



## **Statistical Press Notice: National Diet and Nutrition Survey: results from years 1, 2, 3 and 4 combined (2008/09 – 2011/12)**

Today, Public Health England published combined results from the first four years of the National Diet and Nutrition Survey (NDNS) rolling programme (2008/09 – 2011/12). These results supersede the results from the first three years of the survey combined, published in 2012 and include some new analyses.

The NDNS rolling programme is a continuous cross-sectional survey, designed to assess the diet, nutrient intake and nutritional status of a representative sample of around 1000 people per year (500 adults and 500 children) from the general population aged 18 months upwards living in private households in the UK. The NDNS comprises an interview, a four-day diet diary and collection and analysis of blood and urine samples. Results are used by government to monitor the diet and nutritional status of the population, to provide the evidence base for policy development and to track progress towards public health objectives such as reducing saturated fat and salt intakes.

The NDNS is jointly funded by Public Health England and the UK Food Standards Agency. Work for years 1-4 was carried out by a consortium of three organisations: National Centre for Social Research (NatCen Social Research), MRC Human Nutrition Research (HNR) and the University College London Medical School (UCL).

### **Key findings**

The findings in this report confirm that the UK population overall is consuming too much saturated fat, non-milk extrinsic sugars (NMES) (also known as 'added sugars') and salt and not enough fruit and vegetables and fibre. Comparison of 2008/09-2009/10 with 2010/11-2011/12 did not show a clear or consistent pattern of changes over this period but comparison with earlier surveys suggests that there have been positive changes over the last 10-20 years in some age groups such as young children. There were some differences in the diets of the lowest income quintile compared with the highest, in particular lower consumption of fruit and vegetables, some vitamins and minerals and fibre. The analyses presented in this report do not identify any new nutritional problems in the general population.

- **fruit and vegetables:** Adults aged 19 to 64 years consumed on average 4.1 portions per day and older adults (ie those aged 65 years and over) consumed 4.6 portions. 30% of adults and 41% of older adults met the “5-a-day” recommendation
- boys and girls aged 11-18 years consumed on average 3.0 and 2.7 portions per day respectively. 10% of boys and 7% of girls in this age group met the “5-a-day” recommendation
- **oily fish:** Mean consumption of oily fish was well below the recommended one portion (140g) per week in all age groups
- **total fat:** Mean total fat intake met the recommendation of no more than 35% food energy in all age/sex groups except for men aged 65 years and over, for whom, on average, total fat provided 36.0% food energy
- **saturated fat:** Mean saturated fat intakes in all age groups exceeded the recommended level of no more than 11% food energy. For example, mean saturated fat intake for adults aged 19 to 64 years was 12.6% food energy
- **trans fat:** Mean intakes of trans fat provided 0.7% of food energy for adults and older adults and 0.6% food energy for children, thus meeting the recommendation of no more than 2% food energy
- **non-milk extrinsic sugars** (NMES - also referred to as ‘added sugars’): Mean intakes exceeded the recommendation of no more than 11% food energy for all age groups, most notably for children aged 4 to 10 and 11 to 18 years where mean intakes provided 14.7% and 15.6% food energy respectively
- **alcohol:** 58% of adults aged 19 to 64 years and 51% of adults aged 65 years and over consumed alcohol during the four-day diary. Adults who consumed alcohol obtained 8.4% of energy intake from alcohol on average; older adult consumers obtained 6.4%
- **salt:** mean salt intake for older adults aged 65 years and over was 7.2g/day, above the recommended maximum of 6g/day. Mean salt intake in children aged 4-18 years also exceeded the SACN recommendations for each age group except for children aged 7-10 years. Salt intake for adults aged 19-64 years was published in 2012
- **iron:** 46% of girls and 23% of women had low iron intakes. There was evidence of both iron-deficiency anaemia (as indicated by low haemoglobin levels) and low iron stores (plasma ferritin) in 5% of older girls and adult women and 3% of older women
- **vitamin D:** There was evidence of low vitamin D status (as indicated by low plasma 25-hydroxy vitamin D (25-OHD) concentrations in blood) in all age groups: 23% of adults aged 19 to 64 years, 21% of adults aged 65 years and over, 22% of children aged 11-18 years and 14% of children aged 4-10 years over the year as a whole. In January to March this increased to 30% of older adults and 40% of adults aged 19-64 years and children aged 11-18 years. This has implications for bone health (increased risk of rickets and osteomalacia)

