

National Diet and Nutrition Survey: Headline results from Years 1 and 2 (combined) of the Rolling Programme (2008/9 – 2009/10)

Executive Summary

Introduction

The National Diet and Nutrition Survey (NDNS) is a programme of surveys designed to assess the diet, nutrient intake and nutritional status of the general population aged 18 months upwards living in private households in the UK. The NDNS is jointly funded by the Department of Health in England and the UK Food Standards Agencyⁱ and carried out by a consortium of three organisations: National Centre for Social Research (NatCen), MRC Human Nutrition Research (HNR) and the University College London Medical School (UCL).

The sample was drawn from the Postcode Address File. A sample of 6750 addresses was selected from 250 postcode sectors issued between April 2008 and March 2010. Where there were multiple households at an address a single household was selected at random. For each household, either one adult and one child, or one child only were selected for inclusion. Food consumption and nutrient intakes for 2126 participants was collected using a four-day diary with estimated portion weights. The response rate for completion of the diary was 55%. The survey also included an interview to collect background information on dietary habits, socio-demographic status and lifestyle, collection of a blood sample to assess biochemical indices of nutritional status and a 24-hour urine collection to assess salt intake.

Methods used in the NDNS are reviewed to ensure they remain the best practical methods available. The NDNS provides the only source of high quality nationally representative data on the types and quantities of foods consumed by individuals, from which estimates of nutrient intakes are derived.ⁱⁱ Results are used by Government to develop policy and monitor progress on diet and nutrition objectives of UK Health Departments, for example those set out in the Healthy Lives Healthy People White Paper in England.ⁱⁱⁱ Results are used to monitor diet and nutrient intakes and to assess whether population age groups are meeting expert recommendations. The food consumption data are also used by the Food Standards Agency to assess exposure to chemicals in food, as part of the risk assessment and communication process in response to a food emergency or to inform negotiations on setting regulatory limits for contaminants.

What this report adds over the Year 1 report

This report presents combined results from Years 1 and 2 of the rolling programme (2008/09 – 2009/10) for a sample of the UK population designed to be nationally representative. This report supersedes and replaces the report of the Year 1 results published in 2010.^{iv} It builds on the results from the Year 1 report, combining it with data from Year 2 to provide a larger sample size collected over two years (1031 adults and 1095 children). It also includes some new analyses that were not in the Year 1 report. The results in this report are based on a more balanced distribution of days of the week than were the results in the Year 1 report. Year 1 of the rolling programme was designed to include two week days and two weekend days for each person. As a result some bias may have been introduced into the results for foods and nutrients for which intakes differ between week days and weekend days, for example alcohol. Year 2 was designed so that for both years combined, all days of the week would be equally represented. While there is a more even distribution of days of the week in the combined Year 1 and Year 2 data, there remains a slightly higher proportion of weekend days than week days. Some bias may remain but this should be further reduced in the next report when Year 3 data is included.

Methodological issues

Previous NDNS were carried out as a series of discrete surveys of population age groups, covering children aged 1.5 to 4.5 years, children aged four to 18 years, adults aged 19 to 64 years and older adults aged 65 years and over. There are a number of methodological differences between these surveys and the current rolling programme. The surveys of adults aged 19 to 64 years and children aged four to 18 years used a seven-day diary whereas the current survey uses a four-day diary. The survey of children aged 1.5 to 4.5 years used a four-day diary which over-sampled weekend days. Differences in number of days have little effect on comparisons of mean consumption of food groups or mean nutrient intakes between surveys but do affect comparisons for percentages consuming food groups and meeting dietary recommendations. The other key methodological difference is that all the previous surveys used weighed diaries whereas the current survey uses estimated weights for quantities eaten.

This report includes comparisons with results of previous NDNS covering children aged four to 18 years (1997), adults aged 19 to 64 years (2000/01), and older adults aged 65 years and over (1994/95). The data from the seven-day surveys have been recalculated to represent four days to enable comparison of results to be made with the current survey for percentages consuming food groups and meeting dietary recommendations. Some comparisons for previous surveys have been described and presented to provide context. It is planned to include comparisons with the previous survey for the 1.5 to three years age group in the Year 3 report.

