1 South Asian Sub-continent

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The cultural groups from Gujarat, Punjab, Pakistan, Bangladesh and Sri Lanka have migrated from the South Asian subcontinent to the United Kingdom from different regions over last 60 years, mostly due to economic and political upheavals, and made the UK their home. As a result of the vast distances between the countries there were many differences in their cultural, traditional beliefs and diets but also many similarities as well. The reasons for these changes are many, but lifestyle changes, especially dietary changes, have had the greatest impact on health. The traditional diets which they were following were much healthier, more in line with what is currently recommended, but inclusions of some of the host country's unhealthy foods are having detrimental effects. This is now highlighted in scientific research; however, much of this is generic to those of South Asian origin rather than related to specific cultural groups. In this book, for the first time, an attempt has been made to provide detailed information on each of group. There is information on migration, traditional diets and changes in migration, religious influences and on dietary considerations for specific diseases, such as obesity, diabetes and cardiovascular disease.

1.1 Gujarati Diet

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1.1.1 Introduction

The South Asian sub-continent comprises India, Pakistan, Bangladesh and Sri Lanka. Four per cent of the total UK population is classified as 'Asian' or 'Asian British' and this group makes up 50.2% of the UK minority ethnic population (UK Census, 2001).

'South Asian' defines many ethnic groups, with distinctive regions of origin, languages, religions and customs, and includes people born in India, Bangladesh, Pakistan or Sri Lanka (Fox, 2004).

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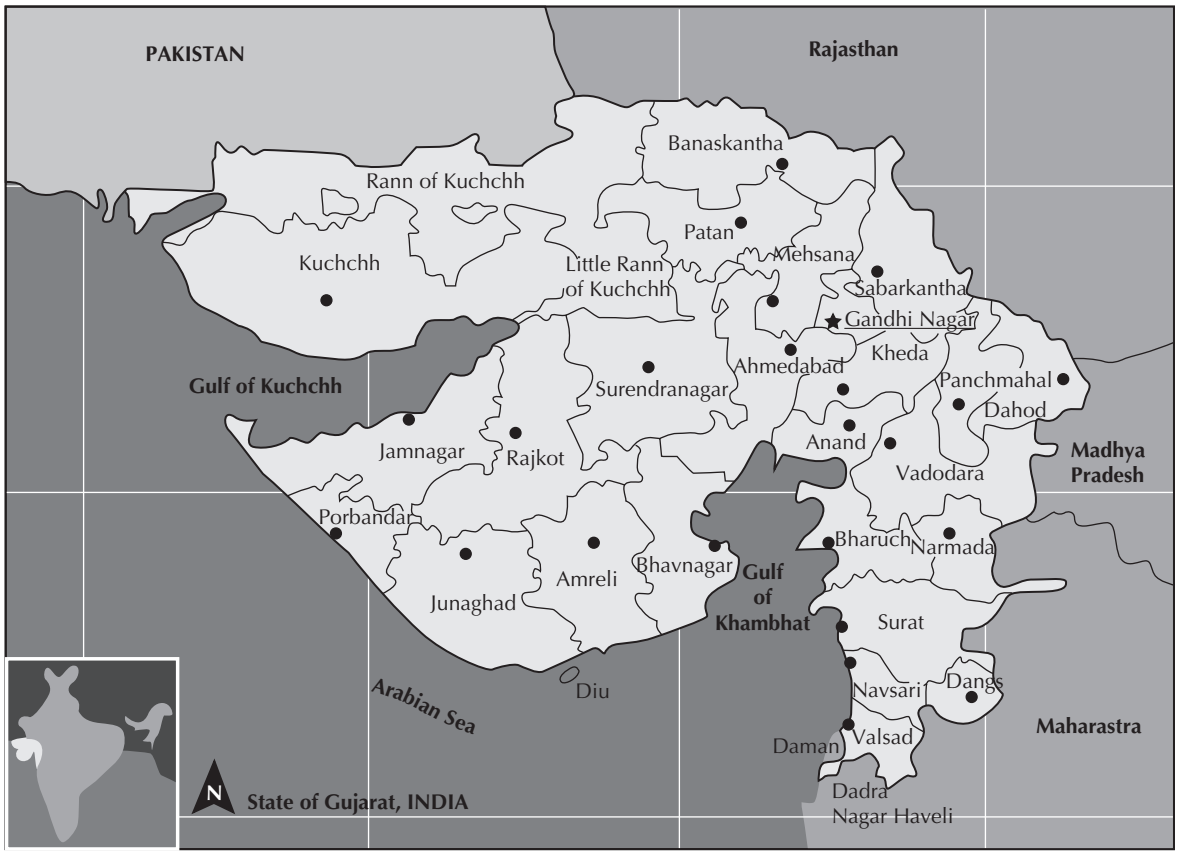


Figure 1.1.1 Map of Gujarat

Gujarat state is situated on the west coast of India and boasts a 1,600 km-long coastline. The Arabian Sea sweeps the western and south-western frontiers. The state extends from Kutch in the west to Daman in the south, with Pakistan to the north-west and the state of Rajasthan to the north and north-east. To the east is Madhya Pradesh and Maharashtra (Figure 1.1.1). This state celebrated the 50th anniversary of its formation on 1 May 2010.

Gujarat is one of the prime developing states of India and is known for its vibrancy and colourful profile. Traditionally, the population has engaged in agriculture as their principal occupation. It is the main producer of tobacco, cotton, peanuts (groundnuts) and other major food crops (rice, wheat, sorghum (*jowar*), millet (*bajra*), maize, red gram dal (*tuvar dal*) and whole pulses); crops account for more than half of the total land area. Animal husbandry and dairy farming also play a vital role in the rural economy. Dairy farming – primarily milk production – is run on a cooperative basis and has more than a million members; it is one of the best examples of cooperative enterprise in the developing economy so that Gujarat is now the largest producer of milk in India. 'Amul' (Anand Milk Union Limited), formed in 1946, is based in Anand and is Asia's biggest dairy. Its products are well known throughout India.

The state is currently experiencing rapid urbanization, with 37.67 per cent of the population living in 242 urban areas according to the 2001 census. Over the last four decades it has become an industrial powerhouse, thereby reducing its dependence on agriculture. Oil, fertilizers, chemicals and textiles production attract many outsiders from across India.

The population of Gujarat state was 50,671,017 according to the 2001 census. Some 89.1% of the population are Hindus, Muslims account for 9.1%, Jains 1.0% and Sikhs 0.1%. The density of population is 258 persons per km^2, which is less than that of other Indian states.

Gujarati is one of the 14 main languages of India and is spoken by an estimated 47 million people worldwide making it the 26th most commonly spoken language in the world. In Gujarat 71% speak Gujarati; the rest (29%) speak Hindi. Almost 88% of the Muslims speak Gujarati while the other 12% speak Urdu. In addition to Gujarati, Kutchi is widely spoken in Kutch District. Almost all Jains speak Gujarati and a few speak Marwardi as well. Gujaratis form the second largest of the British South Asian-speaking communities, with important communities in Leicester and Coventry, in the northern textile towns and in Greater London.

Migration to the United Kingdom

Britain has had commercial links with Gujarat since the early seventeenth century when the British East India Company first set up a trading post in Surat in 1612.

Migration was common from Gujarat during the 18th century. When the winds were favourable, people travelled in dhows (traditional Arab sailing vessels) to East Africa, especially Zanzibar, for cloves and other spices.

In 1896, when Kenya, Uganda and Tanzania were part of British East Africa, migration from Gujarat and Punjab started for the construction of the railway from the Kenyan port of Mombasa to Kampala in Uganda to provide a modern transportation link to carry raw materials out of Uganda and to import manufactured British goods to East Africa. After the construction was completed many of these workers remained in East Africa and established substantial Indian minority communities. Their numbers may have been as high as 500,000 in the 1960s. Apart from being employed to manage the railways, they ran businesses which were, and in some cases remain, the backbone of the economies of these countries. These ranged from small rural grocery stores to sugar mills. In addition, Indian professionals – doctors, teachers, engineers and civil servants – in privileged positions played an important role in the development of these countries. After independence from Britain in the 1960s, the majority of East African Asians migrated or were expelled from these countries (in the 1970s from Uganda). Most moved to Britain, India or other popular destinations like the United States (USA) and Canada as they had acquired British citizenship.

The first Gujaratis to come to UK were students in the late nineteenth century for further studies, especially in law. Notable among them was Mohandas Karamchand Gandhi, born in Porbandar on the western coast of Saurashtra. He was the pre-eminent political and spiritual leader of India during the independence movement, pioneering *satyagraha* (resistance to tyranny through mass civil disobedience), a philosophy firmly founded on *ahimsa* (non-violence), which inspired civil rights movements and demands for freedom across the world.

Prior to Indian independence in 1947 small numbers of students, sailors and emissaries migrated to the imperial capital by exercising the right of all colonial subjects to study, travel and settle in UK. This was followed by different types of migration during the postwar period of decolonization, as the British government began recruiting labour from its former colonies to fill vacancies in its industrial sectors.

Later the main growth of Gujarati communities in UK came when their experience in the textile and steel industries was welcomed at a time of labour shortages. These South Asian workers typically followed an arrangement known as 'chain migration', which involved men from villages and districts (generally in Gujarat, Bengal and the Punjab) migrating temporarily to industrialized inner cities and sharing dormitory-style accommodation while searching for employment as semi-skilled labourers. When the government began to restrict entry into Britain in the 1960s, many of these men decided to stay permanently, sponsoring their immediate families and establishing their lives in different parts of UK.

Current UK population

There are 300,000 Gujarati language speakers in the UK, including East African Gujaratis, many of them in Leicester, Coventry, Bradford and the London boroughs of Wembley, Harrow and Newham.

1.1.2 Religion

The majority of Gujaratis are Hindus. Hindu religion is believed to be the oldest religion in the world; it is nearly 5,000 years old. It can be seen as a 'way or interdependence of life' which gave rise to other religions – Jainism, Buddhism and Sikhism. Hindus avoid eating meat and eggs or food prepared from animal products (e.g., cheeses that contain rennet and gelatin). They believe that if they consume animal flesh, they will accumulate karma – the spiritual load we accumulate or relieve ourselves of during our lifetime – which will then need to be redressed through good actions in this life or the next. Approximately 80% of Gujaratis are lacto-vegetarians (i.e., dairy products, including milk, yoghurt, butter and ghee [clarified butter], are included in their diet).

- Hindus do not eat beef or beef products as cows are considered sacred (this is also the case with Zoroastrianism). The cow has been a symbol of wealth since Vedic times (1500–500 BC), possibly because the largely pastoral Vedic people and subsequent generations relied heavily on dairy products and bullocks for tilling the fields. The milk of a cow is believed to promote *sattvic* (purifying) qualities. The ghee from cow's milk is used in ceremonies and in preparing religious food. Hindus still use cow dung for various purposes; the burning of cow dung repels mosquitoes and the ash formed is used as a fertilizer.
- Although many Hindus are lacto-vegetarian, proscribed animal products tend to vary from one country or region to the next. For example, meat and poultry may be consumed in one geographical location, while fish may be a staple food for people living in the coastal areas.

Foods such as onions and garlic are avoided or restricted as they are thought to inhibit Hindus' spiritual quest.

Religious dietary restrictions

The *Bhagavad Gita* is the holy Hindu scripture and comprises of 18 chapters. In chapter 17, verses 2–22 healthy eating habits are recommended. Food is classified into three major categories:

- *Sattvik* (nutritious) food is the most desirable. Non-irritating to the stomach and purifying to the mind, it includes milk, fruit, vegetables, nuts and whole grains. These foods are believed to produce calmness and nobility, or what is known as an 'increase in one's magnetism'.
- *Rajasi* food is believed to produce strong emotional qualities, passions and restlessness of the mind. This category includes meat, eggs, fish, spices, onions, garlic, hot peppers, pickles and other pungent or spicy foods.
- *Tamasi* food is leftover, stale, overripe, spoiled or otherwise impure food, and is believed to produce negative emotions, such as anger, jealousy and greed.

Many Hindu families have a room set aside for a shrine where deities are worshipped; it is treated as a holy place. Some devotees will refuse to accept any food that is not offered first to the deities. They do this is by placing freshly cooked food garnished with few holy basil leaves (*tulsi*) before the deities and reciting *shlokas* (prayers). Once the food has been offered to God, it is eaten as *prasad* (blessed). Before starting any meal some devout Hindus will first sprinkle water around the plate as an act of purification. Five morsels of food are placed on the side to acknowledge the debt owed to the *devta runa* (divine forces) for their benign grace and protection. This is then given to birds and animals.

There are rituals entrenched in Hindu religion which are associated with food. Food is essential for survival so it is treated with respect from the time it is cultivated, how it is cooked and disposed of. Wasting food is discouraged so food is either served or placed on the table for family members to help themselves to whatever they want to eat. Women takes immense pride in preparing and serving food and hospitality is part of the culture and tradition norms. 'Atithi devo bhava' is a Sanskrit phrase which means 'a guest is divine'. This is very apparent and especially when guests are treated with the same devotion, love and respect accorded to God. Frequently, it happens that people drop in unexpectedly and stay for lunch or dinner. If there is not enough food to go round, then a meal will be prepared for them.

Fasting

Hindus practise fasting on special occasions, such as holy days, new moon days and festivals. A fast is different from a hunger strike: a fast is a personal act of devotion, while a hunger strike is a public act, most often used to highlight an injustice. A fast is also different from anorexia nervosa: it is a 'disciplined' diet, not total abstention from food. Hindus fast in various ways, depending on the individual: they may choose not to eat at all during the fasting period, or eat only once a day or eat only 'pure' foods, such as fruits, nuts and milk. Women and older members of the family fast more regularly then younger family members, but on certain religious days the whole family may fast.

Fasting is believed to help reinforce control over one's senses and is seen as a way of staying close to God and achieving close mental proximity to Him, suppressing earthly desires and guiding the mind to be poised and at peace. Hindus believe that when there is a spiritual goal behind fasting, it should not make the body weak, irritable or create an urge to indulge later. A change of diet during the fasting period is considered to be very good for the digestive system and the entire body.

The Jain community

Gujarat is a stronghold for the Jain community. Jainism was founded as an offshoot of Hinduism in the sixth century BC. Jains preach non-violence to all living creatures and practise a unique concept of restricted vegetarianism. The Jains have also heavily influenced the cuisine of Gujarat with the Gujarati *thali* containing different lacto-vegetarian dishes along with *rotli* (flatbread) and *chaas* (yoghurt drink). They do not consume root vegetables such as potatoes, garlic, onions, carrots, radishes, cassava or sweet potatoes. However, they do consume rhizomes such as dried turmeric and dried ginger. The reason behind this restricted diet is that vegetables grown underground *Kandmul* are believed to contain far more bacteria, and hence are alive than other vegetables. Most Jain recipes substitute potatoes with plantain. Some Jains also avoid *brinjal* (aubergine) owing to the large number of seeds they contain, as a seed or bean sprout is taken to be a form of life. Strict Jains do not consume food which has been left overnight, such as yoghurt, and have their meals before sunset because large amounts of bacteria grow overnight when there is no ultraviolet light from the sun to destroy them.

Religious festivals, celebration and public holidays

Gujarat is known as the land of festivals, making it popular throughout India as well as the rest of the world for its spirit of festivity associated with special dishes. Every festival brings with it the joy of the festival and also ceremonious food that is looked forward to all year long. These festivals have been celebrated in the region for millennia. People observe these festivals strictly as they choose to keep to their age-old customs and traditions. Dates of the festivals vary every year as Hindus follow the lunar calendar. Gujaratis are proud of their rich heritage and this can be seen in the way they celebrate.

Makar Sankranti and the kite-flying festival (January)

The kite-flying festival takes place in mid-January and marks the time when the sun's rays reach the Tropic of Capricorn after the winter solstice. It is celebrated with folk music and dance as well as kite flying. People gather on terraces to fly kites of various colours to celebrate Makar Sankranti or Uttrayana. The glass-reinforced threads of the Indian fighter kites are pitted against each other in the air, and the kite fighter who cuts the other's thread is the winner. At night, kites strung with Chinese lanterns are flown. Food such as *undhiyu* (a mixture of seasonal vegatables), sugar cane juice and sweets are prepared to celebrate the day.

Maha Shivratri (February/March)

Maha shivratri marks the birthday of Lord Shiva. Traditionally, a fast is observed from dawn to dusk, and only pure foods (e.g., milk, fruit, nuts, yoghurt, potatoes and sweet potatoes) are eaten. Some people abstain from all solid food and consume fluids only.

Holi (March)

Holi is a spring festival and is celebrated at the end of winter by people throwing coloured powder and coloured water at each other.

Ram navmi (March/April)
Ram navmi is the birthday of Lord Ram. A fast is observed or one meal a day can be taken.

Mahavir Jayanti (April)
This marks the birth of Lord Mahavir and is one of the biggest Jain festivals in India.

Shravan (July/August)
This is a holy month when devotees attend a temple on specific days or, if possible, for the whole month to worship Lord Shiva. Devotees fast for the whole month or on specific days, during which they consume just one meal a day.

Rakshabandhan (August)
This festival marks the special bond between brother and sister. On this day a sister ties a *rakhee* (wrist band) on her brother's wrist and in return he buys her a gift. A festive meal is prepared and includes snacks such as *bhajiya* and Indian sweets or puddings.

Janmashtmi (August/September)
Janmashtami is the birthday of Lord Krishna. A fast is observed on this day. He was born at midnight so the next day his birthday is celebrated and *mal puda* (pancakes made from whole wheat flour, sugar and ghee) and *rabadi* (sweet thickened milk) are served with other elaborate dishes.

Navratri (September/October)
Navratri is the principal festival of Gujarat. It is celebrated not only in Gujarat but in different parts of India and around the world where Gujaratis have migrated. These celebrations are a part of a nine-day festival before Dussehra, which celebrates the nine manifestations of the Mother Goddess. During these nine days, people observe fasts and visit temples to pray to the Goddess.

At night, the festive mood overtakes everybody. The young and old celebrate the festival alike. The main attraction is Dandia Ras (a dance with decorated sticks) and Garba (a regional dance wearing traditional dress) performed in groups by huge crowds in the open. People joyfully dance to drum beats and folk songs while carrying *diva* (tea candles). The festival is a true blend of devotion, dance, drumming and colourful dress. The dance continues all through the night with great zeal. Today Gujaratis are proud to hear their drumbeats and see their attire on international catwalks.

Sharad Purnima
This is a harvest festival celebrated on the first full moon after Navratri by having dinner with milk (*doodh*) and pava (*rice flakes*) by moonlight.

Diwali (October/November)
Diwali (the festival of light) is celebrated over four days and on each day a religious ceremony is performed in every home. Specific dishes are prepared for each day. In the evening *diva* (oil-filled lamps to signify the triumph of good over evil) are lit and placed in front of the house.

New Year
The fourth day is celebrated as New Year. On this day devotees go to the temple to pray, meet and greet family and friends and to see the display of sacred *Annakut*, an array of hundreds of lacto-vegetarian dishes arranged in tiers before the deities. Business people also mark the end of the fiscal year when a sacred ceremony is performed on the new account books after which the fast is broken.

1.1.3 The traditional diet and eating pattern

Gujarati lacto-vegetarian cuisine has evolved over hundreds of years and contains dishes made from cereals, pulses, vegetables (*shaak*), and side-dishes such as pickles, chutney, papadoms (*papad*), *raita* (yoghurt mixed with shredded cucumber/vegetables) or salad (*kachumber*) and *chaas*.

Northern Gujarat, Kathiawad, Kutch and southern Gujarat are the four major regions of the state and each has its own cuisine. Many Gujarati dishes are distinctively sweet, salty, sour and spicy at the same time and can vary widely depending on the family or region. This harmony, derived from the mix of the sweet with the salt, sour and spices, is what makes the cooking of lacto-vegetarian dishes of this state different from the rest of the Indian subcontinent.

Meals are usually served in a *thali* and include flatbread *rotli*, rice, whole pulses or dal, or yoghurt

soup (*kadhi*) and *shaak*, with *papad* or *raita*. Different accompaniments and sweet dishes are served depending on the menu and occasion. The cuisine changes with the seasonal availability of vegetables. Fresh fruits are normally eaten between meals or sometimes served with the meal. In summer, when mangoes are widely available, *keri no ras* (fresh mango pulp) is often an integral part of the meal.

There are also simple meals of rice and dal known as *khichadi*, served with *kadhi* or with lightly spiced *chaas* and *shaak*.

Cooking methods are handed down from one generation to the next and these cooking styles are followed even though sometimes the main ingredients differ according to the country in which they are prepared. First-generation South Asians are likely to follow traditional eating patterns and habits (Thomas & Bishop, 2007). People who migrated from East Africa were able to maintain their religious festivals and cultural and traditional diet, but they also included cassava (*mogo*) and green banana (*matoke*).

Atta (whole wheat/whole meal flour) is the main ingredient of most varieties of breads on the South Asian subcontinent. Traditionally, *chakki atta*, which is creamy-brown in colour, is made by stone-grinding wheat. This process imparts a characteristic aroma and flavour to the breads.

Atta is made from wheat which has a high gluten content so dough made from this flour is strong and can be rolled out very thin.

Since nothing is removed from *atta*, all of the wheat grain is preserved. *Atta* available in the UK varies in its fibre content from very low to around 12%. The high bran content of *atta* makes it rich in dietary fibre; it also contains significant quantities of starch, protein, vitamins and minerals.

When South Asian communities migrated to UK the *atta* they were used to was not available. In 1962 Elephant Atta 'medium flour' was launched and today it is widely used by this community. However, as the fibre content of this flour is 7.1% this has resulted in a reduction in the fibre content of their diet.

Now different brands of *chakki atta* are widely available in UK but people from the South Asian communities are reluctant to change, as over the years they have acquired a taste for medium *atta* and also because *chakki atta* is more expensive.

Indian breads

Different types of unleavened, round, soft breads are flattened by rolling and baked in a *tava* (frying pan). They vary in size and thickness in different regions and are called by different names.

Plain flatbread is traditionally referred to as *roti*, but also commonly known as *chapatti*. If possible it is served piping hot. A small piece of bread is torn off and used to scoop up a vegetable dish or folded into a loose cone to scoop liquid dishes like dal that form part of the meal.

Rotli or *phulka* is made from a firm but pliable dough. Some people add salt and/or oil. The dough is rolled out into circles 15–18 cm in diameter. The rolled rotli is then placed on a preheated *tava* and partly cooked on both sides, and then directly put on a medium flame, which makes it puff up like a balloon when hot air cooks the *rotli* rapidly from the inside. Finally, ghee is spread on it.

Double *pud* in *rotli* follows the same method as above, but two small balls are loosely joined with oil and flour, rolled together and then cooked. When it is slightly cold they are separated and ghee is spread on it. This type of *rotli* is served with freshly squeezed mango pulp.

Plain *paratha* is one of the most popular breads, made from firm dough shallow-fried in a *tava*.

Layered or puffed *paratha* are made by rolling out the dough in circles approximately 15 cm in diameter and then ghee or cooking oil and a sprinkling of flour is spread over it. It is then folded and rolled again and shallow-fried over a low heat. The *paratha* can be round, square or triangular.

Spicy *paratha* are made following the same method but salt, chilli powder, turmeric and cumin are added before rolling and cooking.

Sweet *paratha* are made following the same method but sugar or jaggery (unrefined cane sugar) is added.

Stuffed *paratha* are usually filled with vegetables such as boiled potatoes, radishes, cauliflower or *paneer*, seasoned with herbs, spices and other seasonings. The stuffing is made into a small ball and placed in the middle of the dough and sealed. This is then rolled quite thin and shallow-fried.

Bhakhari is a thicker, crisper flatbread cooked without oil over a very low heat.

Thepla is a shallow-fried, spiced flatbread made with wheat and chickpea flour dough. It usually

contains shredded vegetables or leftover cooked rice to which salt, chilli powder, turmeric, cumin and sesame seeds are added.

Puran puri (vedmi) is made with a sweetened *tuvar dal* or *mung dal* filling following the same method as stuffed *paratha* but cooked at a low temperature and spread with ghee.

Puri: plain *puri* made with whole wheat flour or semolina and deep-fried. Spicy *puri* (*tikkhi*) is made with salt, chilli powder, turmeric and *ajmo* (carom seeds).

Bajri no rotlo is made from *bajri atta* and cooked without oil or ghee.

Jawar no rotlo is made from *jawar atta* and cooked without oil or ghee.

Makai no rotlo is made from *makai* (maize) *atta* which is cooked without oil or ghee.

Khakhra is a very thin flatbread made from moth bean flour, wheat flour and oil and cooked on a hot tava. There are several types such *methi, jeera* and different *masala* flavours. It is mostly eaten as a snack by the Jain community.

Khichadi is a mixture of rice and *tuvar dal* or *mung dal* with a little ghee. It is a very popular dish and regularly cooked in most homes, typically on a busy day due to its ease of cooking.

Kadhi is a mixture of yoghurt, chickpea flour, salt, turmeric, crushed ginger, chillies and garlic simmered over a slow heat and stirred continuously. *Vaghar* of ghee, mustard seeds, cumin, fenugreek seeds, curry leaves and asafoetida is added. It is garnished with chopped coriander leaves and served hot.

Rice: There are hundreds of varieties of rice but most prized is Basmati rice. It is a staple of the diet and plain boiled rice is eaten at least once a day. It also has a symbolic importance as it is needed for all the religious rites, including wedding ceremonies.

Vegetable rice (*pilau*) is made by adding a mixture of different vegetables (e.g., peas, spinach and onions).

Pulses and dals: There are many varieties of pulses and dals and most are available in the UK.

Apart from soya beans, pulses contain 20–25% protein by weight, twice the protein content of wheat and three times that of rice. For this reason, pulses are called 'vegetarian meat'. The digestibility of pulse protein is high but it is relatively poor in the essential amino acid methionine. However, as they are commonly consumed with grains (high in methionine, but deficient in lysine, which is found in pulses) the two foods complement each other, forming a complete protein. In Gujarati cuisine a combination of three parts rice to one part dals is used in the preparation of most dishes.

