

Chapter 2

Nutrition is the Key to Health

The major causes of death in developed countries are heart disease and cancer which are influenced to a large degree by the type of diet we have. Up to 50 per cent of people with heart disease or cancer could probably have prevented or delayed the onset of their illness if they had eaten a better diet (or stopped smoking). This is particularly true for those who became ill at a relatively young age, i.e. before sixty-five years. Furthermore, many minor ills are also influenced by diet and these include problems such as migraine headaches, high blood pressure, arthritis, kidney stones, premenstrual syndrome, eczema, fatigue, irritable bowel syndrome, insomnia and anxiety. These are only the tip of the iceberg as you will see and in this book alone we have covered over 120 conditions.

When we are children our parents teach us how to eat, dress, wash and generally look after ourselves and we are taught at school how to read, write and add up. But where and how do we learn about our bodies' requirements? Well, it is not at school, neither is it at evening classes, as they seem to concentrate there on car maintenance and the secrets of computer mechanics. The woman, who is often regarded as the 'nutritional head of the household', and is expected to meet the demands of her family's nutrient needs as well as her own, has little or no training for this job. When we consider this rationally, it seems so outrageous, especially as we trade both our cars and our computers in from time to time, but only have one body to last a lifetime.

Because we are so often told by our doctors that a balanced diet is all that we need to maintain our health, the WNAS conducted a random survey a few years ago to find out what people understood by the term 'a balanced diet'. We also asked which foods contained key vitamins like A, B, C, D and E, and some key minerals like calcium, magnesium, zinc and iron. The negative results of this survey would have been entertaining were it not for the fact that the consequences of an unbalanced diet may severely affect the quality of health. The only information that people seemed to have about their diet was from basic lessons at school, if they could remember them. Apart from knowing facts such as 'oranges contain vitamin C' and that 'liver contains iron', hardly anyone had a clue

as to what actually constituted a sound balanced diet, or how much of each nutrient was required each day for their body size, (or anyone else's body size for that matter).

Although magazine articles are one of the key sources of information about diet, confusion abounds as we lurch from one diet scandal to another. First we hear that alcohol is bad for us and that animal fats will cause our cholesterol levels to rise. Then we hear that we should be drinking two or three glasses of wine each day to prevent heart disease, and that fats have little influence on our cholesterol levels. Should we be eating liver regularly, or does it contain too much vitamin A? Will soft cheeses and uncooked eggs give us listeria and salmonella? Is decaffeinated tea and coffee *really* better for us or will the other methylxanthines get us anyway? We could well be forgiven for putting our heads in the sand and hoping for the best. Trying to sort out the dietary myths from the facts is an arduous task for anyone.

Essential nutrients

In order to fully understand the role of vitamins and minerals in health, it is necessary to have some idea about the part that each nutrient has to play. A truly balanced diet must provide an adequate supply of energy and protein, plus essential vitamins, minerals and specialised fats called essential fatty acids (EFAs). The majority of energy comes from fats and carbohydrates in the diet, and a small amount from protein-rich foods.

Proteins, fats, carbohydrates and fibre are all essential for normal body function. Let's look briefly at the function they serve.

Protein

This term is used to describe a series of complex chemicals that are widely found in many nutritious foods. Proteins are made up of amino acids, the essential building blocks of health, as well as many hormones, enzymes and other agents involved in the intricate metabolism of living organisms. If protein intake is not adequate in the diet, then tissue growth and repair cannot take place, and protein-rich tissues breaks down, especially muscle.

Sources of protein

Protein can be found in both animal and vegetarian sources – meat, eggs, dairy products including milk and cheese, peas, beans, lentils, nuts, seeds and, to a very small extent, rice and potatoes. It is wise to have a wide variety of protein sources in your diet, especially if you are a vegetarian.

Fats

Fats provide us with energy. There are a wide variety of different fats, which are all chemically similar, and per gram weight they provide us with over twice the energy content as carbohydrate or sugar.

Animal fats

The majority of animal fats are saturated and serve only as a source of calories. Animal fats are not essential to our diet and have a chemical structure that is saturated with hydrogen. This chemical nature means that they are usually solid at room temperature. A diet rich in these saturated animal fats, and lacking in fibre, vitamins and minerals will often predispose to heart disease.