- **blood lipids:** About half of adults and older adults had elevated concentrations of serum total cholesterol associated with increasing risk of cardiovascular disease. This is well known and in line with findings from health surveys
- **income:** There was some evidence of income differences in diet and nutrient intake with those in the lowest income quintile having lower consumption of fruit and vegetables and also lower intakes of fibre and some vitamins and minerals
- **dietary supplements:** Those who took dietary supplements during the four-day diary generally had higher intakes of vitamins and minerals from food than non-users of supplements
- **changes over time:** Mean reported energy intakes were slightly lower in most age groups in years 3&4 compared with years 1&2. The percentage of energy from carbohydrate tended to be higher in year 3&4 than in years 1&2 while total fat intake tended to be lower. The percentage of energy intake from saturated fat was lower in years 3&4 compared with 1&2 but there was no difference in the percentage of energy intake from added sugars. There was no clear pattern of changes in intakes of vitamins and minerals and no change in fruit and vegetable consumption.
- comparisons with findings from previous surveys in the 1990s suggest that intakes of saturated fat and added sugars have fallen while fibre intakes have increased in some age groups. Changes are most marked in young children and least so in the 11 to 18 years age group. These differences should be treated with caution due to methodological differences between the surveys.

### Background notes

1. The NDNS rolling programme was originally commissioned to collect data over a four year period from 2008/09 to 2011/12 with an extension to a fifth year covering 2012/13. A contract for a further four years covering 2013/14 to 2016/17 has now been agreed. Prior to the rolling programme the NDNS comprised a series of cross-sectional surveys, each covering a different age group. The earlier programme was set up in the early 1990s and ended in 2000/01.
2. The report published today covers a range of topics including food consumption, intakes of energy, macronutrients and vitamins and minerals (including salt intake), nutritional status (see note 12) and use of dietary supplements. The report also includes the heights, weights, blood pressure and socio-demographic characteristics of the participants. Results for food consumption, nutrient intake and nutritional status are presented for five age groups: 1½-3 years; 4-10 years; 11-18 years; 19-64 years; 65 years and over, split by sex in all except the youngest age group. Fieldwork was carried out between 2008/09 and 2011/12 with an overall response rate of 56%. The analyses of food consumption and nutrient intake are based on 6828 individuals (3450 adults and 3378 children). The blood sample analyses are based on 1769 adults and 902 children. These numbers include the boosted samples in Scotland, Wales and Northern Ireland

which have been weighted down in the final analysis to give a UK representative sample.

3. This report supersedes the report of the year 1, 2 and 3 combined results, published in 2012 by the Department of Health

<https://www.gov.uk/government/publications/national-diet-and-nutrition-survey-headline-results-from-years-1-2-and-3-combined-of-the-rolling-programme-200809-201011>

The report published today, based on a larger sample size, supports and reinforces the conclusions of the earlier report and includes some new analyses.

