

Eating and **health**

A **food** and **nutrition** strategy
for **Northern Ireland**





Foreword

What we eat can play a critical role in determining our state of health. Dietary patterns are a major contributing factor to coronary heart disease and cancers. Unfortunately, Northern Ireland's track record for both has not been an impressive one. We are among the world leaders in coronary heart disease with over 4,000 deaths annually. Cancers account for more than 3,000 deaths each year.

Although some of the foods we choose and the way we prepare them are embedded in our culture, changes towards healthier eating patterns are beginning to take place. There are strong grounds for optimism. Our understanding of the importance of eating for health is increasing all the time and the range of healthier options has never been better.

'Eating and Health - A Food and Nutrition Strategy for Northern Ireland' shows us how we can build upon this improving situation. It spells out why the food we eat is important and shows the potential for coordinated action to bring about desired changes. Six groups of key players in this work are identified.

It will be a difficult road and there will be many barriers to overcome. But with clear, common goals and a willingness to work together among those with an interest in promoting healthier eating, we have a real opportunity to move forward.

I urge all of you in a position to influence dietary patterns to read the Strategy and consider how you can help implement its action points. Through coordinated effort we have the opportunity to make a significant contribution to improving the health of our community.



Right Honourable Malcolm Moss MP
Parliamentary Under-Secretary of State for Northern Ireland
Department of Health and Social Services
Department of the Environment
November 1996

EATING AND HEALTH

A FOOD AND NUTRITION STRATEGY FOR NORTHERN IRELAND

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EATING AND HEALTH

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Section **1**
Introduction

EATING AND HEALTH

A FOOD AND NUTRITION STRATEGY FOR NORTHERN IRELAND

Introduction

Dietary patterns affect health. What we eat can promote better health or contribute to ill health. Within Northern Ireland, diet-related conditions such as coronary heart disease, cancers and obesity are common.¹

Broad nutritional targets for diet-related conditions were identified within the Regional Strategy for the Northern Ireland Health and Personal Social Services (1992-1997).² However, detailed nutritional targets were not included within the Regional Strategy.

Within this context, in 1994 the Inter-Departmental Group on Health (IDGH) invited the Health Promotion Agency for Northern Ireland to lead a team with the following terms of reference:

- to consider the need for, and feasibility of developing, a strategy on food and nutrition for Northern Ireland, taking into account:
 - the (broad) targets for healthy nutrition set out in the Regional Strategy 1992-1997;
 - existing initiatives in Northern Ireland;
 - similar initiatives in Great Britain and elsewhere;
- to bring forward proposals to the Inter-Departmental Group on Health.

The team known as the Food and Nutrition Strategy Group (FNSG) was established in May 1994. The membership included:

Angela Bradley,	Health Promotion Agency for Northern Ireland (Chair);
Graham Davies,	Department of Economic Development (until August, 1994);
Derek McDowell,	Department of Agriculture for Northern Ireland (until December, 1995);
Sam Miskelly,	General Consumer Council for Northern Ireland;
Karen Patterson,	Department of Agriculture for Northern Ireland (from March, 1996);
Ronnie Pedlow,	Department of Economic Development (from September, 1994);
Eddie Rooney,	Department of Health and Social Services.

In December 1994, the IDGH approved recommendations from the Food and Nutrition Strategy Group (FNSG) to begin a process of consultation which would lead to the development of a Food and Nutrition Strategy for Northern Ireland.

Six groups of key players were identified by the FNSG: food producers and processors; food retailers; caterers; nutrition educators, including health professionals; representatives of the education sector; and voluntary and community groups. The involvement of these groups was considered essential to the development and subsequent implementation of a food and nutrition strategy.

Representatives from each group of key players were invited to attend one of a series of consultation meetings which were held between March and June 1995. Delegates at each meeting were invited to contribute to a discussion on:

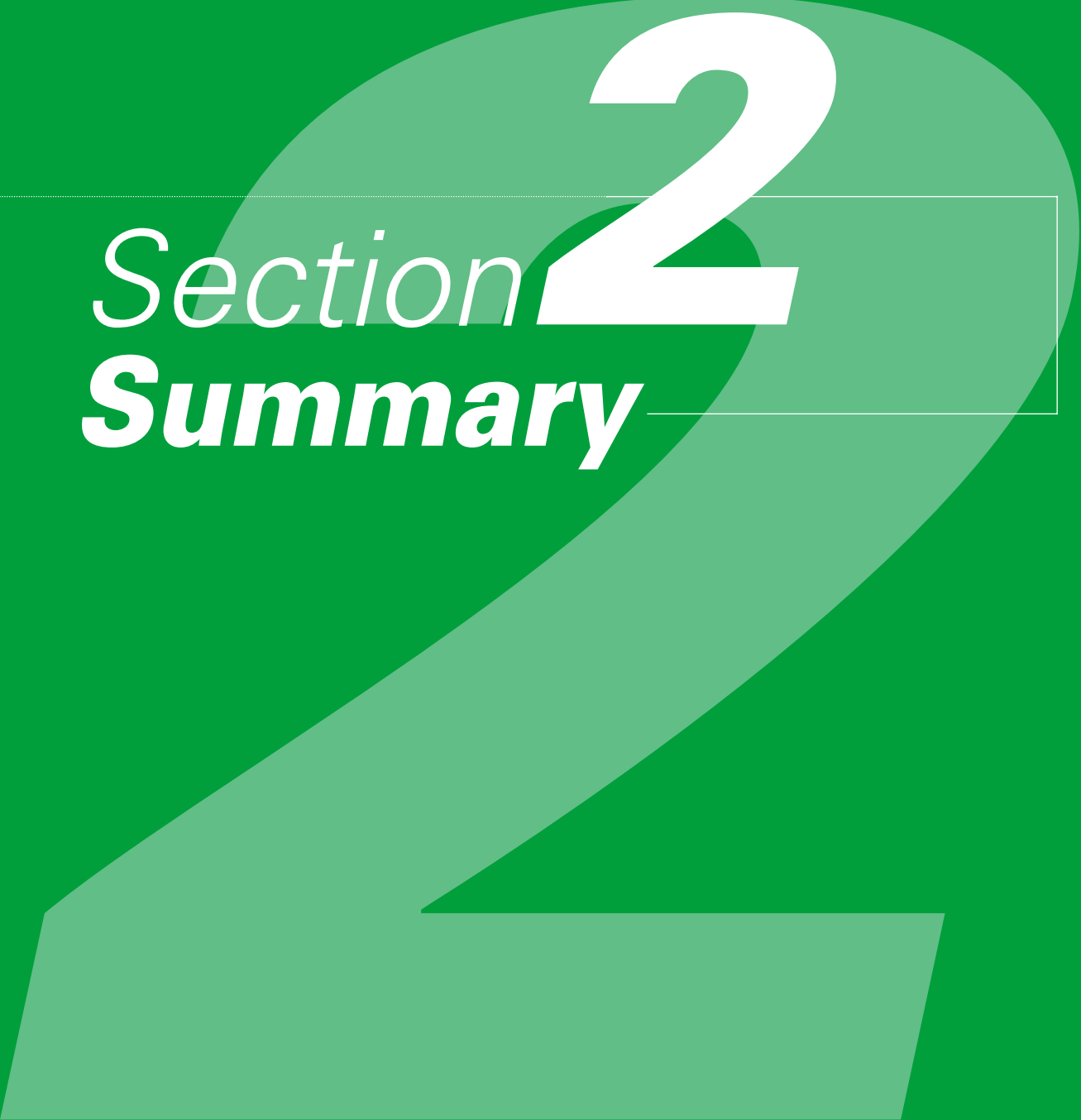
- the need for a food and nutrition strategy;
- factors influencing food choice;
- current and potential contributions of various groups to achieving improvements in nutrition.

Each of the groups agreed the need for a food and nutrition strategy and the factors which influence food choice. They also recognised their role and that of others in contributing to a strategy.

The recommendations and discussion points from the meetings have been used in the preparation of this document.

The intended audience for the strategy includes professionals involved in health, nutrition, nutrition education, the food production and processing sectors, food retailers, caterers and other specialist interest groups in the statutory, voluntary and community sectors.

The document has been accepted and endorsed by the Inter-Departmental Group on Health. Its publication and launch concludes the work of the Food and Nutrition Strategy Group. A new group should now be established which would be representative of the main interest areas. Its task would be to continue the essential work on nutrition in Northern Ireland, through the implementation, coordination and monitoring of progress of the strategy.

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Section **2**
Summary

EATING AND HEALTH

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Summary

Within Northern Ireland, diet-related diseases contribute to premature death and ill health. Coronary heart disease and cancer are the main causes of death in the province.¹ Other important diet-related conditions include hypertension, obesity, dental decay and osteoporosis.

