



Paper for agreement: NDNS synthesis paper

Agenda Item: 4

This summary presents findings from two papers providing recommendations for action in the context of current nutritional policy:

- i) The nutrition health of the population
- ii) National diet and nutrition survey: Adults aged 19 to 64 years further analysis

FIRST DRAFT

Background

UK

1. *Our Healthier Nation* the Department of Health White Paper (1999) set out an initial action plan to tackle poor health by improving the lives of everyone and put focus on reducing dietary related diseases such as cancer, coronary heart disease and stroke in the UK. The Food Standards Agency's (FSA) Strategic Plan 2005-10 sets detailed objectives in diet and nutrition in the UK to make it easier for consumers to choose a healthier diet.

England

2. *Choosing Health* (DH, 2004) set out government priorities and strategies to improve the diet and health of England.

Scotland

3. *The Scottish Diet Action Plan* (Scottish Office Department of Health, 1996) provided a framework of action to improve diet and make progress towards achieving dietary targets and has been the central focus for diet and nutrition policy in Scotland since 1996. FSA Scotland's strategic targets were inline with the objectives of the Scottish Diet Action Plan and *Eating for Health-Meeting the Challenge* (Scottish Executive, 2004), which highlights actions for improving health of the Scottish public and was part of the Scottish Executive Health Department's *Improving Health in Scotland: The Challenge* (Scottish Executive, 2003).

Wales

4. *Food and Wellbeing* (FSA Wales, 2003) the nutrition strategy for Wales developed by FSA Wales, the Welsh Assembly Government and other key stakeholders focuses on addressing food poverty and promoting food equality with emphasis on low income, elderly, ethnic minority groups, infants, children and young people.

Northern Ireland

5. Nutrition is a priority area in the Northern Ireland Executive Public Health Programme *Investing for Health* (2002). The Childhood Obesity Task Force Report, *Fit Futures* was published in March (2006) which provides policy context for much of FSA Northern Ireland's current commitments.

6. **Targets on which UK wide commitments have been based:**

Dietary Reference Values (DRVs). The Committee on Medical Aspects of Food and Nutrition Policy (COMA) set guidance intake figures for food components energy, fat, protein, carbohydrate including sugar and fibre as well as vitamins and minerals (DH, 1991).

Fruit and Vegetables. Consumption of 5 portions (total of 400g per day) of fruit and vegetables per day is recommended to help reduce the risk of chronic diseases such as heart disease, stroke and cancer (DH, 2002).

Salt. The Scientific Advisory Committee on Nutrition (SACN) advised population averages should not exceed a daily intake of 6g salt based on scientific evidence of a direct relationship between salt intake and elevated blood pressure and increased risk of cardiovascular disease (SACN, 2003).

Oily Fish. SACN encourage consumption of at least 2 portions (140g per portion) of fish per week (at least one of which should be oily¹) due to benefits associated with helping to prevent heart disease (SACN, 2004).

Red and Processed Meat. COMA recommended individuals' consumption of red and processed meat should not rise and higher consumers should consider a reduction, as a consequence the population average will fall. (DH, 1998)

Obesity. Bodyweight is measured by calculating Body Mass Index (BMI), dividing a person's weight in kilograms by their height in metres squared (kg/m²). A BMI of between about 20 and 25 represents the normal range of bodyweight for adults. A BMI over 30 is considered obese (COMA, 1991). A target to halt the year-on-year rise in obesity among children aged under 11 years by 2010 was set in the context of a broader strategy to tackle obesity in the population as a whole (DH, 2004).

Vitamin A. SACN advise people consuming liver or retinol containing supplements regularly (once or more a week) should not increase their intake as a precaution due to uncertainties between vitamin A intake and bone health (SACN, 2005).

Alcohol. Current advice for adults is that men should drink no more than three to four units of alcohol a day and women no more than two to three units a day. One unit is equivalent to 8g alcohol (DH).

7. The main government driven initiatives in progress to implement objectives are summarised below:

Fruit and Vegetables. The 5 A DAY logo on food packaging is used to encourage the UK population to increase fruit and vegetable consumption. (DH, 2002). This is supported by *The School Fruit and Vegetable Scheme*. All four to six year old children in Local Education Authority (LEA) maintained infant, primary and special schools in England are entitled to a free piece of fruit or vegetable each school day (DH, 2004). Similar schemes have been set up in schools in Scotland, Wales and Northern Ireland.