Pulses and dals have been part of the South Asian diet for generations and the skills of cooking delicious dishes has been passed on from one generation to another and make the lacto-vegetarian diet unique but also nutritious.

Whole pulses

All pulses grow in a pod. Green tender pods with seeds are used as vegetables and cooked with aubergine. Tender pods with seeds are sold fresh or frozen: e.g., french beans, pink beans (*valor*), haricot beans (*surti papdi*).

Seeds (lilva): They are sold fresh, frozen or tinned: e.g., peas, broad beans, black-eyed beans, soya beans, *chana* (chickpeas), red gram (*tuvar lilva*).

Dried whole pulses

When they are fully mature, the crop is harvested and the seeds are sun-dried. They are cleaned and sold as whole pulses which are soaked, boiled and cooked in different ways. They are also sold in tins, which reduces the cooking time.

- Plain boiled pulses are eaten as a snack or cooked as a dish.
- Whole pulses are deep-fried and consumed as a snack (e.g., Bombay mix).
- They are dry-roasted in cast-iron wok in hot sand. Roasted Bengal gram (Chana) are a most popular snack.
- They are boiled and mashed and used as snack (e.g., *Bengal gram chana chor garam*).

Most pulses can be sprouted (e.g., sprouted mung or moth). Sprouting has both nutritional and practical advantages:

- Germination increases the content of folic acid and other B vitamins.
- Tannins and phytates, which adversely affect bioavailability, are broken down by germination.
- The breakdown of phytic acids allows more absorption of calcium and iron and generation of vitamin C also helps in the absorption of iron.

- As they become soft, digestibility is increased and they can be eaten raw in salad.
- Cooking time is reduced as they are stir-fried.

Split whole pulses are called dals and are eaten with or without the skin.

Cooking methods

Depending on the menu, dal can be cooked into different textures: liquid, semi-liquid or dry.

Dals are deep-fried and used as a snack. Dals are also made into *vadi* like soya chunks and cooked with vegetables.

Dals without skin is ground into flour.

Chickpea flour

This is one of the most versatile of the pulse flours and is used in a variety of ways:

- as a thickening agent (e.g., added to yoghurt in preparation of *kadhi*);
- to prepare sweet or savoury dishes;
- added to wheat flour to make Indian bread;
- to make *puda* (pancakes).

Black gram flour or mung flour

Papadoms are mostly made from black gram flour or mung flour with the addition of different spices. They are rolled very thin and dried in the sun, then dry-roasted over low flame or deep-fried.

Moth dal flour

Mathiya are prepared in the same way as papadams but deep-fried and prepared on special occasions and especially for the festival of Diwali.

Dal and rice flour

These are used in fermented dishes, e.g., steamed – *dhokra/khaman/muthiya*; or baked – *ondhwa*.

Nuts and oilseeds

Nuts, such as almonds, cashews, pistachios and walnuts, are widely used in cooking.

Oilseeds are rich in fat. Groundnuts (peanuts) and sesame seeds are commonly used:

- Dry-roasted in a cast iron wok over a low flame (e.g., peanuts).
- Deep-fried as snacks.
- Sesame seeds used to garnish dishes.
- Crushed into powder and used in cooking, especially stuffed vegetables, and added to sweet dishes and puddings.
- Sweetmeats: e.g., sesame snaps (*chikki*). In Gujarat *chikki* is prepared with nuts or oilseeds and jaggery.

Vegetables

In the tropics, seasonal vegetables are very cheap and they are bought and cooked fresh for each meal. These include both green leafy vegetables and root vegetables. Potatoes are considered as vegetables rather then starchy food as in the UK.

Methods of cooking vegetables

- dry vegetables (*koroo shaak*);
- vegetable in sauce (*rasa varoo shaak*);
- deep-fried vegetables (*tareloo shaak*);
- stuffed vegetables (*bhareloo shaak*);
- stir-fried vegetables (e.g., cabbage, carrots and green chillies [*sambharo*]);
- vegetables cooked with dal;
- steamed dishes made with vegetables (e.g., *patra*, *muthiya*);

Tropical fruits are delicious and are seasonal.

Fresh fruits are included in the diet (e.g., fruit salad, fruit juices, milkshake). Fruits are also made into pickles.

Milk and dairy foods

Traditionally, throughout India (including in Gujarat) full-fat cow or buffalo milk is boiled before it is consumed. As the milk cools a layer of cream (*tor/malai*) forms and this is skimmed off and reserved. When enough cream is accumulated a small amount of yoghurt is added and left overnight. Next morning this mixture is churned with the addition of water and this process separates the fat from the cream. The fat is called 'white butter'. The liquid that remains is called *chaas* and is used in cooking. White butter is placed in a pan and brought to the boil at a low temperature. It is stirred until all the water has evaporated. When it is cool it is sieved through muslin to remove any remaining sediments. This pure fat is called ghee and is used in religious ceremonies and in cooking.

In the UK commercial butter is used to make ghee at home; alternatively, ready made ghee can be bought from groceries.

Milk is used in beverages, as a milky drink, in milkshakes, for making milky puddings, yoghurt and *paneer* (unsalted white cheese).

Yoghurt is mostly made at home, but in the UK commercially made yoghurt is widely available. It is used in cooking, for making sweet dishes, *kadhi* and *raita* (see Table 1.1.1).

Beverages

- Masala tea (*chai*) is made by brewing leaves, sugar and milk with a mixture of aromatic spices (e.g., dried ginger, black pepper, cloves, cardamom, cinnamon and nutmeg) and herbs (e.g., basil or mint).
- *Limbu pani* (sweetened and spiced lime juice).
- Fruit juice (sweetened and unsweetened).
- Carbonated drinks (e.g., cola or Lucozade).
- *Chaas* made with natural yoghurt and water.

Accompaniments

- *Raita*: Made with yoghurt, chopped fruit, aubergine or grated vegetables. Added to this mixture are fresh chopped green chillies, coriander leaves, salt, sugar and cumin powder or mustard powder.
- *Bharatu*: Made with yoghurt and roasted aubergine. Added to this mixture are fresh chopped green chillies, coriander, salt, sugar and cumin powder.
- *Papdi*: Like papadam but made from seasoned rice flour which is steamed then rolled quite thin and sun-dried. *Papdi* can be cooked over a low flame or deep-fried.
- *Rice sev*: Made from rice flour cooked in the same way as above but prepared by squeezing through a special press and sun-dried. Rice *sev* is deep-fried.
- *Vadi* (rice flour): Like soya chunks; it is deep-fried.

Pickles and chutney

- Mango pickles (sweet or spicy).
- Lemon pickles (sweet or spicy).
- Green chilli pickles.
- Mixed vegetables pickle made with mustard powder and lemon juice.
- Herbs preserved in brine or vinegar.
- Tamarind chutney (tamarind and dates).
- Green chutney (coriander and mint).
- Mango chutney.
- Red chutney (red pepper, red chillies and tomatoes).
- Coconut chutney.
- Mint and tomato chutney.

Table 1.1.1 Description of Gujarati foods

Food groups	Description of foods	Gujarati name
Bread, rice, potatoes, pasta and other starchy foods	Wheat atta (flour)	*Ghau no lot*
	Vermicelli	*Ghau ni sev*
	Semolina	*Soji*
	Plain flour	*Maido*
	Millet	*Bajri*
	Sorghum	*Jowar*
	Maize	*Makai*
	Rice	*Chokha*
	White rice boiled/steamed	*Bhaat*
	Pilau rice (cooked with vegetables)	*Pulav*
	Rice pudding	*Kheer*
	Rice flour	*Chokha no lot*
	Rice flakes (pounded rice)	*Pava*
	Puffed rice (made by heating rice in a sand-filled oven)	*Mumara*
	Potato	*Batata*
	Sweet potato	*Shakkaria*
	Sago	*Sabu dana*
	Yam	*Suran*
	A mixture of rice and dal flour is used to make different snacks	

Table 1.1.1 (*cont'd*)

Food groups	Description of foods	Gujarati name
Vegetables and fruits	Amaranth tender	*Tanjurdo*
	Aubergine	*Ringun*
	Bitter gourd	*Karela*
	Bottle gourd	*Dudhi*
	Black-eyed beans	*Chora*
	Broad beans	*Fafda papdi*
	Cluster beans	*Guvar*
	Cauliflower	*Ful kobi*
	Cabbage	*Kobi*
	Carrot	*Gaajar*
	Colocasia leaves	*Arvi/Salia na pan*
	Drumstick	*Saragavo*
	Green peas	*Vatana/Matar*
	Fenugreek leaves	*Methi ni bhaji*
	Fennel leaves	*Sava ni bhaji*
	French beans	*Funsi*
	Mint	*Fudino*
	Okra (ladies' fingers)	*Bhinda*
	Onion	*Doongari*
	Other gourds	*Parval,Gheloda, Kankoda*
	Pink beans	*Valor*
	Pumpkin	*Kollu*
	Radish	*Moora*
	Radish leaves	*Moora ni bhaji*
	Ridge gourd	*Turia*
	Snake gourd	*Gulka*
	Spinach	*Bhaji*
	Sweet corn	*Makai*
	Apple	*Sufferjan*
	Banana	*Kela*
	Custard apple	*Sitaful*
	Dates	*Khajoor*
	Figs	*Anjeer*
	Grapes	*Draksh*
	Guava	*Jamfal*
	Jackfruit	*Phanas*
	Lime	*Limbu*
	Mango	*Keri*
	Melon	*Tarbooch*
	Orange	*Mosumbi*
	Pears	*Nashpati*
	Pawpaw	*Papaya*
	Pomegranate	*Daddam*
	Pineapple	*Ananus*
	Tangerine	*Suntra*
	Sapodilla (Sapota)	*Chikku*

(*Continued*)

Table 1.1.1 (*cont'd*)

Food groups	Description of foods	Gujarati name
Meat, fish, eggs, beans and other non-dairy sources of protein (i.e., pulses/dals, nuts and seeds)	Meat	*Mass*
	Chicken	*Moorghi*
	Eggs	*Inda*
	Fish	*Maachli*
	Bengal gram/dal/flour	*Chana/Chana ni dal/lot*
	Black gram/dal/flour	*Urad/urad in dal/lot*
	Black-eyed peas/dal	*White chora/dal*
	Field beans/dal	*Val/val in dal*
	Green gram/dal	*Mung/Mung ni dal*
	Lentil/dal	*Masoor/Masoor ni dal*
	Turkish gram/dal	*Moth/Moth in dal*
	Red gram/dal	*Tuvar/Tuvar ni dal*
	Peas	*Vatana/Matar*
	Almonds	*Badam*
	Cashews	*Kaju*
	Dried coconut	*Copru*
	Fresh coconut	*Naliyer*
	Dates	*Khajur*
	Pistachios	*Pista*
	Peanuts (groundnuts)	*Sing danna*
	Walnuts	*Akhrot*
Milk and dairy foods	Milk	*Doodh*
	Milk powder	*Doodh no powder*
	Yoghurt	*Dahi*
	Buttermilk	*Chaas*
	(Reduction of milk in an open wok until it is thickened to fudge-like consistency but not caramelized)	*Maavo*
	Unsalted white cheese (can be made at home)	*Paneer*
Foods and drinks high in fat and/or sugar	Pre-packed tropical fruit juices	
	Indian sweets and puddings	*Ladwa, Burfi, Jallebi, gulab-jambu, kulfi, ice cream*
Sugar and sugary foods	Sugar	*Sakker*
	Jaggery	*Gor*
Fats and oils	Corn oil	*Makai nu tel*
	Sunflower oil	*Suryamukhi nu tel*
	Peanut oil	*Sing nu tel*
	Sesame seed oil	*Tul nu tel*
	Rapeseed oil	*Canola/rapeseed oil*
	Butter	*Maakhan*
	Clarified butter	*Ghee*

How herbs and spices are used in cooking

Herbs and spices are an integral part of South Asian cooking and apart from flavouring the food they also have medicinal properties. The making of masala is traditionally done on grinding stones. Nowadays, people use an electric blender or grinder and ready-made masala are widely available in the UK. Each person makes their masala to their own recipe, hence dishes taste different depending on the household. For example, people from northern Gujarat use dry red chilli powder, whereas people from southern Gujarat prefer green chillies, ginger, garlic and coriander. Gujarati Jains (and many Hindus) avoid garlic and onions.

Traditionally, dried (whole and ground) and fresh herbs and spices are used in the Gujarati diet. They are an excellent way to add flavour to foods when reducing the salt and/or sugar content of the diet (see Table 1.1.2).

Table 1.1.2 Use of herbs and spices in Gujarati diet

Ingredients	Gujarati name	Comments
Asafoetida	*Hing*	Used in vegetable/pulse cooking
Bay leaves	*Tejpatta*	In rice dishes
Coriander leaves	*Lila dhana/Kothmeer*	For garnish/in chutney
Curry leaves	*Mitho-limbdo*	In yoghurt dishes
Coriander seeds	*Dhana*	Used for making coriander powder
Cumin seeds	*Jeeru*	As seasoning
Cinnamon	*Taj*	Whole stick and powder used in cooking
Cardamom	*Elchi*	In tea, whole in cooking, crushed in pudding
Cloves	*Laving*	Used whole in cooking
Green chillies	*Lila marcha*	In cooking, pickles, chutney
Garlic	*Lasan*	In cooking, crushed
Ginger	*Adhu*	In tea. In cooking, crushed or grated
Dried ginger	*Sunth*	In tea
Fenugreek	*Methi*	In cooking, in pickles
Mint	*Fudino*	In tea, in chutney
Mustard seeds	*Rai*	In cooking, pickles
Nutmeg	*Jaifal*	In pudding
Poppy seeds	*Khus khus*	For garnish
Peppercorns	*Kara mari*	In tea, in cooking
Red chillies, whole	*Lal mircha*	In vaghar
Red chilli powder	*Mirchu*	In cooking, garnish
Sesame seeds	*Tal*	For garnish, crushed, used in cooking, sesame snaps
Saffron	*Kasar*	In pudding and sweets
Turmeric powder	*Harder*	In cooking
Tamarind	*Amli*	In chutney and in pulses
Sesame seeds	*Tal*	For garnish, crushed used in cooking, Sesame snaps
Fennel seeds	*Variyali*	In cooking
Carom seeds	*ajmo*	In vaghar for cooking vegetables and pulses
Cocum	*Kokum na phool*	In dal dishes

Cooking methods and food preservation

Cooking is mostly done over an open flame. A pressure cooker is used initially to cook pulses or dals. It is also used for cooking vegetables and rice dishes.

Steaming, shallow frying, baking and dry roasting are common cooking methods, but most of the dishes are deep-fried in oil.

Sun drying: This is a common way of preserving food.

Vaghar

Vaghar is essential when spices and herbs are added one at a time to hot oil or ghee and this tempering is either done as the first step in the cooking process, before adding the vegetables or as the last, pouring the tempered oil over dal. The oil extracts and retains all the sharp flavours of the mustard seeds (*rai*), *mitho-limbdo* (curry leaves), cumin seeds (*jeera*), asafoetida (*hing*), etc., and coats the entire dish.

Therapeutic use of foods

The use of ayurvedic (traditional) medicine has been shown to be more common among Indians than in any other ethnic groups (Sproston & Mindell, 2006).

- Hot and cold foods: 'Hot' foods, such as mangoes and ginger, are thought to promote an increase in body temperature; conversely, 'cold' foods, such as potatoes, are believed to reduce temperature (Thomas & Bishop, 2007). It is believed that hot foods should be avoided in hot conditions, such as pregnancy (Hawthorne *et al*., 1993) and cold foods avoided in cold conditions, such as lactation. For health professionals it is important to be aware of such beliefs, especially if they have nutritional implications, for example, a pregnant women suffering from nausea and vomiting and not meeting her nutritional needs may be avoiding ginger, yet anecdotally ginger can be helpful in sickness and may help her to increase her oral intake and meet her requirements.
- Joint pain: Sour foods, such as lemon or tamarind, may be avoided by older people or those with joint problems as it is believed that these foods may exacerbate joint pain and arthritis (Hamid & Sarwar, 2004).
- During pregnancy and postnatally: Women who have recently given birth may be given *katlu*, an Indian sweet made from nuts, herbs, spices and jaggery, as it is thought to aid convalescence, increase lactation and reduce back pain. The consumption of pulses and beans may be discouraged if a mother is breastfeeding as such foods are thought to induce colic in the baby (Hamid & Sarwar, 2004).

Paan and mukhvas

Mukhvas is mostly eaten after a meal. It is made with dry-roasted split coriander seeds, fennel seeds and sesame seeds.

Mukhvas is added to betel nut *paan*.

The use of chewing tobacco (*paan* or *gutka*) is common in the South Asian subcontinent. Research looking at *paan* and *gutka* use by Gujaratis living in the USA showed that the use of *paan* had fallen but the use of *gutka* had increased (Changrani *et al*., 2006).

The use of chewing tobacco is a risk factor for oral cancer, however it is a strong cultural habit for many and the safe use of these products is being promoted (Carlisle, 2002). A patient quoted in an article by Sproston and Mindell (2006) highlights this: 'You can take tobacco out of the *pan* but not *paan* away from the community'.

Smoking

Research looking at cigarette smoking in ethnic minority groups versus the general population has shown that self-reported smoking levels for Indian men is less than the general population in UK (20% versus 24%) and also for women from ethnic minority groups versus women in the general population in UK (Sproston & Mindell, 2006).

Alcohol

Drinking alcohol is forbidden and the majority of first-generation migrants avoided it. However, with exposure to western culture, and as alcohol is widely available, alcohol consumption is quite common among the younger generation.

1.1.4 Traditional eating patterns and changes in migration to UK

Migration is likely to result in dietary changes. In the USA nearly 57.7% of Gujarati subjects surveyed reported dietary changes since immigration. Their total energy intake was as follows: carbohydrates – 57%; protein – 12%; total fat 33% (Jonnalagadda & Diwan, 2002). Problems with maintaining the traditional diet can include the increased cost and reduced availability of ingredients, leading to more use of host country vegetables such as potatoes (Thomas & Bishop, 2007). Also, women are more likely to be in paid work, leading to less time available to prepare traditional foods and more reliance on convenience foods (Thomas & Bishop, 2007). The drawback of increasing the intake of convenience foods may be an increased energy intake and consequent weight gain. A study of Gujaratis in the USA showed that 20% of individuals were overweight or obese (Jonnalagadda & Diwan, 2002). Comparison between Gujaratis in the UK and those in India shows that those in the UK have a higher BMI, energy and fat intake. Patel *et al*. (2006) also reported that Gujaratis in the UK had higher lipid and blood pressure levels.

Stone *et al*. (2005) found that extended family networks are common and are used for information on health and diet.

Traditional cooking is done from scratch and is time-consuming and labour-intensive. Although working women have the option of buying ready-made meals, these are high in fat and sugar (see Tables 1.1.3 and Table 1.1.4).

1.1.5 Healthy eating

Key points

- The traditional Gujarati lacto-vegetarian diet is high in fibre and low in fat and should be encouraged as part of a healthy eating diet.
- The Gujarati diet is influenced by religion and can range from being strictly lacto-vegetarian for orthodox Hindus, to including meat, fish and alcohol.
- After migration the first generation tries to maintain their traditional eating patterns but the children who are born or brought into the country of migration will adopt western-eating habits as they are more exposed to processed foods.
- Traditional cooking methods are time-consuming and women who go to work may rely instead on fried and convenience foods which are high in fat and sugar.
- Some traditional ingredients may not be readily available or are expensive.
- Health promotion education should be targeted in which traditional healthy eating habits are encouraged with the inclusion of healthy local foods.

Introduction

Traditional diets are passed from one generation to the next and, over the years, people have adapted to these foods. The traditional Gujarati lacto-vegetarian diet is very healthy because it contains plenty of cereals, varieties of fresh vegetables/fruits, whole pulses/dals, milk and dairy products, all of which provide the nutrients the body needs, but there are only small quantities of fat and sugar. Food is cooked with different condiments and spices, which not only give a delicate flavour, but also provide beneficial nutrients and have medicinal properties. In the right proportions, this diet is a very healthy option. The traditional diets are closer to dietary recommendations for dietary fat and fibre than those for the general UK population (Health Education Authority, 1991). However, with migration to the UK the balance has changed, resulting in an increase in sugar and fat consumption and a reduction in fibre intake (see Table 1.1.5 pages 19-20).

Recent evidence of good practice to promote healthy eating

A report by Fox (2004) highlights initiatives in the UK to promote healthy eating. These include a 'five-a-day' scheme in Coventry, involving providing weekly vouchers to residents to buy fruit and vegetables at reduced cost and links with a local delivery service, so fruits and vegetables can remain accessible for residents with mobility difficulties.

Table 1.1.3 Traditional eating pattern and changes in Gujarati diet on migration to UK

Meal	Traditional meal	Dietary changes on migration to UK	Healthier alternatives
Breakfast	Nasto, e.g., *Chevdo, ganthia, sev-mumara puri* or *paratha* with tea	Nasto, e.g., *Chevdo, ganthia, sev-mumara* *Puri* or *paratha* with Tea/coffee Cereal with full-fat milk Toast with butter	High-fibre breakfast cereal with semi-skimmed milk Whole meal toast with low-fat spread Tea/coffee
Lunch	(Main meal) *Rotli* with ghee Vegetables/dal Plain yoghurt Salad/pickles Papaddom (*papad*) *Chaas* made with semi-skimmed milk, salt	Leftovers from the night before, e.g., *rotli*/rice with vegetables/dal Sandwich Chips, pizza	*Rotli* made with whole wheat flour, no ghee Boiled rice Vegetables/dal cooked with measured amount of oil Salad *Chaas* made with low-fat yoghurt and small amount of salt Fruit Sandwich made with whole meal bread
Evening meal	As lunch *Puri/paratha/thepla* with vegetables Sweet pickles Dhokra, chutney	(Main meal) *Rotli* Chapatti/rice Vegetables/dal Plain yoghurt Salad/pickle Pizza/pasta	As lunch *Rotli*/boiled rice Vegetables/dal Low fat yoghurt Homemade pickles (made with less oil and sugar/or in vinegar)
Puddings/ Desserts	Indian sweets and puddings, e.g., *jallebi, shrikhand* Fruit	Indian sweets and puddings, e.g., *jallebi, shrikhand* Ice cream, fruit	Fruit Canned fruit in natural juice Fruit salad
Drinks	Water, *chaas* Tea with sugar Fruit juice (special occasions) Fizzy drinks	Water, *chaas* Tea/coffee with sugar Fruit juice, sweetened Fizzy drinks (e.g., cola) Soft drinks (e.g., orange squash, Ribena)	Water, *chaas* Tea/coffee with sweetener Unsweetened fruit juice Diet/low-sugar fizzy/soft drinks
Snacks	*Chevdo, ganthia, sev mumara* *Thepla/puri* (if leftover). *Kachori, dhokra, patra batatavada, samosas* Fruit	*Chevdo, ganthia, sev mumara, bhajiya, kachori, samosas* Cakes, biscuits. Chocolates, nuts, crisps, sweets	Dry-roasted nuts and chana Popcorn Dry-roasted *papad, papdi* Rice cakes, oat biscuits

Table 1.1.4 Glossary of Gujarati foods

Foods	Description
Farsaan	Cooked fresh and served with a meal or as a snack.
Nasto	Deep fried snacks mostly eaten at breakfast or teatime.
Mithai	Indian sweets and puddings.
Ladwa	Made from whole wheat flour, ghee and milk or water are added to make a firm dough. This is then rolled into small balls and deep-fried in oil or ghee until golden-brown. When they are cold they are ground, added to sugar or jaggery syrup, crushed cardamom mixed together and small balls of *ladwa* are made. They are garnished with poppy seeds.
Shiro	Made with whole wheat flour or semolina which is cooked in ghee over a low flame until golden-brown, then milk and sugar are added. It is cooked until all the milk is absorbed. Garnished with chopped almonds and crushed cardamom.
Lapsi	Made with cracked wheat and raisins which is cooked in ghee over a low flame until light brown. Water and sugar are added and cooking continues until the ghee starts oozing out. Garnished with blanched chopped almonds and pistachios.
Sukhadi	Cooked whole wheat flour in ghee and jaggery. This is leavened and left to set. Served cut into small squares.
Mal puda	Made from whole wheat flour which is fermented overnight by adding a little yoghurt and jaggery or sugar to make them sweet. Before frying, fennel seeds and a few crushed black peppers are added to the batter which is then prepared like crepes to golden brown. Garnished with poppy seeds.
Furshi puri	Made from plain flour and semolina dough and seasoned with salt, cumin and crushed black pepper. Small balls of the dough are rolled like puri, scored and then deep-fried until crisp. Eaten as snacks.
Dal dhokori	A complete dish made with *tuvar dal*. Spiced wheat flour is kneaded into dough and rolled into thin *rotli* which are cut into small pieces. These are dropped into boiling *dal* and cooked until soft. Garnished with coriander leaves and served warm. Frozen peas or *tuvar lilva* may also be added.
Dhebara	Shallow-fried spiced flatbread made with a mixture of flours, or millet flour. Mostly fresh finely chopped fenugreek leaves are added and cooked with oil.
Batata pava	Made with potatoes and rice flakes and lightly spiced.
Papdi no lot	Made with steamed spiced rice flour.
Khichi no lot	Same as above but made with *mung dal* flour.
Puda	Made from spiced chickpea flour batter, like pancake. It can be plain or with added chopped methi leaves, onions or shredded vegetables.
Batata-vada	Deep-fried spicy chickpea flour batter balls stuffed with mashed potato fresh herbs and spices.
Methi na gota	Made with chickpea flour and finely chopped fenugreek leaves, seasoned and deep-fried.
Bhel	Mixture of *sev mumara*, boiled/sprouted pulses, boiled chopped potatoes and onions. Served with chutneys.
Sev usad	Boiled dried peas or black-eyed peas seasoned and served with *sev*, chopped onions and chutney.
Chevdo	Known as Bombay mix in UK. It includes deep-fried, potato, *chana dal* and rice flakes (*pava*). This is then seasoned.
Bhajiya	They are made of different vegetables which are cut into thin slices and dipped into spiced chickpea flour batter and deep-fried.
Fuli ganthia	Deep-fried, spicy, star-shaped noodles made from seasoned *chana dal* flour which is pressed through a special press directly into hot oil.
Sev	Deep-fried noodles of different thickness made from seasoned *chana dal* flour. Same cooking method as above.
Sev mumara	A mixture of spicy dry ingredients such as puffed rice, *sev* and peanuts. It is a very light, healthy dish.