A number of expert groups have made recommendations for the prevention of these and other conditions which are influenced by diet.³⁻⁸ The dietary recommendations for the general population are as follows:

- an increase in complex carbohydrates (starch and fibre);
- an increase in fruit and vegetables;
- a reduction in total fat intake;
- a reduction in saturated fat, eg from animal products;
- an increase in n-3 polyunsaturates from fish;
- no increase in n-6 polyunsaturates, eg from sunflower oil, corn oil;
- no increase in monounsaturates, eg from olive oil, rapeseed oil;
- no increase in *trans* fatty acids, eg from hydrogenated (artificially hardened) fats;
- a reduction in sugar;
- a reduction in salt;
- an adequate intake of calcium and iron;
- a moderate intake of alcohol (for those who drink alcohol).

Points of special consideration for women are that:

- all women who are pregnant or who are planning to become pregnant, should be encouraged to increase their intake of folic acid/folate;
- more women should be encouraged to breastfeed for at least six weeks after giving birth.

These recommendations have been translated into dietary and nutritional targets for the population. They will only be achieved through simultaneous, coordinated action on the factors which influence food choice.

These factors are:

public information - to increase public awareness and understanding of the main nutritional issues;

enabling change - for example, through the provision of simple, consistent nutrition information, product identification in shops, price reduction, in-store sampling etc;

education and training - for example, within the education sector and with nutrition educators;

policy development - to encourage healthier food choices within the public, private and voluntary sectors;

research and development, including:

- research to inform, plan and evaluate programmes and activities;
- product development, for example the development of healthier convenience products.

These factors have been considered and have been translated into 22 specific action points, which, if given attention will contribute significantly to improved nutritional knowledge, understanding and behaviour. Ultimately this will contribute to improvements in health in the province.

Progress on the action points will require the use of a variety of approaches and the commitment and cooperation of a wide range of organisations, professions and groups. It is recommended that young people and those on low incomes should be given priority in relation to the planning and delivery of initiatives.

The FNSG recommends that this strategy should operate in parallel with Health and Wellbeing: Into the Next Millennium, the Regional Strategy for Health and Social Wellbeing 1997-2002.⁹

It is recommended that the action points should be given urgent attention. The FNSG recognises that much of the work can be prioritised within existing resources. However there is also a recognition that some action points will require additional resources, for example:

- public information programmes;
- research and development;
- the implementation of specific initiatives to assist healthier eating, particularly among low income groups.

Following the publication of this strategy, it is intended that a small group is established, which is representative of the main interest groups. The main responsibilities of the group would be to:

- agree priorities within the action plan;
- ensure that progress is made in all areas through, for example, the setting up of working groups for specific projects;
- provide guidance to and receive reports from working groups;
- monitor, coordinate and evaluate activity;
- review the action plan in light of changing circumstances;
- enable communication between various sectors;
- provide regular reports on progress on the implementation of the action points to the Inter-Departmental Group on Health;
- monitor the impact of the strategy.

Section **3**
***Rationale for
a Food and
Nutrition
Strategy***

EATING AND HEALTH

A FOOD AND NUTRITION STRATEGY FOR NORTHERN IRELAND

Rationale for a food and nutrition strategy

The consensus that dietary patterns affect health and can contribute to ill health has been established not only in the United Kingdom but in other industrialised countries.^{3-8, 10}

Within Northern Ireland, diet-related conditions account for a considerable amount of premature death and ill health. The most important diet-related conditions which affect the province are detailed below. It is recognised that other factors also contribute to their development. For example, several dietary factors have been implicated in the development of coronary heart disease; other known risk factors include smoking, physical inactivity, raised blood cholesterol, raised blood pressure, obesity, diabetes and a family history of heart disease.

The relationship between diet and medical conditions is complex. Eating and Health - A Food and Nutrition Strategy for Northern Ireland has been written for a wide audience and where appropriate simplified terms have been used. A glossary of terms is included.

Coronary heart disease

Coronary heart disease is the primary cause of death in Northern Ireland, accounting for 4,853 deaths in 1994.¹ In addition, heart disease causes considerable ill health.

The death rate from heart disease has fallen by 36% for men and 25% for women since 1986.¹¹ This reduction has been attributed to lifestyle changes as well as improvements in care and treatment.

The dietary factors which influence the risk of death from heart disease are outlined below.

Fats

Dietary fats influence the risk of death from heart disease mainly through their effect on blood cholesterol.

Blood cholesterol contains two important fractions, LDL (Low Density Lipoproteins, sometimes known as 'bad' cholesterol) and HDL (High Density Lipoproteins, sometimes known as 'good' cholesterol).

The risk of death from heart disease increases with:

- higher levels of total cholesterol;
- higher levels of LDL cholesterol;
- lower levels of HDL cholesterol.⁸

The levels of each of these are affected by different types of dietary fat and fatty acids, as summarised.

Saturated fatty acids (eg from animal products) increase total cholesterol and increase LDL cholesterol.

Polyunsaturated fatty acids are of two types, each of which has a different effect on blood cholesterol:

- n-6 polyunsaturated fatty acids (mainly from vegetable oils, such as sunflower oil, corn oil, safflower oil) lower LDL cholesterol and also lower HDL cholesterol;
- n-3 polyunsaturated fatty acids (mainly from fish oils) lower LDL cholesterol without lowering HDL cholesterol.

Monounsaturated fatty acids (eg from olive oil, rapeseed oil) lower LDL cholesterol but do not lower HDL cholesterol.

Trans fatty acids, particularly from hydrogenated (artificially hardened) fats, have a similar action to saturated fats by increasing LDL cholesterol and decreasing HDL cholesterol.

Triglycerides, another type of fat in blood, also increase the risk of heart disease at higher levels. They are affected by dietary fats as follows:

- n-3 polyunsaturated fatty acids (mainly from fish oils) lower blood triglycerides;
- *trans* fatty acids, particularly from hydrogenated fats, increase blood triglycerides.

The reduction in total fat intake, which is recommended, also reduces the total energy (calorie) intake. This energy deficit should be made up by an increase in the consumption of foods rich in complex carbohydrates (starch and fibre), for example bread, cereals, potatoes, rice and pasta.

Fibre/Non-starch polysaccharides (NSP)

Diets rich in fibre are associated with a lower risk of heart disease.⁸ This may be explained in three ways:

- soluble fibre, for example from pulses and oats, lowers LDL cholesterol thereby reducing the risk of heart disease;
- foods rich in fibre are filling and may displace other foods rich in fats, which will contribute to a reduction of LDL cholesterol;
- displacement of fat-rich foods by fibre-rich foods can contribute to weight loss, which contributes to a lowering of LDL cholesterol and reduces the risk of heart disease.

Antioxidants

Recent research indicates that high dietary intakes or high blood levels of antioxidant nutrients, for example carotenoids (vitamin A) and vitamins C and E, are associated with a lower risk of heart disease.⁸

Sodium and Potassium

Sodium and potassium influence the risk of heart disease through their effect on blood pressure (see Hypertension - page 20).⁸

Alcohol

Recent research has shown that a moderate intake of alcohol can provide some protection against heart disease.¹²

Cancers

More than 3,600 people die from cancer in the province every year making it second only to heart disease as a cause of death.¹ This means that on average more than nine people die each day from cancer in Northern Ireland.

It has been estimated that approximately one third of all cancer deaths can be attributed to diet.¹³ Five main dietary components influence the development of cancer, either through promoting its development or providing protection against it. These are outlined as follows:

Fat

Higher total fat intakes are associated with an increased risk of developing bowel cancer.^{14, 15}

Fibre/Non-starch polysaccharides (NSP)

Higher fibre intakes from cereals, vegetables and fruit provide some protection against bowel cancer.¹⁶

Antioxidants

Recent research indicates that antioxidants including vitamins C and E and carotenoids (vitamin A) can protect against some cancers, particularly against those of the digestive and respiratory tracts.^{17, 18}

Fruit and vegetables

In addition to fibre (NSP) and antioxidants (discussed above), fruit and vegetables contain many other substances which may also be protective against cancers.¹⁹ Despite uncertainties about the active ingredient, it is clear that fruit and vegetables have an important protective effect, particularly against cancers of the stomach and large bowel.²⁰ It is therefore recommended that the consumption of fruit and vegetables is increased rather than taking supplements of vitamins A, C or E.

