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# National Diet and Nutrition Survey: results for Years 5 to 9 of the Rolling Programme for Wales (2012/2013 – 2016/2017) and time trend and income analysis (Years 1 to 9; 2008/09 – 2016/17): summary

Mae'r ddogfen yma hefyd ar gael yn Gymraeg.

This document is also available in Welsh.

# Executive Summary

The National Diet and Nutrition Survey Rolling Programme (NDNS RP) is a continuous cross-sectional survey, designed to assess the diet, nutrient intake and nutritional status of the general population aged 1.5 years and over living in private households in the UK. Each year a representative sample of around 1000 people (500 adults and 500 children) take part in the NDNS RP.

The NDNS RP comprises an interview, a 4-day estimated diet diary, physical measurements and a blood and urine sample. Results are used by government to monitor progress toward diet and nutrition objectives of UK Health Departments and to develop policy interventions.

Fieldwork for the first 9 years of the NDNS RP was carried out between 2008/09 and 2016/17. Government bodies in Wales have funded additional recruitment (i.e. boosted sample) in 2009/10 to 2016/17 (Years 2 to 9) in order to achieve representative data for Wales and enable comparisons to be made with UK results.

The foods and nutrients and blood and urinary analytes presented in this report were selected for their nutritional and public health relevance in Wales. Results are analysed for five age groups: 1.5 to 3 years; 4 to 10 years; 11 to 18 years; 19 to 64 years and 65 years and over, split by sex in all except the youngest age group.

## Food consumption, nutrient intakes and nutritional status compared with recommendations

(Years 5 to 9; 2012/13-2016/17)

- Consumption of 5 A Day fruit and vegetable portions was below the recommendation in all age/sex groups. Average consumption of fruit and vegetables for children aged 11 to 18 years in Wales was 2.7 portions per day with 89% not meeting the 5 A Day recommendation. On average adults aged 19 to 64 years consumed 3.8 portions per day and adults aged 65 years and over consumed 3.9 portions per day. Three quarters of adults aged 19 to 64 years and two thirds of adults aged 65 years and over did not meet the 5 A Day recommendation.
- Average consumption of oily fish was well below the recommended 1 portion (140g) per week.

- Average daily consumption of red and processed meat for men aged 19 to 64 years and men aged 65 years and over exceeded the current maximum recommendation for adults.<sup>1</sup>
- For all age/sex groups, average intakes of saturated fatty acids exceeded the current recommendation of no more than 11% of food energy.
- Average intakes of *trans* fatty acids met the recommendation of no more than 2% of food energy in all age/sex groups.
- Intakes of free sugars<sup>2</sup> exceeded the recommendation of no more than 5% of total energy from free sugars in all age/sex groups: Over 90% of children and 85% of adults did not meet the recommendation.
- For AOAC fibre,<sup>3</sup> over 90% of adults and children over 11 years, 89% of children aged 4 to 10 years and 84% of children aged 1.5 to 3 years were not meeting the recommendations.<sup>4</sup>
- Average intakes of vitamin D were well below the Reference Nutrient Intake (RNI)<sup>5</sup> 10µg/day in all age/sex groups. Average intakes of folate met the RNI in all age/sex groups except girls aged 11 to 18 years. Average intakes of vitamin A were also below the RNI in the 11 to 18 years age group and a substantial proportion of this age group had intakes below the Lower Reference Nutrient intake (LRNI<sup>6</sup>) for vitamin A and riboflavin.

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<sup>1</sup> The Department of Health has advised that people who eat a lot of red and processed meat a day (more than 90g cooked weight) cut down their intake to 70g. [Meat in your diet](#)

<sup>2</sup> The definition of free sugars as described by SACN includes all added sugars in any form; all sugars naturally present in fruit and vegetable juices, purees and pastes, and similar products in which the structure has been broken down; all sugars in drinks (except for dairy-based drinks) and lactose and galactose added as ingredients. Further details of the methodology for determining free sugars in the NDNS RP are provided in appendix AA.

<sup>3</sup> AOAC fibre is the term used to describe fibre measured by the American Association of Analytical Chemists (AOAC) methods. AOAC fibre includes resistant starch and lignin in the estimation of total fibre as well as NSP

<sup>4</sup> The Scientific Advisory Committee on Nutrition (SACN) AOAC fibre recommendations: 30g/day for adults; 25g/day for older children aged 11-16 years; 20g/day for the 5-11 years age group; 15g/day for the 2-5 years age group.

<sup>5</sup> The RNI for a vitamin or mineral is the amount of the nutrient that is sufficient for 97.5% 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 more likely that some of the group will have an intake below their requirement.

<sup>6</sup> 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. An intake below the LRNI is only considered a problem if sustained over a period of time. As diet is recorded for only four days in the NDNS RP, estimated intake values may not represent intakes over the longer term for micronutrients that are not widely distributed in foods such as vitamin A. It should also be noted that DRVs for some micronutrients such as magnesium, potassium, selenium and zinc are based on very limited data so caution should be used when assessing adequacy of intake using the LRNI.