(*continued*)

Table 1.1.4 (*cont'd*)

Foods	Description
Magash	Cook coarse chickpea flour in ghee and caster sugar on a low flame. This is leavened, garnished with chopped almond and cardamom and left to set. Served cut in small squares.
Undhiyu	Made with layers of diced potatoes, yam, raw bananas, small *brinjals*, *papdi* seeds cooked with *muthiya* and seasoned with salt, turmeric and a paste of garlic, green chillies, ginger and finely chopped coriander. It is served hot decorated with grated coconut. (*Muthiya* is chickpea flour deep-fried dumplings with added fenugreek leaves (*methi*), crushed ginger, green chillies and salt to taste.)
Ondhwa	Baked dish made from rice and *tuvar dal* flour fermented with yogurt. Shredded vegetables are added and seasoned.
Muthiya	Steamed dish made from rice and *chana dal* flour to which shredded vegetables are added and seasoned.
Kachori	Deep-fried spicy balls of semolina pastry stuffed with crush green peas or soaked *mug dal*, grated coconut and spices.
Samosa	Triangle-shaped deep-fried spicy pastry of plain flour stuffed with green peas and potatoes and spices.
Dahi vada	Made from *urad dal* soaked overnight and ground into smooth batter. Crushed herbs and seasonings (salt, black pepper, green chillies and ginger) are added to taste. Small batter balls are deep-fried to golden brown then put in cold water for 2–3 minutes and the water squeezed out. They are served with spiced yoghurt and tamarind chutney garnished with chopped coriander.
Dhokra	Made from chickpea flour which is fermented with yoghurt for 4–5 hours. Herbs and spices (salt, crushed green chillies and ginger) and baking soda are added and then they are steamed for about 15 minutes in a flat dish and cut into pieces. A *vaghar* of oil mustard and sesame seeds is poured over it for extra spiciness. They are garnished with coriander and usually served with green chutney.
Khaman	Same as above but instead of chickpea flour *chana dal* is soaked for 4–5 hours and then liquidized and fermented with yoghurt, seasoned and steamed.
Vada	Made from different *dals* (mung, lentil or mixed) which are soaked and liquidized to a batter; seasonings are added and small batter balls are deep fried.
	In India 'Maavo' is used to make sweets described below but as it is not available in UK, full-fat milk powder is used instead.
Penda	Made from full-fat milk powder, which is cooked in ghee on a low flame until light brown. Sugar and cardamom is added. Small round palates are made.
Gulab Jambu	Made with full-fat milk powder dough. Small balls are then deep-fried in ghee or oil on medium flame until light brown. These are dipped into sugar syrup.
Burfi	Sweet made with full-fat milk powder and sugar. Many varieties, including coconut, pistachio and chocolate.
Shrikhand	A creamy dessert made from strained yoghurt. Sugar is added and then it is flavoured with saffron, cardamom and nuts. Chopped fresh fruit or candied fruit can be added for extra flavour.
Doodh pak	Made from milk and rice. Sugar and cardamom are added and garnished with chopped almonds.
Rice Kheer	Rice cooked in milk and sugar to which crushed cardamom is added. Garnished with chopped almonds.
Rabdi	Made from milk until condensed. Sugar and cardamom is added and garnished with chopped almonds.
Jallebi	Made from fermented plain flour batter which is made into cartwheels over hot fat and dipped into sugar syrup.

Table 1.1.5 Healthier alternatives for Gujarati diet

Food groups	Healthier alternatives
Bread, rice, potatoes, pasta and other starchy foods	Try using whole wheat flour to make Indian breads. Make *rotli* and *bhakhari* without adding oil to the dough and spread ghee or butter on them vary sparingly. Try to cook *paratha, thepla, dhebara* in non-stick frying pan, and use as little oil in cooking as possible. Have fried bread, such as *puri*, only as a treat. Try whole meal/granary rolls/brown instead of white varieties and low-fat spreads instead of butter. Choose high-fibre breakfast cereals rather than those coated with sugar or honey. Try brown rice and avoid adding extra ghee or butter to rice or *khichadi*. Try whole meal pasta. Use millet/maize/jowar flour more often. Potatoes, sweet potatoes, yams, cassava, green banana are all good sources of carbohydrates, but use them on their own rather than with Indian breads and rice. Leave the skin on potatoes when cooking.
Vegetables and fruits	Wash vegetables before chopping and avoid peeling. Do not cut into very small pieces where possible. Include traditional vegetables such as okra (*bhinda*), spinach (*palak*), peas (*matter*), cauliflower (*ful gobi*), but also try local vegetables and fruits as they are cheaper, fresher and can be just as nutritious. Frozen vegetables and tinned fruits in their own juices. Limit sweetened fruit products such as tinned mango pulp. Use only small amounts of oil in cooking. Make *raita* with low-fat yoghurt. Eat salad every day, using lemon juice instead of dressing. Eat 3–4 pieces of fruit daily, and eat them with the skin where possible. Avoid oily pickles. Try using more green chutney.
Meat, fish, eggs, beans pluses dals, nuts and seeds	Use more boiled pulses dishes rather than deep fried (e.g., *bhel/sev usad*). Try dals with skins on where possible. Use more shallow-fried dishes rather than deep-fried, e.g., *puda*. Try to cook more steamed and baked dishes, e.g., *dhokra, patra, muthiya, ondhwa*. Use sprouted pulses at least three or four times a week cooked or raw in salad. Cut down on deep-fried snacks, e.g., *chevdo, ganthia*.Try dry roasted chick peas. Restrict intake of nuts to occasional use. Try dry-roasted peanuts instead of deep-fried nuts. Make more use of sesame seeds as they contain calcium and iron. If non-vegetarian, trim fat off meat, take skin off chicken and include oily fish, such as salmon and sardines in the diet.
Milk and dairy foods	Make milky puddings such as *kheer* with semi-skimmed milk and less sugar. Instead of full-fat milk choose semi- or skimmed milk. Try making yoghurt/milkshakes with semi-skimmed milk. Try low-fat plain yoghurts for cooking and for making *raita/chaas* Try low-fat varieties of cheese such as Edam or cottage cheese. Try making *paneer* with semi-skimmed instead of whole milk. Try low-fat varieties of ice cream. Cut down on cream in cooking,
Foods and drinks high in fat and/ or sugar	Have Indian sweets as treats, e.g., *barfi* and *ladwa*. Cut down intake of pies, pastries, sausage rolls, cake, biscuits English sweets, chocolates and all convenience foods.

(*Continued*)

Table 1.1.5 (*cont'd*)

Food groups	Healthier alternatives
Sugar and sugary foods	Gradually cut down on sugar in tea and coffee. Use less sugar and jaggery when making Indian sweets and pickles. Try to restrict eating Indian sweets, biscuits, cakes, chocolates and ice cream to special occasions. Avoid fizzy drinks containing sugar. Try 'no added sugar' varieties of squash, and diet fizzy drinks. Buy tinned fruit in natural juice, not syrup. Buy unsweetened fruit juices. Reduce jaggery intake.
Fats and oil	Cut down on deep-fried foods such as *chevdo, sev, ghthiya*, chips, crisps, samosas. Shallow-fry rather than deep-fry. Spread butter/margarine sparingly on bread. Avoid adding oil when making Indian breads. Use low-fat spread instead of ghee. Steamed dishes are healthier options – *muthiya, patra, dhokra, khaman.* Make more use of microwave, oven, grill, pressure cooker and slow cooker. Invest in non-stick, thick-bottomed saucepans as they require less oil in cooking, and prevent food from sticking or burning.
Salt	Cut down on salt in cooking. Do not add salt at the table. Reduce intake of salty snacks such as crisps, tinned and convenience foods, nuts. Cut down on oily pickles. Use herbs and spices to flavour foods.

Another initiative is a community farm in London to encourage women to grow traditional and indigenous vegetables, and a cookery class, particularly useful for giving health information for chronic conditions such as diabetes.

Suggestions for the way forward

- Working more closely with religious and local voluntary organizations, which are now well established within the local community and are already providing religious and cultural needs.
- Introducing the 'Cook and Eat' model, which has been used successfully in many parts of the UK. The main aim is to discuss and demonstrate simple changes to the diet and different cooking methods.
- Further research looking at the health needs and dietary intake of the Gujarati population in the UK as this would aid health professionals in providing individualized, culturally appropriate information.
- Compiling nutritive values and suitable portion size of foods used by the South Asian communities in the UK.
- The development of appropriate resources.
- Cookery competitions which aim to demonstrate the use of traditional and seasonal indigenous ingredients which are high in fibre and cooked using less fat.

1.1.6 Nutritional deficiencies

Iron deficiency anaemia

Research suggests that anaemia is more prevalent among Indian women than the general population (Sproston & Mindell, 2006). Lacto-vegetarians should consume a variety of foods rich in iron and vitamin C at each meal (see Table 1.1.6).

Vitamin B_{12} deficiency

A low intake of vitamin B_{12} (folate), which has been shown to result in increased homocysteine levels

Table 1.1.6 Sources of iron in Gujarati lactovegetarian diet

Cereals	**Vegetables**	
Whole wheat flour	Amaranth	
Bajri (millet flour)	Colocasia leaves	
Whole meal bread	Mustard leaves	
Wholegrain breakfast cereal	Spinach	
	Radish leaves	
Rice Flakes	Fenugreek leaves	
Puffed Rice	Cluster beans	
Sugary foods	Mint leaves	
Jaggery	Fennel leaves	
	Bitter gourd	
	Leeks	
	Tomatoes	
Whole pulses and dals	**Seeds and nuts**	**Fresh and dry fruits**
Whole *chana dal* (chickpeas)	Sesame seeds	Citrus fruits and unsweetened fruit juices
Roasted *chana*	Peanuts	
Black-eyed beans dal	Dried coconut	Dates
Whole *urad dal* (black gram)	Pistachios	Blackcurrants
Whole *mung dal*	Almond	Figs
Sprouted pulses	Cashew nuts	Raisins
		Apricots
		Prunes/prune juice

and increased cardiovascular risk, and Vitamin B_6 has been reported among Asians (Jonnalagadda & Diwan, 2002).

According the American Dietetic Association (ADA) lacto-vegetarians should increase their consumption of dairy products, fortified breakfast cereals, soy milk and yeast extract to ensure a sufficient intake of vitamin B_{12}.

Strict vegetarians or vegans, however, may need to supplement their diet by taking a vitamin B_{12} (cobalamin) supplement of no more than 100% of the recommended daily value. Some Jains are vegans and will avoid dairy products, so they will need a B_{12} supplement.

Vitamin D deficiency

Low calcium has been shown among Asian women, a risk factor for osteoporosis (Jonnalagadda & Diwan, 2002). Insufficient vitamin D status and corresponding low bone mineral density has also been identified in Gujaratis living in UK (Hamson *et al*., 2003). Research conducted in the USA looking at older Gujarati immigrants found that they were meeting government nutritional guidelines for carbohydrates and vegetables, but not for dairy foods, meat and fruits (Jonnalagadda *et al*., 2005).

Advantages of a vegetarian diet

The ADA is just one example of a major health organization that recognizes that a well-planned vegetarian/vegan diet can reduce the risk of many chronic conditions, such as heart disease, obesity, diabetes, asthma, high blood pressure and cancer. Because vegetarians are less susceptible to major diseases, they can live healthier, longer and more productive lives, with fewer visits to doctors, fewer dental problems and lower medical bills.

Here are some additional health benefits of the vegetarian diet:

- Food is easier to digest, provides a wider ranger of nutrients and requires less effort to purify the body from its wastes.
- Vegetarians' immune systems are stronger, their skin is less flawed and their bodies are more pure and refined.
- Meat is expensive compared to fruit and vegetables so a vegetarian diet can also have advantages for low-income populations. Unfortunately, lack of access to food stores that sell good quality fresh produce continues to be a serious problem among disadvantaged communities (www.betterhealth.vic.gov.au).

1.1.7 Diabetes

Introduction

When talking about Gujarati diets, it is important to make a distinction between the typical urban lacto-vegetarian diet and the non-vegetarian Gujarati diet which has become more westernized, both in large South Asian cities in India and abroad.

In India, the diet of the rural lacto-vegetarian farmer with diabetes appears to be very sound, judging by the current recommendations of Diabetic Associations. The diet is high in carbohydrate and fibre, with cereals and pulses forming the staple. In contrast, the Gujarati person with

Key points

- The traditional Gujarati diet is well balanced, high in fibre and low in fat.
- Following urbanization and migration, most Gujaratis adopt western eating patterns/habits while maintaining some traditional eating habits.
- Adoption of unhealthy western eating patterns and changes in lifestyle have resulted in an increase in diabetes among Gujaratis.
- Cultural beliefs, dietary habits, religious and family influences play a key role in self-care management.
- Some Gujaratis rely on complementary medicine, and asking about the use of these remedies should be an important part of the history, assessment and management of these patients.
- Dietary guidance for people with type 1 and 2 diabetes should be based on a healthy eating framework and current evidence base for the nutritional management of diabetes.
- The principles of dietary management in respect of diabetes for the Gujarati community are no different from those for any other population, but they do have to be applied in a culturally appropriate way.
- Dietitians need to make a careful individual assessment of where a client is in the process of acculturation before tailoring dietary advice.
- For effective health promotion, it is essential to work closely with the local Gujarati community and religious and voluntary organizations.

diabetes living in a city or abroad is more likely to eat fat-rich snacks and fast foods. These Gujaratis also use more oil in food preparation and eat more fat than carbohydrate. This, combined with a sedentary lifestyle, results in an unusually high proportion of body fat, which makes them more insulin resistant.

Prevalence of diabetes

Diabetes is one of the most common chronic disorders and affects about 2 million people in the UK, equivalent to about 4% of the population. The incidence, particularly of type 2 diabetes, is rising rapidly and it was estimated there would be nearly 3 million people with diabetes living in the UK by 2010. Globally, the number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030 (Wild *et al.*, 2004).

The reasons for this increase are population growth, ageing, urbanization and the increasing prevalence of obesity and lack of physical exercise (Wild *et al.*, 2004). With regard to South Asian people, the World Health Organization (WHO) estimated that by 2030 around one third of all people with diabetes will reside in the Indian subcontinent.

The risk of South Asians developing type 2 diabetes is about 4–5 times that of Europeans and around 1 in 4 South Asian adults over the age of 50 have diabetes. Over the course of their lifetime, South Asians have about a 1 in 3 chance of developing diabetes. The condition also tends to develop earlier and complications of diabetes, such as kidney disease and heart disease, develop much more frequently compared to Europeans (Chowdhury, 2007).

A high prevalence of diabetes has been found in South Asians from the Indian subcontinent both in their country of origin and in the countries to which they have migrated when compared to the local resident population (McKeigue *et al.*, 1991; Ramachandran *et al.*, 1992). Diabetes is more prevalent among the less affluent and its incidence may be 1.5 times greater among the more deprived population. Currently, approximately 2–5% of people in India's urban areas are reported to have diabetes (Pawa, 2005).

South Asians, including Gujaratis, are more likely to develop diabetes at a younger age than people of European origin. Increased central obesity plays a role in its increased prevalence in this group in UK (Burden *et al.*, 1992). The Health Survey for England (Joint Health Surveys for England, 2001) indicated that the prevalence of diagnosed diabetes in Indians was 10% for men and 7% for women. According to The Health Survey for England (2004), after adjusting for age, diagnosed diabetes was almost 2.5–3 times more prevalent in Indians compared with the general population. The prevalence of undiagnosed diabetes did not differ between different minority groups in men.

The UK Prospective Diabetes Study (1994) showed that Asian people had a more sedentary

lifestyle and a higher prevalence of family history of known diabetes than other groups. Both environmental and genetic factors could thus explain the high prevalence of diabetes among the Asian population. The trend for a higher prevalence across all age bands implies significant public health implications for resource planning and allocation. A concerted global initiative is required to address the diabetes epidemic.

Risk factors and treatment

At all ages, mortality rates are higher in people with diabetes than in their non-diabetic counterparts (Laing *et al*., 1999). Diabetes has major implications in terms of morbidity and mortality, not only from the acute effects of the disease itself but also because it significantly increases the risk of cardiovascular disease and damage to the microcirculation of the kidneys, nerves, eyes and limbs. As a result, diabetes is a major contributor to heart disease, stroke, renal failure, blindness, gangrene and amputations. It also tends to exacerbate the effects of other risk factors for cardiovascular disease (CVD), such as dyslipidaemia, hypertension, smoking and obesity (Laing *et al*., 1999).

To minimize the risk of complications, people with diabetes require diet and lifestyle measures which help achieve near-normal levels of glycaemia and reduce CVD risk factors. Type 1 diabetes requires treatment with insulin. Ensuring that carbohydrate intake balances insulin action is a major dietary objective in order to maintain tight glycaemic control without hypoglycaemia. Type 2 diabetes is commonly associated with obesity and features of metabolic syndrome. Weight management by means of diet and exercise is a priority for many patients. Prevention of overweight and obesity is the key to prevention of type 2 diabetes. Effective self-care is essential to good diabetes management. Structured education, follow-up and support are essential from diagnosis onwards (Thomas & Bishop, 2007).

Complications associated with diabetes

Although some deaths occur from the acute effects of diabetes (mainly ketoacidosis), most result from the chronic complications associated with the disease. These include diabetic retinopathy, neuropathy, nephropathy and CVD (Thomas & Bishop, 2007). The prevalence of CVD and renal disease is higher in people of South Asian origin than among the European population (Chowdhury *et al*., 2003). The risks of developing diabetic complications are also much greater due to early presentation and the large number of undiagnosed cases.

In renal disease, the principal aim of dietary management is to provide optimal nutritional support. Fluid, salt, potassium and phosphate are restricted according to the cause and degree of renal impairment. Protein and energy requirements are increased among people on haemodialysis and peritoneal dialysis.

There is now indisputable evidence from long-term prospective trials that meticulous control of blood glucose can prevent or delay the onset of microvascular complications in people with type 2 diabetes (UKPDS, 1998).

Dietary modification

Unfortunately, the management of Asian people with diabetes is often both inadequate and ineffective (Cruickshank, 1989). Patients often lack knowledge about the disease, its complications and the importance of self-management, problems which stem from poor communication, provision of inadequate or culturally inappropriate information, and a lack of educational material in minority languages (Goodwin *et al*., 1987; Hawthorne 1990; Close *et al*., 1995). To some extent, the situation will have improved following the implementation of the National Service Framework for Diabetes and the development of translated literature by organizations such as Diabetes UK (2006). However, delivery of appropriate care to this patient group remains variable.

Carbohydrates

The rural Gujarati diet provides 60–70% of the total energy intake from carbohydrates (Raghuram *et al*., 1993). Slow-absorbing carbohydrates are a standard part of the diet, and include cereals such as rice, whole wheat, sorghum, millet and maize. Consumption of cereals seems to decrease with increasing income of the household, while that of pulses, milk, meat/fish, vegetables, fats and oils increases (Food and Agriculture Organization,

2004). The more affluent also consume more refined white flour (*maida*) and carbohydrates in the form of sweetmeats, desserts, cakes, biscuits and preserves. The Indian Diabetes Association recommends a diet high in complex carbohydrates, providing up to 60–70% of energy (this is higher than the Diabetes UK of 45–60% guideline). The consumption of refined carbohydrates is discouraged. The distribution and type of carbohydrates in the diet should be tailored to individual habits.

In people with type 2 diabetes, choosing lower glycaemic index (GI) foods may help to reduce postprandial glycaemia and insulinaemia. Quantitative guidance on carbohydrate intake (e.g., the amount typically needed at a main meal, late night snack or to prevent/treat hypoglycaemia) may be helpful for some patients. It is therefore essential that dietitians should have a thorough knowledge of several models for carbohydrate management. For overweight patients, weight management is a priority, particularly with the increasing incidence of central obesity in those with type 2 diabetes. Newly diagnosed patients with type 2 diabetes should be encouraged to attend Diabetes Education and Self Management for Ongoing and Newly Diagnosed (DESMOND) which are offered by their local Primary Care Trust (PCT).

The introduction of short-acting analogues, the basal-bolus system and insulin pumps has allowed greater flexibility in the timings of meals for people with type 1 diabetes (Nutrition Subcommittee of Diabetes UK, 2003). This has enabled knowledgeable patients to vary their carbohydrate intake at any mealtime. The Dose Adjustment For Normal Eating (DAFNE) structured education programme teaches carbohydrate counting and flexible insulin adjustments to match carbohydrates on a meal-by-meal basis. Those on two fixed daily injections need to choose foods with a similar glycaemic effect in order to balance the prescribed insulin profile. They have better glycaemic control if they achieve day-to-day consistency in the amount and source of the carbohydrate content of their diets (Wolever *et al*., 1991).

Dietary fibre

Diets high in carbohydrate and fibre improve glucose metabolism without increasing insulin secretion. The benefits of a high-fibre diet are numerous. Soluble fibre which is present in fruit, vegetables and legumes is encouraged. An intake of 25 g of dietary fibre each day is considered to be optimal (Raghuram *et al*., 1993) (see Table 1.1.7).

Glycaemic index

Different carbohydrates raise blood glucose levels to variable extents, so the glycaemic index (GI) has a value in planning diets for people with diabetes. Diets with a low GI are generally rich in fibre as in the typical lacto-vegetarian Gujarati diet. Another approach to increase the fibre content is by the addition of purified fibre supplements such as wheat bran, guar gum, tragacanth, oatmeal and ispaghula. It is not only the GI, but also the quantity of the glycaemic load (GL) of carbohydrate influences the metabolic response to the ingestion of carbohydrate.

There is insufficient evidence of the long-term benefit to recommend the use of low GI diets as a primary strategy in meal planning (Franz *et al*., 2002). Although the value of GI in the management of diabetes remains controversial, it can be a useful pointer to carbohydrate food choice in order to minimize glycaemic peaks (see Table 1.1.8).

Protein

Protein is essential for growth and tissue repair. It is generally recommended that 15–20% of total energy is derived from protein. Cereals, pulses and dairy products provide most of the protein requirements of the lacto-vegetarian Gujarati diet. Non-vegetarians can also meet their protein requirements from meat or fish. Studies in India have shown that the protein and energy content of diets increase with increasing income (National Institute of Nutrition, 1992).

In India, it is generally believed that proteins from vegetable sources are better than those from animal sources as they do not contain saturated fat and also add fibre to the diet (Raghuram *et al*., 1993). Diabetes UK recommends lean meats, the consumption of oily fish twice a week and the inclusion of more beans/lentils in the diet. People with diabetes should be discouraged from consuming high-protein, low-carbohydrate weight management diets.

Table 1.1.7 Dietary fibre of some common South Asian foods

Foods	Total dietary fibre (100 g raw)	Foods	Total dietary fibre (100 g raw)
Cereals and millet		**Roots and tubers**	
Bajri (millet)	11.3	Potato	1.7
Jowar (sorghum)	9.7	Sweet potato	3.9
Maize, dry	11.9	Yam	4.2
Rice	4.1		
Wheat	12.5	**Fruits**	
		Banana	1.8
Pulses and legumes		Guava (*jamphal*)	8.5
Bengal gram, whole (*chana*)	28.3	Mango	2.0
Bengal gram, dal (*chana ni dal*)	15.3	Sapodilla (Sapota) (*chikku*)	10.9
Black gram, whole (*urad*)	20.3		
Black gram, dal (*urad ni dal*)	11.7	**Vegetables**	
Green gram, whole (*mung*)	16.7	Amaranth (*tanjurdo*)	4.0
Green gram, dal (*mung ni dal*)	8.2	Aubergine (*ringun*)	6.3
Lentil, whole (*masoor*)	15.8	Bitter gourd	4.3
Lentil, dal (*masoor ni dal*)	10.3	Broad beans	8.9
Red gram, whole (*tuvar*)	22.6	Bottle gourd (*dudhi*)	2.0
Red gram, dal (*tuvar ni dal*)	9.1	Cluster beans	5.7
Soya bean	23.0	Colocasia green	6.6
		Fenugreek	4.7
Nuts and oilseeds		Spinach (*palak*)	2.5
Peanuts (groundnuts)	11.0	Ridge gourd (*turia*)	1.9
Sesame seeds	16.8	Snake gourd (*gulka*)	2.1

(Narasinga *et al*., 1991)

Fat

Fats are concentrated sources of energy and an excess intake increases body fat and leads to obesity. Obesity is increasing in India among western Gujarati diabetics and makes them more vulnerable to hypertension, cardiovascular disease and other related ailments. A recent study suggests that even Gujaratis who appear thin may face a similar risk, as they may have a lot of fat inside the body, in vessels, around organs and in the blood, despite the appearance of healthiness (Joshi *et al*., 2007). Exercise has to be encouraged as part of the lifestyle for a sedentary Gujarati, whereas for the average rural farmer it is their lifestyle.

It is recommended that 15–25% of the total energy should be derived from fat. Since serum lipids are generally raised in people with diabetes, they have to be careful about the amount and nature of the fats consumed. It is recommended that saturated fatty acid sources such as ghee, butter, *vanaspati* (hydrogenated vegetable fat) and coconut oil are taken in small quantities only. It is suggested that monounsaturated (MONO) and/or polyunsaturated (PUFA; e.g., sunflower, safflower, groundnut and olive oil) vegetable fats are used instead. Obese people with diabetes should restrict their total fat consumption.