Alcohol

The consumption of alcohol is associated with an increased risk of cancer of the mouth, throat, oesophagus and liver. There may also be an increased risk of breast cancer in heavy drinkers, particularly in young women.²¹

Hypertension (raised blood pressure)

Raised blood pressure increases the risk of coronary heart disease and stroke; reducing blood pressure levels reduces the risk of stroke and heart disease.^{8, 22} The four dietary factors which affect blood pressure are outlined below.

Sodium

Populations which have a high sodium intake, particularly from salt, have higher blood pressure levels. Blood pressure also rises with age in populations which have high sodium intakes.⁸ Restriction of salt intakes for periods of five weeks or more has been shown to lower blood pressure.²³

The main source of sodium in the diet in the United Kingdom is from manufactured foods.²⁴ A substantial reduction in salt intake will only be achieved if recommendations to reduce the amount of salt used in cooking and at the table are combined with recommendations to rely less on highly salted processed foods. In many instances, it may be possible for processors to reduce the amount of salt used in the preparation of foods, or to find suitable alternatives, for example potassium chloride.

Potassium

Diets rich in potassium are associated with lower blood pressure levels and a lower risk of stroke. An increased consumption of fruit and vegetables would increase potassium intake and is consistent with recommendations made earlier (see Coronary heart disease - page 17).⁸

Weight

Being overweight or obese is associated with increased blood pressure and weight loss reduces blood pressure in those with hypertension.²⁵

Alcohol

Drinking alcohol at levels in excess of 30 units of alcohol per week, increases blood pressure.⁸

Weight problems

$\frac{\text{weight (kg)}}{\text{height}^2 \text{ (m)}}$

The Body Mass Index, calculated as BMI = $\frac{\text{weight (kg)}}{\text{height}^2 \text{ (m)}}$, can be used to classify body weight as shown:

Weight Classification	BMI (males)	BMI (females)
Underweight	20.0 or less	18.6 or less
Ideal weight	20.1 - 25.0	18.7 - 23.8
Overweight	25.1 - 29.9	23.9 - 28.5
Obese	30.0 or more	28.6 or more

In 1994, 5% of males and 4% of females, aged 16-74 years, were classified as being underweight.²⁶ By comparison, 42% of males and 35% of females were classified as overweight and 16% of males and 21% of females were obese.

These figures represent an increase from the 1990 report Challenge for the 90's - The Change of Heart Baseline Clinical Survey in which 37% of males and 33% of females aged 12-64 years were defined as overweight and 8% of males and 16% of females were described as obese.²⁷

Weight problems are not limited to the adult population. In 1993, the percentages of boys and girls described as 'carrying excessive body fat' were:

- 34% of 12 year old and 18% of 15 year old boys;
- 18% of 12 year old and 30% of 15 year old girls.²⁸

Health is influenced by body weight - being underweight, overweight or obese is associated with an increased risk of ill health.

Individuals may be underweight for a variety of reasons including underlying medical conditions. Those who are underweight may be deficient in essential nutrients.

Being overweight or obese has been associated with an increased risk of coronary heart disease.^{8, 29} Obesity also increases the risk of ill health and death from respiratory disease, raised blood pressure, maturity-onset diabetes, gall bladder disease and some cancers.⁸ Weight loss has been shown to have beneficial effects on blood pressure, plasma lipids and insulin resistance.^{30, 31}

The distribution of body fat is also an important indicator of risk. Central obesity, in which body fat is deposited in the abdominal area is associated with a greater risk of heart disease than peripheral obesity, in which fat is more evenly distributed.³²⁻³⁴

Weight loss and weight maintenance are often difficult and repeated cycles of weight loss and weight gain have been associated with additional risks to health.³⁵⁻³⁸

The Food and Nutrition Strategy Group (FNSG) recommends that regional initiatives should be developed which promote the achievement of a healthy weight with priority given to the prevention of obesity.

Classification into weight categories, for males and females, based on Body Mass Index

Weight Category	Males (%)		Females (%)	
	1990 ²⁷	1994 ²⁶	1990 ²⁷	1994 ²⁶
Underweight	*	5	*	4
Ideal weight	*	37	*	41
Overweight	37	42	33	35
Obese	8	16	16	21

*Figures are not available

Dental decay

In Northern Ireland, dental health is worse than in most other areas of the United Kingdom.³⁹ For example, at age eight, 29% of children in Northern Ireland have decay in permanent teeth compared with 17% in England, 22% in Wales and 29% in Scotland. At age 15, the differences in dental health are more marked: 87% of children in Northern Ireland have decay in their permanent teeth compared with 60% in England, 72% in Wales and 87% in Scotland.

Sugary foods and sugar (non-milk extrinsic sugars - *see Glossary*) are the main dietary causes of dental decay.

Low intakes of sugar are associated with a low incidence of dental decay, although the form and frequency of sugar consumption is most important.⁴⁰

Sugar is most damaging to teeth when it is in a sticky form which adheres to teeth, for example, as toffee. Sugar eaten between meals is more damaging to teeth than when it is eaten as part of a meal, since other constituents of a meal act as 'buffers' which soak up the acid produced in the presence of sugar, and therefore limit the damage to teeth.

The frequency of sugar consumption is also important: the frequent consumption of small amounts of sugar is more harmful than a large amount consumed less often.

Other non-dietary factors are also involved in dental decay, for example poor dental hygiene. However fluoride reduces the incidence of dental decay.^{40, 41}

Osteoporosis

Osteoporosis is an age-related bone disease in which total bone mass is lost, resulting in bones becoming more prone to fracture. Fractures of the femur, the vertebrae and wrist are most common.⁴²

A number of risk factors, both avoidable and unavoidable, have been identified. These include hereditary factors, gender (females are more at risk), inactivity, smoking, being underweight and low levels of oestrogen postmenopausally.

The role of calcium in the prevention of osteoporosis is debated. Some studies have suggested that higher calcium intakes (from dairy products) are associated with the achievement of a higher peak bone mass, which in turn reduces the risk of osteoporosis.^{43, 44} It has been suggested that the beneficial effect of a good calcium intake depends on adequate weight-bearing activity.^{44, 45}

Iron deficiency and anaemia

Anaemia can be defined as a reduction in the concentration of haemoglobin in the blood below the norm for the age and sex of the individual. It can result from a number of causes, including a dietary deficiency of iron, folic acid or vitamin B12.⁴⁶

Iron deficiency anaemia is reported as the most common nutritional deficiency in both developing and developed countries.⁴⁷

Iron deficiency anaemia and iron deficiency in the absence of anaemia affect work capacity, brain function and intellectual performance, behaviour and defence against infection.⁴⁷⁻⁴⁹

If insufficient iron is provided by food or insufficient iron is absorbed through the digestive tract, the iron stores are gradually depleted, eventually resulting in iron deficiency anaemia. Good dietary sources of iron include red meat, liver and kidney. Other dietary sources include dark green vegetables and egg yolk; the absorption of iron from these sources is increased by the consumption of foods rich in vitamin C, such as citrus fruits and their juices.

Using serum ferritin levels as an indicator of iron status, 13.4% of females and 1.8% of males aged 16-64 years were reported to have deficient iron stores in 1988.⁵⁰ Iron deficiency was more common among younger women, at 15.9% for women aged 16-49 years, compared with 4.7% among postmenopausal women aged 50-64 years.

Neural tube defects

Neural tube defects (NTD), which include anencephaly, encephalocele and spina bifida cause substantial suffering for affected individuals and their families.

In Northern Ireland, the incidence of NTD at birth is between 7 and 8 per 10,000 total births, which is higher than the United Kingdom average.¹¹

Increased intake of folic acid/folate before conception and until the end of the twelfth week of pregnancy helps prevent first-time occurrence and recurrence of NTD. In 1992 an Expert Advisory Group recommended that all women who are planning to become pregnant should:

- eat more folate-rich foods, eg broccoli, cabbage and avoid overcooking them;
- eat bread and cereals fortified with folic acid;
- take a daily supplement of 0.4 milligrams (400 micrograms) of folic acid from the time they begin trying to conceive until the end of the twelfth week of pregnancy.⁵¹

The Expert Advisory Group also advised that women who have not been supplementing their folic acid/folate intakes and who suspect they may be pregnant should start folic acid supplements immediately and continue taking them until the twelfth week of pregnancy.

To prevent recurrence of NTD, the Expert Advisory Group recommended that a woman who has had a previous child with a NTD, or if she or her partner has spina bifida, should:

- take a daily folic acid supplement of 4 milligrams (4,000 micrograms) from the time they begin trying to conceive until the end of the twelfth week of pregnancy;
- if this preparation is not available, supplements of 5 milligrams (5,000 micrograms) are recommended instead.

The role of diet in the promotion or prevention of disease has been outlined. In addition to the influence of nutrient intakes on the conditions outlined earlier, the practice of breastfeeding is known to offer advantages to both the infant and the mother.