Vegetable fats

Many, but not all vegetable fats are polyunsaturates and these include the specialised essential fatty acids, or EFAs, which are used in the building structure of our cells, especially those of our skin and nervous system, and are also a source of calories. Chemically these fats or oils are unsaturated and are able to accept more hydrogen molecules. This means that they are usually liquid at room temperature. Olive oil and rapeseed oil are rich in monosaturates which are not essential but they do not add to the risk of heart disease in the way that saturated fats do. Good sources of the essential fatty acids are corn, sunflower and safflower oils which provide the Omega-6 series of EFAs. Oily fish such as mackerel, herring and salmon, together with soy bean and walnut oil and to a small extent rapeseed oil provide the Omega-3 series.

Carbohydrates

Carbohydrate is a collective term for the different sugars and starches in our diet. Starches are composed of many individual sugar molecules, predominantly glucose, and are broken down by our digestive system into simple sugars, some of which are better for us than others. The simple sugars are glucose, fructose and galactose (which is part of the sugar found in milk). Table sugar, which is also called sucrose, is made up of one glucose and one fructose unit joined together. Its commercial production from sugar cane and sugar beet leads to the complete loss of vitamins and minerals found in these parent sources. A similar refining process to prepare white flour from wholemeal leads to a substantial reduction in essential vitamins and minerals. Sugars and starch-rich foods all require vitamin B and magnesium in order to be metabolised. Sucrose and to a lesser extent fructose also predispose to tooth decay.

Sources of refined carbohydrates

Cakes, biscuits, sweets, chocolate, table sugar, white bread, white pasta and many breakfast cereals are all refined products that have been depleted of many essential nutrients. Fortunately white flour and some breakfast cereals are fortified with vitamins and flour has added calcium. This helps to make up for these nutritional losses.

Nutritious carbohydrate sources

These include all cereals, potatoes, rice and root vegetables. Fresh fruits and vegetables also provide a mixture of sugars – mainly fructose and a small amount of starch.

Fibre

Fibre is a type of carbohydrate that comes from cellulose – the cell wall of plants – and remains undigested in our gut. Because of its water-retaining properties, it forms the bulk of our stool. There are many types of fibre with differing properties. Most of us associate fibre-rich foods with those containing bran, for example, but bran may inhibit the absorption of certain essential nutrients including calcium and other minerals. It has little effect on blood cholesterol whereas the fibre in fruit, vegetables and oats helps reduce a high level of cholesterol.

Good sources of fibre

A diet rich in fruit, vegetables, salad and cereals lowers blood cholesterol and the risk of heart disease, as well as providing many essential vitamins and minerals.

Vitamins and minerals

There are some 15 vitamins, 15 minerals, and eight to ten amino acids that have been isolated as being essential for normal body function. These nutrients are synergistic, which means they rely on each other in order to keep the body functioning at an optimum level. If you liken the body to a computer for a moment, the computer can only function when it has the correct data and commands fed into it; otherwise it refuses to work or breaks down altogether. Similarly, our bodies require the correct input of nutrients. When one or more nutrient is in short supply the body cannot function properly, and symptoms, be they physical or mental, occur.

Whilst it is true that severe nutritional deficiencies are rare in countries like the UK, Australia, New Zealand and the USA, poor intake of a number of nutrients are acknowledged in some 20 per cent of women of child-bearing age. Combined nutritional inadequacies are likely to have an adverse affect on hormone function and on health in general during the ageing process.

Nutritional needs through the ages

Our bodies are indeed very complex machines that have very specific requirements in order that they may function efficiently. Women in particular have varying needs, not just through their years of physical growth and development, but through each phase as it presents itself. The

nutritional requirements for pregnancy are quite different, for example, from those needed by a woman at the time of the menopause.

The following chart will give you some idea about the changing needs throughout life.

Growth & development	All known nutrients.
Puberty of both boys and girls	All nutrients, and particularly iron, zinc, calcium and magnesium.
Premenstrual syndrome	Particularly magnesium, B vitamins, iron and EFAs.
Preconception	Folate, other B vitamins and EFAs.
Pregnancy	All nutrients, particularly EFAs.
Breast-feeding	EFAs, calcium, magnesium and iron.
Menopause	Calcium, magnesium, vitamin E and EFAs.
Post-menopause	Calcium, magnesium, EFAs, and vitamin D if deficient.
The elderly of both sexes	Vitamins B, C, D, calcium and iron.

