

Monitoring the Scottish Diet Action Plan Targets – Review of National dietary surveys and Scottish research studies.

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Introduction

Dietary targets for Scotland were published in the 1996 Scottish Diet Action Plan, Eating for Health. The targets were published after widespread consultation involving a wide spectrum of interests and were based on earlier documents, in particular the publication Scotland's Health: A Challenge to us all: The Scottish Diet (Scottish Office 1993). The targets are quantitative and population based and include a mixture of nutrient and food based targets. They were set for achievement in 2005 and are listed below.

The food-based targets are as follows:

Fruit and vegetables: average intake to double to more than 400 grams per day.

Bread: intake to increase by 45% from present daily intake of 106 grams, mainly using wholemeal and brown breads.

Breakfast cereals: average intake to double from the present intake of 17 grams per day.

Fish:

- (i) White fish consumption to be maintained at current levels.
- (ii) Oil-rich fish consumption to double from 44 grams per week to 88 grams per week.

For nutrients the following targets were set:

Fats:

- (i) Average intake of total fat to reduce from 40.7% to no more than 35% of food energy.
- (ii) Average intake of saturated fatty acids to reduce from 16.6% to no more than 11% of food energy.

Salt: average sodium intake to reduce from 163 mmol per day to 100 mmol per day

Sugar:

- (i) Average intake of NME sugars in adults not to increase.
- (ii) Average intake of NME sugars in children to reduce by half to less than 10% of total energy.

Total complex carbohydrates: increase average non-sugar carbohydrates intake by 25% from 124 grams per day through increased consumption of fruit and vegetables, bread, breakfast cereals, rice and pasta and through an increase of 25% in potato consumption.

In addition a target for Breast-feeding was set as follows:

The proportion of mothers breast-feeding their babies for the first 6 weeks of life to increase to more than 50% from the present level of around 30%. (This particular area is beyond the scope of this report and will be considered elsewhere.)

Major investments are currently being made in diet related programmes within Scotland and, as part of this effort, it is important that progress towards meeting the dietary targets is monitored. In addition, any dietary change detected will require to be interpreted in relation to levels of morbidity and mortality in the Scottish population.

Although there is cross-sectional Scottish data available from UK-wide surveys, numbers are small and not necessarily representative for Scotland. At present there are no nationally representative longitudinal surveys to monitor the Scottish diet.

To determine how best dietary monitoring should progress, the Scottish Executive Health Department (SEHD) and the Food Standards Agency Scotland (FSAS) have established a Working Group on Monitoring Scottish Dietary Targets.

Criteria for Choosing Methods to Monitor Scottish Dietary Targets

FOOD BASED TARGETS	
Targets	Criteria for choosing a method
Fruit & Vegetables	Requires frequency of consumption and portion weights
Bread	Requires frequency of consumption and portion weights
Breakfast Cereal	Requires frequency of consumption and portion weights
Fish - white	Requires frequency of consumption and portion weights
Fish- oil-rich	Requires frequency of consumption and portion weights

NUTRIENT BASED TARGETS	
Targets	Criteria for choosing a method
% energy from total fat	Full nutritional analysis of total diet
% energy from saturated fatty acids	Full nutritional analysis of total diet
Salt	Urinary sodium essential
NME sugars (as % energy for children)	Full nutritional analysis of total diet
Total Complex Carbohydrates	Requires frequency of consumption and portion weights of all foods containing carbohydrates

Objectives

The purpose of this report is to provide background information for the Working Group about national dietary surveys and studies currently (and recently) underway in the UK.

In addition, the results of a literature search of major Scottish dietary studies (reporting data from 100 or more subjects and published within the past 5 years) are included.

The report is structured as follows:

- Section 1** National Food and Dietary Surveys including: the Expenditure and Food Survey, the National Diet and Nutrition Surveys (NDNS) of adults, people aged 65 and over, young people aged 4 to 18 years and children aged 1 ½ to 4 ½ years, the Low Income Diet and Nutrition Survey (LIDNS), the Irish Food and Consumption Survey and the dietary analysis of the TNS Superpanel data.
- Section 2** National Health Surveys of Scotland and England, and the Health and Health Behaviours of Scottish Schoolchildren.
- Section 3** Scottish Health and Lifestyle Surveys carried out by Local Health Boards.
- Section 4** Research Studies. This includes ongoing studies and studies published within the last 5 years. This search has been conducted as widely as time allows and only the largest / most relevant included in the report (e.g. cohort studies).
- Section 5** Market Research relevant to dietary monitoring

Summary tables are given for Sections 1-4 and are provided in Appendix 4. Comments relating to the ability of the surveys and dietary methodologies to monitor the Scottish Diet Action Plan (SDAP) targets will be found at the end of each sub-section of Sections 1-3

Section 1 National Food and Dietary Surveys

These include surveys where national dietary intake is the primary focus. A summary table for this section is presented in Appendix 4.

1.1 Expenditure and Food Survey (National Food Survey)

Background

Both the Expenditure and Food Survey (EFS) and the National Food Survey (NFS) differ from the National Diet and Nutrition Surveys described in Section 1.2 in that they are household budget surveys (HBS) designed to collect information about household food expenditure as opposed to food consumption at the individual level. Information is not collected in such a way as to directly determine the intake of individuals. Despite the fact that the EFS and its predecessor the NFS are HBS they provide a useful source of information about the nutrition of the population of Great Britain. The NFS has been used as a tool for monitoring nutritional intake patterns in Great Britain since the 1950s. For example, data from this survey was used to inform national food policy, to assess to what extent the Dietary Reference Values were being met, to compare trends in dietary patterns in relation to cardiovascular disease (Department of Health and Social Security, 1974 & 1984 and Department of Health 1991) and to provide information for the food industry.

Furthermore, the impact of the dietary changes proposed in the Scottish Diet Report (Scottish Office, 1993) were estimated using combined data for Scotland from the 1989-1991 National Food Surveys. The Scottish Diet Report provided the basis for the Scottish Diet Action Plan (Scottish Office, 1996).

1.1.1 The National Food Survey (NFS)

The NFS was established in 1940 to provide information on household food purchases and the nutritional value of the national diet of the “urban working class”. From 1950 the Survey was widened to cover Great Britain as a whole and in 1994 it was further extended to include food eaten outside the home.

Information on food expenditure was collected at the household level with one person in each household, known as the “main diary keeper”, asked to keep a record of all food for human consumption entering the home over a 7-day period. Food quantities entering each household were then used to calculate estimated food consumption per capita. This constituted the Main Survey.

The food consumption data was then analysed for nutrient content, taking into account factors such as inedible materials (such as bones) and vitamin losses on cooking, and tabulated in two main ways for each category of households in the survey:

- a) nutrient intake per person per day
- b) intakes as a proportion of Dietary Reference Values (DRVs). This involves comparing intakes with household needs after the age, sex and possible pregnancy of each member have been taken into account. Allowances in this section were also made for foods eaten out with the home and an allowance of 10% wastage of edible food built into the calculation.

Scottish Sample

The sample was drawn from the whole of Scotland, except the area north of the Caledonian Canal and the Scottish islands. The number of Scottish households included in the main NFS in 2000 was 548 (1320 individuals).

The EFS differs slightly from NFS in that the Scottish sample does include the area to the north of the Caledonian Canal. However the Scottish islands are still not covered by the survey.

1.1.2. The Expenditure and Food Survey (EFS)

In April 2001 the EFS replaced both the NFS and the Family Expenditure Survey (FES), both of which were designed to collect information on income and expenditure in a representative sample of around 7000 private households in the UK. The new EFS is a continuous survey of households in the United Kingdom commissioned jointly by the Office for National Statistics (ONS) and the Department for Environment and Rural Affairs (DEFRA). It is said to represent a more cost-effective method of collecting data required by both NFS and FES users.

The EFS is likely to produce more accurate statistics on household food purchases than the NFS due to various design improvements, including the use of till receipts and individual two-week diaries for each household member aged 7 years of age and over. Interestingly, a pilot study in 2000 reported that response rates were enhanced by a payment of £10 to each adult and £5 to each child. The EFS offers the potential for additional analyses by “joining up” food consumption with a wider range of household data and information on food consumption outside the home. It must be remembered that the data collected is for purchases, so although the age and sex of each diary holder is recorded it is not possible to determine individual intakes from the data collected.

The full report from the new EFS, including details of the methodologies used will not be available until March 2004. This will include details of the sampling frame for the UK (including Scotland). However we understand that the current response rate for EFS in Scotland is just below 58%.

The first set of food and drink results from the EFS, based on a sample of 1600-1700 households per quarter who were asked to keep a diary of their food and drink purchases for a two week period, was published in an interim report on the DEFRA website on 28/04/03: (<http://statistics.defra.gov.uk/esg/statnot/efsuk.pdf>). Scaling factors have been developed for adjusting NFS data so that NFS and EFS data may be compared. Food and nutrient intakes are given for the EFS for 2001/02 and compared with NFS adjusted values for 2000/01 and 1996/97 (unadjusted). The adjustments used are provisional. Details of the adjustment method were due to be published at the end of July 2003 but this has now been postponed to March 2004. A summary of selected results from the EFS interim report are presented in Appendix 1.