Breastfeeding

Breastfeeding offers a number of advantages to both the infant and the mother.

For the infant:

- babies who are breastfed are at a lower risk of infection, particularly gastro-intestinal infection;⁵²
- in low birth weight infants, improved intelligence and lower death rates from some conditions have been associated with the feeding of breast milk;^{53, 54}
- improved intellectual development is also associated with breastfeeding in healthy term infants;⁵⁵
- long-term benefits of breastfeeding may also include a reduction in the risk of juvenile onset diabetes;⁵⁶
- breastfeeding may offer some protection against allergic disease, particularly in infants who are genetically at risk.⁵⁷

For the mother:

- breastfeeding is associated with lower rates of premenopausal breast cancer but not for postmenopausal cancer;⁵⁸⁻⁶⁰
- breastfeeding is associated with a lower risk of some forms of ovarian cancer;⁵⁸
- it also helps with weight loss after birth.

In addition to the advantages outlined, breastfeeding also offers a unique contact between mother and baby.

In Northern Ireland, only 36% of women are breastfeeding at time of discharge from hospital; this drops to 17% at six weeks. The incidence and duration of breastfeeding are much lower than in the rest of the United Kingdom.⁶¹

Conclusion

A summary of the interaction between nutrients and diet-related conditions is included in Appendix 1.

Data on current dietary and nutritional patterns in Northern Ireland is available from a number of sources,^{27, 28, 50, 61-65}

A comparison of this data with the recommendations made by various expert panels and groups indicates the agreed dietary and nutritional changes which should be encouraged to promote health and prevent disease.

Changes indicated for the general population are as follows:

- an increase in complex carbohydrates (starch and fibre), eg from cereals, potatoes;
- an increase in fruit and vegetables;
- a reduction in total fat intake;
- a reduction in saturated fat, eg from animal products;
- an increase in n-3 polyunsaturates from fish;
- no increase in n-6 polyunsaturates, eg from sunflower oil, corn oil;
- no increase in monounsaturates, eg from olive oil, rapeseed oil;
- no increase in *trans* fatty acids, eg from hydrogenated (artificially hardened) fats;
- a reduction in sugar;
- a reduction in salt;
- an adequate intake of calcium and iron;
- a moderate intake of alcohol (for those who drink alcohol).


Points of special consideration for women are that:

- all women who are pregnant or who are planning to become pregnant, should be encouraged to increase their intake of folic acid/folate;
- more women should be encouraged to breastfeed for at least six weeks after giving birth.

In section four these recommendations are considered in more detail and targets for change are identified.

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Section **4**
***A Food and
Nutrition
Strategy***

EATING AND HEALTH

A FOOD AND NUTRITION STRATEGY FOR NORTHERN IRELAND

A food and nutrition strategy

Major elements of the strategy

Section four outlines the five major elements of Eating and Health - A Food and Nutrition Strategy for Northern Ireland. These are:

- **dietary and nutritional targets**, which are measurable and achievable;
- **action areas**, identifying factors which can be influenced to achieve the targets;
- **priority groups**, for whom the planning and delivery of initiatives should be given special consideration;
- **intersectoral collaboration**, which is essential for progress towards the targets;
- **action points**, for which organisations and groups, that could be involved and/or assume a lead role, are identified.

Dietary and nutritional targets

The following table outlines the dietary and nutritional targets recommended by the Food and Nutrition Strategy Group. The Group believes that these targets are both measurable and achievable. These targets have been identified by comparing current nutritional intakes in Northern Ireland with those recommended for health which have been agreed and documented by various expert panels and groups.^{7, 8, 51}

Nutrient targets	
Nutrients	Targets
Fat eg from spreading fats, biscuits, fried foods, pastry, sausage rolls.	The average contribution of total fat to dietary energy should be reduced to 35% (from 40%). For baseline see reference 27
Saturated fatty acids eg from animal products.	The average contribution of saturated fatty acids to dietary energy should be reduced to 10% or less (from 17.5%). For baseline see reference 27
n-6 polyunsaturated fatty acids eg from vegetable oils.	The average contribution of polyunsaturates of the n-6 series to dietary energy should not increase from its current level. For baseline see reference 24
n-3 polyunsaturated fatty acids eg from oily fish.	The average contribution of polyunsaturates of the n-3 series should be increased to about 0.2g per day or 1.5g per week (from 0.1g per day). For baseline see reference 24
Trans fatty acids eg from hard margarines and hydrogenated fats used in the preparation of biscuits and cakes.	The contribution of <i>trans</i> fatty acids to dietary energy should not be increased and consideration should be given to ways of decreasing the amount present in the diet. For baseline see reference 24
Complex carbohydrates eg from bread, cereals, potatoes, rice, pasta.	The contribution of complex carbohydrates to dietary energy should be increased to approximately 50% (from 43%). For baseline see reference 27
Fibre/non starch polysaccharides (NSP) eg from bread, cereals, potatoes, rice, pasta, fruit, vegetables.	The average consumption of NSP should be increased to 18g per day from 12g per day (equivalent to an increase to 30g dietary fibre from 20g dietary fibre), from a combination of cereal and vegetable sources. For baseline see reference 27

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Nutrient targets <i>continued</i>	
Nutrients	Targets
Sugar/non-milk extrinsic sugars eg from table sugar, sweetened fizzy drinks, biscuits, confectionery.	The average consumption of non-milk extrinsic sugars to dietary energy should be reduced to approximately 10% (equivalent to a reduction to 60g per day from 103g per day). For baseline see reference 50
Sodium eg from table salt, processed foods.	The average intake of sodium from salt by the adult population should be reduced to 100mmol per day from approximately 150mmol per day (equivalent to a reduction in salt intake to 6g per day from 9g per day). For baseline see reference 24
Calcium eg from milk, yogurt, cheese, bread, nuts.	The recommended intake (Reference Nutrient Intake or RNI) for calcium should be achieved by all population groups particularly girls and women of child-bearing age (<i>Appendix 2</i>). No baseline
Iron eg from red meat, liver, egg yolk, dried fruit, dark green vegetables.	The recommended intake (Reference Nutrient Intake or RNI) for iron should be achieved by all population groups (<i>Appendix 2</i>). No baseline

Food targets	
Foods	Targets
Fruit and Vegetables	The average consumption of fruit and vegetables should increase to at least five portions of fruit and vegetables each day. No baseline
Fish	The average consumption of fish should increase to at least 2 portions of fish each week, of which 1 should be oily fish, eg tuna, mackerel, salmon. No baseline
Alcohol	For those who drink alcohol the consumption of alcohol should be within the recommended limits of 3-4 units per day for men and 2-3 units per day for women. No baseline

Recommendations relating to women	
<p>Folic acid/folates</p>	<p>All women who are pregnant or planning to become pregnant should:</p> <ul style="list-style-type: none"> • eat more folate-rich foods, eg broccoli, cabbage; • eat more bread and cereals enriched with folic acid; • take a daily supplement of folic acid of 0.4 milligrams (400 micrograms) from the time they begin trying to conceive until the end of the twelfth week of pregnancy. <p>Women who have previously had a child with a neural tube defect and women who have, or whose partner has, spina bifida, should take a daily folic acid supplement of 4 milligrams (4,000 micrograms) from the time they begin trying to conceive until the end of the twelfth week of pregnancy.</p> <p>No baseline</p>
<p>Breastfeeding</p>	<p>The target identified within the Regional Strategy for Health and Social Wellbeing 1997-2002 is that the number of women who breastfeed their babies should increase to:</p> <ul style="list-style-type: none"> • 50% at discharge from hospital (from 36%); • 35% at six weeks (from 17%). <p>For baseline see reference 61</p>

Action areas

An individual's food choice is influenced by many factors, for example personal preferences, the range of foods available, cost and the time available to prepare, cook and eat food. The following identifies the various factors which can be influenced to achieve the dietary and nutritional targets identified earlier.

These factors are considered in the following areas:

- **public information;**
- **enabling change;**
- **education and training;**
- **policy development;**
- **research and development.**

Simultaneous, coordinated action on many of these factors will be necessary if the targets are to be met.

