet and Nutrition Survey (NDNS), the LIDNS data were not corrected to account for potential bias in reporting.

<sup>6</sup> Below sex and age lower limits of the reference range: these limits are not diagnostic of deficiencies or inadequacy, but indicate a risk of deficiency. See chapter 14 tables: 14.3a, 14.3b; 14.5a, 14.5b; 14.7a and 14.7b in the main report:  
[www.food.gov.uk/multimedia/pdfs/lidnsvol3.pdf](http://www.food.gov.uk/multimedia/pdfs/lidnsvol3.pdf).

<sup>7</sup> Hypertension defined as SBP $\geq$ 140mgHg and/or DBP $\geq$ 90mmHg and/or medication for hypertension.

<sup>8</sup> Defined for the purposes of this survey as those holding GCSE grades A-C equivalent or above.

<sup>9</sup> Since only 3% of the survey population lived in rural areas, these were categorised with suburban residents for the analyses in this section.

<sup>10</sup> Moderate/severe food insecurity scores obtained in response to series of questions based around circumstances known to characterise households having difficulty meeting basic food needs. Food insecurity can be defined as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.” Bickel *et al* 2000 (For further information and full reference see main report).