1.1.8 Exchange system

It is rare that the rural farmer will ever see a dietitian for diabetes dietary advice. However, for the more affluent Gujarati, a diet is prescribed in terms of exchange lists. In India, it is the general belief that the quantity of food and the total calorie intake of a person with diabetes should not vary markedly from day to day. For this purpose, a food

Table 1.1.8 Glycaemic index of some common South Asian foods

Foods	Glycaemic index	Foods	Glycaemic index
Cereal products		**Fruits**	
Bread	70	Apple	39
Millet	71	Banana	69
Rice (white)	72	Orange	40
Breakfast snacks		**Vegetables**	
Pongal	55	Brown beans	79
Pasarattu	60	Frozen beans	51
Upma	75	Potato	70
Idli	80	Yam	51
Chola	65	Beetroot	64
Sprouted green gram	60	**Dried legumes**	
Dairy products		Kidney beans	29
Milk	33	Bengal gram	47
Ice cream	36	Green gram	48
Curds	36	Black gram	48
Miscellaneous		**Sugars**	
Peanuts	13	Sucrose	59
Potato chips	51	Fructose	20
Tomato soup	38	Glucose	100
		Maltose	105
		Honey	87

(Raghuram *et al.*, 1993)

exchange system is used in which foods providing almost the same amount of energy, carbohydrates, proteins and fats are grouped together.

The food exchange system helps the patient:

- To restrict their food intake according to the insulin prescription for better glycaemic control.
- To have variety in the diet while maintaining the desired daily energy intake.
- To learn the principles of the diet easily.

There are seven food groups used in the exchange system:

- Vegetable exchange.
- Fruit exchange.
- Cereal exchange.
- Legume and pulse exchange.
- Meat/fish exchange.
- Milk exchange.
- Fat exchange.

The foods have been carefully chosen and placed in each group because they contain approximately the same nutritive value when they are eaten in the amounts listed. Notice that it takes different amounts of food to contain the same amount of carbohydrate and energy. For instance, in a vegetable exchange, 90 g onion or 105 g carrot provide 10 g carbohydrate and 50 kcal.

Each exchange list provides a number of food items which can be interchanged within the group. All groups of food exchanges make a specific contribution to a good diet, and none of the exchange groups can itself supply all the nutrients needed for a well-balanced diet (Raghuram *et al.*, 1993).

Particular emphasis may need to be placed on:

- The timing of meals, particularly for those on insulin or oral hypoglycaemic drugs. It is sometimes necessary to remind patients of the importance of taking medications at the specified times and in the prescribed doses.
- The need for starchy cereal foods throughout the day, which is appropriate for any hypoglycaemic therapy given.
- The need to avoid rich sources of sugars, particularly sweetmeats and sugar-containing carbonated drinks, which are often consumed in large quantities.
- The need to reduce fat consumption (principally by using less during cooking) and to reduce the intake of deep-fried snacks.
- The importance of weight loss for those who are overweight (via restriction of energy intake, primarily from fat, and by increased physical activity).
- Those choosing to fast for religious purposes being advised regarding their diet and any medication (especially insulin/oral hypoglycaemic drugs).

Herbal remedies

Many Asians with diabetes either bring traditional/herbal preparations back with them after holidaying in their native country or use such remedies on the suggestion of family members. These preparations are commonly used either on their own or in conjunction with other therapeutic agents and have hypoglycaemic effects. They are available in South Asian shops and grocery stores in the UK and worldwide. Asking about these remedies should be an important part of the history, assessment and management of patients with diabetes (Pawa, 2005).

Fenugreek

The medicinal qualities of fenugreek seeds (*trigonella foenum graecum*) have been known since ancient times, and the seeds are commonly used as a condiment for seasoning in South Asian homes. The seeds are high in fibre (mucilaginous fibre and total fibre of 20% and 50% respectively). In addition, it contains trigonelline, an alkaloid known to reduce blood sugar levels.

There are several trials available for fenugreek in type 2 diabetes; however, most are non-controlled (Madar *et al*., 1988). Of the available randomized controlled trials, they are generally poorer quality studies with small numbers and from a single investigator group. Nonetheless, these trials, including a single trial in type 2 diabetes, have reported improved glycaemic control using seed powder added to unleavened bread (Sharma & Raghuram, 1990). In another series of trials, whole raw seeds, extracted seed powder, gum isolate of seeds and cooked whole seeds seemed to decrease postprandial glucose levels, whereas degummed seeds and cooked leaves did not (Sharma *et al*., 1986). No adverse effects were reported in any of these trials. There is some preliminary evidence for the efficacy of fenugreek, which suggests further studies may be warranted.

In Gujarati families, fenugreek preparations may be used as supportive therapy to anti-diabetic treatment. The use of fenugreek seeds in the management of diabetes is advocated by the National Institute of Nutrition in Hyderabad in India (1991). The quantity of fenugreek seeds to be taken daily depends on the severity of the diabetes. The doses vary from 25 g to 50 g. Initially, 25 g of fenugreek seeds is recommended in two equal parts (approximately two teaspoons each) with lunch and dinner. The seeds can be taken whole after soaking in water overnight or in powder form in water or butter milk 15 minutes before a meal. Fenugreek seed powder can be incorporated in preparations such as chapatti, rice, dal and vegetables. The preparations can be made salty or sour according to individual taste (Raghuram *et al*., 1993).

Karela *(momordica charantia; bitter melon gourd)*

Karela is indigenous to tropical areas and as the English name suggests, it tastes bitter. The glycaemic effect of karela is well known within the Gujarati community. Reported preparations of the herb range from injectable extracts to fruit juice. Processed bitter gourd in the form of capsules or tablets is commonly advertised and sold, or can be ordered online.

The active components of karela are thought to be charantin, vicine and polypeptide-p (an unidentified insulin-like protein similar to bovine insulin). Some, albeit limited, data suggest a potential effect of karela in diabetes, with no adverse side-effects reported. However, further information from RCTs is needed (Yeh *et al*., 2003).

Many Gujaratis with diabetes will cook and eat karela as part of a meal or drink karela juice for its hypoglycaemic effect. For these to have a clinical effect karela need to be taken every day, but most people eat them on an ad hoc basis. This may have implications as it is often taken as well as oral hypoglycaemic drugs and therefore has a doubling effect on the dose. Medical staff may not be aware of this and as a result the severity of the diabetes may be misjudged. Some people with diabetes use this opportunity to indulge by consuming inappropriate foods, but still have control of their diabetes (Hamid & Sarwar, 2004).

Diabetes UK has issued a warning with regard to the use of karela, because it is not yet known what dose is safe when taken with other anti-diabetic agents, and there is a lack of information on other potential bioactive components of the capsule (Diabetes UK, 2006).

Yoga and spiritual healing

Yoga and spiritual healing play an important part of the Gujarati lifestyle. It has been observed that some Gujaratis have stopped using anti-diabetic

drugs after adopting a yogic lifestyle and diet (Shankardevananda, 2002).

It is important to note that Gujarati fasts do not involve total abstinence from food. Pure foods can be taken regularly throughout the day. If the individual wishes to fast, they should do so as safely as possible and may need to modify their diabetes medication/insulin during this period. The dietitian should be able to advise on timely foods/snacks in line with treatment. Patients are encouraged to monitor their diabetes more closely. If they are feeling unwell, they should be encouraged to break their fast.

Suggestions for the way forward in diabetes

Access to healthcare services by South Asians tends to be poor, particularly in older age groups or for whose command of the English language is limited. These issues are beginning to be addressed at both national and local levels by targeted programmes of outreach and health improvement.

Although the aims of dietary management are the same for South Asians as for anyone else, the nature of the advice given must be culturally appropriate and local resources should reflect this. A number of organizations such as Diabetes UK, the British Dietetic Association and British Nutrition Foundation have developed resource material for people from ethnic minorities with diabetes. Information in Gujarati may be helpful, although some of the older generation may be illiterate. Alternative resources such as audiotapes, CDs and DVDs should also be available in different languages (Thomas & Bishop, 2007).

In order to improve compliance, the health professional must first ascertain dietary food patterns and customs, the hierarchy within the family, social pressures within the house and other socioeconomic factors. A skilled interpreter/link worker/health advocate is an essential part of a healthcare team which has among its clients patients with little command of English. Guidance in pictorial form and cookery demonstrations can be an effective way of getting the message across.

The Diabetic Association of India also acts as an advisory body for people with diabetes and provides support for its members. Many Gujaratis living in the UK have their own social clubs (e.g., Asian Women UK), which provide support and good networking in the community.

1.2 Punjabi Diet

Renuka McArthur, Jevanjot Sihra, Rupinder Sahota, Ravita Taheem, Sunita Wallia

The South Asian subcontinent comprises India, Pakistan, Bangladesh and Sri Lanka. Four per cent of the total UK population are classified as 'Asian' or 'Asian British' and this group makes up 50.2% of the minority ethnic group population in the UK (UK Census, 2001).

'South Asians' is 'a term which defines many ethnic groups with distinctive regions of origin, languages, religions and customs and includes people born in India, Bangladesh, Pakistan or Sri Lanka' (Fox, 2004).

1.2.1 Introduction

Punjab is located in the north-west of India and occupies 1.54% of the area. The word Punjab is a hybrid of the Persian words *panj* (five) and *āb* (water), that is, it is the land of five rivers, and it is so fertile that it has come to be known as the food basket of India, providing at least 40% of the country's rice and 60% of the country's wheat requirement (see Figure 1.2.1).

Worldwide, there are 25.8 million Sikhs and approximately 75% of Sikhs live in Punjab, where they constitute about 61% of the population, 37% are Hindus and the rest a small Muslim population still living there after the partition of India in 1947 when the Punjab province of British India was divided between India and Pakistan.

Language

It was estimated from the 1991 census that the British population included 840,000 people from India, of whom 51% were Sikh, and 477,000 people from Pakistan, of whom 48,000 had Punjabi as their main language. In fact, Punjabi is the most common language among British Asians and has become the second language in Britain, used by an estimated 1.3 million people. Punjabi is spoken by Muslims who write it in the Arabic script, whereas

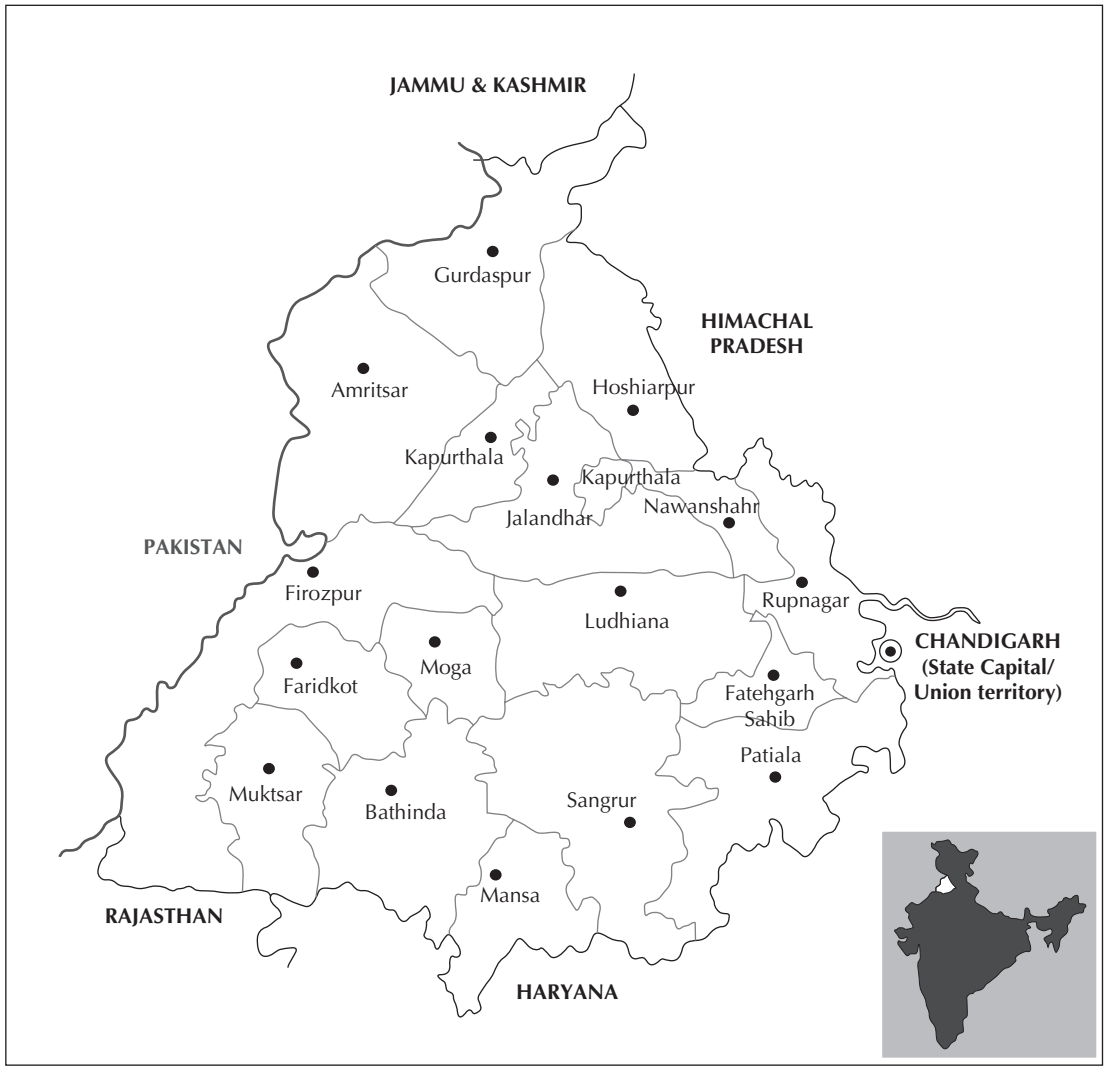


Figure 1.2.1 Map of Punjab area of India

the Sikhs and Hindus of Punjab write it in the Gurmukhi (language of the Gurus) script. It has very many letters in common with Hindi and shares similar vowel marks but the sound systems of Hindi and Punjabi are different. Older generations are concerned that English is becoming the first language for younger generations, who are thereby losing their linguistic heritage.

Migration to the United Kingdom

By the end of the nineteenth century Great Britain had colonized parts of East Africa – Tanzania, Uganda, Kenya, Zambia and Malawi. Skilled workers from the Punjab and Gujarat were brought to the area to construct the railway line from Mombassa to Kampala and also work in government administration in these countries.

The main settlement of Indian families in these countries took place between 1890 and 1935 and again between 1945 and 1960. Because of their history as traders and junior administrators many established successful businesses or professional careers. However, when the East African countries became independent after 1960, they were given the option to become citizens of these countries or

remain British. Most chose to exercise their rights to choose British citizenship. The largest exodus of South Asians to UK occurred in 1972, when Uganda expelled them in line with the government's policy of Africanization. All South Asians families with British passports were expelled to the UK.

People also migrated directly to UK from Punjab in the 1950s not only to work in industry to fill the labour shortages but also to escape the unrest that resulted from the partition of India.

Current UK population

The 2001 census recorded 366,000 Sikhs in the UK (this number excludes the Hindu Punjabi population). Slough has the highest percentage of Sikh residents in the country according to the 2001 census where they make up 9.1% of the population, more than in any other local authority. Many live in Southall, which is primarily a South Asian residential district, sometimes known as 'Little India'. In 1950, the first group of South Asians arrived in Southall, reputedly recruited to work in a local factory owned by a former British Indian Army officer. This population grew, due to the proximity to expanding employment opportunities such as Heathrow Airport. The most significant cultural group to settle in Southall are Asians. According to the Commission for Racial Equality, over 55% of Southall's population of 70,000 are Indian/Pakistani, with less than 10% White British. There are 10 Sikh Gurdwaras in Southall and one of them won the Ealing Civic Society Architectural Award in 2003. The Gurdwara Sri Guru Singh Sabha, which opened in 2003, is one of the largest Sikh Gurdwara outside India.

1.2.2 Religion

Most people from Punjab follow the Sikh religion and the most notable sign of a Sikh man is the wearing of a turban. There are also many Punjabis in the UK who follow the Hindu religion and they call themselves Hindu Punjabi.

The Sikh religion is based on the teachings of 10 Gurus. The Sikh holy scriptures, *Guru Granth Sahib Ji*, were first compiled by the fifth Guru, Guru Arjan Dev Ji, and contained teachings from the first five gurus and other holy saints of that time. These teachings were then complemented by scriptures from the last five gurus.

Religious beliefs

Naam Japna

A Sikh is to engage in the daily practice of meditation and prayers (*nitnem*) by reciting and chanting God's name.

Kirat Karni

To live honestly and earn by one's physical and mental effort while accepting God's gifts and blessings. A Sikh has to live as a householder carrying out his or her duties and responsibilities to the full.

Vand Chakna

Sikhs are asked to share their wealth within the community and outside by giving (*dasvand*) and practising charity (*daan*), 'sharing and consuming together'.

Kill the Five Thieves

The Sikh Gurus tell us that our mind and spirit are constantly being attacked by the Five Evils – *kam* (lust), *krodh* (rage), *lobh* (greed), *moh* (attachment) and *ahankar* (ego). A Sikh needs constantly to combat and overcome these five vices.

Positive human qualities

The Gurus taught the Sikhs to develop and harness positive human qualities which lead the soul closer to God and away from evil. These are *sat* (truth), *daya* (compassion), *santokh* (contentment), *nimrata* (humility) and *pyare* (love).

Sikhs undergo the initiation ceremony (*amrit shakh*) at any point during their lifetime. After this ceremony they strictly follow the Sikh philosophy and beliefs, and wear the five K's:

Kesh: uncut hair, symbolizing a movement away from physical appearance and towards spirituality.
Kara: a steel bracelet symbolizing the infinite God.
Kanga: a comb representing the importance of cleanliness and neatness.
Kacha: cotton underwear, symbolizing modesty and chastity.
Kirpan: a dagger or sword, symbolizing the defence of truth and against injustice.

Gurdwara

The gurdwara (temple) is a holy place for the Sikh community where the scriptures are kept and also

where all religious, social and cultural activities take place.

One of the holiest of Sikh shrines, the Sri Harmandir Sahib Ji or Golden Temple, is in the city of Amritsar. The Golden Temple culturally is the most significant shrine and one of the oldest Sikh gurdwara in the world.

Within the gurdwara, the *Guru ka langar* (Guru's community kitchen) serves free meals for all. The institution of the *langar* was started by the first Sikh Guru, Guru Nanak. It was designed to uphold the principle of equality among all people regardless of religion, caste, colour, creed, age, gender or social status, a revolutionary concept in the caste-ordered society of 16th-century India where Sikhism was founded. In addition to the ideals of equality, the tradition of the *langar* expresses the ethics of sharing, community, inclusiveness and the oneness of all humankind.

People from all classes are welcome at the *langar*. Only lacto-vegetarian food is served to ensure that all people, regardless of their dietary restrictions, can eat as equals. The *langar* is open to Sikhs and non-Sikhs alike. Food is normally served twice a day, on every day of the year. Each week one or more families volunteer to provide and prepare the *langar*. This is very generous, as there may be several hundred people to feed, and caterers are not used as it is considered a form of *sewa* (voluntary community service). All the preparation, cooking and washing-up are also done by volunteers, who are known as *sewadars*. In the UK most *langar* food is cooked and served at least twice a week and on religious days.

Religious dietary restrictions

Sikhs who have been initiated and have undergone the religious Amrit ceremony become lacto-vegetarian and so avoid meat, fish and eggs, and products containing these, and do not drink alcohol. Non-practising Sikhs are not usually vegetarian but do avoid beef and beef products and *halal* meat, preferring animals to be slaughtered with one stroke (the *jatka* method). Some Sikhs also avoid pork and pork products.

Religious festivals

Vaisakhi (also known as *Baisakhi*) is celebrated in the second week of April. It is an ancient harvest festival in the Punjab region, which also marks beginning of the new solar year and the foundation of the Khalsa.

Diwali (festival of light)
This is celebrated during October/November.

Sahib (birthday of Guru Nanak, founder of Sikhism)
One of the most important festivals, Sahib is celebrated on 15 November.

1.2.3 Traditional diet and eating pattern

Traditional Punjabi food is rich in texture and flavour and is characterized by a profusion of dairy products in the form of *malai* (cream), *paneer* (white cheese), butter, ghee and curds (yoghurt) as these food products are readily available. The cuisine is so versatile that sometimes Indian food is associated with Punjabi cuisine.

- *Makke di roti*: maize/cornflour *roti*.
- *Sarson ka saag*: spinach curry is something of a delicacy simply because of the time it takes to prepare as the dish is cooked on a slow fire for hours with a minimum of spices so that the fresh taste can be retained. In fact, the longer it takes to cook, the better it tastes. It is traditionally served with small pieces of white butter which is made at home using cream.
- Whole pulses and dal: black gram, green gram and bengal gram are simmered on a slow fire, often for hours, until they turn creamy and then are flavoured with herbs and spices. *Malai* (cream) is added at the end of cooking process for a rich finish before serving.
- *Chola bhatura*: chickpea curry served with small fried *puri* made from plain flour.
- *Mah ke dal*: Dal made from yellow split peas.
- Stuffed *parathas*: One of the most popular unleavened flatbreads made by pan-frying whole wheat flour in a *tava* (frying pan). The *paratha* dough usually contains ghee or cooking oil. *Parathas* are usually stuffed with spiced vegetables (e.g., potatoes, cabbages, radishes, cauliflowers) or *paneer*. They can be eaten on their own, with pickles or with *raita*.

Traditional meal pattern

The traditional Punjabi diet is a healthy one based on starchy foods, lentils and vegetables. The daily diet consists of roti or rice dal (lentil curry) *sabji* (mixed curry) with some *achar* (pickle) or natural (homemade) yoghurt. *Lassi* (a sweet or savoury yoghurt-based drink) is mainly consumed during the summer season. It can be sweetened and flavoured with rose water or mango, or served plain. Food is usually served in a regular plate with little helpings of the prepared dishes. Fresh fruit or a sweet dessert may follow. Most Indian meals include different types of flatbread, which is traditionally used to scoop up or roll vegetables. Dals can be eaten with a spoon or scooped with flatbread. Traditionally, Indians in Punjab eat their main meal at midday, preferring a light evening meal. People either bring their midday meal to work or use a lunch packing service (tiffin) which delivers traditional hot meals to the workplace. If possible, many Indians like to come home for the midday meal (see Table 1.2.1).

Table 1.2.1 Traditional eating pattern and dietary changes in Punjabi diet on migration

	Traditional meal	Dietary changes on migration to UK	Healthier alternatives
Breakfast	Plain or stuffed *paratha* (potatoes/radish/cauliflower) made with ghee or butter, pickle, yoghurt, milky tea	Cereal or porridge with milk Toast with omelette Biscuits English tea or coffee	Whole meal cereal with semi-skimmed milk and fruit Whole meal toast with low-fat spread Tea with sweetener
Lunch	Chapatti (rotli) with ghee or butter/rice Vegetable/meat/fish/ scrambled egg curry/whole pulses/dal Salad, pickle *Boondi*, cucumber yoghurt Plain yoghurt or *lassi* made with yoghurt	Leftover *sabji* with *roti*, e.g., chapatti with ghee or butter,rice Vegetable/meat/fish/scrambled egg s*abji*/whole pulses/dal Sandwiches, pizza chips, pasta, jacket potato	Chapatti, whole meal flour no butter or ghee; use low-fat spread Boiled rice Vegetable/meat/fish/scrambled egg curry/dal (measure amount of oil in cooking) Salad, pickle *Boondi*, cucumber yoghurt Poppadum – grilled or dry-roasted Sandwich of whole meal bread and low-fat filling Fruit
Snacks	Samosa, *pokora*, spring rolls Indian snacks and sweet meats with tea	Biscuits and cakes Indian snacks and sweet meats with tea	Biscuits and cakes with tea Unsalted, dry-roasted *chana* or nuts
Evening	Same as lunch May have pudding *Halwa/ kheer*/semolina pudding/*sevia*/sweet rice	Chapatti with ghee or butter/rice Vegetable/meat/fish/scrambled egg/*kadhi* (yoghurt curry)/dal/ kidney beans Salad, pickle *Boondi*/cucumber yoghurt Papadom Fruit juice/fizzy drinks Pizza/fish and chips/pasta/ ready-meals/noodles	Chapatti, wholemeal flour no butter or ghee or use of low-fat spread/boiled rice Vegetable/ meat/fish/scrambled egg curry/*kadhi* (yoghurt curry) dal/ kidney beans (measure amount of oil in cooking) Salad, pickle *Boondi*, cucumber yoghurt papadom

Cooking methods

The custom of cooking in community ovens or tandoors prevails in rural areas and tandoori dishes are popular all over the country. There is a variety of both non-vegetarian and vegetarian dishes and one of the main features of Punjabi cuisine is its diversity. Almost all dishes are cooked on a slow fire to achieve a robust taste. The basic sauce used for vegetables and meat dishes is a combination of onion, tomato, garlic and ginger.

Herbs and spices

Herbs and spices (masala) are an integral part of Punjabi cooking. Freshly ground garlic, ginger and green chillies are commonly used. Spices are used individually (e.g. *haldi* (turmeric), chilli powder, cumin, cinnamon or peppercorns) or in specific combinations (e.g. garam masala). 'Curry powder' as used in Britain is not comparable. Different combinations of spices are used and often only with certain foods. Many spices are thought to have special digestive and medicinal qualities. Salt (*nimak*) is also used. Black salt is good for the digestion and used on fruit or in drinks. Less spicy foods may be given to children and invalids.

Hot and cold foods

This bears no relationship to the spiciness of a food or the temperature at which it is served but is regarded as an inherent property of the food itself and one which affects the body's balance and state of health. It is believed that foods can affect the individual physically, emotionally and spiritually.