Public information

In 1992 nutrition research in Northern Ireland indicated a high public awareness and acceptance of the links between dietary patterns and heart disease, body weight and constipation.⁶² However, public awareness of the link between diet and cancer was much lower; half of those interviewed did not know or did not believe that there is a link between diet and cancer. The link between diet (folic acid/folate intake) and neural tube defects, including spina bifida, was not well known by those interviewed in recent research in Northern Ireland or in England.^{63, 66}

Research in Northern Ireland in 1992 indicated that public awareness of the four 'healthy eating' messages - to eat more fibre, less fat, sugar and salt was high. Over 90% of those surveyed recognised the messages after prompting. However the unprompted awareness was much lower and the awareness of each message varied. For example, the message to eat less fat was identified by 36% of respondents without prompting, while the message to eat more fibre was identified by only 18%.⁶²

The recall of healthy eating messages varied between socioeconomic groups. Those in socioeconomic groups A, B and C1 were significantly more likely to remember the messages than those in C2, D and E groups.

Despite the relatively high awareness of the healthy eating messages, public understanding of how these messages can be translated into food in the shopping basket was much lower. Nineteen per cent of those surveyed identified confusion as one of the difficulties they faced in adopting a healthier eating pattern. The main area of confusion was about the role of foods rich in complex carbohydrates (starchy foods) such as pasta, rice, bread and potatoes in healthy eating.

More than half of those surveyed reported changes to their eating patterns over the previous five years. The higher public awareness of the message to eat less fat was clearly demonstrated in these changes. Most dietary changes reported were the reduction of fat consumption by the use of lower fat cooking methods and the purchase of lower fat products such as semi-skimmed or skimmed milk, low fat spreads etc. Such dietary changes are also reported elsewhere.⁶⁴

A number of initiatives have been undertaken across the province to raise public awareness of the healthy eating guidelines and to encourage and enable dietary changes. Many of these followed the launch of the Change of Heart Programme in 1986, which aimed to reduce the number of deaths from heart disease by 15% within a ten year period. Examples of the regional initiatives which have developed include the Healthy Eating Campaign and the Activate Health Programme, as well as a range of locally organised events. Evaluations have consistently shown a high awareness of the Healthy Eating Campaigns among the general public and some dietary changes have been reported.^{62, 67-69}

To achieve higher public awareness and improved understanding of all the dietary recommendations for health, the programme of public information which has been undertaken in recent years should be continued and extended. Particular emphasis should be given to reducing public confusion about nutrition messages and assisting those on low incomes to make healthier food choices.

Public information to increase awareness, knowledge and understanding must be supported by coordinated activity to encourage people to make appropriate dietary changes.

Enabling change

It cannot be assumed that higher awareness and improved understanding will automatically result in behaviour change. This is demonstrated by the research in 1992 in which people were asked about how likely they were to change to healthier eating patterns in response to public information on nutrition.⁶²

Forty per cent of those interviewed stated that they would be more likely to change to a healthier eating pattern. Sixty per cent stated that the programme of public information alone would not cause them to change their eating patterns; they would require further help to make dietary changes.

The importance of eating more fibre, less fat, sugar and salt was widely accepted by over 70% of those surveyed in Northern Ireland in 1992 - almost half considered these dietary changes to be 'very important'.⁶² The groups which attached most importance to change were those aged 26-54 years, women and those in socioeconomic groups C1 and C2. Men and those in socioeconomic groups D and E appeared most resistant to change.

A number of difficulties were anticipated in making dietary changes, even among those who rated change as important.

The main areas of difficulty are outlined and these should guide the planning of activities to enable dietary change.

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Cost - Cost is the most important factor influencing food choice, particularly among lower income groups.⁶² Price differences between 'healthier' food products (ie those which are higher in fibre and/or lower in fat, sugar or salt) and 'less healthy' products are common. For example, wholemeal varieties of bread, pasta, rice and breakfast cereals are more expensive than their white counterparts; leaner varieties of meat and leaner cuts of meat cost more than higher fat varieties and cuts.

This is particularly important for low income households, in which marked differences in food consumption patterns have been noted.⁷⁰ Lower income groups eat less fruit and vegetables, more processed meat products and more chips and roast potatoes than those on higher incomes. This pattern of food consumption is suggestive of less healthy eating patterns. A variety of initiatives have been piloted across the United Kingdom, in which health professionals and/or community group leaders worked with local communities to identify ways in which those on low incomes could be enabled to make dietary changes. Examples of these initiatives include food co-ops and the COOK IT! community nutrition project.⁷¹

The Food and Nutrition Strategy Group recommends that a review of these initiatives should be undertaken and proposals made for future effective action in this area.

Limited availability and accessibility - Most large shops and supermarkets stock a greater variety of food choices, particularly healthier alternatives, than smaller shops.⁷² However, access to larger shops and supermarkets is often difficult for those on lower incomes because of the lower levels of car ownership in these groups. Other factors include the added expense of public transport and the difficulty of walking long distances, for example, with young children. Lower income groups are often dependent on smaller local shops and therefore have a more limited selection of healthier food choices available to them.⁷³ **Food manufacturers and retailers have a key role to play in improving access to healthy food choices, particularly for those on low incomes.**

The importance of access to healthy food choices in catering establishments was identified by 78% of respondents in research in 1989.⁷⁴ The availability of healthier food choices is particularly important for those who use catering outlets frequently, for example in schools, colleges and workplace dining areas, where meals eaten can contribute to between one quarter and one third of all meals eaten each week.

The promotion of healthy food choices in catering outlets should be continued and extended. These establishments can make a significant contribution to dispelling the myth that healthy eating is boring, by promoting a range of appetising, attractively presented healthier alternatives. Links between health professionals and caterers should be strengthened to enable caterers to have access to information on the latest nutritional issues.

Inconvenience - Within Northern Ireland, food shopping and meal preparation is mostly done by women, who are also increasingly working outside the home. This often reduces the time available for meal preparation and may account for the concern expressed by women in Northern Ireland that healthier meals take longer to cook and are less convenient.⁶²

Information on straightforward and easily prepared meals which meet current dietary guidelines should be included in public information and education programmes on nutrition.

Confusion - As outlined earlier, public awareness of the healthy eating guidelines was high in research carried out in 1992.⁶² However, 19% of those surveyed stated that they were confused about what foods should be included as part of a healthier diet. Starchy fibre-rich foods, especially pasta and rice caused most confusion. Confusion was demonstrated across all socioeconomic groups although those in lower socioeconomic groups experienced most confusion. **An objective of all public information campaigns on nutrition should be to reduce public confusion and to increase understanding of healthy eating.**

Inconsistent advice - The conflicting advice on nutrition, as perceived by the public, was of particular importance among the 15% of respondents who were not interested in changing their eating habits.⁶²

It is essential to ensure that consistent messages on nutrition are communicated by all professionals involved in nutrition education. Action should be undertaken to ensure that nutrition taught at undergraduate level for health professionals involved in nutrition education should reflect current nutritional guidelines. Postgraduate training and continuing education courses on nutrition should also be offered to update professionals working in the field.

Education and training

The education sector - Nutrition is taught as part of the mandatory health education cross-curricular theme in primary and post-primary schools in Northern Ireland. It offers the potential to communicate clear messages on nutrition to children and young people in the province and to encourage the adoption of healthy eating patterns.

However, it has been reported that young people are not always aware of receiving nutrition education in subjects other than Home Economics, which is taken by a limited proportion of students.⁶⁵ In addition, the move away from practical food preparation in Home Economics was considered detrimental by many groups and professions during consultation meetings in 1995 (*Appendix 3*). It is anticipated that this will have both short-term and long-term effects, contributing to a further reduction of cooking skills among young people and influencing the choice of food for themselves and for their families in the future.

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Where nutrition is taught as part of health education, it is important that accurate, scientifically-based and current information is taught, since inaccurate messages on nutrition may contribute to the confusion identified by adults in Northern Ireland.⁶²

Nutrition messages taught as part of the ‘hidden curriculum’, for example through tuck shops, vending machines, school meals and reward systems for good work, can reinforce or undermine those taught as part of the formal, taught curriculum.⁷⁵

For example, tuck shops which do not offer healthier alternatives to high fat, high sugar snacks are in conflict with messages to reduce these products. School dining rooms which provide a range of healthier choices which are attractively presented, competitively priced and acceptable to children and young people can reinforce good nutrition messages.

Action should be undertaken in the following areas:

- a review of the range and quality of nutrition education in schools should be carried out and examples of good practice shared widely;
- a review of the nutrition training for teachers at undergraduate and postgraduate levels should be undertaken and recommendations made;
- a review of the Home Economics Syllabus with respect to practical food preparation should be undertaken and recommendations made as to how this could be increased;
- the adoption of a holistic approach to nutrition should be encouraged, for example through the establishment of School Nutrition Action Groups.
(see *Glossary*)

Nutrition educators - Dietitians have an in-depth knowledge of nutrition and its application to individuals and population groups in promoting health, preventing disease and managing dietary-controlled conditions. Their particular expertise enables them to translate the science of nutrition into practical advice.