Mis-reporting of food consumption, generally under-reporting, is known to be a problem in NDNS as in all dietary surveys. Biased low estimates of intake can result from respondents under-reporting their actual intake or modifying their diet during the recording period. There is also day-to-day variation in diet and this can make it hard to capture habitual diet over a relatively short assessment period. The level of under-reporting needs to be borne in mind when interpreting findings from this survey. The doubly labelled water technique has been used to measure total energy expenditure in a sub-sample of NDNS participants to assess the level of under-reporting of energy intake. Results will be published as part of the Year 4 report in summer 2013. Evidence suggests that some foods and nutrients may be under-reported to a greater extent than others, and some may be over-reported, but there is no information available on the level to which different foods and nutrients are misreported in the survey.

Contents of this report

The results in this report cover the following areas:

- Consumption of NDNS food groups based on food and composite dishes as eaten;
- Consumption of meat, fish, fruit and vegetables using 'disaggregated' data for composite dishes;
- Intakes of energy, macronutrients (protein, fat and fatty acids, carbohydrates) and alcohol;
- Contribution of food groups to intakes of energy and selected macronutrients;

- Intakes of selected vitamins and minerals, including and excluding dietary supplements; Comparison of nutrient intakes with UK Dietary Reference Values;^v
- Indicative comparisons of food consumption and nutrient intakes with previous NDNS of children, adults and older adults to provide context;
- Use of dietary supplements.

Key UK Dietary Reference Values for macronutrients are shown below. These apply to the whole population over the age of five years.

Macronutrient	Dietary Reference Value^{vi}
Total fat	Population average no more than 35% food energy
Saturated fatty acids	Population average no more than 11% food energy
Trans fatty acids	Population average no more than 2% food energy
Non-milk extrinsic sugars	Population average no more than 11% food energy
Non-starch polysaccharides	Adult population average at least 18g per day

Results are presented for five age groups: 1.5 to three years; four to 10 years; 11 to 18 years; 19 to 64 years; 65 years and over, split by sex in all except the youngest age group.

The report also includes the heights, weights, blood pressure and socio-demographic characteristics of the participants. These were in line with the general UK population which suggests that the sample was nationally representative.

The following analyses in this report were not included in the Year 1 report:

- Results for people aged 65 years and over were excluded from the Year 1 report due to small sample size in this age group.
- Micronutrient intakes including the contribution of dietary supplements.
- Results from blood analytes were excluded from the Year 1 report due to small sample sizes. Results for adults 19 to 64 years and children 11 to 18 years from Years 1 and 2 will be published in Autumn 2011 as a supplementary report.

Key findings

The results in this report confirm the results in the Year 1 report. Findings suggest that the overall picture of the diet and nutrition of the UK population is broadly similar to previous surveys in the NDNS series carried out between 1992 and 2001. Intakes of saturated fat and sugars remain above recommended levels. The analyses presented in this report do not identify any new nutritional problems in the general population.

- Adults aged 19 to 64 years on average consumed 4.2 portions of fruit and vegetables per day and older adults 4.4 portions.^{vii} Thirty per cent of adults and 37% of older adults met the five-a-day recommendation.
- Mean consumption of fruit and vegetables was 3.1 portions per day for boys aged 11 to 18 years and 2.7 portions per day for girls. Thirteen per cent of boys and 7% of girls in this age group met the five-a-day recommendation.
- The majority of participants did not eat oily fish during the four-day diary period and mean consumption was well below recommended one portion per week in all age groups.
- Mean energy intakes for adults were 1918 kcal/day for adults aged 19 to 64 years and 1721 kcal per day for adults aged 65 years and over. In children mean energy intakes ranged from 1127kcal per day for children aged 1.5 to three years, 1556 kcal per day for children aged four to 10 years and 1827 kcal per day for children aged 11 to 18 years.
- Mean intake of total fat met the DRV (no more than 35% food energy) in all age/sex groups except for women aged 65 years and over and men aged 65 years and over for whom, on average, total fat provided 35.9% and 37.1% food energy respectively.
- Mean intakes of saturated fat exceeded the DRV (no more than 11% food energy) in all age groups. Mean saturated fat intake for adults 19 to 64 years was 12.8% food energy.
- Mean intakes of *trans* fatty acids provided 0.7-0.9% of food energy for all age groups, thus meeting the DRV (no more than 2% food energy).