'Hot' foods are thought to increase the body temperature, stimulate the emotions and increase activity. 'Cold' foods are considered to reduce the body temperature and impart strength and cheerfulness. Normally, a diet containing a mixture of hot and cold foods is consumed. However, hot foods may be restricted during 'hot' conditions (e.g., mangoes/papaya are restricted during pregnancy). The intake of cold foods is controlled during 'cold' conditions (e.g., potatoes are consumed only in small amounts during lactation). It is mainly the older generation from the South Asian community that follow this advice during illness and during hot and cold weather. This belief can have nutritional implications if important sources of nutrients are restricted in vulnerable people. For example, dairy product consumption may be reduced in people who have arthritis and the consequent lower calcium intake may be significant for the elderly.

There is also anecdotal evidence that many people attribute asthma and coughs to the use of oils and margarines instead of ghee. Ghee is considered a pure food and has religious significance (Dhina, 1991).

Dietary manipulations based on 'hotness' and 'coldness' tend to have less influence on the diets of people originating from the Indian subcontinent than on those from Far East Asian countries such as China. There is also much more variation among different South Asian groups as to which foods are considered 'hot' and 'cold', and the younger generation may not follow these practices at all (see Table 1.2.2).

Alcohol

A community survey of Sikh, Hindu, Muslim and White men in the West Midlands showed men living in Britain born of Indian origin have higher than expected rates of alcohol-related disorders. According to the study, older Sikh men consumed more alcohol than younger men (Cochrane & Bal, 1990). Sikhs were more likely to be regular drinkers, followed by Whites, then Hindus; very few Muslims drank. Greater levels of alcohol consumption were reported by Sikhs and Hindus born in India than Sikhs and Hindus in Britain (Cochrane & Bal, 1990).

Smoking

According to Johnson *et al*. (2000), South Asians had very little knowledge on health-related issues and the impact of smoking on heart disease. In the South Asian community smoking habits vary

Table 1.2.2 Classification of South Asian hot and cold foods

Food group	Hot	Cold
Cereals		Wheat, rice
Green leafy vegetables	Fenugreek	All others
Root vegetables	Carrots and onions	Potatoes
Other vegetables	Capsicum peppers, aubergine or brinjal	Most other vegetables, including cucumbers, beans, cauliflower, marrow, okra, gourds
Fruit	Dates, mango, papaya	
Animal products	Meat, including chicken, mutton, fish	
Dairy products	Eggs	
Milk products		Milk and cream, curd or yoghurt, buttermilk
Pulses	Lentils	Bengal gram or chickpeas, green gram, peas, red gram
Nuts		All types, including groundnuts (peanuts), cashew nuts
Spices and condiments	Chilli, cinnamon, cloves, garlic, ginger, hing (asafoetida), mustard, nutmeg, pepper	Coriander, cumin, cardamom, fennel, tamarind
Oils	Mustard	Butter, ghee, coconut oil, ground oil
Miscellaneous	Tea, coffee, honey, *gurr* (jaggery), brown sugar	White sugar

British Diabetic Association, Asian diet information pack

significantly. Women rarely report smoking, however this is changing among the younger generation. Higher rates of smoking in certain groups can be attributed to social acceptance (Bush, 2003). It has been suggested that the heterogeneity of South Asians is an important consideration in the development of any health programme (Bhopal, 1999). Many health professionals regard South Asians as a homogeneous community; however, there are many sub-groups in terms of religion, traditions, education, language, beliefs and attitudes. Therefore, it is important to take account of heterogeneity when designing health promotion programmes (Bhopal, 1999).

Physical activity

On the Indian subcontinent physical activity is part of daily life, however, this is declining with modernization and affluence. In the UK South Asian men and women from all ethnic groups are less likely to take part in physical activity than the general population (Fischbacher *et al*., 2004). Younger generations of South Asians in the UK may access gym facilities, but this is uncommon among older generations.

1.2.4 Eating patterns in the United Kingdom

Findings from a qualitative study, using focus group discussions and individual interviews, about diet and cuisine among family members from a range of South Asian origins in Scotland found that South Asians are more likely to eat South Asian meals in the evening; other meals tend to be based on British cuisine (Wyke & Landman, 1997). This implies that a change of eating habits may be taking place. The widest ranges of cereal, pulse and vegetable foodstuffs were associated

with South Asian-style cuisine; British cuisine was more likely to be associated with convenience foods (see Table 1.2.3). Older and younger generations were very strongly committed to South Asian eating habits (Wyke & Landman, 1997). The National Food Survey (2003), which records food purchases, suggests a lower total fat intake, higher total polyunsaturated fatty acid and a higher polyunsaturated saturated fatty acid intake ratio in South Asians than in British Whites. However, the survey fails to take into account the diversity of South Asian diets.

1.2.5 Healthy eating

Key points

- After migration, most people adopt western eating habits while maintaining their traditional eating habits.
- Liberal use of oil/butter/ghee in cooking may result in a high intake of saturated fat and calories.
- Traditional vegetables and pulses are easily obtained in major cities but can be expensive.
- Potato may be a major component of a vegetable curry and accompanied by a large serving of rice or chapatti. The carbohydrate content of a main meal can therefore be very high.
- Poor cooking facilities and skills may make traditional cooking methods of difficult, resulting in a greater reliance on fried and convenience foods.
- Women are more likely to work and have less time for traditional, time-consuming methods of food preparation.

The traditional Punjabi diet is rich in starchy cereal foods, pulses and vegetables, and in principle could be made a very healthy one, resulting in a diet high in complex carbohydrate and fibre and low in fat (see Table 1.2.4).

Due to the heterogeneity of diets consumed by Punjabis it is impossible to generalize about the nutritional implications as these will vary from person to person depending on the nature of the diet and the extent to which it meets individual nutritional needs and provides an overall dietary balance. The younger generation is increasingly moving away from traditional dietary practices in favour of western eating habits (Thomas & Bishop, 2007).

The government's consumer insight summary (2008) reports that mothers in younger families from a Punjabi and Gujarati background are confident in preparing both western and traditional cuisines and generally do so for their families.

There may be a number of nutritional problems with the diets of Punjabi population in the UK. For those on low incomes an inadequate intake of energy and micronutrients may be due to ignorance. For others, often younger people, it is becoming increasingly common to consume high-fat, convenience and snack foods in preference to fruit, vegetables and starchy cereal foods, a diet that is energy-dense and nutritionally unbalanced. The range of nutritionally related health problems within the Punjabi community is similarly wide, extending from malnutrition, anaemia and rickets to obesity, diabetes and heart disease.

Specific guidance on modification of traditional recipes (e.g., in terms of the quantity and type of oil and fat used), cooking methods and meal patterns may also be advisable. Portion sizes may need to be reviewed as they tend to be large.

1.2.6 Coronary heart disease and stroke

Key points

- Coronary heart disease (CHD) has a high mortality rate, incidence and prevalence among Indian, Pakistani and Bangladeshi communities in the UK, indicating the need for effective prevention initiatives for these communities.
- There is a need to develop effective, culturally focused CHD prevention interventions for these groups by addressing identified barriers, including deeply held cultural beliefs.

Introduction

The South Asian community is approximately 50% more likely to die prematurely from CHD than the

Table 1.2.3 Glossary of Punjabi foods

Punjabi name	English name	Punjabi name	English name
Commonly used pulses		*Palak*	Spinach
		Payaz	Onions
Chola	White chickpea	*Phalli*	Green leaves
Lobia	Black-eyed beans /cow peas	*Phul gobi*	Cauliflower
Masur dal	Red lentils	*Saag*	Mustard leaves
Matar	Peas	*Salad*	Lettuce
Mung	Green gram	*Sarson-ka saag*	Mustard leaves
Rajma	Kidney beans	*Shakarkund*	Sweet potato
Toor	Red gram (pigeon peas)	*Tamater*	Tomato
Urad	Black gram		
		Commonly eaten fruits	
Most commonly used vegetables			
		Aam	Mango
Aloo	Potato	*Amrud*	Guava
Aloo saag	Potato and spinach	*Ananas*	Pineapple
Baingan	Aubergine (*brinjal*)	*Angoor*	Grapes
Band gobi	Cabbage	*Karbooja*	Sweet melon
Bindi	Ladies' fingers (okra)	*Karbooja*	Water melon
Gajar	Carrots	*Kela*	Banana
Hara dhania	Coriander leaves	*Narial*	Coconut
Kadoo	Pumpkin	*Nashpati*	Pear
Karela	Bitter gourd	*Nimbu*	Lemon
Khira	Cucumber	*Papita*	Papaya
Matar	Peas	*Saib*	Apple
Methi saag	Fenugreek leaves	*Santra*	Orange
Mooli	Large white radish		

general population. The death rate is 51% higher for women and 46% higher for men. Currently, the death rates compared to the rest of the population is increasing (DH, 2004). The reasons for the risk of CHD are not understood. It may be due to the South Asian community being genetically predisposed to CHD or factors associated with its development, such as insulin resistance or central obesity.

Prevalence

The high prevalence of type 2 diabetes is known to be a major contributory factor to CHD mortality; other risk factors are low levels of physical activity and a diet high in fat and low in fruit and vegetables (DH, 2004). The relatively disadvantaged socioeconomic status of the South Asian population has also been suggested as an explanatory factor (DH, 2004).

Other key risk factors requiring control are diabetes, which is up to six times more common in South Asians than in the general population, high cholesterol levels and hypertension (DH, 2004). There is evidence to suggest that Asian communities tend to be diagnosed at a more advanced stage of disease and have poorer survival rates (DH, 2004). For example, Punjabis living in Southall had mean serum cholesterol of 6.5 mmol/l compared with 4.9 mmol/l for their siblings in Punjab, India (Bhopal *et al*., 1999), i.e., their cholesterol concentration showed a marked rise (about 1.6 mmol/l) after migration. Rapid risk factors of this magnitude may be very important (Bhopal *et al*., 1999). Although we cannot fully explain why there is increased incidence of CHD in South Asian communities, it is important to address the inequalities. According to Bhopal and colleagues (1999), among the South Asian communities there are important differences between them for many

Table 1.2.4 Healthier alternatives for Punjabi diet

Foods	Healthier alternatives
Indian flatbreads *Roti* or chapatti	Encourage use of whole meal flour *Roti* is also be made from millet flour (*bhajra*), maize/cornmeal (*makke*) or gram flour (*basan*).
Fat added to dough (oil/butter), i.e., *roti*	Try not to add any to the dough. Keep *rotis* soft by covering with a tea cloth.
Butter/margarine/ghee spread on chapatti	Have dry *roti* or try low-fat spreads or reduce the amount of spreads used.
Plain *paratha* made with wheat flour with butter spread inside, folded and shallow-fried on a hot griddle Can also be made sweet or stuffed (with meat or vegetables)	Reduce amount of fat in preparation, and try not to add any after cooking. Try to use whole meal flour instead of plain flour. Use small amount of oil while shallow-frying, cook on dry hot griddle – it's the stuffing that provides most of the flavour.
Puris are deep-fried can be spicy or sweet	Very high in fat so only on special occasions.
Bhatura, deep-fried in oil/ghee (made for special occasions)	Try not to have often (e.g., only on special occasions or weekends).
Bread and breakfast cereals	
Bread	Try to have whole meal or granary bread.
Breakfast cereals	Try wholegrain cereals or low-sugar variety.
Rice	
White rice is mainly consumed	Best type for diabetes control is white basmati as it has a low glycaemic index. Brown basmati is also available. Try to boil, steam or microwave.
Pilau rice (fried rice with cumin and onions)	High in fat. Cut down on the oil used.
Biriyani, meat or vegetable	High in fat. Try to use low-fat cooking methods.
Potatoes	Cook with skins on when added to curry. Avoid deep-frying (e.g., chips).
Meat, fish and alternatives	
Meat/chicken curried, kebab or tandoori	Try to remove all visible fat. Use low-fat cooking methods. Skim fat from surface when dish is made. If eaten daily, try to encourage reducing frequency and portion sizes and substitute some days with dal/vegetable curry.
Fish (white or oily) may be deep- fried (masala fish), curried or steamed	Try not to fry; instead bake in foil. Use yoghurt and tandoori paste as a marinade. Try to include oily fish 1–2 times a week.
Eggs	Boiled, poached, scrambled. Cut down on oil when cooking omelettes or fried eggs.
Pulses and dals (60 different varieties, whole or split, e.g., *chola* (white chickpeas), kidney beans). Dals can be boiled, mashed, dry- roasted or fried. Dals can be ground into flour and used as a thickening agent and to make pancakes.	When cooking dal cut down on oil used (1–2 tablespoons of oil). Try low-fat cooking methods. Avoid adding any butter at the table before eating. If vegetarian, try to have dal every day for protein and iron. To help absorption of vitamin C have pure fruit juice or fruit after meal.
Milk and dairy products	Encourage 2–3 servings per day.
Milk used in sweet dishes, tea or *khoya* (or *maavo*), a solidified full-fat milk.	Do not use gold top, evaporated or condensed milk. Try semi-skimmed or skimmed milk. Mention that semi- or skimmed milk tastes thinner but is still full of goodness.

(*Continued*)

Table 1.2.4 (*cont'd*)

Foods	Healthier alternatives
Yoghurt	Try low-fat or use semi-skimmed milk to make yoghurt at home. *Raita* – try using cucumber, carrots and tomato instead, or *boondi* (small deep-fried gram flour balls).
Paneer (white cheese)	Add to curries shredded or cut into cubes without frying. Make *paneer* with semi-skimmed milk. Try low-fat varieties (e.g., cottage cheese).
Vegetables and fruit	
Vegetables (aubergine, spinach, tomato, okra, peas and cauliflower). Can be made with a sauce, deep-fried, stuffed or steamed.	Encourage low-fat vegetable curry (*sabji*); try not to overcook or reheat vegetables as this reduces vitamin content, especially spinach (*saag*). Encourage salad with meals. Store vegetables in a cool, dark place and use while fresh.
Fruit	Encourage all fruit but for diabetes be cautious of very sweet fruits (e.g., mangoes, grapes). Small portions only. Generally recommend three a day and spread these out. Where possible, eat with the skins. Try to have dried fruit as a snack or add to breakfast cereals. Try to have tinned fruit in natural juice rather than syrup. Avoid *chaat* (fresh fruit with added salt or salty spice mixes).
Fruit juice	Try not have sweetened juice drinks. Only small glass of pure juice if taken, as still high in natural sugars. Best to take with food to slow down absorption.
Snack foods	
Biscuits, cakes, pastry	Avoid sweet rusks. Try to reduce the frequency of biscuits and cakes.
Bhajis, pakoras, samosas, poppadum (*papad*) (fried or roasted)	Cut down, as these are very high in fat and salt. Best to have fresh fruit. Limit fried foods. If frying, shallow-fry instead of deep-fat frying and remove excess fat, or bake samosas in the oven. Try tea cakes, toast and crumpets, or oven-baked *aloo tikki* (spicy potato cake) and *chola* (chickpea curry) and salad or small portion of oven-baked chilli *paneer* served with salad.
Chevra (Bombay mix), nuts (dry- roasted or deep-fried)	Try to have dry-roasted nuts (chickpeas, peanuts or popcorn) instead of high-fat snacks (*chevra, gathiya, sevia* or crisps).
Sugary foods	
Indian sweetmeats *(barfi, jallebi* and *ladoo*)	High in fat and sugar. Try to avoid Asian sweets – save these for special occasions. Try to have fruit instead.
Puddings: *Sevia* (made with milk, fine noodles and sugar), *kheer* (rice pudding), *halva* (semolina pudding), *phirni* (made with milk, rice flour and sugar) *gajar halwa* (carrot pudding), sweet rice	*Kheer* – use semi-skimmed milk. Use sweetener for taste or dried fruit, sultanas and raisins. In puddings, try margarine instead of ghee and reduce the quantity. Save for special occasions. If not overweight, can have puddings made with low-fat milk and artificial sweetener.
Squash/soft drinks/cordial	Diet or low-calorie, even if only having occasionally; try sugar-free drinks.
Sweet *paan/paan* masala	Avoid. Have savoury version instead.

Table 1.2.4 (*cont'd*)

Foods	Healthier alternatives
Sugar, honey, *gurr*, in sweet or savoury foods. Glucose drinks	Try to cut down on these, or use artificial sweetener.
Tea. *Chai* (Indian tea) usually prepared with milk, sugar and a blend of ginger, nutmeg, cinnamon, cloves, fennel seeds and cardamom). Coffee.	Check the amount and type of milk used. Advise low-fat milk. Check if sugar, *gurr* or honey is added. If necessary, use artificial sweetener.
Fats	
Butter, margarine, ghee	Use mono- or polyunsaturated, rapeseed or olive oil, sunflower or corn oil instead of ghee or butter. Measure the amount of oil used and try to reduce the quantity. Aim for one teaspoon per person in curries. Avoid frying; try to grill, bake, steam or microwave.
Takeaways, weddings, parties, weekend, temple/ place of worship	Check type of food eaten and how often. Advise to be sensible and only eat small quantities of high-fat and sugar foods.
Pickle	High in fat and salt, drain oil before eating. Or try to make pickle with lemon juice or vinegar or have chutneys (tomato, mango or mint).

CHD risk factors. The belief that South Asians have lower risk factors for CHD is incorrect and may be the result of combining ethnic sub-groups and a narrow range of factors (e.g., insulin resistance; Bhopal *et al*., 1999).

Risk factors

- Age.
- Male gender.
- A family history of heart disease.
- Obesity.
- Diabetes and insulin resistance.
- Hypertension.
- Stress.
- A high saturated fat diet.
- High LDL and low HDL cholesterol.
- Socioeconomic factors.
- Smoking.
- Lack of physical activity.

Physical activity

People who engage in little physical activity have almost double the risk of dying from coronary heart disease than active people. Thirty minutes or more of at least moderate-intensity physical activity a day on at least five days a week significantly reduces the risk of cardiovascular disease and has general health benefits (DH, 2000). The recommended levels of activity can be achieved either by doing all the daily activity in one session, or in several shorter bouts (e.g., 10 minutes) of activity. The activity can be lifestyle activity or structured exercise or sport, or a combination of these (DH, 2000). It is known that South Asian men and women from all ethnic groups are less likely to take part in physical activity than the general population (Fischbacher *et al*., 2004).

Treatment

The National Service Framework for Coronary Heart Disease set national standards of treatment and care for preventing and treating CHD, with the aim of improving the standard of care and reducing inequalities (DH, 2000). Standards were set for better, faster treatment of patients who have had or are suspected to have had a heart attack, faster

diagnosis of heart disease and shorter waiting times for heart surgery (DH, 2004).

1.2.7 Diet modification

Fruit and vegetables

Eating at least five portions of a variety of fruit and vegetables a day could lead to an estimated reduction of up to 20% in overall deaths from chronic diseases, such as heart disease, stroke and cancer (DH, 2004). It is found that each increase of one portion of fruit and vegetables a day lowered the risk of CHD by 4% and the risk of stroke by 6% (DH, 2004).

Fat

Other dietary changes that would help to reduce rates of CHD include a reduction in consumption of fat, particularly saturated fat. A survey that focused on the health of minority ethnic groups asked about the frequency of consumption of a range of foods, including fruit and vegetables and a number of high-fat and high-sugar foodstuffs. The results show considerable variation in eating habits by ethnic group (Health Survey for England, 1999). As there is limited nutritional intake data for the South Asian population these findings should be interpreted with caution. It does appear that second-generation South Asians have adopted British dietary patterns, increasing fat and reducing fruit and vegetable consumption (Landman & Cruickshank, 2001).

Fish and omega 3 fatty acids

Research by the UK Food Standards Agency (2003) suggests that the Sikh population, and other Asian groups, could significantly reduce their risk of heart disease by increasing the amount of oily fish they eat. The study found that Sikh men and women consumed less fish oil and more vegetable oils than White men and women in the UK. After a moderate intake of fish oil (4 g a day for 12 weeks), the levels of beneficial fatty acids in the body increased in the Sikh group to levels similar to those of the White men and women studied. Results also showed that taking fish oil supplements reduced the risk of heart disease by changing levels of fats in the blood. Eating at least two portions of fish a week, one of which should be oily fish such as salmon or mackerel, could significantly help reduce the risk of heart disease in Asian communities.

This recommendation applies to pregnant and breastfeeding women, but they should limit oily fish consumption to no more than two servings a week and avoid marlin, swordfish and shark because of potential exposure to methyl mercury which accumulates in these fish. The FSA also advises pregnant women that the amount of tuna eaten should be limited to no more than two tuna steaks a week or four medium-sized cans a week, again because tuna may contain mercury, which at high levels can harm the foetus's developing nervous system.

In line with guidelines from the Food Standards Agency a diet high in fruit and vegetables, including two portions of oily fish and low in saturated fat, reduces the risk of CHD (Bhopal *et al*., 1999).

Plant-based source of omega 3 fatty acids

For patients who are following a lacto-vegetarian diet, omega 3 fatty acids can be derived from:

- Rapeseed or canola oil (most blended vegetable oils contain rapeseed oil).
- Walnut oil.
- Olive oil-based margarine.
- Soya beans, soya chunks/mince, soya milk/yoghurt, soya flour, soya oil and tofu.
- Nuts (walnuts, pecan, almonds).
- Peanuts.
- Ground flax (linseed) seeds and flax (linseed) oil.

The International College of Nutrition India recommendations for the prevention of CHD are that, in this population, a BMI > 23 kg/m^2 should be considered overweight and that an intake of 440 g/day fruit and vegetables and 25 g/day mustard oil or soybean oil instead of hydrogenated fat, coconut oil or butter is advised (Singh *et al*., 1996). Moderate physical activity, smoking cessation and moderate alcohol intake are also recommended (Singh *et al*., 1996).

1.2.8 Suggestions for way forward

A study of South Asians in Tyneside found that 35% did not understand the term heart disease,

19% were unable to provide any description of it, 14% could not give a single cause and 16% could not suggest a preventative measure (Rankin & Bhopal., 2001). This highlights that education and intervention for the South Asian community are needed.

1.3 Pakistani Diet

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1.3.1 Introduction

The South Asian subcontinent comprises India, Pakistan, Bangladesh and Sri Lanka. Four per cent of the total UK population is classified as 'Asian' or 'Asian British' and this group makes up 50.2% of the minority ethnic group population in the UK (UK Census, 2001).

'South Asians' is 'a term which defines many ethnic groups, with distinctive regions of origin, languages, religions and customs and include people born in India, Bangladesh, Pakistan or Sri Lanka' (Fox, 2004).

Pakistan is situated in the west of the Indian subcontinent, with Afghanistan and Iran to the west, India to the east and the Arabian Sea to the south. The name Pakistan is derived from the Urdu words *pak* meaning pure and *stan* meaning country (see Figure 1.3.1).

The British ruled the Indian subcontinent for nearly 200 years – from 1756 to 1947. After a revolt in 1857, the British initiated political reforms, allowing the formation of political parties. The Indian National Congress, representing the overwhelming majority of Hindus, was created in 1885. The Muslim League was formed in 1906 to represent the Muslim minority. When the British introduced constitutional reforms in 1909, the Muslims demanded and acquired separate electoral rolls.



Figure 1.3.1 Map of Pakistan

This guaranteed them representation in the provincial as well as national legislatures until independence in 1947 (Hamid & Sarwar, 2004). The British decided on partition and on 15 August 1947 power was transferred to Pakistan and India. For almost 25 years following independence Pakistan consisted of two separate regions, East (now known as Bangladesh) and West Pakistan, but now it is made up only of the western sector. Both India and Pakistan have laid claim to the Kashmir region; this territorial dispute has led to four wars and remains unresolved (www.infoplease.com/ipa/A0107861.html).

Migration has been a constant in the history of Pakistan. From its inception, its people have been moving in migratory waves. This migration of people started with the movement of millions of people from India into Pakistan when the two nations gained independence in 1947. Muslims moved to Pakistan in the hope of a better life, not just economically but also socially and for religious freedom (www.yespakistan.com).

- Languages: Urdu 8%, English (both official); Punjabi 48%, Sindhi 12%, Siraiki (a Punjabi variant) 10%, Pashtu 8%, Balochi 3%, Hindko 2%, Brahui 1%, Burushaski, others 8%.
- Religions: Islam 97% (Sunni 77%, Shiite 20%); Christian, Hindu and other 3% (http://www.infoplease.com/ipa/A0107861.html).

Migration to the United Kingdom

Large-scale immigration to the UK began in the 1950s, when Britain encouraged migration from its former colonies to fill its labour shortages following the Second World War. Many Pakistanis were economic migrants from rural areas of the country and most intended to return to Pakistan once they had earned enough money in Britain. Throughout the 1960s and 1970s their numbers increased. Men came first, followed by their wives, children and other dependants. By the 1960s and 1970s many Pakistanis believed it would be difficult to return home due to the higher living standards in the UK, the need to maintain new businesses, their children's education and political instability in Pakistan. Therefore the community settled and expanded.

Current UK population

The total minority ethnic population was 4.6 million in 2001 or 7.9% of the total population. Pakistanis were the second largest ethnic minority group with a population of 747,285, or 1.3% of the UK population, making up 16.1% of the minority ethnic group (www.statistics.gov.uk).

1.3.2 Religion

The main religion of Pakistan is Islam, which comes from the Arabic word meaning submission. Sunni Muslims comprise the largest denomination of Islam. Approximately 77% of Pakistanis are Sunni and 20% are Shia Muslim. The word Sunni comes from *sunnah* which means the words and actions or example of the Prophet Muhammad (peace be upon him). Shia is a shortened version and means the followers of Ali. Sunni Muslims and Shia Muslims differ regarding various beliefs in Islam.

All Muslims acknowledge the obligation to express their submission in terms of the 'five pillars of Islam'.