Labelling. FSA is committed to help consumers make healthier choices by improving information and understanding and by encouraging them to take action (FSA Strategic Plan, 2005-10). As part of this commitment the Agency has recommended a voluntary front of pack colour coded signposting scheme to increase consumer awareness of the nutritional quality of manufactured foods (FSA, 2006).

Food Promotion. The Office of Communications (Ofcom) proposes to restrict television food advertising aimed towards children. (Ofcom, 2006).

¹ Men, boys and women past childbearing age can consume up to 4 portions and girls and women of child bearing age are advised to consume up to 2 portions of oily fish per week (SACN, 2004).

Salt. The FSA promotional *Salt Campaign* (FSA, 2004) is supported by work to establish targets for industry to reduce salt in processed foods, using a model of sources of salt in the diet based on National Diet and Nutrition Survey (NDNS) data (FSA, 2003).

Schools. National Assembly for Wales launched its Welsh network of *Healthy Schools Schemes* 1999, which has encouraged schools to consider action on food and nutrition such as fruit tuck shops and breakfast clubs etc. *The National Healthy Schools programme* encompasses minimum nutrition standards for food in schools in England set by the Department for Education and Skills (DfES), which are to be compulsory from September 2006 (DfES, 2006). Supported by the UK wide *Target Nutrient Specifications* (TNS) for manufactured foods (FSA, 2006), which replaced and were based on the TNS (FSA Scotland, 2003) developed to meet the nutrient standards launched as part of The Scottish Executive's *Hungry for Success* initiative.

Young Adults. FSA Wales launched *Get Cooking* (FSA Wales, 2005) a toolkit for teaching young people aged 14-25 basic cooking skills in a community setting. FSA Wales also published *Healthy Nosh for Less Dosh* (FSA Wales, 2005) to provide healthy eating advice on a budget, especially suitable for students. Similarly Scotland has published *1st Time Self-Caterers* as an aid to students as well as others in a new situation of having to cook for themselves (FSA Scotland, 2005). FSA have teamed up with popular teen magazine *Sugar* to promote the importance of healthy eating to young adults including work with *Eatwell* www.Eatwell.gov.uk (FSA, 2006).

Older Adults FSA Wales are committed to providing support to older adults and have published *Eat Well- guide to healthier eating in over 60s* and as part of the *Keep well this winter* campaign *Stock up your Store cupboard* was published (FSA Wales, 2005).

Recognition of Local Community Initiatives Food Standards Agency Wales set up the *Annual Awards for Food Action Locally* (AFAL) scheme to recognise individual or team contributions to local nutrition initiatives that have made a positive impact on the diet or eating habits of residents in the communities where they work (FSA Wales, 2003). FSA Wales also published *£ind funding for initiatives on Nutrition and Diet* a resource for community projects and initiatives and groups working to improve diet and health and reduce inequalities in Wales.

Vitamins and Minerals. FSA strategic plan 2005-10 set out aims to seek expert advice on the health implications of low vitamin and mineral (nutrient) intakes in some population groups, the results of which are detailed in the two papers summarised in this report.

(i) **The Nutritional Health of the Population**

8. This paper presents a detailed summary of findings from the four surveys in the NDNS programme carried out between 1992 and 2001. Results from the most recent NDNS of adults aged 19-64 years (NDNS 2000/01) are also compared with the 1986/87 Dietary and Nutritional Survey of British Adults aged 16-64 years (Gregory *et al* 1990). The paper highlights specific diet and nutritional issues according to age, gender, regional and socio-economic differences. The findings from this analysis showed a mixed picture of the diet and nutritional health of the population:

9. ***Fruit and vegetables***

Consumption of fruit and vegetables is below the recommendation in all age groups (average of 2.8 portions per day for adults aged 19-64 years), and is particularly low for young adults and people in lower socio-economic groups. In general fruit and vegetable consumption has increased since the previous survey (by an average of 0.4 portions per day for adults aged 19-64 years), however this was not the case for younger adults. 20% of the 4-18 age group did not consume any fruit (excluding fruit juice) during the survey week.

10. ***Oily Fish***

Mean consumption of oily fish was below the recommended one portion per week in all age groups (average 1/3 of a portion for adults aged 19-64 years). There was evidence of higher consumption in 2000/01 compared with 1986/87 in adults (both men and women) aged 50-64 years.

11. ***Meat***

Meat consumption was slightly higher for men in 2000/01 compared to 1986/87. The major contributor had changed from beef to chicken and turkey. The data show that consumption of red and processed meat and meat-based dishes (that is excluding chicken and turkey and dishes) was lower in 2000/01 than in 1986/87 for both men (138g/day in 2000/01) and women (79g/day in 2000/01)². There is also evidence from the Expenditure Food Surveys of a reduction in carcass meat purchases over the last 15 years. All groups had mean protein intakes above recommendations.