Summary of key changes in food consumption between 2000/2001 and 2001/2002
(Adapted from the April 2003 Interim Report)

- 7% reduction in milk and cream consumption with reduced purchases of both whole and skimmed milk
- 8% reduction in purchases of beef and veal
- 9% reduction in purchases of chicken
- 3% increase in non carcass meat with higher consumption of ready meals and convenience meat products
- 10% reduction in consumption of fresh potatoes and a 6% increase in consumption of processed potatoes.
- Fruit consumption remains unchanged
- 8% reduction of bread and cereal consumption.

Note on the nutritional database used in the NFS/EFS

DEFRA use their own nutritional database to convert consumption data to nutrient intakes. The food composition data used is based on the FSA's rolling programme of nutrient analysis, as published in the McCance and Widdowson's The Composition of Foods series. However it differs from the published food composition data in that there are no missing values. Estimated values are used where there is no firm data available.

Ability to monitor the Scottish Dietary Targets

- Scottish dietary targets were devised, in part, using combined Scottish NFS data.
- Data could be analysed to measure achievement of both food and nutrient-based SDAP.
- Current method of reporting not conducive to measuring SDAP. However extended data, available from the ESRC data archive, could be obtained and further analyses carried out.
- Scottish Sample may need to be enhanced to assess intake of different groups within the population.
- No linkage to health outcomes.

1.2 National Diet and Nutrition Surveys (NDNS)

The NDNS programme is a joint initiative between the FSA and the Department of Health (DofH) and aims to provide comprehensive, cross-sectional information on the dietary habits and nutritional status of the population of Great Britain. In addition to quantitative information on food and nutrient intakes the surveys measure:

- Blood and urine indices related to dietary data
- Height and weight
- Physical activity levels
- Oral health

Originally established by the Ministry of Agriculture, Fisheries and Food (MAFF) in 1991, the responsibility for the programme was transferred to the FSA on its establishment in April 2000.

The full objectives of the programme can be found in the reports of the individual surveys. To date 4 surveys have been carried out under the NDNS programme:

- Preschool children in 1992-1993 (Gregory et al., 1995)
- Older adults aged 65 years+ in 1994-1995 (Finch et al., 1998)
- Young people aged 4-18 years in 1997 (Gregory et al., 2000)
- Adults aged 19-64 years in 2001 (Henderson et al., 2002)

These surveys all used weighed food records and the data has been analysed to give nutrient intakes. The data could also be used to measure progress (at the particular time of the cross-sectional study) towards the food based diet targets if further analysis is carried out on the data. In addition a dietary interview (using a brief food frequency questionnaire) is carried out and in some cases subjects have carried out this less onerous part of the study and not the weighed intake.

Separate analyses have been carried out for the Scottish sample for each survey. However the Scottish sample is fairly small (less than 200) and is not adequate for detailed analysis of foods eaten by different age groups and social groups.

Comparisons have been made with previous national surveys of children (DofH, 1989) and adults (Gregory et al., 1990). A further study is underway to assess the diet of low-income consumers. A different methodology is used and will be described in next section.

Ability to monitor the Scottish Dietary Targets

- Data could be analysed to measure achievement of SDAP Targets
- Scottish sample too small to assess intake of different groups within the population.

1.3 The Low Income and Diet Survey (LIDNS)

The Low Income Diet and Nutrition Survey (LIDNS) will provide robust baseline data on the diets and nutritional status of low-income / materially deprived consumers.

The aims are to:

- Provide quantitative data on the food and nutrient intakes, sources of nutrients and nutritional status of low-income groups.
- Describe the characteristics of individuals with intakes of specific nutrients above or below the national average.
- Measure blood indices that provide evidence of nutritional status or dietary biomarkers.
- Provide height, weight and other anthropometric measurements for a representative sample of low-income individuals.
- Assess the diets of low-income consumers to determine the extent to which they are sufficiently nutritious.
- Monitor the extent to which the diets of low-income consumers vary from expert recommendations.
- Examine the relationship between dietary intake and factors affecting food choice in low-income groups.
- Examine within household distribution of food and nutrient intake and the factors affecting this.
- Assess physical activity levels of low-income groups.
- Examine possible relationships between diet and risk factors in later life.
- Provide basic information on oral health status in relation to diet.

A feasibility study was completed in July 2002 and the main stage fieldwork will begin in November 2003.

Dietary data will be collected using 4 non-consecutive 24-hour recalls collected using the triple (multiple) pass method (see briefing paper on dietary assessment methods). This will provide data on individual food consumption including: estimates of normal quantities of food eaten, supplement use, water and time and place of eating.

For the main stage fieldwork the country allocation of numbers was originally based on the proportion of the total UK population, plus slight adjustment for bias in the population of low-income individuals in each country. Following discussions there will now be a minimum of 400 subjects each in Scotland, Wales and Northern Ireland.

Statistical advice is that the minimum sample size that would allow any relevant inter-country comparisons between Scotland and the rest of the UK is 400 and that to carry out the same scale of analysis within Scotland as within England would require a sample size of 3000. This sample size is prohibitively expensive and as statistical advice was that nothing would be gained from a sample size of between 400 – 3000 the minimal figure of 400 was chosen.

Ability to monitor the Scottish Dietary Targets

- Data could be analysed to measure achievement of SDAP Targets
- Scottish Sample too small to assess intake of different groups within the population.

1.4 TNS Superpanel (see also Section 5.1)

A recently released FSA research report (Elliot et al., 2003) looked at the feasibility of using the TNS Superpanel data for surveillance and post marketing monitoring of the potential health effects of novel (including GM) foods. The aim of this study was primarily to determine whether commercially available data sets could be used to quantify possible 'exposure' to certain foods and nutrients at a population level. The FSA initiated the study to see if commercially available data sets on household food consumption could be used to carry out nutritional surveillance.

Sample: The TNS Superpanel is a rolling panel with a recruitment target of 10,000 households per year. The feasibility study used data collected between 1991 and 2000 from 33,177 households containing 105,668 individuals. The sample changes over time but was found to be broadly comparable to the population (as seen in the GB census data) in terms of the regional split and social class distribution. Scottish data was available (approximately 8-9% of the complete sample) collected from 2,865 households between 1991 and 2000. However, the social class data relate to the complete (GB) sample, and would therefore need to be re-assessed using only the Scottish households data. It is worth noting that the TNS collect 400,000 household weeks of data each year, which is over 70 times more than that collected by the NFS.

Method: The product description data for over 39,000 food items was converted into estimates of energy and nutrient content. This involved a major nutrient coding effort and took over a year of the equivalent of one full-time member of staff.

Results: Comparison with published nutritional studies showed that the TNS data underestimated total daily energy intake by approximately 32% which is in line with the company's claim that their data capture about 70% of total food consumption, as impulse purchases and food eaten outside the home are not included.

Conclusions Subject to some enhancements (e.g. sampling methods, improved availability of food composition information), the results of the feasibility study suggest that it would be possible to monitor food purchasing patterns reliably at household level using the TNS data. As such these data could be used to inform nutritional surveillance. However as the data currently stands it would not be possible to correlate food purchases with health data. For recommendations about how the work could be taken forward from this study see Appendix 4

Ability to monitor the Scottish Dietary Targets

- Data could be analysed to measure achievement of both food and nutrient-based targets
- Some correction would be required to adjust for fact that this purchasing data captures only 70% of total food consumption
- No linkage to health outcomes

1.5 North/ South Ireland Food Consumption Survey

A full description of the methods used in this survey, in addition to the survey results are published in a special edition of Public Health Nutrition (Public Health Nutrition 4 (5A), 2001).

This survey was carried out in Northern Ireland and in the Republic of Ireland between 1997 and 1999. The primary purpose of this cross sectional survey was to establish a database of habitual food and drink consumption in a representative sample of adults aged 18-64 years in Northern Ireland and in the Republic of Ireland with a view to informing nutrition policy and planning. The project was unique in that it was the first of its kind to be undertaken in the North and the Republic using the same methodology.

Methods

Sampling. A random population sample of adults aged 18-64 was obtained by a two stage clustered design using the electoral register with recruitment procedures being the same in both the North and South. Pregnant and lactating women were excluded. Information on age, education and occupation was collected on those who declined to participate in order to describe non-respondents.

Response to the Survey. Completion of the food diary was used as the criterion to distinguish between responders and non-responders. The total number of responders was 1379 (final response rate 63%) comprising 662 men and 717 women.

Diet Diaries- Non weighed records. Each respondent kept a written record of all food and drink consumed for 7 days using a food diary. The same field worker made four visits to each respondent during the recording period. Data recorded were, all foods drinks and supplements consumed over 7 days, the time and location of each eating occasion, the method of cooking and brand name (where appropriate), leftovers, recipe details and a definition of the "eating occasion" as the subjects perceived it (snack or meal). Respondents were provided with new food diaries at each visit and the old ones collected.

Quantification of food diaries. A hierarchical approach was developed, with foods and drinks being quantified by eight specific methods according to a quantification protocol. If it was not possible to quantify a food or drink by one method a subsequent method was used.

The methods used in this survey to quantify portion size are described in Appendix 1 of "A short review of dietary assessment methods used in National and Scottish Research Studies" (<http://www.food.gov.uk/scotland/dietarytargetsscotland/>)

Coding data entry and analysis of food diaries. The field workers coded and entered the data collected in the field diaries using the computer programme, Weighed Intake Software Package- Data Entry System (WISP-DES) version 1.25C (Tinuviel Software, Warrington, UK). The quality control of the food data entry was a priority. Nutritionists at each centre reviewed 1 in 8 diaries and in the Republic of Ireland on a line- by- line basis and in the North, every diary was checked in this way.