- Belief: Allah (the Arabic word for God) is the only God and Mohammed is his true messenger.
- Prayer: Muslims should pray five times a day at set times throughout the day.
- *Zakat*: Muslims should give 2.5% of their wealth (*zakat*) to the poor and needy. This is not a tax but a purification of their wealth through sharing. *Zakat* is normally paid during Ramadan.
- Fasting: In Islam, fasting means complete abstention from eating and drinking from dawn to sunset during Ramadan. Muslims rise before sunrise (*sehri*) to have a meal similar to breakfast and break their fast at sunset (*iftari*). Ramadan occurs in the ninth month of the Islamic year. It is considered one of the highest forms of worship as it enables people to practise self-discipline and helps them to appreciate and share the experiences of the poor and hungry. Fasting is also a way of purifying oneself spiritually and physically, a process of detoxifying to allow rest and recuperation for the body, mind and spirit (see Table 1.3.1).

Table 1.3.1 Exemptions from fasting

Persons exempt from fasting	Others exempt for certain periods but are supposed to make up for the missed fasts later
Young children (below the age of puberty)	The sick
Those with a life-threatening or chronic disease	The frail and elderly
	Women during menstruation
	Pregnant and lactating women
	People travelling on a long journey

Other than eating and drinking the fast can be broken by:
- engaging in any sexual pleasure or indulging in unclean thoughts;
- smoking;
- taking any kind of medicine;
- displaying anger or using foul language.

For those unable to fast they should feed a needy person, preferably a fasting person, with the same quality and quantity of food they would eat, for every day they do not fast.

- Pilgrimage (*hajj*): Once in a lifetime, a Muslim should make a pilgrimage to Mecca, if they can afford it. The *hajj* formally begins on the eighth day of Dhul-Hijjah, the 12th month of the Muslim lunar calendar. The *hajj* consists of several ceremonies, meant to symbolize the essential concepts of the Islamic faith and to commemorate the trials of Prophet Abraham and his family. It is a magnificent form of worship, combining prayers (*salat*), physical effort, long hours of meditation, supplification and glorification of Allah. *Hajj* results in the largest gathering of Muslims in any one place (Hamid & Sarwar, 2004).

Religious festivals and celebrations

The two main festivals of Islam mark the ending of Ramadan (*Eid-al-Fitr*) and the climax of *hajj* (*Eid-al-Adha*).

Eid-al-Fitr

The holiday follows the month of Ramadan falls on the first day of Shawwal, the 10th month of the Islamic calendar. Fasting is forbidden on this day. Muslims must pay *zakat-ul-fitr* (a charitable donation) for the month of Ramadan.

Eid-al-Adha

This feast of sacrifice is observed at the end of *hajj* and is celebrated over a number of days. The celebration is in commemoration of the command given by Allah to Prophet Abraham to sacrifice his son. Abraham's willingness to obey this noble command signified his faith in Allah. Today Muslims offer animals such as goats, sheep, lambs and cows as a symbol of sacrifice. Some of this meat is given to the poor and the rest is shared among family and friends. The Islamic New Year starts three weeks after *hajj*.

Religious dietary restrictions

In Islam, all wholesome things may be used for food and the general rule is that every food is lawful (*halal*) unless it is declared unlawful (*haram*).

Unlawful foods are:

- Foods and food products from pig meat.
- All other meat which has not been ritually slaughtered by reciting the name of Allah as the animal is slaughtered, the blood being allowed to drain. Kosher meat may be acceptable.
- Foods containing ingredients or additives derived from the pig, or from any animal which has not been ritually slaughtered or from any *haram* source. In practice, this means that a wide range of manufactured foods containing gelatine, animal fats or emulsifiers derived from animal sources will be avoided.
- Shellfish or fish without fins and scales.
- Alcohol, including that used in cooking or for medicinal purposes (Thomas & Bishop, 2007).

1.3.3 Traditional diet and eating patterns

The cuisine of Pakistan can be described as a fusion of cuisine from two Asian regions: Central Asia and the Middle East. Pakistani cuisine is known for its use of a variety spices and richness.

Breads

- *Roti* or chapattis are the most common bread made at home. The flat round bread (*roti*) is a staple part of the daily diet. They are thin, unleavened and made from whole wheat flour.
- *Tandoor* bread made with white flour: Different varieties of breads are prepared in a clay oven (tandoor). They are extremely popular in Pakistan and are consumed with just about anything, most commonly with shish kebabs. Restaurants usually cook these or if people have a clay oven, they might make these themselves.
- *Naan*: Naans are slightly thicker than chapattis, typically leavened with yeast and mainly made with white flour. They may be sprinkled with sesame seeds (*kulcha*). They are often served with *sri paya* and *nihari* for breakfast.
- *Roghni naan*, made from white flour: This is a naan sprinkled with sesame seeds and covered with a minute amount of oil. It is usually round and thicker than the standard *roti*.
- *Sheermal naan*, made from white flour and prepared with milk and butter: It is often sweetened and is particularly enjoyed by children.
- *Taftan* made from white flour: It is leavened and flavoured with saffron and cardamom powder and baked in a clay oven.
- *Puri*: It is deep-fried and is typically eaten with *halwa* or *bhujia* (made from chickpeas and potatoes). *Halwa purian* or *bhujia* with *puri* (now commonly known as *poorian*) has become a typical breakfast in Pakistan. They are also sold from makeshift carts or otherwise in breakfast stores.
- *Paratha*, a flat, multi-layered chapatti separated by ghee (similar to pastry dough). It is commonly eaten for breakfast and may be served with a variety of stuffings. It can be made from white or whole meal flour.

Rice

Basmati is the most popular variety rice consumed in Pakistan. Dishes made with rice include many varieties of pilau. *Biryani*, a very popular dish made with red meat or chicken, is always served at weddings and most parties. *Yakhni pilau* is made from meat stock, meat and rice. *Tahiri* is a vegetarian biryani and is made with rice and potatoes. *Matar pilau* is made with the additions of pea and, occasionally, corn and carrots.

Meat

An average Pakistani consumes three times more meat than an average Indian (Speedy, 2003). Of all the meats, the most popular are beef, goat, lamb and chicken.

Fish

Fish (e.g., sardines, prawns, tuna and cod) is generally not consumed in large quantities, though it is popular in the coastal areas.

Pulses and dals

Various kinds of pulses also make up an important part of the Pakistani dishes.

Lentils (dal) are considered an inexpensive food source and hotel/restaurants may only offer a limited variety of these dishes. Lentil dishes are also typically not served to guests or on special occasions. The main exception is *haleem*, which contains a variety of lentils, rice, wheat and barley. Vegetables may be added.

Beverages

Tea or coffee.

Accompaniments

Chutneys
Coconut chutney
Onion chutney
Tomato chutney
Coriander leaves chutney
Mint chutney
Tamarind chutney (Imli chutney)
Mango chutney (made from unripe, green mangos)
Garlic chutney made from fresh garlic, coconut and groundnut

Achars (pickle)
Mango achar
Lemon achar
Carrot achar
Green chilli achar
Pickle achar
Green chilli yoghurt is made with plain yoghurt, grounded garlic, green chilli and ground chilli powder
Raita (yoghurt) can also be made with cucumber, cumin seeds and oil
Aubergine *raita*

Although, traditionally, home-cooked meals are preferred, those who live in cities are becoming more inclined to eat fast foods. Furthermore, as a result of lifestyle changes, ready-made masalas are becoming increasingly popular (see Tables 1.3.2 and 1.3.3).

Typical meal pattern

Traditional food is cooked fresh from scratch and Pakistanis living in the UK will cook at least two or three main dishes, excluding accompaniments. Food for Pakistanis is a means by which the whole family gets together in preparation as well eating together.

The main course usually consists of meat curry (with or without vegetables) or vegetable curry (*sabzi*) and/or bean/whole pulses/lentils or dal curry, which is served with *roti* or boiled rice (basmati rice is mainly used). An example of dal is red lentils and *roti* is made from wheat flour, usually whole meal.

Meat plays a dominant role in Pakistani diet compared to other South Asian cuisines. Vegetables are added to meat curry (e.g., potatoes, spinach, courgettes, tomatoes, peas, aubergine, cauliflower and cabbage).

Salad is generally served with the main course.

Assorted fresh fruit or desserts are consumed and sweet dishes are cooked and served on special occasions (see Table 1.3.4 and Table 1.3.5).

Cooking methods

- Barbecue dishes are extremely popular and are a specialty of various cities. All barbecue dishes are marinated with variety of herbs and spices and are therefore very flavourful rather than being just dominated by chilli. Among the well-known dishes are chicken tikka, mutton tikka, shish kebab and bihari kebab. These specialties are usually cooked on special occasions or for dinner parties.
- One-pot (*handi*) cooking means that all the ingredients are cooked together on top of the cooker.
- Ovens are mainly used in this country to cook stuffed pastries but not meals.
- Tandoori meat dishes are a healthy way of cooking as fat drips into the fire.
- Grills are used for grilled chicken and kebabs.
- Pressure cookers are widely used as less oil is needed and the meat cooks more quickly.
- Rice cookers are also used occasionally.

Paan

Paan is a South Asian tradition which consists of chewing betel leaf combined with the areca nut. *Paan* is chewed as a palate cleanser and a breath freshener. It is also commonly offered to guests and visitors as a sign of hospitality and as an ice-breaker to start conversation. It also has a symbolic value at ceremonies and cultural events. *Paan* makers may use tobacco as an ingredient in their *paan* fillings. Although most types of *paan* contain areca nuts, some do not. Other types include sweet *paan*, where sugar, candied fruit and fennel seeds are used. Although the term *paan* is generally used to refer to the leaves of the betel vine, the common use of the word refers mostly to the chewing mixture wrapped in the leaves. Pakistanis who have migrated to the West generally do not chew *paan* as often as they would have in Pakistan (Panesar *et al*., 2008).

Alcohol

Alcohol is forbidden for Muslims so the majority of Pakistanis do not drink it, however some do and others may do but not admit it. Therefore it is best always to ask patients and not to make assumptions.

Table 1.3.2 Description of Pakistani foods

Food group	Description of foods	Urdu name
Bread, cereal, rice, potatoes and other starchy food	Wheat,	*Gehon*
	Wheat flour	*Gehon ka atta*
	Rice	*Chawal*
	Semolina	*Suji*
	Potatoes/chips/crisps	*Alu*
	Sweet potatoes	*Shakarkandi*
	Turnips	*Shalgam*
Meat, fish, egg, beans, nuts, seeds	Mutton/lamb	*Bakeka ka gosh*
	Minced meat	*Keema*
	Beef	*Gai ka gosh*
	Chicken	*Murga*
	Fish	*Machli*
	Chickpeas, white	*Chola*
	Kidney beans	*Rajma,*
	Lentil	*Masoor,*
	Black-eyed peas	*Lobia*
	Split pulses	*dal*
	Almonds	*Baadam*
Vegetables	Vegetables	*Sabzis*
	Green beans	*Faliya*
	Aubergine, cabbage, spinach, okra	*Bagan, kobi, Palak, bhindi,*
	Karela, cauliflower	*Bitter gourd, Ful gobi*
Fruit, fresh or dried	Mangoes, oranges, lychees, pomegranates, bananas, papaya, apples, pears, dried apricots, dates	
Milk and dairy foods	Milk	*Doodh*
	Plain yoghurt	*Dahi*
	Paneer	*paneer*
	Milk-based drink made with yoghurt, milk, sugar or salt and ice cubes. There are three types of *lassi*: salted, sweetened or mango-based	*lassi*
Foods and drinks high in fat and sugar	Butter	*Maakhan*
	Ghee	Ghee
	Sugar	*Shaker*
	Sunflower oil/olive oil	Sunflower oil/olive oil
	Jaggery (unrefined sugar)	*Ghur*
	Regular fizzy drinks, concentrated tropical/fruit juices e.g. mango	
	Asian sweets and savoury dishes	*Ladoo, gulab jamun, rasmalai, garjur carrot) halwa*
	Cakes, biscuits and ice cream	*pakora, samosa, chevra, Cakes, biscuits and ice cream*

Table 1.3.3 Herbs and spices used in Pakistani cooking

English name	Urdu name
Asafoetida	*Hing*
Black cardamom	*Bari elaichi*
Black peppercorn	*Kali mirch*
Black salt	*Kala namak or Sanchal*
Carom seed	*Ajwain*
Chutney	*Chutney*
Cinnamon	*Darchini*
Cloves	*Loonng*
Coriander powder	*Pissa dhania*
Coriander seed	*Sabut dhania*
Cumin seed	*Zeera*
Dried fenugreek leaves	*Kasoori methi*
Emblica gooseberry	*Aamla*
Garam masala	*Garam masala*
Garlic	*Lahsun*
Ginger	*Adrak*
Green cardamom	*Choti elaichi*
Green chilli	*Hari mirch*
Green coriander	*Hara Dhania*
Mango powder	*Amchoor*
Mint	*Pudina*
Nigella seed	*Kalonji*
Nutmeg	*Jaifal*
Onion	*Pyaz*
Parsley	*Jafari*
Pickle	*Achar*
Pomegranate seed	*Anaar dana*
Rosewater	*Gulab rus*
Saffron	*Kesar*
Salt	*Namak*
Sesame seed	*Til*
Tamarind	*Imli*
Turmeric	*Haldi*

Smoking

Smoking prevalence is increasing, especially in the developing countries. In Pakistan, the sixth most populous country, there is a high prevalence of smoking. A study conducted in Karachi in 1983 reported a prevalence of 21% among male medical students with average age of commencement 17 years (Ali *et al*., 2008). Another study conducted in 1995 reported a smoking prevalence of nearly 17% among male medical students as compared to 4% among female medical students in Karachi. It can be suggested that smoking among British Pakistanis will be more prevalent in men than that in women (Rozi *et al*., 2005). Similar to the general UK population 26% of Pakistani men smoke and 6% of Pakistani men and women reported tobacco chewing in *paan* (Rozi *et al*., 2005).

1.3.4 Healthy eating

The traditional Pakistani diet can be very healthy because it often includes plenty of vegetables, starchy foods (e.g., rice and bread) and good sources of protein (e.g., meat, fish, beans and pulses). However, as large quantities of oil/fat are added it can have a high fat content.

Simple changes to the diet and cooking methods should be discussed (see Table 1.3.6 and Figure 1.3.2).

Evidence to promote healthy eating

There is evidence that the UK health services are not reaching South Asian communities effectively. Attendance rates at outpatient clinics are notoriously low and compliance with treatment and advice can be similarly poor. Some may be reluctant to approach health professionals because they feel their ignorance will be exposed, their lifestyle scrutinized and possibly ridiculed, and their culture neither understood nor respected.

In order to overcome these barriers it is necessary for health professionals to develop local initiatives where links are built with respected community leaders and health promotion work is conducted within the community itself. It is often more productive and hence time- and cost-effective to run specific healthy eating sessions, cookery classes and group sessions in a local centre or even someone's home. It is also important that health education is focused on specific ethnic groups rather than being targeted at 'South Asians' (Thomas & Bishop, 2007).

Interpreters may also be invaluable for group teaching sessions, for example when introducing a video presentation, especially if the group has a common language. If the group is mixed, Hindi is usually the most appropriate language to use since Indian films are produced in Hindi and these are

Table 1.3.4 Traditional eating pattern and dietary changes in the Pakistani diet on migration to the UK

Meal	Traditional meal	Dietary changes on migration to UK	Healthier alternatives
Breakfast	*Paratha* with curry (eggs and potato) or yoghurt Fried eggs/omelette *Halwa* (made with semolina) with *puris* Water or tea Leftovers from the night before	Cereals Toast (usually white bread) Fried eggs/omelette Fruit cake Tea or coffee	Whole meal bread or wholegrain cereal (with semi-skimmed or skimmed milk). Unsweetened fruit juice Tea or coffee
Lunch (Main meal)	Chapattis (rotis) Meat or vegetable curry Salad	Leftovers from the night before Chapattis (rotis) with curry (vegetable/meat) Chips, pizza, fish fingers	Chapattis (rotis) with meat or vegetable curry or boiled rice with curry or sandwich with low-fat filling (chicken, salad, egg) or baked potato with leftover curry or baked beans
Evening meal	Rice with curry (meat/vegetable) or chapattis with curry, chutney, salad, yoghurt, pickles (in oil)	Rice or chapatti (roti) with meat/vegetable curry, salad, yoghurt, chutney (green)	Chapatti (roti) with vegetable or meat curry or rice with dal curry, fish curry or grilled fish (oily fish – mackerel, salmon, pilchard), salad
Puddings/ Desserts	Rice pudding (*kheer*) *Sevian* (vermicelli) *Zarda* (sweet rice) *Halwa* made with semolina or carrots	Rice pudding Vermicelli Sweet rice Cakes Ice cream Tinned fruit in syrup	Fresh/tinned fruit in natural juice. Rice pudding or vermicelli (made with sweetener and semi-skimmed milk). Fruit salad. Fruit yoghurt (low-fat/low-sugar)
Drinks	Water. Tea (made with milk and usually sugar or salt). Coke. *Lassi* (sweet or salty). Home-made lemon cordial with sugar	Fizzy drinks (e.g., cola). Sweetened soft drinks (Ribena, orange squash, etc.). Fruit juices. Sweetened fruit juices	Water. Unsweetened fruit juices. Diet or sugar-free soft drinks. *Lassi* made with low- fat yoghurt, milk and sweetener. Tea made with less semi-skimmed milk and sweetener
Snacks	Fried samosas, *pakoras*, kebabs, Bombay mix, Asian sweets (*burfi, jalebi, sweet sev, halwa*)	Bombay mix, peanuts, crisps, chocolates, Asian sweets, biscuits, fruit cakes Fried snacks such as samosas, *pakoras*, kebabs	Oven-baked samosas, *chana* (chickpeas) and/or potato *chaat*, fruit *chaat*, pitta bread filled with salad or vegetable curry. Grilled kebab with pitta/naan bread, more fruit and vegetables

(Hamid & Sarwar, 2004)

generally widely understood (Thomas & Bishop, 2007).

In health promotion work, education sessions that use a respected and well-known community elder as an interpreter are likely to be particularly well received. However, it must not be forgotten that some people may not be prepared to reveal personal information in a public setting (Thomas & Bishop, 2007).

Suggestions for the way forward

The development of effective nutritional intervention strategies to meet the needs of any population group should take account of modifiable risk factors that can form the basis of intervention and understand relevant health behaviours or beliefs so that appropriate strategies can be designed (Thomas, 2002).

Table 1.3.5 Glossary of Pakistani foods

Name of food	Description
Aachar	Pickle mainly made from vegetable and fruit (e.g., mango, lime, green chillies).
Burfi	Dessert made from milk that has been reduced to fudge-like consistency. Flavoured with saffron, vanilla essence, cocoa, rosewater, etc. Sometimes coconut and nuts are added. Eaten and served in bite-sized pieces.
Chaat	Sweet and spicy spices mixed in fruit or chickpeas.
Chapatti/Roti	Unleavened flatbread made with wheat and water. Usually cooked on a *tava* (griddle).
Halwa	Sweet made from semolina and finely grated vegetables (e.g., carrots), with milk, sugar and flavoured with cardamom. Consistency of thick pudding.
Jallebi	Crisp round whirls, made from plain flour and water, deep-fried and then dipped in an orange-flavoured syrup.
Kheer	Rice pudding made with rice, milk, sugar, flavoured with cardamom. Sometimes nuts are added. Served hot or cold.
Kulfi	Sweet, aromatic ice cream made from cream, milk and sugar, flavoured with mango, pistachio, saffron, etc.
Lassi	Drink made from yoghurt, milk and water. Either salty or sweet.
Mathai	Asian sweetmeats (e g., *burfi, Jallebi*).
Pakora	Crispy and spicy snack served straight from the frying pan with coriander chutney. Slices of different vegetables are dipped in batter made from gram or chickpea flour and a few dry spices, then deep-fried.
Paneer	Home-made white cheese from full-fat milk.
Paratha	Whole wheat unleavened flatbread. Sometimes filled with ground meat or a vegetable mixture. Shallow-fried.
Puri	Deep-fried whole wheat flatbread. Usually 10 cm in diameter. They puff up when fried.
Samosa	Deep-fried pastry appetizers filled with vegetable or meat mixtures.
Sev	Thin, string-like fried snack made out of gram flour.
Zarda	Sweet rice.

(Hamid & Sarwar, 2004)

Table 1.3.6 Dietary modification of Pakistani diet to meet healthy eating guidelines

Foods	Discourage	Encourage
Staple foods: breads	*Paratha* *Sheermal* *Puri*	Chapatti (roti) made with whole meal flour Whole meal pitta bread
Vegetables	Frying or adding oil	Boiling and continue adding to curries
Fruit	Adding cream or sugar	Prepare fresh fruit salad
Meat	Fatty meats Excessive salt	Use lean meat. Incorporate more fish in the diet Use less salt
Lentils and pulses	Large amount of oil for *bargar* (added to dal)	No more than 1 teaspoon of oil in *bargar*
Fats and oils	Ghee, butter Limit fried snacks, e.g., *chevra*, samosa	Olive oil, sunflower oil, rapeseed oil Snack of fruit/dried fruit
Dairy	Making *keer* and other desserts with full-fat milk/condensed milk. Evaporated milk	Use semi-skimmed milk and sweetened using less sugar



Figure 1.3.2 South Asian eat well plate model
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Guidance in pictorial form (e.g., photographs or drawings of the foods that should be eaten more frequently or avoided) is particularly valuable because even if the client is fluent in English, other members of the family (who may be the ones who do the shopping or cooking) may not be. Other innovative methods such as cookery demonstrations can also be effective.

Written information in Punjabi Gurmukhi (a Punjabi dialect) can be useful, although it should be borne in mind that some people, especially older women, may be illiterate in their own language. In contrast, younger people often prefer to be given written information in English. Rather than make assumptions, it is usually better to ask the client (if necessary via an interpreter) which written language would be most helpful. Dietitians will also need an English translation to refer to. Alternative resources (e.g., audiotapes, CDs and DVDs) should be considered and made available in different languages.

For strategies focusing on risk factors to be effective, two key elements are required: first, information needs to reach the right people; and second, the people need to commit to behavioural change.

Strategies need to take account of language, communication and cultural barriers and be targeted appropriately, and communities must be involved in their development.

People also need to have the opportunity to make healthier choices. Some communities do not have ready access to affordable healthy foods, safe, pleasant open spaces or affordable facilities for physical activity.

Information and knowledge need to be targeted to this community and services need to be made accessible.

Nutritional health groups should be established aimed at Pakistanis to educate them on healthy eating and the relationship between diet and disease.

More literature should be available in Urdu, including a website approved by British Dietetic Association (BDA) about nutrition and fact sheets in Urdu made available online.

1.3.5 Obesity

Key points

- The incidence and prevalence of obesity have continued to rise in the UK, which is a precursor for major diseases such as diabetes, coronary heart disease and certain types of cancer.
- Pakistani women living in the UK have been identified as having one of the highest rates of obesity.
- Being overweight or obese not only shortens life, it also reduces the years of life spent free of major illness and disability.
- As well as the emotional and psychological struggles, there is an immense toll on the NHS in treating as well as preventing obesity.

Introduction

Obesity is a major risk factor for cardiovascular disease, diabetes, hypertension and premature death. Body mass index (BMI) is a widely accepted measure of weight-for-height. Generalized obesity is defined as a BMI > 30 kg/m^2. However, BMI does not take account of the distribution of fat around the abdomen, which has been recognized as a risk factor in relation to chronic diseases. For this, the waist/hip ratio (WHR) is used, a measure of central obesity. Central obesity is defined as a WHR of 0.95 or greater in men, and of 0.85 or greater in women (www.statistics.gov uk).

Prevalence

According to the World Health Organization (1998), the global prevalence of obesity is in excess of 250 million people, and has been described as the single biggest public health issue in the western world. One in five adults in the UK are obese, an incidence which has nearly trebled over the past 20 years – the fastest rise in Europe, (National Audit Office, 2001). It is having a vast effect on health services, mainly due to related complications such as coronary heart disease (CHD), diabetes, hypertension and certain cancers (Andersen, 2003). Obesity is also increasingly affecting the emotional and psychological health of those who are obese (DH, 2004a).

Aspects such as greater food production, cheaper high energy-dense foods, more disposable income, lack of positive exercise/activity messages from young age, lack of sports opportunities, advances in technology, and so on have all contributed to this situation (Laing, 2002).

In the UK, children, people of low socioeconomic status and South Asians (in particular women with a Pakistani origin) have all been shown to have high rates of obesity (NAO, 2001). The National Audit Office reported that women of Pakistani origin are suffering not only high rates of obesity compared to the rest of the population (NAO, 2001), but also CHD and diabetes (Vyas *et al*., 2003; DH, 2004b).

However, compared with the general population, levels of obesity are three times lower in Pakistani men compared to their White counterparts (London Health Observatory, 2003). British Pakistani girls have an increased risk of becoming obese and Pakistani boys an increased risk of becoming overweight than the general population (DH, 2001). Obesity is therefore increasing in this community. The UK is unique in that it has the largest population of Pakistanis outside of Pakistan. It has therefore been the first to encounter the health issues within this community outside of Pakistan, and perhaps it has taken many generations to settle in the UK in order for the health issues to present themselves. Public health now has the advantage of having this long-established community with whom it can work to tackle health issues such as obesity (Shaw, 2000).

Results from the National Health Survey in Pakistan found overweight/obesity to be generally higher in women compared to men in Pakistan, and higher in urban than rural areas; women aged 45–64 years had the highest prevalence (40% overweight/obese) (Nanan & White, 1999). In comparison, Shah *et al*. (2004) profiled a mountain population in Pakistan whose prevalence of overweight and obesity was 1.8% among men and 2.5% among women, dramatically lower than elsewhere in the country.

Although many lifestyle factors determine whether someone becomes obese, the government has recognized in the White Paper 'Saving Lives

– Our Healthier Nation' (DH, 1999) that certain vulnerable groups are more at risk of suffering from poorer health due to inbuilt inequalities. High obesity levels among low socioeconomic status and ethnic minority groups suggest that these groups are experiencing health inequalities (Phillips, 2005).