Essential nutrients – are we deficient?

To continue the ‘machinery’ metaphor, learning what your body needs to function properly is a bit like trying to work a complicated computer without a manual. In fact, if the computer arrived without a manual, you would probably either leave it in the box until the manual arrived or, failing that, send it back to the shop. Becoming familiar with your body’s needs demands a little patience and determination, because it is not that simple. It’s almost like learning a new language.

Although we all have a body, that is where the similarity ends. Each individual body has slightly different requirements. The type of metabolism we have is inherited. There are the lucky robust minority who appear to be able to eat what they like, to maintain their weight and good health, and who seem to be oblivious to environmental and social stresses and strains. They must come from unusually strong stock. As for the rest of us, we have to come to terms with the fact that subtle differences determine the strengths and weaknesses of our make-up, and that one balanced diet for all is a myth.

To understand your own nutrient needs you need to know a little about each individual nutrient. This is presented in the chart on pages 18–21. Look through it and follow up any health problems you might

The Essential Nutrients, Vitamins, Minerals and Essential Fatty Acids

Nutrient	Food source	What they do
Vitamin A	<i>Retinol (animal vitamin A)</i> Liver, all dairy products and margarine <i>Beta-carotene (vegetable vitamin A)</i> All yellow, green, and orange fruits and vegetables	Essential for vision, especially in the dark, for growth and resistance to infection
Vitamin B1 (Thiamin)	Meat, fish, nuts, wholegrains and fortified breakfast cereals	Essential in the metabolism of sugar, especially in nerves and muscles
Vitamin B2 (Riboflavin)	Milk, meats, fish and vegetables	Involved in energy release from fats and carbohydrates
Vitamin B3 (Nicotinamide)	All forms of meat and fish, liver, fortified breakfast cereals and bread	Energy release from fats and carbohydrates, health of the skin and nervous system
Vitamin B6	Meat, fish, nuts, bananas, avocados, wholegrains	Essential in the metabolism of protein and the amino acids that control mood and behaviour. Affects hormone metabolism
Vitamin B12	All forms of meat, liver, eggs and milk, yeast extract	Involved in the chemical functioning of the nervous system, and the blood cells
Vitamin C (Ascorbic acid)	Any fresh fruits and vegetables	Involved in healing, repair of tissues and production of some hormones
Vitamin D	Milk, margarine, sardines, cod liver oil, eggs (and sunlight)	For the balance of calcium in bones and teeth, and for muscle strength
Vitamin E	Most nuts, seeds and vegetable oils and dark green leafy vegetables	Protect tissues from wear and tear, keep cholesterol and other fats from deteriorating inside the body
Vitamin K	Green leafy vegetables, and the bacteria in our intestines	Help with blood clotting
Folic acid	All green leafy vegetables, liver and fortified cereals	Help maintain the health of the nervous system and the blood

Who is at risk	Symptoms	Visible Signs
The ill, elderly and poorly fed pre-school children	Poor night vision, recurrent chest infections	None
Alcohol consumers, women on the pill, breast-feeding mothers, high consumers of sugar	Depression, anxiety, poor appetite, nausea, personality change	None usually! Heart, nerve and muscle problems if severe
Those on a poor diet. Deficiency rarely severe	Mild fatigue and possibly burning feet	Peeling of the skin on the lips. Red ring around the iris of the eye
Alcoholics, those on a poor diet, and with poor digestion	Diarrhoea, depression and dermatitis	A sore tongue and red scaly rash in light-exposed areas
Women, especially smokers, 'junk-eaters'	Depression, anxiety, insomnia, loss of responsibility	Dry/greasy facial skin, cracking at corners of mouth
Long-term vegans, those who have lost part of their stomach, and the elderly with digestive problems	Anaemia, loss of balance and a sore tongue	Smooth sore tongue, pale appearance, and unsteadiness
Smokers particularly	Lethargy, depression, hypochondria (imagined illnesses)	Easy bruising, look for small pinpoint bruises under the tongue
Urban-dwelling, dark-skinned immigrants, especially young children and pregnant women, those with little sunlight exposure	Softening of the bones, poor teeth and weakness of the hip muscles	Enlarged skull, bowing of the legs and a waddling gait
Those on a very poor diet, or with serious absorption problems	None. Damage to the nervous system if severe	None
Those with a poor diet or on long-term antibiotics	Prolonged bleeding	None
Those on a poor diet, those taking anti-epileptic medication, coeliacs, and a percentage of the normal population of child-bearing women who are at increased risk of having a child with a neural tube defect	Often none. Possibly depression, fatigue and poor memory	None unless anaemic