Food composition database. The food composition database used was McCance and Widdowson edition 5 (Holland et al., 1991) and all nine supplements. In addition, one thousand and ten new food codes (including 148 nutritional supplements) were created and added to the existing database to include generic Irish products, new products on the market,

dietary supplements and specific brand codes. Nutritional data for the new food codes were obtained from manufacturers and from direct analysis of recipe dishes.

Anthropometric Measurements. The following anthropometric measurements were made: weight height, waist and hip circumferences and body composition using bioelectrical impedance. Body mass index was derived from the height and weight measurements.

Questionnaires. In addition to the food diary, 6 questionnaires were also used in the survey. They were:

- Health, Lifestyle and Socio-demographic Questionnaire. This was used to assess the influence of social and lifestyle factors on food choice and nutrient intake.
- Physical Activity Questionnaire developed by the Institute of Public Health, University of Cambridge). This was used to provide an estimate of the energy cost of self reported physical activity using an activity metabolic equivalent (MET) index by assessing a multiple of resting metabolic rate (MET score) to each activity.
- The Dutch Eating Behaviour Questionnaire. This was included to identify possible mis-reporters (see Section 1.2.3.). This is a short questionnaire designed to measure the eating behaviour scales: restraint, emotional and external eating.
- Attitudinal Questionnaire. This was designed to assess attitudes to diet and health.
- Meat Questionnaire. This was included to assess the participants understanding of “red meat”, meat food choices and cooking practices.
- Evaluation Questionnaire. This was used to assess reasons for participation and how the respondents felt about participation.

Ability to monitor the Scottish Dietary Targets

- This methodology provides a detailed model of assessing dietary intake and would provide the information required.
- Too detailed (and expensive) to be carried out at regular intervals, required for monitoring the targets over time.

A brief summary of the major findings of this survey is listed in **Appendix 3**.

Section 2 National Health Surveys

These are surveys in which the primary focus is health assessment. However each contains components that provide limited dietary information.

2.1 Scottish Health Survey

<http://www.show.scot.nhs.uk/scottishhealthsurvey/>

The Scottish Health Survey (SHS) programme reports normally every three years, the first survey was 1995, the second 1998 and the 2003 ongoing. It is a significant contributor to monitoring the health of the Scottish population in respect of national health priorities. The survey aims: to monitor trends in the population's health over time, to identify and measure risk factors associated with particular health conditions; to look at the differences between regions and subgroups of the population; to monitor progress towards health and dietary targets and to make comparisons with the Health Survey England.

The Survey covers a nationally representative sample of the population of Scotland between the ages of and 74 years (approx. 13 000). The survey is based on a 'stratified multi-stage random sample' of individuals in private households. Members of each household were interviewed and their medical information/measures collected by a nurse. The information collected includes:

- demographic, socio-economic and other background details for analysis purposes
- general health, long standing illness and acute sickness
- diagnosis, treatment and family history of cardiovascular disease
- respiratory symptoms and asthma
- physical activity, exercise, eating habits, smoking and drinking
- measures of height, weight, blood sample (lipids and anti-oxidants), lung function
- use of health services

The *eating habits module* was developed for the 1995 SHS and collected limited dietary information via a food list. The questionnaire was changed for the 1998 survey. For the current 2003 survey the *eating habits module* is based on the original 1995 questionnaire. This provides frequency of consumption of the following food items: bread, cereals, starchy foods [potato, pasta, rice], chips, red meat, poultry, processed meat products, white fish, oil-rich fish, full fat cheese, energy dense foods [ice cream, biscuits, cakes, pastries], sugared soft drinks. The types of the following foods are asked: bread, spread used on bread, milk and cereals. Assessing the quantity of the foods is limited to: the number of slices of bread, number of cakes and biscuits. The use of salt added to food is asked. In addition the 2003 survey includes a comprehensive questionnaire about fruit and vegetable consumption (from Health Survey England). This provides a detailed assessment of the quantity and type of fruits and vegetables consumed on the previous day (recall method).

The 1995 SHS eating habits module was evaluated by reference to the food frequency questionnaire used in the 1995 Glasgow – MONICA survey (Bolton-Smith et al., 1991). In this study 1085 adults aged 25-64 years completed both the Glasgow MONICA food frequency questionnaire and the dietary questions used in the 1995 SHS (referred to in the publication as the **Dietary Targets Monitor**) (Lean et al., 2003). The Dietary Targets Monitor reported a lower frequency of consumption of fruit and vegetables and starchy foods than reported in the MONICA FFQ. To enable the analysis assumptions had to be made with regard to portions sizes for foods in the Dietary Targets Monitor (calibration formulas are given). There were difficulties in extrapolating the dietary information to assess nutrient based target (total fat, saturated fat) due to the limited scope of the Dietary Targets Monitor.

In summary the paper concludes the Dietary Target Monitor provided dietary information that, with calibration, could be used to monitor some of the Scottish Dietary Target (oil-rich fish, starchy foods and fruit and vegetables) in a large population (minimum 1000) of adults. However it was not adequate for measuring the nutrient based targets of fat and saturated fat or for monitoring in smaller sub groups.

Ability to monitor the Scottish Dietary Targets

- Data measures achievement of fruit and vegetable targets
- To monitor the target for bread, breakfast cereals, complex carbohydrate and oil-rich fish portion sizes would need to be assumed
- Unable to measure nutrient-based targets
- Linkage to health outcomes and confounders
- This survey provides a suitable framework to which new dietary assessment tools may be added for the purpose of monitoring the Scottish Dietary Targets.

2.2 Health and Health Behaviour of Scottish School children

<http://www.hbsc.org/>

This is an international, multi-centre and cross sectional survey. It is a World Health Organisation (WHO) collaborative study carried out every 4 years. As time has progressed more countries have joined the survey and in 2002, 36 countries participated in the regions of Europe, Canada and USA.

The study aims to gain new insight into, and increase our understanding of young people's (age 11-15 years) health and well being, health behaviours and their social context. In addition it aims to inform and influence health promotion and health education policy and practice at national and international levels.

Questionnaires are the instrument for the collection of data, which takes place in the school classroom. Most questions are pre-categorised and the questionnaires have been added to over time. Core areas covered include: demographic (social environment), health related behaviours (smoking, alcohol, diet, physical activity, dental, sexual health), psychosocial health (self assessed health, confidence, peer relations, relationship with parents, perceptions of school). Dietary data is a very limited food list: fruit, vegetables, sugared drinks, sweets, crisps, chips, cakes, processed meat, bread, milk (type of), coffee. Dietary trends in Scottish schoolchildren in the 1990s have been reported using this data (Inchley et al., 2001).

Ability to monitor the Scottish Dietary Targets

- Data provides information on previous day food consumption but no quantities
- Unable to assess food based or nutrient-based targets
- Limited to adolescents

2.3 Health Education Population Survey (HEPS)

This survey began in 1996, and is carried out annually (with two waves at 6 month intervals). The sample of adults from the two waves is combined to provide an annual nationally representative sample for analysis. The total (combined) sample size in 2001 and 2002 was 175 (response rate 71%) and 1742 (response rate 72%) respectively. The principle aim is to collect the data required to monitor progress towards achieving the aims of NHS Scotland's work in terms of: increasing public awareness of health-related risk factors; influencing health related knowledge and attitudes and facilitating behaviour change to reduce risk. The indicators presented concern knowledge, attitudes and behaviour/health status of adults. Changes in behaviour are also a focus with questions around motivation and barriers to change.

The questionnaire is administered by computer assisted personal interviewing (CAPI) in respondents homes and includes a self-completion section for mental health, sexual health and drug use. The survey questions have changed over time and cover the following topic areas: attitudes towards own health, physical activity, diet, smoking, alcohol, mental health, oral health, drug use, and sexual health. Dietary questions are basic food frequency over a week with a limited number of foods including fruits and vegetables. It is possible to provide basic descriptive statistics on the food frequency split by age group. In addition questions are asked with regard to changes made to the diet over the past year, motivation and barriers to change.

2.4 The Health Survey for England (HSE)

This is a yearly survey commissioned by the Department of Health and is designed to monitor health trends in England.

The principle aims of the survey are:

- to provide annual data about the nation's health
- to estimate the proportion with specific health conditions
- to estimate the prevalence of risk factors associated with these conditions
- to examine differences between population subgroups
- to assess the frequency with which combinations of risk factors occur
- to monitor progress towards selected health targets
- (from 1995) to measure the height of children (aged two and over) at different ages. This aspect of the survey replaced the National Study of Health and Growth.

Dietary Aspects of the HSE

This survey focuses on different health issues each year. In the 1990s the survey focussed on cardiovascular disease and associated risk factors and as such a dietary questionnaire based on the DINE questionnaire (Roe et al.1994), designed to assess fat and fibre intake, was included. More recently, in 2000 the HSE focussed on older people and social inclusion and as such it contained dietary questions relating to the dietary habits of the elderly in care homes. Since 2000 a fruit and vegetable questionnaire has been included as a core component of the HSE with the aim of obtaining annual trend data. This fruit and vegetable questionnaire (or module) asks about fruit and vegetable consumption in the previous 24 hours and also attempts to quantify portion size, e.g. salad is quantified in bowlfuls and vegetables as number of tablespoons. Participants are then asked to estimate if their intake in the past 24 hours was representative of their usual intake.