There is a vast array of information on obesity from dedicated books and journals to websites (Garrow, 2000; Bessen & Kushner, 2001; National Obesity Forum, 2003). However, there is very little research, in particular qualitative research, specifically related to obesity and South Asians, or Pakistanis. There is therefore a huge gap, which is of particular concern as obesity is an emergent issue among those of Pakistani origin.

BMI and waist circumference

'Obesity is a condition, in which body fat stores are enlarged to an extent which impairs health' (Garrow, 2000). WHO recommends a BMI classification in order to diagnose overweight and obesity, where obesity is determined by a BMI > 30 kg/m^2. This is the most targeted or at-risk group, as they are likely to have the most serious medical and psychological problems (WHO, 1998). Although it has limitations, the BMI is useful for diagnosing and indicating the degree of severity of the obesity (Thomas, 2001).

The increase in the average BMI in the UK is graphically illustrated by the fact that aeroplane designers have had to increase the assumed weight of each passenger by over 9 kg, designers of clothes, beds, chairs and cars are all acknowledging that this increase in girth is not a temporary deviation in the statistics (Prentice, 1997).

Dietary modification

The National Institutes of Health review of 48 randomized controlled trials found strong and consistent evidence that weight loss can be achieved by reducing fat as part of a low-energy diet. However, both diet and physical activity are essential components of any weight loss programme (Mulvihill & Quigley, 2003).

Surgery for obesity is now used more frequently in the NHS, although it should be considered a last resort for severe and intractable obesity (Kopelman, 2001).

Physical activity

Physical activity is one of the key determinants of good health. A physically active lifestyle delivers significant physical and mental health benefits, notably helping to reduce cardiovascular disease and osteoporosis. Current guidance recommends that adults should take part in 30 minutes or more of moderate physical activity at least five times a week. Twenty-nine per cent of Pakistani men met the guideline whereas only 16% of women did. Traditionally, Pakistanis are accustomed to walking to markets or to visit relatives. However, in the West these things are harder to do and the weather conditions can act as a deterrent, therefore decreasing levels of activity and increasing health risks.

Physical activity is an important component of long-term weight control (Jakicic & Otto, 2005). As well as benefiting the internal functions of the body, it has been shown that it can also vastly improve mental health (Brownell & Kramer, 1994). There are clear differences in exercise behaviour and the effects of exercise across different cultural groups. Among African-Caribbeans aged 16–74 years, 62% of men and 75% of women do not participate in enough physical activity to benefit their health. Similar statistics are true of South Asians in the same age group. Activity levels in women vary: 83% of Indians, 86% of Pakistanis and 82% of Bangladeshis do not take enough exercise to benefit their health, while the figures for men are 67%, 72% and 75% respectively. About half of all South Asian women are sedentary compared to about 45% of South Asian men (DH, 2001). The exercise rate among South Asians is low (Fischbacher *et al.*, 2004) and factors such as lack of encouragement for sports (especially with females) and older women preferring not to leave the house alone, may partly explain this. Many said that they are lazy, especially due to habits adopted from Pakistan (too much rest/not enough exercise). This can only be related to the higher social classes, as much of the population in Pakistan lives in poverty (Nanan & White, 1999). A comparison was made with Indians, who are more active, with traditional dancing. Culturally, Pakistanis take pleasure in eating and entertaining (Shaw, 2000). Sports and

exercise have not been dominant aspects of the culture, perhaps partly due to the lack of women-only facilities in Britain and Pakistan and free mixing of males and females is not encouraged (Shaw, 2000). The sports culture in Pakistan is very much based around the male-dominated sport of cricket, with other world championship status in hockey and squash. However, this does not mean that women cannot have their own teams. Pakistani women have represented Pakistan in the world athletic games, marathon (*Jang*, 2005) and, more recently, in tennis.

Behavioural changes

Over the last decade the importance of behaviour modification as part of any weight loss programme has increased (Bagozzi & Edwards, 2000). Cognitive behavioural therapy has been shown to increase motivation and positive thinking and help people to change difficult aspects of their lives, whether this is smoking, drugs, alcohol or eating behaviour (Armitage & Conner, 2002). Behavioural treatment is an approach used to help individuals develop a set of skills to achieve a healthier weight and identify how to change (Garaulet *et al*., 1999). Foster *et al*. (2005) evaluated the weight loss of a dietary/behavioural weight reduction programme in 90 overweight patients. Treatment included behavioural therapy, nutritional education and physical activity. Forty-three per cent of patients completed the treatment, with a mean weight loss of 9 kg. It is known that many aspects can affect the behaviour of an individual, especially with regard to health. It is believed that behaviours are the result of complex psychological factors, including habits, emotions, attitudes and beliefs, and that any attempt to change behaviour must therefore be targeted at these factors (Marks *et al*., 2004).

The reasons why an individual or group follow a particular diet or exercise pattern include upbringing, family habits, culture, religion, education, knowledge and location (Brown, 1991). There is little research on health behaviour, obesity and ethnicity, although these have been highlighted in recent years (Alexander, 1999; London Health Observatory, 2003).

In Pakistan, social and environmental changes are occurring rapidly, with increasing urbanization, changing lifestyles, energy-dense diets and less physical activity. There has been a vast expansion of the food industry, with many new restaurants and fast-food outlets as eating out has become very popular (Nanan, 2002). However, awareness of obesity is increasing, especially among the younger generation who are taking their body image more seriously (Anwar, 1998). The leisure industry in Pakistan is developing rapidly, with more gyms, parks and other leisure activities (Nanan, 2002). However, this tends to be targeted at the wealthy who can afford to use these services, thus highlighting inequalities within Pakistan itself.

Many of the most significant, social and pleasurable activities in human experience are centred on eating and drinking, and thus are common to all people, (Beardsworth & Keil, 1997). However, eating and drinking are also social activities that are rich in symbolic, moral and cultural meaning (Marks *et al*., 2004) which shapes the individual's experiences with food (Mela & Rogers, 1998).

Eating patterns may be influenced by religious beliefs, cultural background, availability of traditional foods and adaptation to a western lifestyle. Culture is the major determinant of what and when we eat and, to a lesser degree, how much we eat, and is embraced with pride and not readily altered. Thus, food habits and preferences are among the last characteristics of a culture to be lost following migration to a new culture (Marks *et al*., 2004).

In some cultures, including the South Asians', obesity has been admired as a symbol of wealth and success, and fatness regarded as physically attractive. For example, in Africa and the Pacific Basin, in the past, obesity was perceived as attractive or a symbol of power and status (Brown, 1991; Marks *et al*., 2004). Brown (1991) found that 81% of the societies for which there were sufficient data rated 'plumpness' or being 'filled out' as an attribute of beauty in females. Ethnicity is an important variable for understanding the distribution of obesity, but it brings with it the danger of stereotyping – the mistaken notion that all members of a group are alike.

Studies show that migrant groups who move to the UK become more overweight than the general UK population due to a combination of poor social conditions, little physical activity and a sharp increase in the amount of fat in the diet, linked to western influences on the traditional South Asian diet (Chowdhury *et al*., 2003).

Prescott-Clarke and Primatests (1998) reviewed the influence of socioeconomic status on obesity around the world. They concluded that in industrialized countries, obesity tends to be more prevalent among the lower socioeconomic groups, whereas in poorer countries it is more common in the upper social groups, because only the relatively affluent have the opportunity to get fat. Poverty, inner-city living, poor housing and unemployment remain harsh realities for Pakistanis, Bangladeshis and African-Caribbeans (National Audit Office, 2001).

Recent evidence of good practice

There is a dearth of research and data to suggest the best evidence-based solutions in addressing obesity within this community, as well as others (Maryon-Davis Giles & Rona, 2000).

Perwiz (2005) explored the key issues and concerns of a sample of obese Pakistani women in London to identify the barriers that prevented this group from generating any sustained weight loss. Twenty-six participants were recruited from two local community groups. Overall, the subjects felt that aspects surrounding their own behavior, such as lack of motivation and time, rather than specific inequalities acted as the barriers. However, recurrent issues expressed by the subjects included a lack of appropriate weight management services, resources, support and awareness. Over half of the respondents said that they would go to a commercial slimming group, but only if there were other Asian women there and if it was not expensive. Groups such as Weight Watchers and Slimming World are successful because there is a need for such a service for the obese population (Thomas, 2001). However, such groups have not made concerted efforts to target ethnic minority groups. The fact that it is not a free service may prove to be an issue for those who are affected by wider inequalities. These results indicate that the main reasons for the increase in obesity in this community are diet and exercise. This and other factors, such laziness, are not exclusive to this community but affect the wider obese population too (Garrow, 2000).

Suggestions for the way forward

The lack of positive psychosocial support for the obese population and public health services/initiatives sensitive to the needs of this community must be addressed in order to tackle this epidemic, as well as the absence of extensive qualitative research, especially within the more deprived areas.

The Faculty of Public Health Medicine states that improving access to effective weight management programmes and health and leisure services by such groups needs to be addressed (Maryon-Davis *et al*., 2000). The current situation of 'too little and (often) too late' cannot be allowed to continue. Only in this way will the obesity epidemic witnessed in South Asians be arrested and reversed (Chowdhury *et al*., 2003).

It appears that local councils, Primary Care Trusts and government have to make full use of the opportunities available to increase the commitment to raising awareness. At the same time, the community needs to increase their awareness and support within the community.

Rankin and Bhopal (2001) state that there is an urgent need for health education within South Asian communities, as they found that for both heart disease and diabetes two-thirds of respondents in their study understood too little about the conditions and how to prevent them.

1.3.6 Diabetes

Prevalence

In 2009 the prevalence of diabetes in the adult population across UK was 5.1% in England, 4.5% Northern Ireland, 4.6% in Wales and 3.9% in Scotland. The average prevalence of diabetes in UK was estimated to be 4% (Diabetes UK, 2010).

Not all diabetes is diagnosed. The Health Survey for England (DH, 2004c) suggests that 3.1% of men and 1.5% of women aged 35 and over have undiagnosed diabetes. For both men and women, the proportion of people with diabetes increases with age. The Health Survey for England (DH, 2006) suggests that around 1% of men aged 16–34 years have diagnosed diabetes compared with 13.5% of those aged 75 and over. The pattern is similar in women, although rates are slightly lower at most ages than for men. Prevalence rates of diabetes in the UK are average for developed countries. In general, developed countries have higher rates than developing countries. The prevalence of diabetes in 2004 was much higher among some

ethnic minority communities than in the general population. The prevalence for Pakistani women was 2.5 times that of the general population (www.heartstats.org).

Almost 10% of the adult population of Pakistan suffer from diabetes (Staines *et al*., 1997; Shah, 2004). The very low incidence of children aged up to 16 years with type 1 diabetes in Karachi contrasted with the substantially higher incidence among migrants, which supports the view that environmental factors are the major determinants of variations in the incidence of this condition between populations.

In the UK, people of South Asian origin are four times more likely to develop type 2 diabetes than Europeans (Mather & Keen, 1985). A more recent survey in inner city Manchester, where around 30% of the population is South Asian, showed that among individuals aged 35–79 years, 30% of Pakistani men and 36% of Pakistani women had previously known or newly diagnosed diabetes (Riste *et al*., 2001).

The Health of Minority Groups Report 1999 (DH, 2001) stated that South Asian men and women had the highest rates of diabetes. Pakistanis of both sexes were more than five times as likely as the general population to have diabetes (www.statistics.gov.uk).

Diabetes substantially increases the risk of coronary heart disease (CHD). Men with type 2 diabetes have a 2–4-fold greater annual risk of CHD, with an even higher, 3–5-fold risk in women. Diabetes not only increases the risk of CHD but also amplifies the effect of other risk factors for CHD, such as raised cholesterol levels, raised blood pressure, smoking and obesity.

Diabetes causes severe morbidity (www.heartstats.org, 2009).

Complications of diabetes can be divided into three categories:

- Metabolic complications: low blood glucose levels (hypoglycaemia) and high blood glucose levels (hyperglycaemia). Diabetic coma is one such metabolic complication and is particularly severe.
- Microvascular complications: damage to small blood vessels leading to damage to the retina (retinopathy), kidneys (nephropathy) and nerves (neuropathy).
- Macrovascular complications: damage to the arteries leading to the brain (resulting in stroke) or to the heart (resulting in coronary heart disease) or to the legs and feet (causing peripheral vascular disease).

Data from South Asia and from areas with high concentrations of South Asian immigrants (Indians, Sri Lankans, Pakistanis and Bangladeshis) suggest that the diagnosis of type 2 diabetes among this ethnic group is increasing rapidly. Type 2 diabetes presents around a decade earlier in South Asians than indigenous Chinese, Japanese and UK populations. Cardiovascular complications of diabetes are more common among South Asians, with a 50% higher mortality compared to Caucasians. Similarly, renal disease is three times more common among South Asian diabetics than Europeans (Chowdhury & Hitman, 2007).

Type 1 diabetes requires treatment with insulin to achieve a balance between carbohydrate intake and insulin action. The overall aim is to establish good glycaemic control and prevent hypoglycaemic episodes. Although it is not yet possible to prevent type 1 diabetes, much can be done to prevent or delay the onset of type 2 diabetes. The development of type 2 diabetes is closely associated with obesity. Diabetes UK (2005) discusses how diabetes is approximately three times more common in people who have gained around 10 kg in weight during adulthood than in those who remain the same weight. There is increasing evidence that effective weight management and an active lifestyle can delay its onset.

Diet and lifestyle measures, including physical activity and ceasing smoking, are necessary if people with diabetes are to achieve near-normal blood glucose control and reduce cardiovascular risk factors.

Dietary modification

The South Asian eatwell plate (Figure 1.3.2) should be followed for healthy eating principles for diabetes management (see Table 1.3.7).

Those choosing to fast for religious purposes need to be advised on how to manage their diet and drug treatment, especially those taking insulin or oral hypoglycaemic drugs (Thomas & Bishop, 2007).

Table 1.3.7 Dietary modification for diabetes

- The timing of meals, particularly for those on insulin or oral hypoglycemic drugs. It is sometimes necessary to remind patients of the importance of these medications being taken at the specified times (and in the specific amounts).
- The need for an even and relatively constant distribution of starchy cereal foods throughout the day, and which is appropriate for any hypoglycemic therapy given.
- The need to avoid rich sources of sugars, particularly sweetmeats and sugar-containing fizzy drinks, which are often consumed in large quantities.
- The need to reduce fat consumption (principally by using less in cooking) and to reduce the intake of deep-fried snacks.
- The importance of weight loss for those who are overweight (via restriction of energy intake, primarily from fat and from increased physical activity).

Table 1.3.8 Glycaemic index of South Asian foods

Foods	Glycaemic index
Cereal products	
Chapatti	59–67
Basmati rice	58
Potato	70
Vegetables	
Karela	65
Saag (spinach)	0
Pulses and lentils	
Chickpeas	28
Mung beans	31
Red lentils	21
Chana dal	12
Fruit	
Banana	51
Mango	56
Water melon	72
Dates (dried)	45

Several prospective observational studies have shown that the long-term consumption of a diet with a high glycaemic load (GL; GI × dietary carbohydrate content) is a significant independent predictor of the risk of developing type 2 diabetes and cardiovascular disease. More recently, evidence has been accumulating that a low-GI diet may also protect against obesity (Foster-Powell *et al*., 2002) (see Table 1.3.8).

Herbal remedies

Karela (bitter gourd)

Karela is commonly consumed by the Pakistani population as it is believed to have a positive impact in reducing blood glucose levels. Pawa (2005) discusses how Indo-Asian people with type 2 diabetes may use traditional/herbal remedies for their perceived hypoglycaemic effects In the UK, karela capsules and juice are consumed, or added to curry. However, some people believe these can be taken as a substitute for oral medication so it is important that this is discussed by health professionals. Pawa (2005) recommends that asking about the use of these remedies should be an important part of the history, assessment and management of patients with diabetes.

Fenugreek

Fenugreek (*trigonella foenum graecum*) has been used for a variety of medicinal and other purposes, and may be used in the treatment of diabetes. Fenugreek is a member of the Leguminosae, or Fabaceae, family and grows well in India, Egypt and elsewhere in the Middle East. The part used medicinally is the seeds.

Fenugreek seeds contain alkaloids, including trigonelline, gentianine and carpaine compounds. The seeds also contain fibre, 4-hydroxyisoleucine and fenugreekine, a component that may have hypoglycaemic activity. The mechanism is thought to delay gastric emptying, slow carbohydrate absorption and inhibit glucose transport. Fenugreek may also increase the number of insulin receptors in red blood cells and improve glucose utilization in peripheral tissues, thus demonstrating potential anti-diabetes effects in the pancreas and other sites. The amino acid 4-hydroxyisoleucine in the seeds may also directly stimulate insulin secretion (Sharma *et al*., 1996).

The lipid-lowering effect of fenugreek seeds was studied in 60 non-insulin-dependent diabetic subjects. Isocaloric diets without and with fenugreek were given for 7 days and 24 weeks respectively.

Ingestion of an experimental diet containing 25 g fenugreek seed powder resulted in a significant reduction of total cholesterol, low density-lipoprotein (LDL) and very low-density lipoprotein (VLDL) cholesterol and triglyceride levels. These results indicate the beneficial effect of fenugreek seeds in diabetic subjects (Sharma *et al*., 1996).

Cinnamon

Cinnamon is the inner bark of an evergreen tree native to India and Sri Lanka. It has insulin-like properties, which decrease blood glucose levels as well as triglycerides and cholesterol, all of which are important, especially for type 2 diabetes patients. Just half a teaspoon of cinnamon powder in the daily diet of a person with diabetes can significantly reduce blood glucose levels. The results of a study by Khan *et al*. (2003) demonstrated that intake of 1 g, 3 g or 6 g of cinnamon per day reduces serum glucose, triglyceride, LDL cholesterol and total cholesterol in people with type 2 diabetes and suggest that the addition of cinnamon to the diet of people with type 2 diabetes reduces risk factors associated with diabetes and cardiovascular disease.

By taking cinnamon, reduction in fasting blood levels was 18–29%, triglycerides was 23–30%, LDL cholesterol was 7–27% and total cholesterol was 12–26%.

Fasting

The Pakistani population mostly follows Islam. Fasting during the month of Ramadan is one of the five pillars of Islam (see introduction). Patients with a chronic condition are exempt from fasting on medical grounds, however many people with diabetes may choose to fast. With appropriate guidance and counselling some patients with diabetes may be able to fast quite safely.

Shaikh *et al*. (2001) discussed those who should not fast. They include:

- Type 1 or type 2 diabetics with poor glycaemic control.
- Individuals known to be non-compliant with diet or medication.
- Those with serious concurrent disease, including unstable angina or uncontrolled hypertension.
- Patients with a recurrent diabetic ketoacidosis.
- Pregnant women.
- Patients with intercurrent infections.
- Patients with renal impairment of any severity because of the risk of dehydration and uraemia.
- Elderly patients with reduced alertness.
- Those that have previously experienced severe deterioration in glycaemic control during Ramadan.

Suggestions for the way forward

- Unfortunately, the management of Asian people with diabetes is often inadequate and ineffective (Cruickshank, 1989).
- Patients often lack knowledge about the disease, its complications and the importance of self-management, problems which stem from poor communication, inadequate or culturally inappropriate information and the lack of availability of educational material in minority languages (Goodwin *et al*., 1987; Hawthorne, 1990; Close *et al*., 1995).
- To some extent, the situation will have improved following the implementation of the National Service Framework for Diabetes and the development of translated literature by organizations such as Diabetes UK. However, delivery of appropriate care to this patient group remains patchy.

1.3.7 Coronary heart disease/stroke

Key points

- The incidence of CHD is higher among South Asians than the general population.
- The main risk factors are poor diet, physical inactivity, smoking, high blood pressure, obesity, type 2 diabetes, age and socioeconomic deprivation.
- Many support groups are working to ensure equal access to treatment and services.

Prevalence

The British Heart Foundation shows that CHD is the UK's single biggest killer. One in four men and one in five women die from the disease.

South Asians living in the UK are 50% more likely to die prematurely from coronary heart disease than the general population. The death rate is 46% higher for men and 51% higher for women. The difference between South Asians and the rest of the population is increasing because the death rate from CHD is not falling as fast in South Asians as it is in the general population. 'From 1971 to 1991 the mortality rate for 20–69 year olds for the whole population fell by 29% for men and 17% for women, whereas in people born in South Asia it fell by 20% for men and 7% for women' (Coronary Heart Disease Statistics, 2008). By reducing the incidence of CHD, other arterial diseases, especially stroke, will also fall.

Cardiovascular disease (CVD) can affect anyone, but it is more prevalent in certain ethnic minorities. Pakistani men had rates of CVD about 60–70% higher than men in the general population. The picture was similar for women (British Cardiac Society, 2008).

Risk factors and treatments

It is not understood why South Asians suffer more from heart disease than other groups. Several explanations have been suggested (WHO, 2002). When several risk factors coexist, the risk of CHD is greatly increased.

Risk factors

- Age.
- A family history of heart disease.
- Economic deprivation.
- Diet and low fruit and vegetable intake.
- Low HDL cholesterol and elevated triglycerides.
- Diabetes.
- Smoking.
- Hypertension.
- Inadequate exercise.

Certain risk factors are more common among South Asians, but vary between communities.

Diabetes

Diabetes is a chronic condition that occurs when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it does produce. There are two forms of diabetes: type 1 – people with this type of diabetes produce very little or no insulin; and type 2 – people cannot use insulin effectively. Most people with diabetes have type 2 (WHO, 2002).

People with diabetes are at increased risk of developing CHD than the general population. Men with type 2 diabetes have a 2–4-fold greater annual risk of CHD. However, women face a greater risk, with a 3–5-fold risk of type 2 diabetes (Garcia *et al*., 1974). Similar results were seen in The Interheart study (2004), which estimated that 15% of heart attacks in Western Europe are due to diagnosed diabetes; therefore, those who suffer from diabetes were at three times the risk of heart attack.

The Health Survey for England (1999) found South Asian men and women had the highest rates of diabetes. Pakistanis and Bangladeshis of both sexes were more than five times as likely as the general population to have diabetes, and Indian men and women were almost three times as likely.

Hypertension

The 2004 British Hypertension Society guidelines are that optimal blood pressure treatment targets are a systolic blood pressure of less than 140 mmHg and a diastolic blood pressure of less than 85 mmHg (and lower still, at 130/85 mmHg, for people with diabetes). People with high normal blood pressures (130–139/85–89 mmHg should be assessed annually). Data from the Health Survey for England show that in 2004 the proportion of Pakistani men with high blood pressure was two-thirds that of the general population. Pakistani women had half the levels of high blood pressure than women in the general population. In addition, the prevalence of untreated hypertension was lower among Pakistani men and women than in the general population.

Diet modification

To reduce the risk of CHD the British Nutrition Foundation recommend the following: maintain a healthy body weight; eat five or more portions of fruit and vegetables a day; reduce intake of fat, particularly saturated fat; reduce salt intake; eat at least two portions of fish, of which one should be

Table 1.3.9 Dietary modification of Pakistani diet for treatment for coronary heart disease

Food group	Encourage	Discourage
Carbohydrates	Whole meal bread or wholegrain cereal, chapatti (roti) made with whole meal flour, boiled rice	*Parathas, puri*, fried toast
Protein	Meat or chicken curry, dal (using small amounts of oil and choosing lean meats). Fish curry using oily fish (mackerel, trout, kippers, pilchards, salmon, sardines, herring, sprats) Boiled eggs Boil/steam/grill-meat/fish	Fried egg/omelette. Fatty meats and fried meat/fish
Dairy	Semi-skimmed or skimmed milk	Full-fat milk, cream, evaporated milk
Desserts	Fresh or tinned fruit in natural juice Rice pudding or vermicelli (made with semi-skimmed milk). Fruit salad Fruit yoghurt	*Halwa* (made with carrots or semolina), *zarda* (sweet rice)
Snacks	Oven-baked samosas. *Chana* (chickpeas) and/or potato *chaat*, fruit *chaat*. Grilled kebab with pitta/naan bread with salad. More fruit and vegetables	Fried samosas, pokoras, chips. Bombay mix, crisps. Asian sweets (*jalebi, halwa, burfi*)
Drinks	Water, unsweetened fruit juices. Diet or sugar-free soft drinks. *Lassi*	Fizzy drinks. Sweetened soft drinks. Sweetened fruit juices
Fats and oils	Reduce fats and oils	Ghee, butter

oily fish, a week. This is consistent with general healthy eating guidelines (see Table 1.3.9).

Increased consumption of fruit and vegetables has been shown to be associated with a reduced risk of CHD. The general population consumption of fruit and vegetables is less than three portions a day, however by increasing just one portion of fruit and vegetables the risk of CHD is lowered by 4% and the risk of stroke by 6% (Heart Disease and South Asians). The Health Survey of England (1999) found considerable variation in eating habits among ethnic groups. The Pakistani community had the lowest levels of vegetable consumption, with just 7% of men and 11% of women eating vegetables on six or more days a week. The survey also showed that about half of South Asians (Pakistanis 53%) perceived their traditional diets to be healthier than western diets. In addition, 79% of Pakistani people reported that traditional foods constituted a major component of the diets eaten at home.

Dietary restrictions for cultural or religious reasons were widespread among Indian (80%), Pakistani (97%) and Bangladeshi (97%) people (Health Education Authority, 1999). The survey also reported less understanding of key terms used in healthy eating messages, such as 'starchy foods', 'dietary fibre' and 'saturated fat', though this varied widely among South Asians. Among those who said they understood dietary terms, knowledge of foods high in starch, dietary fibre, fat and saturated fat was patchy and often poor across all ethnic groups.