12. ***Soft drinks/Sugar***

Non-milk extrinsic sugar (NMES) is sugar not incorporated in the cellular structure of food, which is not derived from milk. These sugars are thought to be a major cause of dental caries in the UK (DH, 1991). The proportion of energy intake derived from NMES exceeds the recommendation (maximum 11% food energy³) in most age groups, particularly for children and young adults (up to 19% food energy). Soft drinks were the major source of NMES in children and young adults and table sugar in older adults. Consumption of soft drinks (mainly concentrated squashes) in the 1½-4½ year age group was equivalent to about 8 cans or 14 cartons per week. Consumption of soft drinks in adults was substantially higher (most notably in the youngest age groups) in 2000/01 (4-5 cans carbonated drink per week) than in 1986/87 (3 cans carbonated drink per week).

² Consumption figures include non-meat components of meat-based dishes and so are not directly comparable with the COMA recommendation

³ Energy consumed as food and drink excluding alcohol (DRVs DH, 1991)

13. *Fat*

The proportion of energy derived from fat and saturated fat was lower in the more recent survey of adults (2000/01) (35% and 13% respectively) compared to 1986/87 survey (40% and 17% respectively). Diets high in saturated fat increase levels of LDL and total cholesterol in the blood, which can increase the chances of developing heart disease. The fall in total fat and saturated fat intakes in adults is reflected in the fall in total and LDL cholesterol levels in the blood between 1986/87 and 2000/01. Mean intakes of total fat were generally close to recommendations in all population groups, however intakes of saturated fat exceeded recommendations (maximum 11% food energy) in all groups (population intakes up to 17% food energy).

14. *Fibre*

Intake of dietary fibre was low overall and no groups met the recommendation for adults.

15. *Alcohol*

In the 2000/01 survey, 60% of men and 44% of women exceeded the recommended daily benchmarks for sensible drinking on at least one of the seven reporting days. 6% of men and 4% of women exceeded the benchmarks on four or more days of the week, with 3% of men exceeding the benchmark on all seven days. 39% of men and 22% of women drank more than twice the benchmarks (twice the benchmark is defined as heavy drinking) on their heaviest drinking day.

16. *Salt*

The average intake of salt for adults up to 64 years has increased from 9g/day in 1986/87 to 9.5g/day in 2000/01 well above 6g/day (the recommended maximum). The proportions of the population consuming less than 6g/day were 15% of men and 31% of women. A number of individuals had very high intakes with 21% of men and 5% of women with intakes above 15g/day. Men and women in the 19-24 age group were least likely out of the adult age groups to meet the target with only 2% and 17% respectively consuming less than 6g/day.

17. *Vitamins*

Low intakes of one vitamin or mineral were likely to be accompanied by low intakes of other vitamins and minerals i.e. diets are rarely seen to be low in nutrients in isolation. There is evidence of low intakes and status⁴ for a number of vitamins and minerals especially for older children, young adults and older people particularly those living in institutions. Mean intakes of vitamins were however, above the recommended levels as defined DRVs (DH, 1991) in all age groups except for vitamin A, which fell below for children and young adults. Males and females between 11 and 25 years are more likely than other groups to have low intakes of vitamins and minerals, including vitamin A, riboflavin, iron, potassium and magnesium. Evidence of low vitamin D status was found in most population age groups especially in a proportion of older children and young adults, and in elderly people living in institutions.

⁴ "Status" is a general term used to cover levels of nutrients available in the body, which reflect intakes over the longer term indicating how well nourished individuals are. This is compared to nutrient intakes, which are estimated over shorter periods of time.

18. *Minerals*

Mineral intakes were generally lower in relation to DRVs (DH, 1991) than vitamin intakes. Intakes of magnesium and potassium were low in all age groups except young children, while a pattern of low intakes of several other minerals including calcium, zinc and iodine was seen in older children and young adults, particularly women. Low iron intakes were found in young children (under 5 years), in some teenage girls and young women and in older adults, particularly those living in institutions. Evidence of low iron status was also seen in these groups.