With a view to monitoring salt intake, the HSE has carried out a feasibility study using spot samples by validating with 24-hour urine. This work is currently being analysed and a decision will be made whether or not to include spot urine sample in time for the 2004 HSE.

Ability of the HSE methodology to monitor the Scottish Dietary Targets

This survey only contains core questions relating to fruit and vegetable intake. Other dietary questions may be included depending on the annual focus of the Survey. As such, the dietary aspects of the HSE do not provide a suitable model for monitoring the entire range of Scottish Dietary Targets. However, the HSE core questions on fruit and vegetables have now been included in the Scottish Health Survey and this may provide a method by which trends in fruit and vegetable intake may be monitored within Scotland. Depending on the outcome of the spot urine validation study, spot urines may be considered as a method for monitoring salt intakes in Scotland.

2.5 The Welsh Health Survey (WHS)

Two health surveys have already been completed in Wales, one in 1995 and one in 1998. The 1998 WHS Report is available at the following web site address: <http://www.wales.gov.uk> - go to **subject index, health, publications then surveys**. A copy of the 1998 survey database is available through the ESRC data archive. The WHS relies on a self-completion questionnaire and, as such, it reflects people's own understanding of their health rather than a clinical assessment of their medical condition.

Fieldwork for a new survey will begin in October 2003 and will run for two years.

Dietary aspects of the WHS

The 1998 Survey questionnaire contained four dietary questions relating to the frequency of consumption of potatoes (not fried), green vegetables or salad, fresh citrus fruit and other fresh fruit. A new and expanded fruit and vegetable section, designed to monitor the number of portions consumed daily, has been developed for the 2003 survey with the aim of gauging to what extent fruit and vegetable guidelines are being met within Wales. In this new fruit and vegetable section the question on potatoes has been dropped, while questions on the number tablespoons of vegetables, pulses and vegetables in composite dishes have been included. Questions about the number of portions of small, medium and large fruits have been included as well as the number of tablespoons of frozen or tinned fruits, dried fruit, fruit in composite dishes and the number of glasses of fruit juice.

Additional questions on consumption of other foods were considered for inclusion in the 2003 survey but cognitive testing showed that this did not work well and so the additional dietary questions were dropped (personal communication, Cath Roberts, Health Statistics and Analysis. Welsh Assembly Government)

Ability of the WHS methodology to monitor the Scottish Dietary Targets

The WHS only contains questions relating to fruit and vegetable intake so, like the HSE, the methodology has a limited ability to monitor the Scottish dietary targets. The WHS fruit and vegetable section aims to elicit similar information to the HSE fruit and vegetable questionnaire, already incorporated into the Scottish Health Survey.

2.6. Longitudinal Survey of Scotland's Children

A proposal to carry out a longitudinal survey of several cohorts of children, including one at birth, is currently under consideration. Although the project will primarily support the monitoring and evaluation of the Scottish Executive's early years policies it is envisaged that it will also provide a database for research on children and young people. It is possible that dietary information could be collected in this survey given the interest in food and health, and the link with education.

More details on the survey will be prepared for meeting 3 of the Working Group on Monitoring Scottish Dietary Targets which will take place on 30th October.

Section 3 Scottish Health and Lifestyle Surveys carried out by Local Health Boards

Health and lifestyle surveys gather information on the health-related knowledge, attitudes and behaviours of the population. They also contain limited dietary components.

The 15 Health Boards in Scotland carry out periodic health and lifestyle surveys of a sample of their populations. Many of the recent surveys incorporate questions devised by the Scottish Needs Assessment Programme (SNAP). These questions were developed to make available a standardised set of questions for use by all Health Boards within their individual surveys. Some of these questions are relevant to the SDAP targets (fish, but not oil-rich fish; bread, wholemeal, white and brown; fruit, vegetables).

Latest questionnaires used by each of the Scottish Health Boards to conduct their Health and Lifestyle surveys were collected. They were then examined to ascertain whether it would be possible to use the data collected in these surveys to measure progress towards the Scottish Dietary Targets (Scottish Office 1996).

The findings are as follows:

1. Vegetables and Fruit: Consumption to increase to >400g / 5 portions per day
All questionnaires had questions on fruit and vegetable consumption. All asked about portions of fruit and vegetables separately, either asking the respondent to write how many portions they consume on average per day or asking them to tick the appropriate box. Most excluded potatoes as a vegetable, and most gave examples of a portion.
2. Bread: To increase by 45% from 106g to 154g per day, mainly using wholemeal and brown bread
Bread was mentioned in each questionnaire but in about half of the questionnaires it was combined with other starchy carbohydrates. Where it did stand alone there were various ways of classifying it, e.g. all types combined; white & wholemeal; white/brown & wholemeal; white, brown & wholemeal. Intake was mainly requested as frequency but one questionnaire asked how many slices of bread / rolls were consumed daily.
3. Breakfast Cereal: Consumption to double from 17g to 34g per day
Breakfast cereal was only included in questionnaires from 6 areas, usually as a frequency with one as times per week and another only at breakfast.
4. Total Fat: <35% Energy
It would not be possible to measure this target on any of the questionnaires.
5. SFAs: <11% Energy
It would not be possible to measure this target on any of the questionnaires.

6. Sodium: 100mmol
It would not be possible to measure this target on any of the questionnaires.
7. NME Sugars: Adults not to Increase; children <10% energy
It would not be possible to measure this target on any of the questionnaires.
8. Complex Carbohydrates: Increase by 25% from 124g to 155g
It would not be possible to measure this target on any of the questionnaires.
9. White Fish: Consumption to be maintained
Most questionnaires ask about white fish consumption, in most cases this is asked separately from oil-rich fish, as frequency or portions per week, although in a couple of instances it asked combined. Tuna is occasionally grouped in white fish examples.
10. Oil-rich Fish: Consumption to double from 44g to 88 g per week
More questionnaires ask about oil-rich fish consumption than white fish consumption. There were inconsistencies in grouping tuna fish- some group it with white fish, some with oil-rich and some have excluded it altogether.
11. Breastfeeding: At 6 weeks should increase from 30% to 50%
Only 2 of the questionnaires include breastfeeding, one asking if you have had a baby in the last 3 years and if so did you breastfeed and the other asking if you or your partner have had a baby in the last year, if so was your baby breastfed and if so for how long. Another questionnaire has questions on pregnancy but no post-natal questions.

In summary the questionnaires used by Grampian and Shetland were the only ones able assess all of the 5 food based targets (fruit and vegetables, bread, breakfast cereals, white fish and oil-rich fish) as well as the breast feeding target. None of the questionnaires provided enough information on the total diet and quantities of foods eaten to assess fat, saturated fat, non-milk extrinsic sugars or complex carbohydrates.

A summary table for this section is included in Appendix 4.

Section 4 Research Studies

Ongoing and recently published Scottish studies containing a dietary assessment component, and with subject numbers of 100 or more are summarised in Appendix 4. Collection of data was constrained by the time-scale of this project and the authors appreciate that others may exist which could have been added.

Section 5 Market Research relevant to dietary monitoring

A number of approaches were taken to identify market research relevant to dietary monitoring. These included contacting market research companies and trade organisations and looking at their websites. The following were contacted: Taylor Nelson (who have already provided information for the NDNS), Data Monitor, the Seafish Industry, the Meat and Livestock Commission, Quality Meat Scotland and the Food and Drink Federation.

5.1 Taylor Nelson

Taylor Nelson Sofres (now rebranded as simply TNS) considers itself one of the world's leading market information groups. TNS has a number of different panels that are of interest. The primary distinction between them is whether they are Purchasing or Consumer Usage Panels. The consumer usage panels are probably likely to be most useful for monitoring as they measure individual consumption rather than household purchase so that the issue of wastage and non-specific data becomes irrelevant.

TNS Superpanel is GB's leading continuous consumer panel and provides purchasing information on all main grocery markets. The panel was launched in 1991 and now consists of 15,000 households (about 1350 in Scotland) which are demographically and regionally balanced to offer a representative picture of the GB marketplace. The households record all their purchases for in home consumption. This includes most foods including both packaged grocery and fresh foods Data is collected twice weekly via electronic terminals in the home, with purchases being recorded via home-scanning technology. Details for non bar-coded fresh food products are collected by answering specific on-screen questions. A wide range of standard and special analysis can be carried out on this data, including Scotland only analysis

<http://www.tns Sofres.com/superpanel/default.asp?country=uk>

(Chris Lamb, Meat and Livestock Commission, personal communication, Jenny Kemp, TNS personal communication)

A recently released FSA research report (Elliot et al., 2003) looked at the feasibility of using the TNS Superpanel data for surveillance and post marketing monitoring of the potential health effects of novel (including GM) foods. As this was a national study this was reported in Section 1.