A number of other professionals are also regularly involved in giving general nutritional guidance or advice, including general practitioners, practice nurses, health visitors, school nurses, environmental health officers and health promotion officers. In a recent survey of general practitioners in Northern Ireland, 85% reported that they gave dietary advice at least on a daily basis.⁷⁶ The same research indicated that practice nurses were also frequently involved in advising clients on nutritional issues.

However, it has also been reported that significant proportions of GPs and practice nurses recognised their need for further training and updating on nutrition issues.⁷⁷ Although they were agreed on the importance of increasing fibre intake, more than one third of the health professionals interviewed were not aware of the importance of eating more starchy foods.

The level of confusion about dietary terms and concepts is reflected in their satisfaction with training on nutrition issues at undergraduate and postgraduate levels. Only 14% of GPs were satisfied with training at undergraduate level, 35% at postgraduate level and 33% of practice nurses were satisfied with formal vocational training.⁷⁷ Although data on the levels of satisfaction with nutrition training were not available for other professionals, some dissatisfaction with nutrition training in a number of sectors was identified during consultation meetings in 1995. (*Appendix 3*)

Inconsistencies between nutrition messages has been identified by the public as an important demotivator for dietary change.⁶²

It is essential to ensure that consistent messages on nutrition are communicated by all professionals involved in nutrition education. Where nutrition is taught at undergraduate level, this should be revised to reflect recommendations from current scientific reports.

Postgraduate seminars and training courses on nutrition should also be offered to update professionals already working in the field.

Caterers - The role of caterers in challenging the image of healthy eating as 'dull and costly' through the development of innovative dishes and menus was identified in consultation meetings in 1995. **The importance of nutrition training for catering students has been identified, particularly in relation to food preparation methods which contribute to meeting the nutritional targets.**

Policy development

Price differences between healthier and less healthy food products have been noted. Cost has been identified as the most important factor influencing food choice and price reductions have been identified as the single most important motivator for healthier food choices, particularly for lower socioeconomic groups.⁶²

A number of organisations have developed nutrition policies which aim to increase awareness and encourage healthier food choices among employers and users of the services. **The development, implementation and evaluation of nutrition policies by Health and Social Services Boards, Education and Library Boards, Health Trusts (acute and community), Local Councils, schools, colleges, universities, food producers, processors, retailers, caterers and other organisations should be encouraged.**

Nutrition policies developed by statutory organisations should highlight the importance of incorporating nutritional standards in all catering contracts.

Nutrition policies developed by food producers, processors, retailers and caterers could include a number of elements, for example the provision of nutrition information, in-store promotions including shelf-highlighting and competitive pricing policies to encourage and enable customers to make healthier food choices.

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The school meals service is ideally placed to reinforce the nutrition messages taught in the classroom by the meal provision within the school dining room. Tuck shops and reward systems within schools can also reinforce or undermine nutrition education in the classroom.^{75, 78}

A recent investigation into the nutritional quality of school meals in Northern Ireland indicated that meals served in a sample of post-primary schools often failed to meet recommendations made by the Cardiovascular Group of the Committee on Medical Aspects of Food Policy (COMA), for example for fat and saturated fat contents. In addition, most school meals in the sample did not normally provide enough calcium, iron or folate and many were low in vitamin C.⁶⁵ Information is not currently available on the nutritional content of meals provided by primary schools.

The Arrangements for the Provision of Milk, Meals and Related Facilities in schools predate the NACNE and COMA reports of the 1980s and may explain the high percentage of calories from fat.⁷⁹ These standards are currently being reviewed. During consultation meetings in 1995, the perception that pupils prefer 'chips with everything', the low unit cost allocation per meal and the diminishing time allocated to school meals within the timetable were felt to restrict the range of foods which could be offered. (*Appendix 3*)

A review of school meals provision should be undertaken. Nutritional standards for school catering should be reintroduced at post-primary level.

Schools should be encouraged to develop nutrition policies and adopt a 'whole-school' approach to nutrition education, to ensure that nutrition messages taught through both the formal and hidden curricula are complementary.

Research and development

Research - Research informs the planning of programmes and activities which contribute to the achievement of the dietary and nutritional targets. Further research is needed in three clearly identified areas.

- 1 The reasons for the current low levels and short duration of breastfeeding in Northern Ireland are not fully understood. **Research should be undertaken to:**
 - identify the reasons for low levels of breastfeeding;
 - inform activities to increase rates of breastfeeding at birth and to continue breastfeeding for at least six weeks after giving birth.
- 2 Food choices are determined by many interrelated factors. **Research should be undertaken to understand more fully the psychology of food choice and how this can be influenced.**
- 3 A mechanism to monitor progress towards the dietary and nutritional targets is not currently in place in Northern Ireland. The extension of the National Food Survey to Northern Ireland in 1996 will go some way towards assessing progress. **The results from the survey should be complemented by in-depth nutritional surveys on specific age groups, for example, children, young adults and older people.**

Product development - The increasing importance of convenience to the modern consumer has been identified.⁸⁰ The combination of convenience with health offers scope for the further development of food products which can contribute to a healthy diet, for example, ready meals and snacks, which are low in fat, saturated fat, sugar and/or high in fibre.

The Cardiovascular Review Group of the Committee on Medical Aspects of Food Policy (COMA) recommends that *'the possibility, including the safety, efficacy and acceptability, of substituting potassium chloride in bread should be explored, as this might prove a useful and practical way of reducing the sodium content of this food. In addition an increase in potassium intake resulting from this exercise might be valuable'*.⁸

The range of food products which are higher in fibre and/or lower in fat, sugar and salt, including convenience foods, should be further developed.

Priority groups

It is recommended that two groups within the population should be given priority during the planning and delivery of initiatives which aim to influence and enable dietary changes. The two groups are children and young people; and people on low income.

Children and young people

The eating patterns of children and young people in Northern Ireland are similar to those recorded for adults in the population.^{27, 28, 50} Influencing the eating patterns of children and young people offers the potential to improve the health of the population in both the short-term and the long-term for the following reasons:

- eating habits established early in life are often maintained into adulthood when they can be more difficult to change;^{65, 78}
- evidence of atherosclerosis (the disease process involved in the development of coronary heart disease) has been found in post-mortem studies on adolescents;⁸¹
- other risk factors for coronary heart disease, for example raised blood pressure, have been shown to 'track' from childhood into adulthood;⁸²
- educational establishments offer an ideal venue for education on nutrition issues alongside the development of academic and social skills;
- parents can reinforce nutrition messages which are taught in schools, therefore easily accessible information and materials for parents are essential.

People on low income

Low income groups are those with limited resources, including for example, those on benefits, older people on pensions, students etc.

Low income groups eat less of the foods recommended for health, for example fruit and vegetables and more high fat processed meat products, chips and roast potatoes than those on higher incomes.⁷⁰

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Low income groups are also reported to experience most difficulties in making changes to their eating patterns, for example:

- the cost of healthy eating is particularly important for this group who often consider food as a dispensable item, which is purchased only after allowances for indispensable items such as rent and electricity have been made;⁸³
- the feeling of powerlessness resulting from the 'poverty cycle' increases the difficulties experienced when taking control over various areas of life, for example, making changes to eating patterns;
- the lack of basic cooking equipment has been identified as of particular importance for some, especially young single parents;
- the access to and availability of some foods, for example fresh vegetables, are more limited to some low income groups;⁷²
- a reluctance to experiment with new foods, food products and recipes has been identified among this group, because of concern over food rejection, wastage and the lack of resources to provide alternatives.⁶²

Initiatives which aim to address the nutritional needs of children, young people and low income groups should be reviewed. Recommendations should be made for the continuation or expansion of existing programmes and/or the development of new programmes to assist healthier eating patterns by these groups.

Intersectoral collaboration

The wide variety of factors which influence dietary behaviour necessitates the use of a range of approaches to achieve the dietary and nutritional targets in the strategy. This requires the involvement and cooperation of many organisations, professions and groups. These include:

- Government departments, including the Department of Agriculture for Northern Ireland, the Department of Economic Development, the Department of Education for Northern Ireland, the Department of Health and Social Services;
- Health and Social Services Boards and Health Trusts (acute and community);
- Health Promotion Agency for Northern Ireland;
- health professionals, including doctors, dietitians, nurses, health promotion officers, environmental health officers, dentists, health visitors;
- schools, colleges and universities;
- the commercial sector, including food producers, processors, retailers, caterers and sectoral promotion bodies;
- statutory organisations;
- voluntary and community groups.

The commitment and cooperation of all of these departments, organisations and groups is essential for the successful implementation of Eating and Health - A Food and Nutrition Strategy.