19. *Supplements*

The inclusion of dietary supplements increased mean intakes of most vitamins and some minerals, but had little effect on the proportions with intakes below the minimal requirements, as defined in the DRVs (DH 1991), indicating that supplements are generally taken by those who have adequate vitamin and mineral intakes from food. A fifth of children aged 1½-4½ years, surveyed in 1992, reported taking supplements, mainly vitamins A, C and D and multivitamins. COMA (1994) recommended children between the ages of 1 to 5 years should be given vitamins A and D supplements unless adequate vitamin status can be assured from a diverse diet rich in vitamin A and D containing food and from moderate exposure to sunlight (DH 1994). Vitamin D supplements are advised for institutional and housebound elderly who consume no meat or oily fish. However, evidence of low vitamin D status of older adults in institutions was found (paragraph 13) and the number of elderly in the institutional group reported as taking supplements was lower (5% men and 9% women) than free-living group at (29% men and 34% women).

20. *Socioeconomic Status*

There is also evidence of marked differences in diet and nutritional status associated with socio-economic status. Both adults and children living in households receiving benefits were more likely to have low intakes of vitamins and minerals and there was some evidence of lower vitamin and mineral status in this group. Fruit and vegetable consumption was lower in households receiving benefits and those from manual social class groups.

21. *Regional Differences*

Few regional differences were seen in diet or nutritional status. There is evidence from the surveys of some age groups for lower consumption of fruit and vegetables and lower intakes and status of some vitamins and minerals in Scotland and Northern England than elsewhere. These differences were however, inconsistent.

ii) National diet and nutrition survey: Adults aged 19 to 64 years further analysis

22. This paper reports on the further analysis of data from the recent NDNS of adults (2000/01). Three analyses were carried out:

- (a) Nutrient intake and status data was analysed to focus on a range of vitamins and minerals for which a relatively high proportion of adults had low intakes. The aim was to determine differences in dietary and non-dietary characteristics between people with low intakes/status and people with intakes/status above recommendations. Nutrients that were identified in groups where there were a sufficient number of people to take analysis forward, included vitamins A, D and B6, riboflavin (referred to as vitamin B2 in paper), potassium and magnesium.
- (b) The full set of data, which included all nutrients for which a relatively high proportion of adults had low intakes (vitamin A, riboflavin, iron, calcium, magnesium, zinc, iodine) or low status (vitamins B1 and B12, riboflavin vitamins C and D, folate and iron), was recalculated for 5 equally sized groups “quintiles” of the population determined by increasing intake/status for each nutrient. Comparisons were made to determine differences in dietary and non-dietary characteristics between people with low intakes/status and people with intakes/status above recommendations.
- (c) Data was analysed to further summarise the different patterns of food consumption using a statistical technique, which characterises food consumption patterns rather than individual foods. This resulted in the identification of different groups that consist of individuals with similar dietary and non-dietary characteristics.

23. (a) (i) **Non-dietary characteristics**

Those with low intakes/status were more likely to be:

Smokers, living in households in receipt of benefits, younger adults.

Those with intakes close to or below recommendations for vitamin A, potassium and magnesium and those with low riboflavin or vitamin D status were more likely to be smokers, those living in a household in receipt of benefits and younger adults.

24. ***Inactivity***

Those with low status for vitamin D reported being less physically active compared with those who had adequate vitamin D status. Vitamin D is produced by the action of sunlight on the skin, and therefore this finding may be linked to low levels of outdoor physical activity among this group.

25. (ii) **Dietary characteristics**

When nutritional data from the surveys were compared with current dietary recommendations it could be seen that at a population level, adults with low intakes/status of these nutrients consumed diets that did not reflect a balanced diet⁵.

⁵ A balanced diet includes consuming plenty of fruit and vegetables, foods rich in starch and fibre such as bread, cereals and potatoes; consuming moderate amounts of meat, fish, eggs, nuts, beans, pulses, milk and dairy products (choosing reduced fat versions where possible); consuming food and drink high in saturated fat and sugar occasionally and if alcohol is consumed it is consumed sensibly (Balance of Good Health FSA, 2001).

26. ***Low food energy***

Those with low nutrient intakes consumed less of almost all food groups resulting in lower energy intakes. Individuals with low intakes for vitamin A, potassium and magnesium had significantly lower intakes of food energy compared to those with nutrient intakes above these levels. Those with low vitamin D status had lower intakes of food energy compared with those with vitamin D status above this level.

27. ***Lower consumption of fish and fish dishes, fruit and vegetables***

Low riboflavin and vitamin D status, were independently associated with lower consumption of fish and fish dishes, total fruit and vegetables (including potatoes and fruit juice), fruit (including and excluding fruit juice).