Family Food Panel is the UK's largest and only continuous monitor of food and drink consumption. The TNS Family Food Panel Complete helps companies and trade organisations understand how consumers prepare and consume food both in and out of home. The database is perfectly complementary to purchase panel data as it tracks products to their final consumer. This is a panel of 11,000 individuals in 4,200 households who record all food and drink consumed (i.e. in-home consumption, out of home consumption, and carried out of home consumption – e.g. lunchbox) for two weeks every six months. Whilst this used to only be in-home, it has now been merged with the out of home service to yield "Family Food Panel Complete".

The individuals are a representative sample of individuals aged from 'cradle to grave' (0 - 65+). The survey also records the weight and height of respondents, which can be useful when looking at BMI and obesity. Lifestyle and attitude questions can also be linked to show if people's diets are reflecting what their attitudes suggest.

In all cases the sample size quoted is for a GB sample. The Scottish population equates to approximately 9% of GB and this can be applied to determine the sample size. So, for example, FFP would achieve a sample of 1,000 respondents every 6 months, in around 400 households.

The attached link may be useful in this context.

Family Food Panel <<http://intranet.tnsfres.com/uk/consumer/ffp.htm>>

5.2 Data Monitor

Provide reports on trends in consumption of food categories e.g. bakery and cereals, dairy food, savoury snacks for 51 countries.

The UK country report will incorporate Scottish data, but data is not separated for reporting. (personal communication from Data Monitor)

5.3 Seafish Industry

Household consumption data is collected by TNS and Seafish buy into this information according to particular needs. The data they receive from TNS on fish consumption in Scotland includes the Borders (as data is arranged by TV region) so they were not sure if Scotland could be separated from English Borders.

(personal communication from Julie Graham, Seafish)

5.4 Meat and Livestock Commission

They also purchase information from TNS using both Superpanel and Family Food Panel Complete.

The Meat and Livestock Commission also report that TNS have recently done some special analysis on BMI and this shows that they are able to look at the eating patterns and attitudes of the overweight and obese.

In addition, a company called Millward Brown carry out "tracking studies" for a wide range of companies/brands on a tailor made basis. The MLC study, which has been running on meat for over 20 years includes questions such as "which of these are important in a healthy balanced diet?", "which of these are good for you?" and a range of other similar questions focussing on meat and its protein competitors

(Chris Lamb, personal communication)

5.5 Quality Meat Scotland

In conjunction with the MLC they have undertaken two pieces of research approximately 2 years ago. One looked at trends within the Scottish diet using data from the National Food Survey (NFS) and TNS. They comment that the TNS data is made available to a group called Family Marketing Consulting Group (FNCG) and that the data provided by FMCG was from a larger sample and also more detailed than that of the NFS but that the data showed many similarities. The study confirmed what we already know, i.e. that the diet of the Scots provides a higher proportion of fat and less fruit and vegetables than the rest of Great Britain. (Blades, 2003).

The other study they carried out was a composition survey of butchery products (Mathews et al., 2003). A range of products was purchased and analysed by Public Analysts. The data is more detailed and varied than that provided in standard tables of food composition and show that it is possible to get some relatively low fat contents in what are traditionally regarded as high fat products e.g. 7.2% fat in a Scotch Pie.

(Personal communication from Margaret Stewart) This clearly has implications for the analysis of dietary intake.

5.6 Food and Drink Federation

The only data they have collected that may be relevant concerns salt in foods. There were two pieces of work carried out, one on salt levels in breakfast cereals and one on salt levels in sauces. These were surveys of the products, not surveys of dietary habits.

(Personal communication from Marion Owen)

5.7 Institute of Grocery Distribution

This group have produced a very comprehensive publication on Food Consumption in 2002, covering the various influences that determine food consumption and buying patterns. The majority of the food consumption data given is based on secondary sources such as the National Food Survey and the only data reported for Scotland is for vegetable consumption and is a summary of what we know from the NFS.

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APPENDIX 1: UK Household Energy and Nutrient Intakes

Table 1: Comparison of Energy and Selected Nutrients - 2000/2001 and 2001/2002

	Excluding contributions from sweets, soft drinks or alcoholic drinks		Including contributions from sweets, soft drinks or alcoholic drinks
	NFS (adjusted) 2000/2001	EFS 2001/2002	EFS
	Per person per day		
Energy (kcal)	1978	1895	2086
Energy (MJ)	8.3	8.0	8.8
Protein (g)	72.5	70.0	71.2
Total Fat (g)	82	82	86
As % food energy	37.2	39.1	36.9
Carbohydrate (g)	254	233	262
Non starch Polysaccharide (g)	14.4	13.1	13.3
Calcium (mg)	933	896	931
Iron (mg)	11.7	10.5	11.0
Folate (ug)	281	250	256
Vitamin C	65	60	67
Vitamin A	836	785	803
Adapted from the April 2003 Interim Report http://statistics.defra.gov.uk/esg/statnot/efsuk.pdf			

Table 2: Comparison of Estimates of Average Household Consumption of Selected Foods– 2000/2001 and 2001/2002

Food Group	NFS (adjusted) 2000/2001	EFS 2001/2002	Absolute year on year difference	Standard error due to sampling
	g per person per week except where specified otherwise			
Milk and Cream (ml)	2156	2012	-144	26
Cheese	110	112	2	2
Meat & Meat Products	776	803	27	11
Fresh Potatoes	719	645	-73	12
Processed Vegetables	667	620	-47	9
Adapted from the April 2003 Interim Report http://statistics.defra.gov.uk/esg/statnot/efsuk.pdf				

APPENDIX 2: Surveillance and Post-Market Monitoring of Potential Health Effects of Novel (including GM) Foods: Feasibility Study Department of Epidemiology and Public Health, Faculty of Medicine, Imperial College, London.

Recommendations

1. FSA are encouraged to set up a system similar to the Nutrition Coordinating Centre (NCC) database in the USA for the purposes of maintaining a constantly updated database of nutritional information relating to food products currently available in this country. This system should include a) both nutrient and (where possible) product ingredient information; b) a direct link between barcode information and product names and nutrient data; c) liaison with the food manufacturers to ensure that the necessary ingredient information is provided, and to the required format; d) a direct link with manufacturers/retailers so that their ingredient information can be fed directly into the database; e) annual updates of existing product information so that changes in nutrient (and ingredient) composition can be tracked
2. FSA should work with TNS to initiate suggested improvements to their database (identified in section 9.4) to make it suitable for long-term nutritional surveillance.
3. FSA are encouraged to set up a nutritional surveillance system based on the TNS Super Panel (or equivalent) to provide a continuous record of foods entering (and leaving) the market place.
4. FSA should approach TNS about recording NHS number of Panel members and obtaining appropriate consents (and possibly on-going questionnaire data) to allow the health experience of Panel members to be followed up longitudinally through routine NHS records.
5. Serious consideration should be given to replacing the NFS with a continuous monitoring system using barcoded household purchase data, run by TNS (or similar), provided the enhancements identified could be implemented. This would allow estimation of national dietary trends and other information currently provided by the NFS, and also provides the basis for an on-going nutritional and health surveillance system.

For the executive summary and full report see:

<http://www.foodstandards.gov.uk/multimedia/webpage/feasibility>

APPENDIX 3: Key findings of the north/south Ireland food consumption survey

1. The trend towards obesity in Ireland has increased significantly since 1990.
2. Physical activity levels, particularly in women, are low.
3. Energy intakes have not changed significantly over the previous 10 years. (The possibility of under reporting was recognised.)
4. The percentage of energy (excluding alcohol) from fat is higher than recommended while the percentage of energy from carbohydrate is lower.
5. More than 3 out of 4 adults do not reach the recommendation for dietary fibre.
6. Intakes of most vitamins and minerals are adequate within the population but women were more likely to have inadequate intakes than men. Significant prevalence of inadequacies exists for iron, calcium and folate in women. A substantial proportion of men and women had low vitamin D intakes.
7. There was little evidence of excessive intakes of vitamins and minerals.
8. One in three women and one in six men are regular supplement users.
9. A significant proportion of individuals (especially women) are trying to change their diet and there is a high level of awareness among the population to increase physical activity levels.

APPENDIX 4: Summary Tables

Final 1 October 2003

Note re methodology. More details on the methodologies described are given in the Briefing Paper on dietary assessment methods.

Summary tables for Section 1

National Food and Dietary Surveys

Summary tables for Section 2 **National Food and Dietary Surveys**

Survey description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Checklist
Expenditure and Food Survey This is a household survey based on food purchase data.	UK	Annually 2001 onwards (Previously the National Food Survey ran from 1940-2000)	Households and individuals aged 7 years and over	Details of methodology, including details of Scottish sample, to be published in March 2004.	Household food purchases (with till receipts) recorded in individual two-week diaries for each household member aged 7 years of age and over.	Food frequencies <ul style="list-style-type: none"> ✓ Food quantities ✓ Macronutrients ✓ Micronutrients Time of day <ul style="list-style-type: none"> ✓ Food group

Summary tables for Section 2 contd. **National Food and Dietary Surveys**

National Diet and Nutrition Surveys (NDNS) and Low Income Diet and Nutrition Survey. The principle aim of these surveys is to provide detailed quantitative information on the current dietary behaviour, nutritional status and oral health of various subgroups as detailed below.