Nutrient	Food source	What they do
Iron	Meat, wholegrains, nuts, eggs and fortified breakfast cereals	Essential to make blood-haemoglobin. Many other tissues need iron for energy reactions
Zinc	Meat, wholegrains, nuts, peas, beans, lentils	Essential for normal growth, mental function, hormone production and resistance to infection
Magnesium	Green vegetables, wholegrains, Brazil nuts and almonds, many other non-junk foods	Essential for sugar and energy metabolism, needed for healthy nerves and muscles
Calcium	Milk, cheese, bread, especially white, sardines, other fish with bones, green vegetables and beans	Needed for strong teeth and bones, also for normal nerve and muscle function. Lack leads to osteoporosis – bone thinning
Potassium	All vegetables and fruit	Needed for the health of all cells, especially muscles and the nervous system
Selenium	Most wholesome foods, especially seafoods	Involved in two enzymes that protect inflamed and damaged tissues and help thyroid function
Chromium	All wholesome foods, not sugar and other refined carbohydrates	Helps in the action of insulin. Deficiency causes a diabetic-like state
Essential Fatty Acids Omega-3	Cod liver oil, mackerel, herring	Help control inflammation
Fish and related oils	Salmon, rapeseed and soya bean oil	Reduce calcium losses in urine
Essential Fatty Acids Omega-6, evening primrose and related oils	Sunflower, safflower and corn oils, many nuts (not peanuts) and seeds, green vegetables	Control inflammation, needed for health of nervous system, skin and blood vessels

Who is at risk	Symptoms	Visible Signs
Women who have heavy periods (e.g. coil users), vegetarians, especially if tea or coffee drinkers, women with recurrent thrush	Fatigue, poor energy, depression, poor digestion, sore tongue, cracking at corners of mouth	Pale complexion, brittle nails, cracking at corners of mouth
Vegetarians, especially tea and coffee drinkers, alcohol consumers, long-term users of diuretics (water pills)	Poor mental function, skin problems in general, repeated infections	Eczema, acne, greasy or dry facial skin
Women with PMS (some 50 per cent may be lacking), long-term diuretic users, alcohol consumers	Nausea, apathy, loss of appetite, depression, mood changes, muscle cramps	Usually NONE! so easily missed; muscle spasms sometimes
Low dairy consumers, heavy drinkers, smokers, women with early menopause, lack of exercise increases the rate of bone calcium-loss in later years	Usually none until osteoporotic fracture of hip or spine. Back pain	Loss of height
The elderly, after prolonged vomiting, with use of some diuretics and poor diet	Weakness, low blood pressure and muscle cramps	None
The ill, elderly, those on a very poor diet, possibly those with heart failure or long-standing malabsorption, or alcoholics	None that are specific, just not well	None
The elderly, life-long consumers of junk food!	Those of diabetes or of a low blood sugar with episodic weakness and sugar craving	Perhaps a large waistline or sweet wrappers in their pockets!
Those on a poor diet	None	None
Older people, diabetics, drinkers	None	None
Those on a poor diet, diabetics and drinkers. Also those with severe eczema and premenstrual breast tenderness	None	Possibly dry skin

have by referring to the relevant chapters. If you are looking for a general improvement in your health rather than wishing to address a particular condition you would be advised to follow the recommendations for The Very Nutritious Diet on page 437 in order to get a balance of all the essential nutrients. Shop regularly for fresh food, especially for fruit and vegetables, and if you get the opportunity, grow your own fruit and vegetables or buy additive-free or organic produce.

Judith's story

Judith was a very dedicated 45-year-old social worker. She regularly worked long hours at work and had really neglected her social life.

It was thus easy to put her problems of diarrhoea, fatigue and pre-menstrual problems down to her over-caring and rather nervous disposition. Her self-sacrificing nature meant that she had also sacrificed the quality of her diet. She ate erratically, had a poor intake of fresh foods, and would regularly snack on biscuits. She was reluctant even to mention her problem and it was only because of pressure from a friend that she consulted us at all.

