Nutrition in older people

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Background

*The Diet and Nutrition Survey: People Aged 65 Years and Over* (Finch et al., 1998) was launched almost a year ago, in October of 1998. There was a recognised need for a survey of this nature, given that the proportion of older people in the UK population has been increasing. Further, it had been over 20 years since the diet and nutritional status of older people had been surveyed on a national scale. Crucial information was provided by this survey on the diet and nutritional status of older people.

Methodology

The survey sample included a cross-section of the population of people aged 65 years and over in 1994/5, throughout the whole of the UK. A total of 1,275 free-living older people and 412 older people living in residential care took part in the survey. A four-day weighed dietary record was kept to assess dietary intake. During the four-day period, the free-living participants were asked to weigh all food and drink consumed. The participants living in residential care were visited by an interviewer daily, who weighed one main meal; a descriptive record was kept of all other foods eaten by the participant or their carer. A venous blood sample was obtained after an overnight fast to measure haemoglobin, clotting factors and various blood analytes of clinical relevance. Urine samples were analysed for urinary sodium, potassium and creatinine. Anthropometric measurements included weight, height, demi-span, waist and hip circumference and mid-upper arm circumference.

As a result of these detailed measurements, data are available for the amount of food and drink consumed as well as energy and nutrient intakes, and nutritional status.

Macronutrient intakes

It is apparent from this survey that older people are generally well nourished. Taken as a group, people met healthy eating recommendations set out by COMA (Committee on Medical Aspects of Food and Health Policy) (Department of Health, 1991) for total fat. The average fat intake of the
free-living population surveyed was 35.9 per cent of food energy (fat intake was 34.9 per cent of food energy in the institutional group). This is lower than the population average of 39 per cent of food energy, and close to the recommendation of 35 per cent of food energy made by COMA. However, intake of saturated fatty acids was 15 per cent of food energy; this is consistent with the level consumed by the general population and is in excess of the current recommendation of 11 per cent of food energy (Department of Health, 1991). The current recommendation for dietary fibre is 18g per day (as non-starch polysaccharide). Intakes in this survey were considerably lower than this (13.5g per day in men and 11g per day in women in the free-living group; 11g per day in men and 9.5g per day in women in the residential-care group). The macronutrient and dietary fibre intakes of participants in this survey are shown in Table I.

### Vitamin and mineral intakes

On average, intakes of most vitamins and minerals were above the reference nutrient intakes, as shown in Table II. However, despite the general adequacy of diet, a small proportion of the subjects had intakes below the LRNI (lower reference nutrient intake) i.e. the level sufficient for just 2.5 per cent of the population.

There is no LRNI for vitamin D; however, virtually all the subjects (99 per cent of those living in institutions and 97 per cent of those who were free-living) had intakes below the RNI of 10µg per day. Improving intakes of vitamin D is particularly important for those who are housebound and, therefore, do not obtain vitamin D from the sunlight via skin synthesis. Low vitamin D status among those living in residential care occurred in 38 per cent of men and 37 per cent of women. Among free-living participants, 6 per cent of men and 10 per cent of women had a low vitamin D status. Dietary sources of vitamin D should be encouraged, including oily fish, meat, and fortified spreads and breakfast cereals. As well as being a source of vitamin D, meat may help to enhance the absorption of vitamin D (Duggan and Henderson, 1997), although more research is needed in this area.

The vitamin C status of those living in institutions was poor, with 44 per cent of men and 38 per cent of women having a low status (plasma concentration of below 11µmol/l). The free-living participants fared better, with 14 per cent of men and 13 per cent of women having a poor status. Good sources of vitamin C include citrus and soft fruits, sprouts, peppers, green vegetables and potatoes. The promotion of at least five portions a day of a variety of fruits and vegetables should be encouraged.

A substantial proportion of the subjects had intakes of magnesium and potassium that were below the LRNI. Food sources of potassium include vegetables, potatoes, fruit (in particular bananas), bread, fish, nuts and seeds. Magnesium can be found in bread (especially wholemeal) and cereals, green vegetables, nuts and seeds and milk.