Survey description	Location	Date	Age group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Checklist
NDNS adults/as above for adults living in private households in Great Britain	GB	2000/2001	19-64 Males and females	123 weighed food diaries	Weighed Food Record 7 days + interview on usual dietary behaviour (n=191)	<ul style="list-style-type: none"> ✓ Food frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group
NDNS young people/ aims above for young people living in private households in Great Britain	GB	1997	4-18 Males and females	137 weighed food diaries	Weighed Food Record 7 days	<ul style="list-style-type: none"> ✓ Food frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group
NDNS older people/ aims above for people aged 65 years and over (older adults) both in the community and in institutions	GB	1994/1995	65-85+ Males and females	102 (free- living) but results in report combined with North of England	Weighed Food Record 4 days Weighting factors used to correct for sex, age, people living alone and different co- operation rates.	<ul style="list-style-type: none"> ✓ Food frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group

Summary tables for Section 1 contd. **National Food and Dietary Surveys**

Survey description	Location	Date	Age group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Checklist
NDNS children aged 1½ to 4½/ aims above for preschool children living in private households	GB	1992/1993	1½ to 4½y Males and females	165	4-day weighed record (weighted to give estimate for 7 days)	<ul style="list-style-type: none"> ✓ Food Frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group
Low Income and Diet Survey (LIDNS)/ aims to provide detailed quantitative information on the food and nutrient intakes, sources of nutrients and nutritional status of low-income groups, in relation to their socio-economic and deprivation status.	UK	Feasibility study 2002, Main study 2003-2004 Report due 2006	2 years + Males and females	Minimum of 400	Multiple pass 24 hour recalls on 4 non-consecutive days (including weekends and selected to reflect benefit cycles)	<ul style="list-style-type: none"> ✓ Food Frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group.

Summary tables for Section 1 contd. **National Food and Dietary Surveys**

Survey description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Checklist
TNS Superpanel Feasibility study to determine if the TNS superpanel data could be used for nutritional surveillance.	GB Nationally representative sample of households	1991-2000	All as based on households	2865	Households record all their purchases for in home consumption-includes most foods including both packaged grocery and fresh foods Data is collected twice weekly via electronic terminals in the home, with purchases being recorded via home-scanning technology Product description data for over 39,000 food items was converted into estimates of energy and nutrient content.	Food Frequencies <ul style="list-style-type: none"> ✓ Food quantities ✓ Macronutrients ✓ Micronutrients Time of day <ul style="list-style-type: none"> ✓ Food group for in-house consumption - records approximately 70% of intake

Study Description	Location	Date	Age Group/ Gender/ Status	Number surveyed	Methodology (for details see 2.5)	Checklist
North /South Ireland Food Consumption Study	Northern Ireland and the Republic of Ireland	1997-1999	18-64 Males and Females (pregnant and lactating women excluded)	662 men and 717 women completed food diary-response rate of 63%	7 day non weighed diary with additional questionnaires used to complement and interpret the food diary data. (No blood sampling)	<ul style="list-style-type: none"> ✓ Food Frequencies ✓ Food quantities ✓ Macronutrients ✓ Micronutrients ✓ Time of day ✓ Food group

Summary tables for Section 2

National Health Surveys

Summary tables for Section 2 **National Health Surveys**

Scottish Health Survey

Survey Description	Location	Date	Age Group/ Gender/	Scottish sample (number of respondents)	Methodology	Checklist
<p>Scottish National, cross sectional study.</p> <p>To monitor health in Scotland and measure progress towards targets for health.</p> <p>http://www.show.scot.nhs.uk/scottishhealthsurvey/</p>	Scotland - nationally representative sample	1995 1998 2003 (on - going)	Adults 16-64 (74 in 1998 and 2003) Children 2-15 (in 1998 and 2003)	7932 (1995) 9,047 (1998 adults) 3893 (1998 children)	<p>food list - Eating habits module 2003 survey</p> <p>frequency of consumption of – bread, cereals, milk, spread (type)</p> <p>starchy foods, meat (red, poultry, processed), fish (white, oily),cheese, energy dense snacks, drinks</p> <p>fruit and vegetables (type and quantity)</p> <p>Other data collected: lifestyle behaviours, demographic, current health status</p>	<p>✓ Food frequencies</p> <p>Food quantities</p> <p>Macronutrients</p> <p>Micronutrients</p> <p>Time of day</p> <p>✓ Food group.</p> <p>Multiple factors - allows confounding and interactions to be considered e.g. physical activity/diet/ social.</p>

Summary tables for Section 2 contd. **National Health Surveys**

Health and Health Behaviour of Scottish School children

Survey Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Checklist
<p>Scottish branch of international study based at Research Unit in Health and Behavioural Change, University of Edinburgh.</p> <p>http://www.hbsc.org/</p>	<p>Scotland : Stratified by region</p>	<p>1986 1990 1994 1998 2002</p>	<p>11, 13, 15 years old Males and females</p>	<p>In 1998 total n=5632</p> <p>Numbers; age 11 = 2092 age 13 = 1813 age 15 = 1727</p> <p>Sample unit is school classes (primary 7, secondary 2 and 4)</p> <p>Stratified by region</p>	<p>Food List :</p> <p>Dietary behaviours questions : fruit, vegetables, sugared drinks, sweets, crisps, chips, cakes, processed meat, bread, milk (type of), coffee</p>	<p>✓ Food Frequencies Food quantities Macronutrients Micronutrients Time of day ✓ Food group.</p>

Summary tables for Section 2. **National Health Surveys**

Health Education Population Survey (HEPS)

Survey Description	Location	Date	Age group/ gender	Scottish sample (number of respondents)	Methodology	Comment
<p>Cross sectional – Postal Address File as sample frame</p> <p>To monitor progress towards achieving lifestyle changes in the population. Aims to assess health –related knowledge, attitudes and behaviours and health status.</p> <p>To inform planning and development of future health promotion initiatives</p>	National Scottish sample	Twice per year in March and September 1996 -2002	Adults 16-74	1742 in year 2002 Male 856 Female 886	<p>Computer Assisted Interviewing (CAPI) in respondents home.</p> <p>Frequency of consumption of fruit, salad and vegetables the previous day and other foods over a week.</p> <p>Knowledge of recommended intake for fruit, salad and vegetables, changes made to the diet, motivations and barriers to change.</p> <p>Other data collected: self assessed health, breast feeding, physical activity, alcohol, smoking, oral health, accidents and safety, social capital, sexual health, mental health, drugs</p>	<p>Fruit and vegetable intake is used as a proxy for a generally healthy diet.</p> <p>Commissioned by NHS Scotland</p> <p>http://www.hebs.scot.nhs.uk/</p>

Summary tables for Section 2. **National Health Surveys**

Study Description	Location	Date	Age Group/ Gender/ Status	Number surveyed (England)	Dietary Methodology	Reference
Health Survey for England Annual, large scale health survey of English population	England	Annual-began in 1990	Aged 2 and over	Numbers differ depending on different population samples and measurements e.g. in 2000 around 1000 elderly care home residents seen by nurse- (not clear how many completed food habits questionnaire	Only fruit and vegetable questions core to the survey since 2000. Depending on the focus of the survey in a particular year other dietary questions may be added. E.g. Focus in the early 1990s was on CVD so a fat and fibre questionnaire was included. In 2000 a dietary questionnaire targeting the eating habits of the elderly was included.	http://www.doh.gov.uk/public/hse01.htm http://www.data-archive.ac.uk/findingData/hseAbstract.asp

Summary tables for Section 2. **National Health Surveys**

Study Description	Location	Date	Age Group/ Gender/ Status	Number surveyed (Wales)	Dietary Methodology	Reference
<p>Welsh Health Survey</p> <p>Methodology: Self completion questionnaire</p>	Wales	<p>First survey 1995</p> <p>Second survey 1998</p> <p>New survey about to begin- Oct 2003</p>	Adults aged 18 and over	<p>1998 survey: Around 30,000 individuals returned completed questionnaires</p> <p>Overall response rate -61%</p> <p>A separate study showed that non-responders were more likely to be younger, female and reported themselves to be in better health than those who returned their questionnaires.</p>	<p>1998 survey only contained 4 questionas on the frequency of consumption of fruit and vegetables</p> <p>The fruit and vegetables section has been expanded to obtain quantitative information about portion sizes so that adherence to guidelines may be monitored.</p> <p>Additional food sections were considered but not adopted.</p>	<p>http://www.wales.gov.uk - go to subject index, health, publications and then surveys.)</p>

Summary tables for Section 3

Scottish Health and Lifestyle Surveys

Summary table for Section 4. Scottish Health and Lifestyle Surveys: Eating habits relating to the Scottish Diet Targets