There was nothing remarkable to be found from examination but certainly her diet made it likely that she would have some nutritional deficiencies. Tests did reveal somewhat reduced levels of a number of nutrients including zinc and vitamin B1, but the striking feature was the very low level of vitamin B3. Deficiency of this vitamin in particular can cause diarrhoea and can contribute to depression and possibly menstrual disturbances as well.

She had already begun making changes to her diet to improve its nutrient quality and to avoid foods that might be aggravating her bowel problems by the time these results returned. There was no immediate improvement from changing her diet but within a week of beginning high-strength vitamin B her diarrhoea settled completely, her mood improved, and pre-menstrual symptoms lessened. She took this opportunity, with the support of her friends, to make changes to her lifestyle, reducing her work commitment and developing some social interests. A new hairstyle and some evening classes were two further useful steps forward.

Overall there was a very good reduction in her levels of physical symptoms. Her generous, caring nature continues and doubtless she will have to take care that she does not over commit herself both physically and emotionally.

Physical Signs of Vitamin and Mineral Deficiency

<i>Sign or symptom</i>	<i>Can be caused by deficiencies of</i>
Cracking at the corners of the mouth	Iron, vitamins B12, B6, folic acid
Recurrent mouth ulcers	Iron, vitamins B12, B6, folic acid
Dry, cracked lips	Vitamin B2
Smooth (sore) tongue	Iron, vitamins B2, B12, folic acid
Enlargement, prominence of taste buds at the tips of the tongue (red, sore)	Vitamins B2 or B6
Red, greasy skin on face, especially sides of nose	Vitamins B2, B6, zinc or essential fatty acids
Rough, sometimes red, pimply skin on upper arms and thighs	Vitamin B complex, vitamin E or essential fatty acids
Skin conditions such as eczema, dry, rough, cracked, peeling skin	Zinc, essential fatty acids, vitamins A and E
Psoriasis	Folic acid, zinc, selenium, vitamin A, essential fatty acids
Wrinkles	Antioxidants: vitamins A, C, E, selenium, zinc
Poor hair growth	Iron or zinc
Dandruff	Vitamins C, B6, zinc, essential fatty acids, biotin
Acne	Zinc
Bloodshot, gritty, sensitive eyes	Vitamins A, B2
Night blindness	Vitamin A, zinc
Dry eyes	Vitamin A, essential fatty acids
Cracking at corner of eyes	Vitamins B2 or B6
Brittle nails, flattened upturned nails	Iron, zinc, essential fatty acids
White spots on nails	Zinc
Pale appearance due to anaemia	Iron, vitamin B12, folic acid, essential to consult you doctor

Martine's story

Martine was a 45-year-old mother of three who worked part-time as a secretary. Since her mother's death nine months earlier she had been neglecting herself, eating largely junk food, and had put on two stones in weight. She was unhappy, she had dry spotty skin and her hair was in poor condition. She also had dry rough red pimples on her upper arms and thighs, split brittle nails and cracking at the corners of her mouth.

'I hadn't been feeling brilliant for some time, so having to cope with my mother's death on top of that was probably the final straw. My eating got out of control and over a period of nine months my weight gradually went up to nearly 12 stones. My normal weight was around 9½ stones so I felt very uncomfortable and obviously couldn't fit into any of my clothes, which was very depressing. I also noticed that my breasts became incredibly sore each month before my period.

As well as being overweight, I experienced mood swings and noticed that my skin, hair and nails had deteriorated. My nails were split and brittle, my skin became very dry and spotty, and my hair became very dull and split. I felt like a walking wreck. I tried dieting, but found I couldn't stick to a diet for more than a few days which was very demoralising.

I read that cravings for food may be a physiological problem in a report on some research conducted by the WNAS, in Here's Health magazine. I contacted them for advice and was given a programme to follow that involved eating good food little and often, exercise and nutritional supplements. I started in December which was difficult because of Christmas. But once the new year came, I found I was able to stick to my programme, in fact I was surprised how much I enjoyed it.

I lost weight gradually, without counting calories, and my vitality returned. Within four months I had lost a stone in weight, my skin was clear, my nails had grown beautifully and even my hair had got its old shine back. The breast symptoms had cleared up too. I felt like a new woman and totally in control. I've had some ups and downs since, but I feel that I now know what my body needs, so it's much easier for me to get back on the right road again.'

See also: Standard References.