Intakes of iron were generally adequate; however, there was a high prevalence of iron

### Table I Macronutrient and dietary fibre intakes of older people

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Free-living Men</th>
<th>Free-living Women</th>
<th>Living in institutions Men</th>
<th>Living in institutions Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (MJ)</td>
<td>8.02</td>
<td>5.98</td>
<td>8.14</td>
<td>6.94</td>
</tr>
<tr>
<td>Total fat (per cent food energy)</td>
<td>35.7</td>
<td>36.1</td>
<td>35.1</td>
<td>34.8</td>
</tr>
<tr>
<td>Saturates (per cent food energy)</td>
<td>14.6</td>
<td>15.3</td>
<td>15.2</td>
<td>15.4</td>
</tr>
<tr>
<td>Polysaturates n-6 (per cent food energy)</td>
<td>5.0</td>
<td>4.8</td>
<td>4.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Polysaturates n-3 (per cent food energy)</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>Monounsaturates (per cent food energy)</td>
<td>11.1</td>
<td>10.9</td>
<td>10.8</td>
<td>10.5</td>
</tr>
<tr>
<td>Trans fatty acids (per cent food energy)</td>
<td>1.5</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Protein (per cent food energy)</td>
<td>16.1</td>
<td>16.5</td>
<td>14.1</td>
<td>14.0</td>
</tr>
<tr>
<td>Total carbohydrate (per cent food energy)</td>
<td>48.2</td>
<td>47.5</td>
<td>50.8</td>
<td>51.3</td>
</tr>
<tr>
<td>Starch (per cent food energy)</td>
<td>26.9</td>
<td>26.2</td>
<td>24.9</td>
<td>23.9</td>
</tr>
<tr>
<td>Non-milk extrinsic sugars (per cent food energy)</td>
<td>13.2</td>
<td>11.5</td>
<td>17.9</td>
<td>18.5</td>
</tr>
<tr>
<td>Non-starch polysaccharides (fibre) (g)</td>
<td>13.5</td>
<td>11.0</td>
<td>11.0</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Source: Finch et al., 1998

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deficiency anaemia in those living in residential care, with 52 per cent of men and 39 per cent of women reported to have low haemoglobin levels. This may be a result of poorer absorption of iron; for example the consumption of tea was high among this group and the tannins in tea inhibit the absorption of non-haem iron. Further, gastric disorders are more common in older people, which can also interfere with efficient iron absorption (Department of Health, 1992). The best food sources of iron are those containing iron in the haem form, for example red meat, liver, kidney, oily fish and poultry. Non-haem sources of iron can also make a useful contribution to overall intake, e.g. fortified breakfast cereals, pulses, nuts and dark green vegetables.

Although non-haem iron is less well absorbed than haem iron, foods that contain vitamin C, for example fresh orange juice, soft and citrus fruits and green vegetables, can enhance absorption if consumed at the same time.

**Socio-economic status**

The government's green paper, *Our Healthier Nation* (Department of Health, 1998a) recognised that health inequalities exist. One of the key recommendations in this report was to improve the health of the worst off in society and to narrow the health gap. For those participants in the survey who were free-living, there was evidence of lower nutrient intakes in the manual social class groups, those who were receiving benefits and those in the lowest income group. Amongst these groups in particular, intake of energy, protein, carbohydrate, fibre and some minerals and vitamins, especially vitamin C, were lower. Nutritional status, particularly for vitamin C, was also lower in these lower socio-economic groups.

**Key public health issues**

There were three principal issues that arose from this survey in relation to public health. These concern bone health, the relationship between B vitamin status and cardiovascular disease, and oral health.

**Bone health**

Bone health is an important issue in this age group. Osteoporosis is a significant factor in 90 per cent of bone fractures in people over 65 years of age. Calcium is an essential nutrient to maintain bone health, and absorption of calcium is promoted by vitamin D (see section on vitamins and minerals). It is important to ensure adequate calcium and vitamin D intakes in this age group to maintain bone health.
The COMA report on *Nutrition and Bone Health* (Department of Health, 1998b) endorsed the current dietary reference value for vitamin D of 10 µg per day for older people. This report also recommended that the public and health professionals be better informed about the importance of achieving adequate vitamin D status, including the appropriate use of vitamin D supplements for those most at risk of deficiency. Amongst older people, those identified as being at the greatest risk of vitamin D deficiency include those who are housebound, those who live in institutions and those who avoid eating meat and oily fish.