	Age Group	F & V	Bread	Breakfast Cereal		White Fish	Oily Fish	Total Fat	SFA	Na	NME Sugar	Complex CHO
Argyll & Clyde	16+	Yes, as portions, e.g. given	No, with other starchy CHO	No	Argyll & Clyde	No, all fish freq	No, all fish freq	No	No	No	No	No
Ayrshire & Arran 11-16(17)	11-16 (17)	Yes, as portions, e.g. given, includes potatoes	Yes, freq all types	Yes, freq	Ayrshire & Arran 11-16(17)	No	No	No	No	No	No	No
Ayrshire & Arran	16+	Yes, as portions, e.g. given, includes potatoes	Yes, freq (inc >1pd) white & w/meal	No	Ayrshire & Arran	No	Yes, freq (inc >1pd), not tuna	No	No	No	No	No
Borders		No questionnaire received			Borders	No questionnaire received						
Dumfries & Galloway	18+	Yes, as portions (range 0,1-3, 4-5, 6+), e.g. given	No, with other starchy CHO	No	Dumfries & Galloway	No	Yes, freq	No	No	No	No	No
Fife	16+	Yes, as portions, e.g. not given	Yes, freq all types & usual type	Yes, freq	Fife	Yes, freq	Yes, freq, inc tuna	No	No	No	No	No
Forth Valley	16-75	Yes, as portions, e.g. not given	Yes, freq white/brown & w/meal/gran	No	Forth Valley	Yes, freq	Yes, freq, inc tuna	No	No	No	No	No
Grampian (Youth)	S1-S6	No questionnaire received			Grampian (Youth)	No questionnaire received						
Grampian		Yes, as portions, e.g. not given	Yes, freq white, brown & w/meal	Yes, freq	Grampian	Yes, freq	Yes, freq	No	No	No	No	No
Greater Glasgow		Yes, as portions, e.g. given	Yes, all types as slices of bread/rolls	Yes, times per week	Greater Glasgow	No	Yes, inc tuna, x per wk	No	No	No	No	No
Highland	18+	Yes, as portions (range <1 - >5), e.g. given	No, with other starchy CHO	No	Highland	Yes, freq, inc tuna	Yes, freq	No	No	No	No	No
Lanarkshire	16+	Yes, as portions (range 0 - >5), e.g. not given	No, with other starchy CHO	Yes, only at b'fast	Lanarkshire	Yes, freq	Yes, freq, inc tuna	No	No	No	No	No
Lothian	16+	Yes, as portions (range 0 - >5), e.g. given	No, with other starchy CHO	Yes, only at b'fast	Lothian	Yes, freq	Yes, freq, inc tuna	No	No	No	No	No
Orkney	S1&S2, S3-S6, 16-74	Yes, as portions, e.g. not given	No, with other starchy CHO	Yes, freq	Orkney	Yes, as portions	Yes, as portions	No	No	No	No	No
Shetland	16+	Yes, as portions (range 0 - >5), e.g. given	Yes, freq white, brown & w/meal	Yes	Shetland	Yes, as portions	Yes, as portions	No	No	No	No	No

Tayside	16-74	Yes, as portions (range 0 - >2), e.g. given	Yes, freq white, brown & w/meal	No	Tayside	No, all fish freq	No, all fish freq	No	No	No	No	No
Western Isles	18+	Yes, as portions (range <1 - >5), e.g. given	No, with other starchy CHO	No	Western Isles	Yes, freq, inc tuna	Yes, freq	No	No	No	No	No

Summary tables for Section 4

Research Studies

Summary tables for Section 4 **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
WCRF Concordance Study University of Dundee	Tayside, Scotland	2001-2002 Cross-sectional surveys.2	18-70 Males and females	Questionnaire sent out to 2400 Valid Responses 851 (35%)	DALDI FFQ Developed specifically for the project which included areas specific to each of the guidelines in the WCRF 1997 report.	<i>Professor Annie Anderson or Marieke Vossenaar University of Dundee</i>
MIDSPAN Renfrew – Paisley Family Health Study University of Glasgow	Renfrew and Paisley, Scotland, UK	1996 (Data not published)	30-59 Males and females	2338 1040 Men 1298 Women	Cohort Study FFQ developed and validated by Yarnell et al 1983	<i>Professor Graham Watt, University of Glasgow</i>
The West of Scotland Twenty-07 Study MRC SPHSU, Glasgow	Central Clydeside Conurbation (CCC), Scotland, UK	1987-2007	15, 35 and 55 years at original cohort, followed up for 20 years Males and females	Initial Regional Sample ~ 3000 (CCC) Plus Initial Localities (Affluent and Deprived) Sample ~1500	Cohort Study Various FFQs with most being adapted from Yarnell et al 1983	<i>Professor Sally Macintyre, Mary-Kate Hannah, MRC Social and Public Health Sciences Unit, Glasgow</i>
SHARP Study MRC SPHSC Glasgow	Scotland, UK	2002-2003	Males and females old enough to be a tenant of a Housing Association	At least 600	For tenants moving into a housing association new build property Questions on daily portions of vegetables, fresh fruit and fruit juice.	<i>Contact Catherine Ferrill, MRC Social and Public Health Sciences Unit, Glasgow</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
The West of Scotland 11-16 and 16 ⁺ Studies MRC SPHSC Glasgow	Central Clydeside Conurbation (CCC), Scotland, UK	1994 - Date	Males and females aged 11 at original cohort	2586 at original cohort	Cohort Study Brief food list with times of day (13 foods highlighting F&V consumption) and brief FFQ (10 foods)	<i>Dr Helen Sweeting, MRC Social and Public Health Sciences Unit, Glasgow</i>
Food, Health and Shopping in Glasgow MRC SPHSC Glasgow	Shettleston, Glasgow, Scotland, UK	Sept 2001 Sept 2002	Males & females	600 (2001) 118 males 295 females (2002)	Cohort study evaluating the health impacts of a major food superstore Questionnaire on shopping habits, which includes questions on portions of fruit and vegetables consumed daily	<i>Dr Steven Cummins, MRC Social and Public Health Sciences Unit, Glasgow</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
Seaton Study of diet in pregnant women in Aberdeen to assess the influence of maternal diet on asthma and allergy in children. Study ongoing, began 1998	Aberdeen	Began in 1998. Study ongoing	Women of child bearing age and offspring	Recruitment through Aberdeen Maternity Hospital 2000 pregnant women 1200 offspring	In mothers SCG-MRC/FFQ used to collect data on maternal diet. Also, blood levels of Vitamin C, E and b carotene. In offspring postal questionnaire on infant feeding administered after birth . PS/FFQ administered to the offspring.	<i>Contact: Professor Anthony Seaton, University of Aberdeen. Dietary aspects: Dr Geraldine McNeill</i>
SOCCS Study of diet and colorectal cancer.	Across Scotland	2000-2005	Males and Females	2000 cases and 2000 the period 2000-2005	SCG-MRC/FFQ used to assess fatty acid intake and other nutrients.	<i>Prof. Harry Campbell, University of Edinburgh</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
<p>Diet & Pregnancy To determine the relationship between nutrient intake and various outcomes in relation to pregnancy, including fertility, spontaneous abortion, maternal health, birth weight, health of the baby and consequences for disease susceptibility in later life. Measurements of relevant maternal and offspring genotypes to investigate gene/nutrient interactions.</p>	Aberdeen	2000-2005	Women of childbearing age including, normal fertile women and women under going IVF treatment.	<p>Recruitment through Aberdeen Maternity Hospital. Measurements carried out prior to conception and in early, mid and late pregnancy?</p> <p>Currently 2000 women have been studied- 5000 expected by 2005</p>	<p>SCG-MRC/FFQ Plus a wide range of nutrients and metabolites also measured in body fluids and tissues. Current focus is on folate, other B vitamins and fatty acids.</p>	<p><i>Dr Paul Haggarty, Rowett Research Institute</i></p>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
MAVIS study. Study to investigate the influence of vitamin and mineral supplementation on infection	Grampian	Ongoing	Males and females aged 65 years or over.	Randomised control trial of 900 men and women aged over 65 years. Recruited through GP practices in Grampian.	NAQ used to assess nutritional risk of micronutrient deficiency at baseline.	<i>Dr Alison Avenell, HSRU, University of Aberdeen</i>
RECORD study Medical Research Council Randomised Evaluation of Calcium and or vitamin D in the secondary prevention of osteoporotic fractures.	UK wide study (1081 subjects in Scotland)	1999-2002 Trial due to report results in late spring 2004	Males and Females aged 70 or over	Patients aged 70 or over who have sustained a fracture likely to be related to osteoporosis during the previous two years were eligible for trial entry. 5292, UK wide, participants in total, with 1081 in Scotland . Recruitment data (including dietary data) collected March 1999-April 2002.	Ca & Vit D FFQ specifically directed at calcium intake, Vitamin D status and vitamin D exposure.	<i>Prof. Adrian Grant, HSRU, Aberdeen Nutrition components, Dr Alison Avenell also HSRU</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
Aberdeen Prospective Osteoporosis Screening Study (APOSS)	Aberdeen	1990- present	Women aged 45-54 years at baseline	5118, of which 1064 diets assessed at baseline. Includes perimenopausal, early and late menopausal women. At second visit, 3883 returned and 3239 diets obtained. Sample was randomly chosen from the Community Health Index.	APOSS/FFQ	<i>Prof David Reid, University of Aberdeen. Dietary aspects, Dr Helen MacDonald</i>
Mechanisms by which fruit and vegetables influence postmenopausal bone health : an RCT in a well-characterised population	Aberdeen	Began in 2003. 2 year intervention study ongoing	Postmenopausal women > 5 years past menopause and not on HRT	Recruitment: 260 in total (65 in each intervention arm). Women taken from APOSS. In upper half of dietary acidity (previously assessed by FFQ). Stratified according to APOE and VDR genotypes.	Non weighed record (Epic Food Diary/ McCance & Widdowson Food Composition)	<i>Dr. Helen MacDonald, University of Aberdeen</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
Case only study of genotype and phenotype, measures of folate and colorectal lesions	Grampian, Tayside and Fife	Ongoing	Males & Females aged 50-60	Recruitment ongoing during 2002-3 from individuals participating in the East & North of Scotland Faecal Occult Blood Screening Pilot found to have positive FOB test & with adenomatous polyp or colorectal cancer. 650 to be recruited from Grampian, Tayside and Fife	Dietary Questionnaire closely resembling the EPIC FFQ (developed by Prof David Foreman (Leeds)) Plus blood analysed for polymorphisms in a range of folate metabolising genes and for folate, B ₁₂ , homocysteine and riboflavin in all participants. Some data also on genetic and phenotypical measures of selenium metabolism.	<i>Linda Sharp, Amanda Cardy and Prof Julian Little, Department of Medicine & Therapeutics, University of Aberdeen</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
Case only study of interactions between diet, lifestyle and family history in breast cancer Part of an EU project taking place in 8 countries, in Milan UK locations include, Scotland and NE England	EU (including Scotland)	1999-2003 (ongoing)	Females under 40 years	Women diagnosed with breast cancer between UK sample 300 (Entire study, 3-5000)	SCG-MRC/FFQ (UK sample) Plus mouthwash DNA collected from UK participants to be analysed later for gene involved in nutrient metabolism	<i>Linda Sharp and Mark Taylor, Dept Medicine & Therapeutics, University of Aberdeen</i>
Identification of phenotypic correlates of human obesity: refining the obese genotype	Aberdeen	Ongoing	Males and Females 20-50, BMI 20-40	Recruitment through newspaper advertisement 150 subjects	7 day weighed intake	<i>Dr Leona O'Riley Rowett Research Institute</i>
Characterisation of the factors involved in the development of obesity	Aberdeen	Ongoing	Males and Females aged 2-6 years Any BMI	Recruitment through newspaper advert and nursery advert display 150 subjects	7 day weighed intake	<i>Dr Diane Jackson Rowett Research Institute</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	Contact
Eating patterns and activity levels	Glasgow & Edinburgh	1995-96	Males and females	N=100 Healthy controls	7-day unweighed intake	<i>Dr Sandra Drummond QMUC</i>
Weight loss during energy restriction and promotion of activity	Edinburgh	2003-4 Starting	20-60 Females	N=120	7-day baseline unweighed and 4-day follow-up. Cholesterol, LDL HDL, glucose insulin will be determined	<i>Dr Sandra Drummond QMUC</i>
Weight loss and its maintenance during high CHO for 3/12 and maintenance over 9/12	Edinburgh	2001-2003	20-50 Females	N=135 BMI>25	7-day baseline unweighed and 4-day follow-up	<i>Dr Sandra Drummond QMUC</i>
Current and future impact of malnutrition in Scottish children and adolescents: further analysis of the Scottish Health Survey. Analysis of interactions between obesity and potential explanatory variables (e.g. diet, activity). In addition it will explore potential co-morbidities for obesity	Scottish Health Survey Database	2002-2003	Male and Females Children 3-15 years Young people 16-24 years	Children 3892 Young people 927	Database of the Scottish Health Survey 1998 Limited food frequency questionnaire	<i>Julie Armstrong Glasgow Caledonian University</i>