- Mean NMES intakes exceeded the DRV (no more than 11% food energy) for children aged four to 18 years and adults aged 19 to 64 years. Soft drinks were the largest contributor to NMES intake for children aged four to 18 years.
- Sixty-one per cent of adults aged 19 to 64 years and 53% of older adults aged 65 years and over consumed alcohol during the four-day recording period. Adults who consumed alcohol during the four-day recording period obtained 9% of energy intake from alcohol in the 19 to 64 age group and 6% in the 65 years and over group.
- Mean intakes of Non-Starch Polysaccharides (NSP) were below the adult DRV (at least 18g per day) for all age groups.
- Mean intakes of vitamins (except vitamin D) from food sources were close to or above the Reference Nutrient Intake (RNI)^{viii} for all groups. Twelve per cent of children aged 11 to 18 years had vitamin A and riboflavin intakes below the Lower Reference Nutrient Intake (LRNI).^{ix} The contribution of dietary supplements did not reduce the proportions below the LRNI.
- Mean intakes of minerals from food sources were below the Reference Nutrient Intake (RNI) for some age groups, in particular children aged 11 to 18 years and a substantial proportion of this age group, particularly girls, had intakes below the LRNI. Mean intakes of iron were below the RNI for girls aged 11 to 18 years and women aged 19 to 64 years and 44% of girls and 22% of women were below the LRNI. Use of supplements had little effect on the proportions below the LRNI. Mean intakes of minerals in younger children aged under 10 years were above RNIs and few children in this age group had intakes below the LRNI.
- A quarter of adults aged 19 to 64 years and more than a third of adults aged 65 years and over reported taking at least one dietary supplement during the four-day recording period.

Future reports

The following reports are planned:

- A supplementary report covering results for blood analytes indicating nutritional status for Years 1 and 2 will be published in Autumn 2011. This will include results for adults aged 19 to 64 years and children aged 11 to 18 years.

- A report of Years 1-3 of the rolling programme is planned for summer 2012. This will report combined data for Years 1-3 (2008/09 – 2010/11) for food consumption, nutrient intakes and nutritional status. This report will give more robust results based on a larger sample size and so will supersede the current report.
- A report covering Years 1-4 of the rolling programme is planned for summer 2013. A report of an assessment of salt intakes in adults aged 19 to 64 years in England based on urinary sodium excretion data collected in autumn 2011 is due in 2012.

ⁱ Responsibility for nutrition policy in England and Wales transferred from FSA to Health Departments in 2010. Management of NDNS also transferred to the Department of Health in England at that time.

ⁱⁱ Ashwell M, Barlow S, Gibson S, Harris C (2006) National Diet and Nutrition Surveys: the British experience. *Public Health Nutrition* 9(4) 523-530

ⁱⁱⁱ Department of Health Healthy Lives, Healthy People: Our Strategy for public health in England White Paper [online] Available: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_121941 (accessed 01/02/2011)

^{iv} Bates B, Lennox A, Swan G (2010) National Diet and Nutrition Survey; Headline results from year 1 of the rolling programme (2008/09) [Online]. Available: <http://www.food.gov.uk/science/dietarysurveys/ndnsdocuments/ndns0809year1> (Accessed 30/01/2011)

^v Report on Health and Social Subjects 41 *Dietary Reference Values (DRVs) for Food Energy and Nutrients for the UK*, Report of the Panel on DRVs of the Committee on Medical Aspects of Food Policy (COMA) 1991. The Stationery Office. London

^{vi} Report on Health and Social Subjects 41 *Dietary Reference Values (DRVs) for Food Energy and Nutrients for the UK*, Report of the Panel on DRVs of the Committee on Medical Aspects of Food Policy (COMA) 1991. The Stationery Office. London

^{vii} The Health Survey for England is used to monitor five-a-day. HSE estimates of fruit and vegetable consumption are based on a recall of consumption over the previous 24 hours and are therefore different from NDNS estimates which are based on a four-day diary. NDNS estimates are higher than HSE estimates, at least in part because NDNS is better able to capture the contribution from composite dishes containing fruit and vegetables.

^{viii} The RNI for a vitamin or mineral is the amount of the nutrient that is sufficient for about 97% of people in the group. If the average intake of the group is at the RNI, then the risk of deficiency in the group is judged to be very small. However, if the average intake is lower than the RNI then it is possible that some of the group will have an intake below their requirement.

^{ix} The adequacy of vitamin or mineral intake can be expressed as the proportion of individuals with intakes below the LRNI. The LRNI for a vitamin or mineral is set at the level of intake considered likely to be sufficient to meet the needs of only 2.5% of the population.