- There was evidence of low intakes (below the LRNI) for magnesium, potassium, iodine, selenium and zinc, particularly in the 11 to 18 years age group and iron and calcium in girls in this age group.
- There was evidence of a high prevalence of low folate status, as determined by concentration of folates in red blood cells and in serum in all age groups indicating biochemical deficiency or increased risk of anaemia. Among women of childbearing age (16 to 49 years), 79% had red cell folate concentration below the optimal concentration for avoidance of folate-related foetal neural tube defects (748nmol/L).
- There was evidence of low vitamin D status in all age groups.<sup>7</sup> Twenty-three percent of children aged 11 to 18 years, 19% of adults aged 19 to 64 years and 15% of adults aged 65 years and over had serum 25-OHD below 25nmol/L. Blood samples were collected throughout the year and so represent average summer and winter vitamin D status.
- The median concentration of iodine in spot urine samples for children aged 4 to 10 years and aged 11 to 18 years was above the threshold indicating adequate iodine status. The median concentration of iodine in spot urine samples for adults was slightly below the threshold.
- There was evidence of anaemia (low blood haemoglobin concentration and low plasma ferritin concentration) in older children and adults;<sup>7</sup> 6% of children aged 11 to 18 years and 5% of women aged 19 to 64 years.
- There was evidence of low vitamin B12 status (as determined by measurement of holotranscobalamin) in older children and adults,<sup>7</sup> particularly adults aged 65 years and over, of whom 13% were below the threshold indicating biochemical vitamin B12 deficiency.

#### Trends over time (Years 1 to 9; 2008/09-2016/17)

- Overall, trends over time in Wales were similar to those seen in the UK as a whole.
- There was little change in intake of fruit and vegetables over the 9-year period.
- There was little change in intake of oily fish over the 9-year period, except in the proportion of male consumers aged 65 years and over which increased by 30 percentage points.
- Intake of red and processed meat showed a downward trend over time.
- Over the 9 years, the proportion of the population consuming sugar sweetened soft drinks dropped by 38 and 42 percentage points respectively for those aged 4 to 10 years and aged 11 to 18 years. There

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<sup>7</sup> Results for blood analytes are not reported for children aged 1.5 to 3 years and aged 4 to 10 years because numbers are too small to be confident in estimates.

was a significant decrease in intake over time among children aged 11 to 18 years who drank sugar sweetened soft drinks.

- As a percentage of total energy, free sugars intake dropped by 8.2 percentage points over the 9 years for boys aged 11 to 18 years compared with a 3.8 percentage point drop for this age group in the UK as a whole. There was no significant trend over time for other age/sex groups. Average intakes exceeded the recommendation of no more than 5% of total energy from free sugars in all age/sex groups over the 9 years.
- Over the 9 years total fat intake as a percentage of food energy dropped by 5.1 percentage points for men aged 65 years and over compared with a 1.1 percentage point drop in this age group in the UK as a whole. No trend over time was seen in total fat intake over the 9-year period for the other age/sex groups. As a percentage of food energy, saturated fatty acid intake increased over time for children aged 11 to 18 years while intake decreased over time for men aged 65 years and over. Average intakes in all age groups exceeded the current recommendation of no more than 11% of food energy over the 9-year period.
- Most age/sex groups showed a significant reduction in *trans* fatty acids intake as a percentage of food energy over time.<sup>8</sup>
- There was little change in AOAC fibre intake over time.
- There was a downward trend in intakes of most vitamins and minerals over the 9-year period for many age/sex groups.
- There was a downward trend over time in sodium intake<sup>9</sup> and this was significant in most age groups.
- In all age groups there was a decrease over the 9 years in folate status as determined by folate concentrations in red blood cells and in serum. While in the UK there was a decline in the folate status of women of childbearing age over the 9-year period, as shown by the proportion with red cell folate concentration below 748nmol/L; this was less clear in Wales.
- There was evidence of decreasing vitamin D status in children aged 11 to 18 years; a 32 percentage point increase over the 9-year period in children in this age group with 25-OHD concentration below 25nmol/L at

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<sup>8</sup> The levels of *trans* fats produced artificially through food processing have been reduced. NDNS relies on the availability of food composition data to support estimation of nutrient intakes. This decrease in intake may reflect changes in the composition of foods that took place some time ago, rather than changes in actual nutrient intakes in the survey population over the 9-year period.

<sup>9</sup> Sodium intake estimates are based on the sodium content of foods consumed. They do not fully take account of salt added during cooking and exclude salt added at the table by participants.

the time of blood sampling. This was compared with a 12 percentage points increase in the same age group in the UK as a whole.

#### Equivalised household income<sup>10</sup> (Years 5 to 9; 2012/13-2016/17)

- There was evidence of greater intake of fruit and vegetables with increasing income in all age/sex groups and, for most age/sex groups, the increases in intake seen in Wales were greater than those seen in the UK as a whole. Higher percentages of consumers of fruit juice were also seen with increasing income in some age groups.
- Intakes of oily fish tended to increase with increasing income for adults.
- There was no consistent pattern across age/sex groups in total fat and saturated fatty acid intake as a percentage of energy with respect to income. As a percentage of food energy, *trans* fatty acids intake tended to increase with increasing income for most age/sex groups although the changes were small and only statistically significant for children aged 1.5 to 3 years.
- Free sugars intake as a percentage of total energy decreased significantly for adults aged 19 to 64 years with increasing income. For children there were small, non-significant increases in intake with increasing income.
- Intakes of AOAC fibre and most vitamins and minerals tended to increase with increasing income.
- Changes in sodium intake<sup>11</sup> with increasing income were small and not in a consistent direction.
- As for the UK as a whole, those with higher incomes tended to have better nutritional status, as indicated by concentrations of some biomarkers; this was not consistent in all age groups or for all nutrients.

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<sup>10</sup> Equivalisation is a standard methodology that adjusts household income to account for different demands on resources, by considering the household size and composition.

<sup>11</sup> Sodium intake estimates are based on the sodium content of foods consumed. They do not fully take account of salt added during cooking and exclude salt added at the table by participants.