It was also recommended in the COMA report that the present policy of fortifying flour with calcium should continue and dietary means of achieving an adequate calcium intake should be encouraged. Dietary sources of calcium include milk and dairy products such as yogurt and cheese, along with fortified breads and cereals, fish eaten with bones, some green vegetables, e.g. broccoli and spinach, and some nuts and seeds, e.g. sesame seeds and peanuts.

**B vitamin status and cardiovascular disease**

Improved status of vitamin B6, vitamin B12, and in particular of folate, is thought to be protective against cardiovascular disease. Low status of these vitamins can result in elevated levels of homocysteine, an amino acid produced during the metabolism of methionine, which is an independent risk factor for cardiovascular disease. Homocysteine levels in the blood tend to increase with age and levels are relatively high in the UK, in particular in Scotland. Average intake of B vitamins, including folate and vitamins B12 and B6, was adequate; however, there was evidence of low intakes and poor status for some of the sample, especially for folate. Of those in institutions, 39 per cent had a low serum folate concentration; this figure fell to 15 per cent in free-living people.

It has been suggested that public health measures to increase intakes of these vitamins could have a significant impact on the prevalence of vascular disease (Schorah *et al*., 1998); further studies in this area are now needed. The government’s advisory committee, COMA, is currently reviewing the scientific evidence linking folate status and disease risk. It is expected that their findings will be made public in the near future. In the USA, statutory fortification of folic acid was recently adopted. Voluntary fortification of some breads and breakfast cereals with folic acid currently occurs in the UK.

Good food sources of folate and folic acid include dark green vegetables, e.g. sprouts and spinach, some fruits, e.g. oranges, liver, fortified breads and fortified breakfast cereals.

**Oral health**

A separate survey was carried out that looked at the oral health of this age group (Steele *et al*., 1998). In total, 50 per cent of the free-living sample reported being dentate; in those over 75 years this fell to 35 per cent. Among those in institutions, only about 21 per cent were dentate.

It was found that those with their own teeth had improved dietary intakes and nutritional status. Edentate people had a lower energy intake than dentate people (mean 6.62 MJ/day compared with 7.39 MJ/day) and lower mean intakes of non-starch polysaccharides, protein, fat, carbohydrate, calcium, niacin, haem and non-haem iron, vitamins A, C and E, pantothenic acid, thiamin, riboflavin and sugars. Those without their own teeth were less likely to choose foods that needed chewing, such as apples, oranges, raw carrots, nuts and bread. The World Health Organisation (WHO) (1982) advocates the presence of 21 or more natural teeth as part of their health goals. For people with 21 or more teeth, increased amounts of most nutrients were consumed, compared to those with 20 or fewer teeth.

The oral health survey has implications for the under 65s of today, and highlights the importance of good dietary and oral hygiene practices, beginning early in childhood.

**Public health implications**

In conclusion, older people need a good, varied balance of different foods to achieve an optimal nutritional intake. The data from this survey highlight the importance of vitamin D and folate status; it may be appropriate to consider the merits of food fortification with these micronutrients. Further, it is apparent that particular emphasis needs to be placed on promoting good nutritional intakes amongst those in residential care, those of a lower socio-economic status and those lacking their own teeth.
Dietary advice should focus on the inclusion of the main food groups in the daily diet. This means promoting consumption of bread and other cereals (particularly wholegrain varieties) and potatoes for energy and fibre, along with a good variety of different fruit and vegetables (at least five portions a day) to ensure intake of micronutrients, fibre and beneficial antioxidant phytochemicals. Meat, fish and alternatives are useful sources of iron in the diet and milk and dairy foods (e.g. yogurt and cheese) are useful sources of calcium. Intake of fats, and in particular saturated fatty acids, should not be excessive. Sugar is best consumed with meals rather than frequently throughout the day. Good oral health should be promoted from childhood, including regular brushing of the teeth, to ensure as many teeth as possible are maintained into older age.

The results of this survey form the basis of important health messages for the whole population. Good nutrition and a healthy lifestyle should start in childhood; we should not wait until we are 65 years of age. The better our nutritional status when we reach this age, the better our health and wellbeing are likely to be into the later years of life.

References


Further reading