Summary tables for Section 4 contd. **On-going Scottish Research Studies**

Study Description	Location	Date	Age group Gender Status	Scottish sample (number of respondents)	Methodology	Contact
Diet Trials – A comparison of weight loss over 3/12 with popular diets (Atkins, Weight Watchers & Slim Fast) and analysis of blood lipids and body composition (DEXA)	Multicentred – Nottingham, Edinburgh, Surrey, Northern Ireland (Surrey lead)	2002-2003	20-65 Males and females	N=120 BMI>25	3-day diaries unweighed Cholesterol, HDL, glucose, insulin, TAG, body composition measured	<i>Prof A de Looy QMUC</i>
Influence of breakfast clubs on dietary intake, body composition and cognitive performance in school children	Edinburgh and Lothians	2000-2003	Children 7-9 Males and females	N=105	3-day diaries unweighed – using photographic atlas for comparison of portion size Validated against school dinners - weighed	<i>Mr Michael Clapham QMUC</i>

Summary tables for Section 4 **Recently Completed Scottish Research Studies**

Study description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	References
UK Women's Cohort Study – University of Leeds Paper on F & V Consumption	England, Scotland, Wales	1995-1998	35-69 Females	35374 Total UK, 58% Response Rate	Revised EPIC FFQ	Pollard et al., 2001
MONICA (included diet history survey)	North Glasgow	1986,1989 1992,1995	25-64y + 65-74y in 1992 Males and females	1260 (1986) 1397 (1989) 1517 (1992) 1836 (1995)	Cross-sectional surveys using FFQ adapted from Yarnell et al., 1983. 65 different foods and drink. FFQ included more foods in later surveys	Bolton-Smith et al., 1991 Wrieden et al., 2000
Fibre intake, constipation, and risk of varicose veins in the general population: Edinburgh Vein Study	Edinburgh, Scotland, UK	1994 - 1996	18-64 Males and females	1503 689 Men 814 Women	Tinuviel FFQ	Lee et al., 2001

Summary tables for Section 4 **Recently Completed Scottish Research Studies**

Study description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	References
Dietary Fats and 16-year coronary heart disease mortality in a cohort of men and women in Great Britain.	GB	1984-1985	40-75 Males and females	1676 1225 Men 1451 Women	30 Food Group FFQ similar to Yarnell et al 1983	Boniface et al., 2002
Evaluation of effects of dietary exchange of individual saturated fatty acids on haemostasis and vascular function.	Tayside and Fife, Scotland, UK	1999-2002	Males 40-75y Women Post Menopausal – 75y	101 48 Men 53 Women	7 day weighed food record at baseline	Belch et al., 2003
Study of growth before birth and adult health.	Aberdeen	1999-2000 Study complete	20-50 Males and females	260 twins 90 controls matched for age and gestational age. All subjects were born in Aberdeen Maternity Hospital.	SCG-MRC/FFQ used to assess intake of fats, NSP and antioxidant intake in relation to risk factors for coronary heart disease.	Contact: Dr Geraldine Mc Neill, University of Aberdeen

Summary tables for section 4 **Recently Completed Scottish Research Studies**

Study description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	References
<i>Case-control study of polymorphisms in folate and xenobiotic metabolising enzymes and colorectal cancer</i>	Grampian Health Board Area	1998-2000	Males and Females	Cases recruited from Aberdeen Royal Infirmary. Controls were randomly selected from the Community Health Index and frequency matched to cases on age and sex. 270 cases and 400 controls	SCG-MRC/FFQ (including use of flavanoid database) Plus blood samples collected from a sub-group (100 cases and 200 controls) and analysed for plasma folate, Vitamin B ₁₂ and homocysteine. Mouth wash DNA sample collected from all, analysed for polymorphisms in MTHFR gene.	Sharp et al., 2001; Sharp et al., 2002
Pilot case-control study of polymorphisms in nutrient metabolism and breast cancer	Aberdeen	1998-1999	50-69 Controls Cases unspecified	Cases recruited from the Aberdeen Royal Infirmary Breast Units. Controls randomly selected from 2 GP lists in Grampian. 62 cases, 66 controls	SCG-MRC/FFQ Plus mouthwash DNA collected and analysed for polymorphisms in genes involved in metabolism of folate, retinal and vitaminD	Sharp et al., 2002; Schofield et al., 2001; Miedzybrodska et al., 2001; Baird et al., 1999 a,b& c

Summary tables for section 4 **Recently Completed Scottish Research Studies**

Study description	Location	Date	Age group Gender Status	Scottish sample (number of respondents)	Methodology	References
Pilot case-control study of polymorphisms in MTHFR and colorectal cancer	Grampian	Recruitment Completed 1997	Males and females 37-77yrs	Cases were recently diagnosed invasive colorectal cancer and controls were selected from general practice lists in Grampian area. 79 cases and 79 controls	SCG-MRC/FFQ Plus mouthwash DNA analysed for polymorphisms in MTHFR gene	Howe et al , 1997 <i>Contact Prof Julian Little and Linda Sharp</i>
Interactions between diet and polymorphic genes involved in nutrient metabolism in the aetiology of cleft lip and palate Case-control study	Scotland, Northern Ireland, England	1997-2000	Parents and children	Children born with cleft lip/palate between 1997 and 2000 and their parents. Control children and parents selected from CHI (Scotland), Health Board Register (N. Ireland) and GP practices (England) Total number of cases 221, controls 251	SCG-MRC/FFQ Plus mouthwash DNA analysed for polymorphisms in MTHFR (and other genes). Blood samples analysed for folate biomarkers.	<i>Contact Prof Julian Little</i>

Summary tables for section 4 **Recently Completed Scottish Research Studies**

Study description	Location	Date	Age Group/ Gender/ Status	Scottish sample (number of respondents)	Methodology	References
<p>The effect of folic acid supplementation on plasma homocysteine in an elderly population</p> <p>Randomised double blind placebo control trial</p>	Aberdeen	1997-2000	65-75 Males and females	Sample drawn from to GP practices in Aberdeen. 368 Subjects	Dietary folate intake assessed at baseline and after 6 weeks of supplementation using the Scottish Heart Health/MONICA FFQ . Analysis carried out at the Rowett Research Institute	Rydlewicz et al., 2001