4. 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. From 1 April 2013, responsibility for the survey transferred to Public Health England, an operationally autonomous executive agency of DH.
5. The Government recommends an intake of at least five portions of fruit and vegetables per person per day. The Health Survey for England (HSE) is used to monitor 'five-a-day' in England. 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, at least in part, because NDNS captures the contribution from composite dishes containing fruit and vegetables.
6. The dietary recommendations or Dietary Reference Values for nutrients are reported in 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. The DRVs for energy are reported in: Scientific Advisory Committee on Nutrition (2011). Dietary recommendations for energy. [http://www.sacn.gov.uk/pdfs/sacn\\_dietary\\_reference\\_values\\_for\\_energy.pdf](http://www.sacn.gov.uk/pdfs/sacn_dietary_reference_values_for_energy.pdf)
7. Saturated fat is the kind of fat found in animal foods such as butter and lard, fatty cuts of meat, sausages and bacon, cheese and cream and foods containing them such as pies, cakes and biscuits. Consuming high levels of saturated fat can lead to raised blood cholesterol levels, which are associated with greater risk of developing heart disease.
8. Trans fats are formed when liquid vegetable oils are turned into solid or semi-solid fats through a process of hydrogenation. The main sources of trans fats in the diet are from partially hydrogenated vegetable oils (PHVOs), dairy and meat from ruminant animals. Hydrogenated Vegetable Oils can be used as ingredients in products such as biscuits, cakes and desserts and are also used as cooking and ingredient oils. Naturally occurring trans fats are found in dairy produce and the flesh of ruminant animals eg beef and lamb. Trans fats raise the levels of the type of cholesterol in the blood, which may increase the risk of heart disease.
9. Non-Milk Extrinsic Sugars (NMES) (also referred to as 'added sugars') are any sugars which are not contained within the cellular structure of the food, either because they have been added to a food in the form of table sugar, honey etc; or because the food

has been processed which has released (otherwise intrinsic) sugars from the cell structure eg fruit juice. Intakes of NMES are of interest as they are implicated in tooth decay.

10. The recommended daily alcohol limits are no more than three to four units a day for men and no more than two to three units a day for women - <http://www.evidence.nhs.uk/topic/alcohol>. There is no recommendation for the maximum percentage of energy from alcohol.
11. Salt intakes for adults aged 19-64 years were published in 2012, based on 24-hour urinary sodium data collected in 2011. National Diet and Nutrition Survey - Assessment of dietary sodium in adults (aged 19 to 64 years) in England, 2011 report. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/127916/Sodium-Survey-England-2011\\_Text\\_to-DH\\_FINAL1.pdf.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/127916/Sodium-Survey-England-2011_Text_to-DH_FINAL1.pdf.pdf)
12. The SACN recommendation for maximum daily salt intake is no more than 3g/day for children aged 4 to 6 years, no more than 5g/day for children 7 to 10 years and no more than 6g/day for children aged 11 years and over and adults.
13. Nutritional status means the level of nutrients available to the body (after absorption) for use in metabolic processes. For some micronutrients, status can be assessed by directly measuring the level of the nutrient in blood, while for others it is assessed by a functional measure such as the activity of vitamin-dependent enzymes.
14. The report presents descriptive statistics on blood analytes for the following micronutrients: iron; vitamin C; vitamin B12; vitamin B1 (thiamin); vitamin B2 (riboflavin); vitamin B6; retinol; carotenoids; vitamin D; vitamin E; selenium; zinc. Results are also reported for blood lipids (eg cholesterol). The percentage of participants with levels above or below an accepted threshold indicating low status is shown for those analytes for which threshold values have been proposed.
15. The survey also measured blood levels of folate to assess folate status. However these results have been delayed due to problems with the laboratory analysis. We currently expect to publish in the first quarter of 2015.
16. Haemoglobin concentrations below 115-130g/L (depending on age and sex) indicate iron deficiency anaemia. Plasma ferritin levels below 15µg/l indicate low iron stores. The combination of haemoglobin and ferritin concentrations can be used as a measure of iron deficiency. Low levels may be due to low intakes or to blood loss
17. Severe vitamin D deficiency causes rickets in children and osteomalacia in adults, this is a condition characterised by pain, muscle weakness and bone fractures. Both conditions are rare in the UK although there is evidence of significant incidence in South Asian and Afro-Caribbean groups.