Action points

The following table outlines the 22 action points which were identified earlier in Action areas on pages 33-40. The action points are presented within the five action areas: public information; enabling change; education and training; policy development; research and development. The action points are not ranked in order of importance.

Suggestions are included for the organisations and groups which could be involved and/or assume a lead role.

Action point	Involvement/lead role
<p>Public information</p> <p>1 The dietary and nutritional targets in the Food and Nutrition Strategy could be translated into agreed statements about foods which are easily understood by the public.</p>	<p>Department of Health and Social Services; Department of Agriculture for Northern Ireland; Health Promotion Agency for Northern Ireland.</p>
<p>2 A programme of public information and education on, for example, 'healthy eating' messages could be continued. Work on other nutrition related topics could be strengthened, for example: breastfeeding; the role of folic acid/folate in the prevention of neural tube defects.</p>	<p>Department of Health and Social Services; Department of Agriculture for Northern Ireland; Health Promotion Agency for Northern Ireland; Health and Social Services Boards.</p>
<p>3 A process could be developed in which outdated nutrition information is recognised. Steps could then be taken to ensure that 'old' information in current use is replaced by updated research-based guidelines and clearly communicated.</p>	<p>Department of Health and Social Services; Department of Agriculture for Northern Ireland; Department of Education for Northern Ireland; Health Promotion Agency for Northern Ireland; Health and Social Services Boards; sectoral interest groups.</p>
<p>4 Recipes for easily prepared low cost dishes which can contribute to healthier eating patterns could be developed and distributed.</p>	<p>Food retailers; caterers; bodies which promote generic products.</p>

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Action point	Involvement/lead role
<p>Enabling change</p> <p>5 Initiatives which assist shoppers to make healthy food choices could be developed and implemented.</p> <p>6 A review could be undertaken of current initiatives which aim to address the particular problems of low income groups. Recommendations could be made for the continuation or expansion of existing programmes to assist healthier eating patterns by these groups.</p> <p>7 Healthier food choices could be provided and actively promoted within:</p> <p>a) catering establishments; b) in particular, in workplace dining areas.</p>	<p>Food retailers; caterers; bodies which promote generic products.</p> <p>Government departments; Health Promotion Agency for Northern Ireland.</p> <p>Caterers; employers.</p>
<p>Education and training</p> <p>8 Training on nutrition at undergraduate level for doctors, nurses, environmental health officers and others involved in nutrition education could be regularly updated to ensure that accurate, consistent messages on nutrition are given by all those involved in giving nutritional advice.</p> <p>9 A continuing programme of postgraduate courses or nutritional updates could be undertaken for health professionals and other professionals involved in nutrition education to ensure an acceptance, understanding and commitment to the targets in this strategy.</p>	<p>All agencies concerned with the education and training of health professionals and other professionals involved in nutrition education.</p> <p>Educational establishments; Health Promotion Agency for Northern Ireland.</p>

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Action point	Involvement/lead role
Education and training	
10 A review of the nutrition training for teachers at undergraduate and postgraduate levels could be undertaken and recommendations made.	Department of Education for Northern Ireland; Health Promotion Agency for Northern Ireland; training colleges; universities.
11 A review of the range and quality of nutrition education in schools could be undertaken and examples of good practice promoted and widely shared.	Department of Education for Northern Ireland.
12 A review of the practical food preparation content of the Home Economics Syllabus could be undertaken and recommendations made.	Department of Education for Northern Ireland; Northern Ireland Council for the Curriculum, Examinations and Assessment (CCEA).
Policy	
13 Nutrition policies could be developed, implemented and evaluated. (Nutrition policies developed by statutory organisations should highlight the importance of incorporating nutritional standards in all catering contracts).	All sectors. Statutory organisations.
14 Nutrition policies could be developed incorporating for example in-store promotions, shelf-highlighting and competitive pricing policies for healthier food choices (for example lean meat, reduced fat cheese, low fat spreads).	Food producers; processors; retailers; caterers; Health Promotion Agency for Northern Ireland.
15 A review of school meals provision could be undertaken.	Department of Education for Northern Ireland.
16 Nutritional standards for school catering could be reintroduced in post-primary schools.	Department of Education for Northern Ireland; Health Promotion Agency for Northern Ireland.
17 Initiatives which encourage a 'whole-school' approach to nutrition education could be promoted.	Department of Education for Northern Ireland; the education sector; Health Promotion Agency for Northern Ireland.

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Action point	Involvement/lead role
Research and development	
18 Research to understand the low rates and short duration of breastfeeding in Northern Ireland could be undertaken and recommendations made.	Department of Health and Social Services; Health Promotion Agency for Northern Ireland; Health and Social Services Boards.
19 Research could be undertaken to understand more fully the psychology of food choice.	Department of Health and Social Services; Department of Agriculture for Northern Ireland; Department of Economic Development; Health Promotion Agency for Northern Ireland.
20 Results from the National Food Survey could be complemented by the development of a programme of nutritional surveys on specific population groups, for example children and older people.	Department of Health and Social Services; Health Promotion Agency for Northern Ireland.
21 The range of products which are higher in fibre and/or lower in fat, sugar and salt, including convenience foods, could be further developed.	Food producers; food processors.
22 The safety, efficacy and acceptability, of substituting potassium chloride for sodium chloride in bread could be explored.	Department of Agriculture for Northern Ireland; Department of Health and Social Services.

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The graphic features a large, stylized number '5' in the background, rendered in a light green color. The text 'Section 5 Recommendations - the Way Forward' is overlaid on this background. 'Section' is in a white, italicized serif font, while '5' is a large, bold, white sans-serif numeral. 'Recommendations' is in a white, bold, italicized sans-serif font. '- the Way Forward' is in a white, bold, italicized sans-serif font, with 'the' in lowercase and 'Way Forward' in title case. The entire design is set against a solid green background with a decorative bar of vertical stripes at the bottom.

Section **5**
Recommendations
- the Way Forward

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Recommendations - the way forward

Initiatives to increase public awareness and understanding of nutritional recommendations and to enable changes to dietary and nutritional patterns have been ongoing in Northern Ireland since the 1980s. As a result an increased public awareness and some dietary changes have been reported.^{62, 71, 84} However, much remains to be done and this requires urgent and collaborative action. This section outlines the recommendations of the Food and Nutrition Strategy Group for the way forward. It highlights the timescale of the strategy, allocation of resources and the mechanism for the monitoring of progress.

Timescale

The action points identified in section four of this document should be given urgent attention. It is recommended that Eating and Health - A Food and Nutrition Strategy for Northern Ireland should operate in parallel with Health and Wellbeing: Into the Next Millennium, the Regional Strategy for Health and Social Wellbeing 1997-2002.⁹

Resources

The 22 action points identified in the strategy can be classified into two broad categories, each of which has different resource implications. The categories are:

- 1 Action that could be progressed within existing resources with minimal changes to current practices.
- 2 Action that would break new ground and require additional resources.

The majority of the action points fall into category one. The Group believes it is possible to make significant progress in a number of areas within the current financial constraints. This progress will depend on the support of everyone working in the area of nutrition to ensure that the implementation of the action points is given priority and resources.

Some of the action points fall into category two and will require additional resources. The areas most likely to be affected include:

- public information programmes;
- research and development.

As a result of progress on a number of action points, further work will be identified and will require additional funding, for example, implementation of initiatives to assist healthier eating, particularly among low income groups.

The scale of additional funding that would be necessary is difficult to quantify. This would depend upon developing specific, costed proposals for action and presenting these to potential funders.

Monitoring of progress

The publication of this strategy concludes the work of the Food and Nutrition Strategy Group (FNSG).

Eating and Health - A Food and Nutrition Strategy for Northern Ireland identifies specific action points, which, if given attention will contribute significantly to improved nutritional knowledge, understanding and behaviour among the population of Northern Ireland. Ultimately, this will contribute to improvements in health in the province.

Following the publication of the document, a group should be established which would have the following responsibilities:

- to agree priorities within the action plan;
- to ensure that progress is made in all areas through, for example, the setting up of working groups for specific projects;
- to provide guidance to and receive reports from working groups;
- to monitor, coordinate and evaluate activity;
- to review the action plan in light of changing circumstances;
- to enable communication between various sectors;
- to provide regular reports on progress on the implementation of the action points to the Inter-Departmental Group on Health;
- to monitor the impact of the strategy.

The group should include representatives of the main interest groups and have the flexibility to co-opt additional members for specified periods as necessary.

The membership of the group should include:

- Government departments;
- Health Promotion Agency for Northern Ireland;
- the health sector;
- the education sector;
- nutrition educators;
- food producers and processors;
- food retailers;
- caterers;
- voluntary groups.