28. ***A higher consumption of savoury snacks and soft drinks*** (excluding fruit juice),

Low riboflavin status was associated with significantly lower consumption of milk and significantly higher consumption of savoury snacks and soft drinks. These results suggest that foods high in fat and sugar, could be displacing other foods rich in riboflavin in those with low riboflavin status (e.g. soft drinks may to some extent replace milk consumption in the diets of those with low riboflavin status).

(b) Quintile analysis

When the data set was divided into 5 groups (“quintiles”) of increasing intake/status for each vitamin and mineral, the following associations were observed:

29. ***Sugar consumption***

The results of this analysis by quintile show that as well as patterns observed above, there was some evidence that a higher consumption of sugar, preserves and confectionery was associated with low nutrient intake/status.

30. ***Breakfast cereals***

In addition, those with the lowest status for riboflavin, B12, vitamin C and folate consumed less breakfast cereals (many of which are fortified with vitamin B12, riboflavin and folate), and breakfast cereals are usually consumed with milk (a major source of riboflavin in the diet).

(c) Consumption Patterns

31. Characterisation of food consumption patterns identified three distinguishable groups. Findings were inline with results seen from the other two methods. The group with the lowest mean intakes/status for all nutrients out of the three groups were more likely to be smokers, more likely to live in households receiving benefits and had the highest consumption of soft drinks, savoury snacks and alcoholic beverages. Conversely the group with the highest mean intakes/status of most nutrients were least likely to be smokers and had the highest consumption of fish and fish dishes, fruits and vegetables and nuts and seeds out of the three identifiable groups.

Overall Summary and Recommendations

32. The findings from both reports above indicate that while there is some evidence of positive dietary changes, especially the fall in fat and saturated fat intakes and increased fruit and vegetable consumption in most adults over the last fifteen years, action is needed to improve the overall diet of the population in order to reduce the risk of nutrition-related disease.
33. The key areas identified as failing to meet recommendations were:
- Low fruit and vegetable consumption.
 - Low fish (especially oily fish) consumption.
 - High total/saturated fat and sugar rich food consumption.
 - High salt intakes.
34. Population groups identified as having a high incidence of poor diets were:
- Children
 - Young adults
 - Smokers
 - People in lower socio-economic groups
 - Older people living in institutions
35. There are currently a number of government driven initiatives in progress to meet objectives to reduce obesity and improving the diet and health of the nation (paragraphs 1 & 2). Many of these already focus on improving the areas highlighted as requiring attention in the above reports. Extensive efforts are being made towards increasing the quality of children's diets, promoting fruit and vegetable consumption, reducing salt intake and work is currently underway by FSA to reduce the fat, saturated fat and energy content (including sugar) of many manufactured foods. This work will be continued in order to contribute to an improvement in quality of diets and improved nutritional status of the UK population.

Areas requiring action are as follows:

36. ***Sugar rich foods especially soft drinks***

Further action should be taken to reduce sugar intakes, especially the consumption of soft drinks. Consideration could be given to promote the replacement of some soft drinks in the diet with low fat milk particularly for children. Increases in milk consumption would help improve intakes of riboflavin as well as calcium.

37. ***Oily fish***

Although intakes of oily fish have increased in certain groups over the past 15 years, they are still below recommendations and efforts should be continued to promote fish consumption particularly oily fish. The results of the analysis of vitamin D status during the winter months suggest that those who undertake limited outdoor activity would benefit from increasing the consumption of certain foods rich in vitamin D such as oily fish.

38. ***Vitamins and minerals***

Promoting improvements to the quality and variety of the diet is required. As a result this will address the imbalance in macronutrients i.e. reduce sugar and saturated fat

intake while increasing intake of healthy fats (found in oily fish, nuts and seeds etc) and dietary fibre, as well as improving overall nutrient status. It is important to note that those adults taking supplements in the surveys tended to be those with higher nutrient intakes from food. Even though individuals with poor nutrient intakes/status were less likely to be reporting supplement use, their overall nutrient status would be better improved through the consumption of a balanced diet⁴ rather than supplement use. Vitamin D status could also be improved by increased promotion of outdoor activity.

Balance

39. For optimum health and prevention of dietary related illnesses such as diabetes, coronary heart disease, stroke and cancer, a balanced diet⁴ should be promoted. This healthy balanced diet approach should be recommended within the context of a healthy lifestyle, reinforcing existing health messages to stop smoking, maintain a healthy body weight and take part in regular physical activity and should be targeted particularly towards young adults, older adults living in institutions and people in lower socio-economic groups.

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