The involvement of each key sector will be essential for the implementation of this strategy. Their commitment and contributions will ensure that the vision which is contained within the strategy is achieved.

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Section **6**
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Section **7**
***Appendices and
Acknowledgements***

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Appendix 1 – Summary of interaction between nutrients and diet-related conditions

The following is a summary of the complex interaction between nutrients and a number of important diet-related conditions.

	Fat				Fibre	Sugar (non-milk extrinsic sugars)	Sodium (salt)	Potassium	Fruit & vegetables	Fish	Folic Acid	Over weight	Calcium	Iron	Alcohol
	Total	SFA	n-6	n-3											
Coronary Heart Disease	I	I	*	D	D	-	I	-	D	D	-	I	-	-	**
Cancers	I	-	-	-	D	-	-	-	D	-	-	I	-	-	I
Hypertension	-	-	-	-	-	-	I	D	-	-	-	I	-	-	I
Overweight and Obesity	I	-	-	-	D	I***	-	-	D	-	-	-	-	-	I
Osteoporosis	-	-	-	-	-	-	-	-	-	-	-	-	D	-	-
Dental decay	-	-	-	-	-	I	-	-	-	-	-	-	-	-	-
Iron deficiency anaemia	-	-	-	-	-	-	-	-	-	-	-	-	-	D	-
Neural tube defects	-	-	-	-	-	-	-	-	-	-	D	-	-	-	-

Key:

Total = total fat

SFA = saturated fatty acids

n-6 = n-6 polyunsaturated fatty acids, eg from vegetable oils

n-3 = n-3 polyunsaturated fatty acids, eg from fish oils

MUFA = monounsaturated fatty acids

Trans = *trans* fatty acids, eg from hydrogenated fats

I = associated with higher levels of the condition

D = associated with lower levels of the condition

Notes: * polyunsaturates of the n-6 series found mainly in vegetable oils, lower both LDL ('bad') and HDL ('good') cholesterol, so have both beneficial and detrimental effects.

** some research has shown that a moderate intake of alcohol is protective against heart disease.

*** sugar can contribute to the overall excess of dietary energy which causes obesity and is often found in foods which are also rich in fat.

Appendix 2 - Reference Nutrient Intakes (RNI)* for calcium and iron

Age	CALCIUM		IRON	
	RNI (mg/day)		RNI (mg/day)	
0 - 3 months	525		1.7	
4 - 6 months	525		4.3	
7 - 12 months	525		7.8	
1 - 3 years	350		6.9	
4 - 6 years	450		6.1	
7 - 10 years	550		8.7	
	Males	Females	Males	Females
11 - 14 years	1000	800	11.3	14.8**
15 - 18 years	1000	800	11.3	14.8**
19 - 50 years	700	700	8.7	14.8**
50 + years	700	700	8.7	8.7
Lactating Women	+550			

* RNI = the amount of a nutrient which is sufficient for almost all individuals.

** About 10% of women with very high menstrual loss will need more than shown. Their needs may be best met by taking iron supplements, following consultation with their GP.

(Department of Health. Dietary Reference Values for Food Energy and Nutrients for the United Kingdom. Report of the Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. Report on Health and Social Subjects 41. London: HMSO, 1991).

Appendix 3 – Consultation meetings 1995

During 1995 representatives from food producers and processors, retailers, caterers, nutrition educators, the education sector and voluntary and community groups were invited by the Food and Nutrition Strategy Group (FNSG) to participate in one of a series of preliminary consultation meetings.

The meetings were chaired by a neutral moderator and opened with an outline of the background to the FNSG and the consultation process.

A keynote address was given at the meetings with food producers and processors, retailers and caterers. Dr Steven Shaw, Senior Manager, Analytical Services from J Sainsbury plc, presented *Healthy Eating : A Retailer's Response* at the meeting with food producers and processors. Charles Moore, Director of the Consumer Division, Taylor Nelson, presented data on trends in food consumption and attitudes towards healthy eating at the meetings with food retailers and caterers.

At each of the meetings delegates were invited to contribute to a discussion on:

- the need for and aims of a food and nutrition strategy;
- factors influencing food choice;
- current and potential contributions of various groups to a food and nutrition strategy.

The recommendations and discussion points from the meetings were used to guide the preparation of Eating and Health - A Food and Nutrition Strategy for Northern Ireland.

Acknowledgements

This strategy is the result of several months of consultation. During that time the Food and Nutrition Strategy Group received comments and support from many individuals, organisations and agencies, including nutrition educators; food producers and processors; food retailers; caterers; representatives from the education sector; and voluntary and community groups.

This help is gratefully acknowledged.

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A large, stylized number '8' is the central graphic. It is composed of two overlapping, rounded rectangular shapes. The top shape is a light green color, and the bottom shape is a slightly darker green. The number is centered on the page.

Section **8**
Glossary

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Glossary

Antioxidants - these protect cells in the body against damage by oxidation. Examples of antioxidants which occur naturally in food include carotenoids, vitamins C and E.

Atherosclerosis - a disease of the arteries in which fatty, fibrous plaques develop on the inner wall. This may eventually disrupt blood flow, especially if a clot forms.

Carotenoids - a group of red or yellow pigments found in fruit, vegetables and some animal tissues, for example beta-carotene, the orange pigment of carrots.

Extrinsic sugars - sugars not contained within the cellular structure of a food, eg table sugar, honey.

Fat - see triglycerides.

Fibre or dietary fibre - the part of plant foods which cannot be fully digested by humans. There are two types - soluble fibre (eg from oats, fruit and vegetables) and insoluble fibre (from cereal products, especially wholegrain varieties).

High density lipoprotein (HDL) - a blood lipoprotein which carries cholesterol from the tissues to the liver. A low level of HDL is associated with a higher risk of heart disease, especially when the level of low density lipoprotein (LDL) is high.

Intrinsic sugars - naturally occurring sugars which are contained within the cell wall, eg sugars in an orange.

Lipoproteins - complex molecules which are made up of lipids and protein. They transport cholesterol, triglycerides and other substances in the blood.

Low birth weight (LBW) - infants which weigh less than 2,500g at birth are described as being of low birth weight.

Low density lipoprotein (LDL) - a blood lipoprotein which is rich in cholesterol. This is the form in which cholesterol is transported to the tissues. High levels of LDL are associated with an increased risk of heart disease.

Monounsaturated fatty acids or monounsaturates - these consist of a chain of carbon atoms with one double bond joining two of the carbon atoms in the chain so that there are two less hydrogen atoms attached.

Neural tube defects (NTD) - these conditions occur if the brain and/or spinal cord with its protecting skull and spinal column fail to develop properly around the fourth week of embryonic life. They include spina bifida, anencephaly and encephalocele.

Non-milk extrinsic sugars (NMES) - added dietary sugars, ie all sugars except those contained in fruit, vegetables and milk.

Non-starch polysaccharide (NSP) - the term for the most precisely measurable form of dietary fibre (see fibre).

Polyunsaturated fatty acids or polyunsaturates - these consist of a chain of carbon atoms with two or more double bonds in the chain between some of the carbon atoms so that there are less hydrogen atoms attached than is the case with saturates or monounsaturates. There are two main classes of polyunsaturated fatty acids, known as n-3 and n-6. They differ in the position of their first double bond in relation to the whole carbon chain.

Reference Nutrient Intake (RNI) - the amount of a nutrient which is sufficient for almost all individuals.

Saturated fatty acids or saturates - chains of carbon atoms to which a maximum number of hydrogen atoms are attached, ie the carbon chains are fully saturated with hydrogen.

School Nutrition Action Group (SNAG) - a school based alliance in which staff, caterers and pupils, supported where appropriate by health and education professionals, work together to review and expand the range of food and drink provided through, for example, tuck shops, vending machines and the midday meal, to increase the uptake of healthier food choices.

Trans fatty acids - unsaturated fatty acids in which the hydrogen atoms around a double bond in the carbon chain are on opposite sides, compared with most naturally occurring fatty acids in which the hydrogen atoms are on the same side (known as *cis* fatty acids). The main source of *trans* fatty acids is hydrogenated vegetable oils.

Triglycerides - these make up the major part of dietary fat and are composed of three fatty acid molecules joined to one molecule of glycerol.

Unit of alcohol - an approximate measure of alcohol, in which one unit equals half a pint of ordinary beer, one small glass of sherry or one glass of wine. A single measure of spirits in Northern Ireland is equivalent to one and a half units of alcohol.

Weight-bearing activity - any activity which involves putting pressure on the spine, for example, walking, jogging, skipping, racquet sports and press-ups.