Smoking

It is estimated that the average male smoker loses about 13 years of life and the average female smoker about 14 years of life. Stopping smoking is the single most important thing an individual can do to avoid a heart attack. Some studies have shown that 5–15 years after quitting smoking the risk of stroke is reduced to the level of a non-smoker, and 15 years after quitting the risk of coronary heart disease is the same as a non-smoker's. South Asian men and women on average smoked fewer cigarettes than men and women in the wider population. The reported rate of current cigarette smoking was very low in women (1%) but higher

among men (Health Education Authority, 1999). However, knowledge about the main diseases linked to smoking was low among men and women in all groups. The serious illness most likely to be linked to cigarette smoking was lung cancer, but knowledge about the links between smoking and other respiratory diseases, heart disease and throat and mouth cancers was very low.

Physical activity

The government confirms that at least 30 minutes of at least moderate physical activity a day on five or more days a week (45–60 minutes a day for children and 60 minutes for young people) significantly reduces the risk of premature death from cardiovascular disease (DH, 2004c).

There is evidence to show that an inactive lifestyle has a sustainable negative effect on health (DH, 2004d). Estimates have shown that 37% of CHD deaths can be attributed to physical inactivity. This compares to 13% attributable to high blood pressure (Britton & McPherson, 2002).

South Asian men and women from all ethnic groups are less likely to take part in physical activity than the general population (British Heart Foundation, 2001). Compared with the general population, Indian, Pakistani, Bangladeshi and Chinese men and women were less likely to meet physical activity recommendations.

The second health and lifestyle survey found several barriers for individuals not participating in exercise. Religion played an important role, though the desire to maintain modesty or avoid mixed-sex activity and fear of going out alone were not confined to Muslims. It was also found that Pakistani men were more likely to identify taking regular exercise as health-enhancing than Pakistani women. Other barriers may be due to lack of knowledge about recommended levels of physical activity. Fear of racism may affect people's willingness to exercise in public places, and socioeconomic disadvantage or lack of money or transport to attend facilities is commonly cited as a barrier to participation in sport and leisure activities.

Recent evidence of good practice

Evidence of good practice can be difficult to find as some support groups have only recently been set up or there is insufficient evidence for the Pakistani population.

The Khush Dil is a primary care-led, NHS Lothian-funded, community health project that offers a culturally sensitive framework for the identification and management of CHD risk factors. Staff include a health visitor, dietitian, two South Asian community health workers and an administrator. The nurse/health visitor provides a one-to-one cardiac health assessment designed for Asian patients. This helps build a picture of their individual heart health profile and identify any risk factors. In addition, the dietetic clinic provides one-to-one support to promote healthy eating using a South Asian diet. Community programme activities are also available for South Asians and include aerobic exercise for women, circuit training for men, walking and jogging groups. The Khush Dil project has found it difficult to formally evaluate the effectiveness of these changes in the group session. However, they did find it reassuring that healthy changes can be made without changing the taste of food. 'The local Asian community is enthusiastic about the project and anecdotal evidence suggests health and social outcomes have been improved for many Khush Dil attendees.'

In Birmingham Heartlands and Solihull NHS Trust interpreters play a vital role in ensuring that patients understand their condition. If needed the interpreters have the support of an Equal Access Facilitator. In addition, software packages in Urdu and Bengali are available. The resources available for Asians include a video, *Help Yourself to a Healthy Heart*, which is available in several Asian languages. The video covers what happens when you have a heart attack, medication and advice on exercise and diet. Later the Trust employed a CHD Asian Link Nurse who speaks Punjabi, Hindi and Urdu and as a result is able to check patients' understanding of their condition and what they need to follow. All patients attend the same rehabilitation programme; however, classes are given in different languages to different groups. Useful resources in different languages, as well as employing a suitable candidate for the role, have led to increased take-up of cardiac rehabilitation and compliance with the programmme.

Similar to the above Trust, the New Cross in Wolverhampton has a dedicated heart disease nurse who speaks Punjabi and Hindi. A common

problem highlighted was patients failing to take medication or follow treatment and rehabilitation programmes. Since the nurse was recruited she has been able to work with patients to provide a better understanding of their medical condition and ways to improve their quality of life. As a result attendance at rehabilitation and heart failure clinics by Asian patients has greatly increased, compliance with medication is up and patients appear more satisfied with the information provided.

Support groups

Many initiatives are working specifically to break down barriers to health inequalities and some particularly focus on minority ethnic groups and people living in areas of high deprivation. Below are some examples of organizations working to improve heart disease services for South Asians.

Improving access

- The South Asian Living with Heart Disease project was set up to examine and improve equal access to primary care services between South Asian and non-South Asian with CVD.
- Using ethnic profiling to improve services for BME (black and minority ethnic) communities with CHD. The aim was to improve the percentage of DNAs (did not attends) for patients with CHD attending the GP practice. Following ethnic profiling the practice provided appropriate bilingual services which resulted in fewer DNAs.

General prevention

- QUIT: The British Heart Foundation (BHF) and Diabetes UK have teamed up to promote healthy lifestyle messages to a large number of Asian families at venues such as summer *melas* (community fairs), as well as providing imams and other religious leaders with training in basic prevention of heart disease.
- Project Dil: a Leicester-wide primary care and health promotion programme, which aims to increase understanding of CHD and improve primary and secondary prevention of CHD in the South Asian community.
- Rochdale Healthy Living Centre is running initiatives to break down barriers to health information and services, with their main focus on general healthy eating advice as well as CHD and diabetes.
- Khush Dil Happy Heart Project is a primary care-led, NHS Lothian-funded, community health project which aims to prevent CHD in South Asian communities. Core project staff include a health visitor, dietitian, two South Asian community health workers and an administration worker based in Leicester.

Rehabilitation

- Fair and equal access to cardiac rehabilitation in Leicester was the aim of the project, in addition to helping patients understand their illness, its treatment and promoting their return to a full and normal life.
- Planning and delivering an equitable cardiac rehabilitation service in Newham – a two-year project delivering cardiac rehabilitation services to minority ethnic groups.
- Action CHD (Dil Ke Baat): the aim of the two-year project was to reduce deaths from CHD in South Asians by developing an education programme covering secondary prevention and cardiac rehabilitation.
- The CADISAP (Coronary Artery Disease in South Asian Prevention) study: the aim was to improve the uptake of and adherence to cardiac rehabilitation among South Asians through culturally specific interventions.
- Bengali Bridge Project: addresses chronic health conditions in the Bengali population in Euston.

Treatment

- The 3 Cities Project: covers Sheffield, Leicester and Nottingham, where multi-language health information can be accessed using touch-screen computers.
- The Ealing Coronary Risk Prevention Programme is nurse-led programme focusing on men and women aged 35–75 years and assessing risk of CHD from the participating practices.
- Birmingham Heartlands and Solihull NHS Trust: the Trust has employed interpreters which staff in any department can book at short notice; they also carry out ward rounds. In

addition, the trust has a CHD Asian Link Nurse. This has resulted in an increased take-up of cardiac rehabilitation and compliance with the programme.
- The New Cross Heart Disease Asian Link Nurse increases take-up of services.
- The Manchester Heart Centre Cardiac Liaison Team provides advice at every stage of the patient journey from point of listing through to follow-up support after discharge. In addition, booklets for patient in Urdu, Hindi and Punjabi are available, and 50 audio tapes are available in each language.
- Improving care for South Asian cardiac patients in Bradford to improve the care of heart failure patients. This was achieved by employing a bilingual community cardiac worker as part of the CHD team.

Diet and nutrition

- The Coventry 5-a-Day Scheme provides people with £2 vouchers to spend on fruit and vegetables.
- The Coriander Club, Spitalfields City Farm is a group of Bangladeshi women who get together to grow vegetables. The group has two weekly gardening days and a weekly healthy cookery class.
- The Birmingham Food Net began in August 2000 to promote a cardio-protective diet in a specified area of Birmingham, including some areas with a high South Asian polulation.
- The Bradford Trident Healthy Living Project weight management programme is a 12-week programme and groups meets on a weekly basis as it has been identified that health inequalities are significantly higher in this area, as are rates of CHD and type 2 diabetes.
- Dietary intervention in high-risk families with CHD in Ealing – a family-based programme, where a cardio-protective diet is emphasized.

Physical activity

There are now over 700 GP exercise referral schemes prescribing physical activity to improve health and well-being. Pilot projects, such as LEAP and the Walking the Way to Health initiative, are trialling different approaches for increasing access to and levels of physical activity.

- Walking for Health in Wolverhampton is a local scheme that provides regular, free, led walks, map-packs of short local walk routes and general health information on walking.
- SITARA is a women-only projct, staffed by women for women, in Batley, West Yorkshire.
- Hamara Healthy Living Centre in Leeds promotes physical activity as a preventative measure for CHD.
- Al-Badr Health & Fitness is a fitness centre in East London, serving the entire Muslim community.

Suggestions for the way forward

The National Service Framework on coronary heart disease suggests: 'Adopt[ing] broadly-based strategies that focus on established risk factors, taking account of language and cultural needs.'

- Smoking cessation, which has been relatively neglected, needs to be targeted at Bangladeshi and Pakistani men and all South Asian teenagers.
- Other key risk factors requiring vigorous control include diabetes, hypertension, obesity, raised cholesterol and triglycerides values and lack of physical exercise.
- Disease registers and practice lists may need an ethnic code so services can be appropriately targeted.

Other suggestions

- Identify barriers experienced by the ethnic community in accessing the service, by patient involvement.
- Create a local network of organizations working as partners in health care to increase awareness of CHD and its prevention.
- Integrated work between primary and secondary care.
- Improve awareness among patients of CHD risk factors and their prevention. Care professionals created a local network of organizations working as partners in health care to increase awareness of CHD and its prevention.
- Recruit and train community health educators from minority ethnic men and women who live in their respective communities to carry out particular health education sessions with members of their communities.

- Community educators must be bilingual, have some cultural understanding of their own communities and be able to deliver quite complex information in an accessible manner.
- Community involvement to devise effective implementation of policies and ensure that South Asians are well informed about their risk of CHD (BHF fact file, 2000).

1.3.8 Cancer

Key points

- Cancer is a consequence of complex and multiple factors, involving the environment and genetics.
- Tobacco use is the principal causative factor for cancer.
- Dietary modification and regular physical activity are significant elements in cancer prevention and control.
- Diets high in fruit, vegetables and fibre may reduce the risk for various types of cancer, whereas high intake of preserved and/or red meat, salt, alcohol and fat are associated with increased cancer risk.
- Overweight and obesity are both serious risk factors for cancer in both the general population and the Pakistani community in the UK.

Introduction

Cancer is the second leading cause of death in developed countries and becoming a significant cause of death in developing countries. Evidence suggests that cancer rates change as populations move between countries and adopt different lifestyles. Currently, little information is available about cancer in the Pakistani population due to lack of data from cancer registries in the UK.

Prevalence

There is little information on ethnic differences in the incidence of cancer and cancer mortality among adults in the UK, especially the Pakistani population, mainly due to the lack of reliable ethnicity data in cancer registries (Lees & Papadopoulos, 2000; Moles *et al*., 2008) and lack of published data on the Pakistani population both in Pakistan and the UK (Winter *et al*., 1999). Due to a recent trend in collecting data about ethnic minorities by health care services only some data are available, which show that cancer incidence rates and mortality are lower in minority groups compared to the general population (Winter *et al*., 1999; Lane *et al*., 2007).

This might underestimate the true extent of the prevalence of cancer in the Pakistani population as the main reason accountable for this difference is a the younger age structure of the ethnic minority groups compared to the White population and cancer incidence increases with age. It is estimated that more than half the ethnic minority population are under 16 years of age (National Statistics, 2002). This could partly be explained by the fact that some members of the ethnic minority return to their country of origin after retirement (Lodge, 2001). Another important reason to explain the underestimation of the cancer burden is lack of reporting by some members of this population as they rely on alternative therapies or traditional interventions for their disease.

However, when compared to cancer incidence rates in the Indian subcontinent, the migrant Asian populations have higher cancer rates. This suggests that changes in lifestyle or greater exposure to a carcinogenic environment have occurred within this population group which has changed the incidence rates from the country of origin to that of the country of residence (Winter, 1999).

Breast and lung cancers are the most common cancers among ethnic minority groups in the UK (Lodge, 2001). However, although they are at a lower risk of most cancers, the South Asian population, including Pakistani people, have increased risks of oral and pharyngeal cancers relative to the general British population. This mirrors similar trends in the Indian subcontinent (Winter, 1999; Merseyside Regional Head and Neck Cancer Centre, 2007).

Among the other main cancers, Hodgkin's lymphoma in males and cancer of the tongue, mouth, oesophagus and thyroid and myeloid leukaemia in females are significant. Cancer of the hypopharynx, liver and gall bladder are prevalent in both sexes (Winter, 1999).

Another study suggested that on the basis of the number of cases, breast, lung and neoplasm of the lymphatic system were the three main cancers for

adults in the ethnic minority in the UK, whereas cancers of the gall bladder, liver and oral cavity were considered to be the three predominant cancers, based on the standardized mortality ratio (Bhopal & Rankin, 1996).

Risk factors and treatments

It is yet to be established what the exact mechanism is that leads to the development of cancer. It appears to be a series of complex factors. Some of these, such as environmental influences, which are thought to be accountable for 95% of cancers, can be modified, whereas a genetic predisposition cannot, but the aetiology of such cancers remains complex and with genetic influence the development of the disease is not definitive.

Due to the scope of this chapter only environmental factors are discussed in the following sections.

Tobacco and smoking

Tobacco use is one of the most recognized risk factors in the development of cancer. Not only smoking but chewing tobacco is associated with this disease (Critchley & Unal, 2003). As in other South East Asian populations, both smoking and chewing tobacco are common in the Pakistani population, with an estimated 29% of Pakistani men compared to 24% of men in the general population smoking (DH, 2004d). The prevalence of tobacco chewing increases with age, especially among women. Betel quid mixed with tobacco is the most commonly used tobacco product (DH, 1999).

Mouth, throat, oesophagus, lung, stomach, kidney and bladder cancers are all related to tobacco exposure. Passive smoking is also a risk and studies show that there is a 25–50% increase in the risk of developing lung cancer in people exposed to secondhand smoke (Boffetta, 2002; Jamrozik, 2005; Vineis *et al*., 2005). This could be of particular importance among the Pakistani population, as they have large families and live in an extended family environment (National Statistics, 2002), thus exposing more people to passive smoking.

Environmental pollution and fuel smoke are other possible factors in the development of predominantly lung cancer (Fullerton *et al*., 2008). The International Agency for Research on Cancer identified biomass smoke as a probable carcinogen and coal as carcinogenic to humans (Straif, 2006). This could be a particularly important risk factor for the first-generation Pakistani population who were frequently exposed to smoke from household use of solid fuels. Data from India, Mexico and China have recognized domestic coal smoke and biomass fuel smoke as significant risk factors for the development of lung cancer (Du *et al*., 1996; Hernandez-Garduno *et al*., 2004; Behera & Balamugesh, 2005; Zhao, 2006).

Betel quid (paan) and areca nut (chalia)

Betel quid or *paan* consists of areca nut, lime and catechu wrapped in a betel leaf to which tobacco is often added (Centres for Disease Control and Prevention, 2007). The habit of chewing betel quid is widespread in South-East Asia, especially in the Indian subcontinent. This habit is also common in migrants from these countries (Gupta & Warnakulasuriya, 2002; Cancer Research UK, 2009).

There is evidence to show that chewing betel quid containing tobacco is carcinogenic (Gupta *et al*., 1992; Gupta & Ray 2003, 2004; IARC, 2004; Nair *et al*., 2004; Centres for Disease Control and Prevention, 2007). In 2004, the International Agency for Research on Cancer (IARC) declared betel quid and areca nut to be group 1 carcinogens.

Oral cancers, predominantly cancers of the lip, mouth, tongue, and pharynx and oesophageal cancer, are associated with betel quid use (Gupta & Ray, 2003, 2004; IARC, 2004; Nair *et al*., 2004; Centres for Disease Control and Prevention, 2007). Much of the evidence for such an association comes from Indian studies, however this research can also be implied for the Pakistani population due to similar cultural and geographical characteristics.

Diet

After smoking and tobacco use, diet is considered to be the most attributable cause of cancer (Cancer Research UK). Dietary factors are thought to cause about 30% of all cancers in western countries and up to 20% in developing countries (WHO, 2004). Alcohol, salt, meat and fat are some of the dietary factors which have well-established links to cancer risk.

The traditional Pakistani diet tends to be high in carbohydrates, fibre, fruit and vegetables, legumes,

lentils and dairy products and low in meat, poultry and fish. The Pakistani diet is also high in fat, in particular saturated fat (mainly from full-fat dairy products, ghee and butter), as well as high in salt and sugar (Pakistan manual). However, due to adopting of western eating pattern and habits, and an increase in socioeconomic status, the Pakistani diet is depicting trends of more modern but unhealthy choices. This is especially true of the migrant Pakistani population in western countries (Winter *et al*., 1999). The Health Survey for England (2004) shows poor health and lifestyle choices among the Asian community in general and Muslim community in particular. Women tend to make better lifestyle choices than men, but report more illness or poor health when compared with Pakistani men.

Fat

High fat intake, especially saturated fat, has been linked predominantly with breast cancer by various studies; however, there is no conclusive evidence for this. It is not clear whether it is saturated fat, dairy products in general or the resultant obesity which is increasing the risk of cancer (Thomas, 2001). There is clear evidence of high fat intake among the Pakistani population, which was also observed in the Health Survey for England in 2004. It was found that women of all other ethnic minorities apart from Pakistani women had lower mean consumption of fat. However, female fat consumption is considered to be lower than their male counterparts: 84% of women had a low fat intake as compared to 72% of men in the general population. Health promotion messages aimed at the Pakistani population should focus on decreasing fat consumption for its associated links with heart disease and diabetes, which are also prevalent in this ethnic minority group.

Salt

High salt intake has been linked with stomach cancer, however most of the evidence comes from countries with high salt intake which makes it unclear to what extent salt can cause stomach cancer in other populations (Cancer Research UK). Salt may either increase the sensitivity of the lining of the stomach to carcinogens or directly cause damage to mucosa and inflammation. It was found that the pattern of salt intake in the Pakistani population was similar in both genders, however in comparison with the general population the amount of salt used in cooking was higher in ethnic minorities (DH, 2004a). This finding was comparable with the traditional Pakistani diet, which consists of significant salt intake in both cooking and at the table. Accompaniments like pickles and chutneys which are used on daily basis also contribute large quantities. However it was found that both Pakistani men and women were using less salt in cooking as well as on the table in the 2004 Health Survey compared with 1999. This could be attributable to health messages especially aimed at ethnic minorities regarding excessive salt intake and related health risks such as high blood pressure, stroke, heart disease and some cancers.

Fruit and vegetables

A combination of fibre, antioxidants, folate and a range of phytochemicals make this food group protective against the development of cancers. Hence the government's current advice is in line with the World Health Organization's (2004) – five portions of fruit and vegetables a day. High intakes are linked with a reduced risk of oral, oesophageal, larynx, stomach, lung and bladder cancers. Some 33% of Pakistani men and women eat the recommended five or more portions of fruit and vegetables a day as compared with 14% of the adult general population (DH, 2004a). The ratio of women eating recommended fruits and vegetable was higher than men. This is also true for the general population. These findings are based on self-reports of the consumption of fruit and vegetables. That does not necessarily take into account the cooking or preparation methods which can result in substantial losses of nutrients and hence reduce the protective effects of fruit and vegetables.

Fibre

Some evidence suggests that a high fibre intake is protective against some forms of cancer (e.g., bowel and pancreas). Studies show that it is particularly protective in people with high consumption of red and processed meat. However, it is important not to link only one aspect of food with the development of cancers as other factors (e.g., physical activity, drinking alcohol, smoking, high consumption of red and processed meat and salt)

are also strongly linked with the development of bowel and pancreatic cancers. Therefore, the focus should be on promoting general healthy eating guidelines (Thomas *et al*., 2005).

Two mechanisms are linked with the protective effects of fibre: first, fermentation of fibre in the bowel produces short-chain fatty acids, which may have anti-proliferative properties; second, fibre contributes to maintaining gut health by increasing the transit time of stool, thereby decreasing the exposure of the intestine to possible harmful substances. There were no data available on the fibre intake of the Pakistani population from the Health Survey of Minority Ethnic Groups in 2004. The Department of Health recommended an average intake of 18 g a day for the general population; however, the average individual daily intake of fibre in the UK is 14 g (DH, 1991).

Red and processed meat

Some evidence suggests that people with a high intake of red and processed meat have a high risk of bowel cancer (Larsson & Wolk, 2006). Two possible mechanisms relating high intake of meat to cancer include an exposure to carcinogens like heterocyclic amines produced during cooking or increased production of nitrosamines in the gut. There are no data on the meat intake in the Pakistani population, but it is generalized that red meat intake is rising in this group, whereas processed meat intake remains low (Pakistani Manual).

Alcohol

Alcohol is well established as a cause of cancer and its risk is greatly increased in combination with smoking. Cancers of the upper respiratory-digestive tract, bowel and liver are especially linked with alcohol consumption (Cancer Research UK, 2009). Alcohol is prohibited for Muslims, so there is less consumption among the Pakistani population when compared with other minority groups and the general population, but it is not totally uncommon. An estimated 89% of Pakistani men and 95% women are non-drinkers as compared to 8% of men and 14% of women in the general population (DH, 2004a).

Body weight and physical activity

Obesity and lack of physical activity are both linked with the development of a number of diseases including cancer (WHO, 2002). The main cancers associated with excess body weight are cancers of the colon, breast, endometrium, kidney, oesophagus, gastric cardia, gall bladder and pancreas (Cancer Research UK, 2009).

The prevalence of obesity is increasing in the South Asian ethnic group. Although mean body mass index (BMI) for men was lower when compared with the general population, Pakistani women were most obese after Black Caribbean and Black Africans women and were also more obese than women in general population. Similar trends were observed in Pakistani children, with Pakistani girls at a high risk of being obese and boys of being overweight (DH, 2004c).

Central obesity is considered to be more accurate in determining the risk of obesity-related diseases as compared to the BMI. The Health Survey of England (2004) showed an increase in central obesity in the Pakistani population (37% men and 39% in women as compared to 33% and 30% respectively in the general population).

Research also suggests that overall participation in sport and activity is clearly lower in the Pakistani population as compared to other ethnic minority populations. Figures on sports show that participation of Pakistani population is lower (31%) as compared to the national average of 46% (Rowe & Champion, 2000).

The thresholds for BMI, waist circumference and WHR used in the Health Survey of England (2004) are intended for White European populations and growing evidence suggests that they might not apply to those of non-European descent (Deurenberg *et al*., 2000; Dudeja *et al*., 2001). This could lead to an underestimation of the actual prevalence of obesity in the South Asian, in particular the Pakistani, population (Lovegrove, 2007). The World Health Organization Expert Consultation in 2004 highlighted that the health risks can considerably increase, particularly in South Asian populations, below the cut-off point of 25 kg/m^2 for there is significant evidence to suggest that associations between BMI, percentage of body fat and body fat distribution differ across populations (Seidell *et al*., 2001; Misra *et al*., 2005, 2006).

(For further reading on obesity and ethnic-specific cut-offs for BMI and waist circumference see the section on Obesity.)

Table 1.3.10 Dietary guidelines for cancer prevention

- Maintain weight within healthy BMI range.
- Eat at least five portions of fruit and vegetables of a wide variety each day.
- Eat more starchy foods and mainly high-fibre varieties.
- Eat red or processed meat only within the UK's average intake (90 g/day).
- Drink alcohol in moderation.
- Do not take high-dose supplements of beta-carotene or other micronutrients.
- Avoid excess salt.

Dietary modification

Although there is a strong association between dietary influences and the prevention or development of cancer, focusing on one aspect of diet and its relationship with a particular cancer is not advisable. Therefore the COMA working party (DH, 1998) recommended dietary guidelines for the prevention of cancer, which are summarized in (Table 1.3.10) and are in accordance with WHO (2002) and the Food Standard Agency's recommendations. However, these guidelines should be used in conjunction with the healthy eating principle.

Dietary management of cancer is not a straightforward process due to the involvement of a number of interlinked, and to some extent complex, factors. These can range from health promotion for cancer prevention to specific aspects of dietary management before, during and after cancer treatment. It can also extend to addressing psychological and emotional issues associated with diagnosis, treatment and prognosis. In addition, due to the extended family structure, dietetic intervention will be further complicated with meeting expectations of the family members as well as the patient.

In the Pakistani population group, the language barrier also plays an important role, especially as risk of cancer increases with age and therefore the group at a higher risk of cancer development are the first-generation migrants who encounter language and cultural barriers the most.

Dietetic modification involves nutritional assessment with particular importance to the following aspects:

- Weight changes and present nutritional intake.
- Changes in appetite or taste.
- Difficulty in eating and/or swallowing.

Table 1.3.11 Main cancer treatments and their nutritional implications

Surgery	Increased nutritional requirements
	Delay in nutritional intake
	Surgery induced side-effects, e.g., ineffective digestion and absorption
Radiotherapy	Anorexia, nausea, sickness
	Increased risk of infections of mouth and throat
	Mucositis, painful and sore mouth and throat
	Abdominal cramps and diarrhoea
	Loss or change in taste
	Xerostoma
	Dysphagia
	Difficulty in speech
	Tiredness
Chemotherapy	Nausea, vomiting
	Taste changes
	Stomatitis
	Mucositis
	Oesophagitis
	Diarrhoea
	Constipation
	Poor appetite

- Nutritional implications of specific types of cancers.
- Nutritional implications of treatment related side-effects.
- Requirement of oral or enteral nutrition support.

However, it is important to note that spirituality and religion also play a vital role in the lives of people from this cultural group as well as use of herbal and alternative therapies. Reliance on tales, myths and personal beliefs about specific foods or treatments can pose a real challenge for dietary management. Therefore, it is essential that all members of the healthcare team are aware of the need to look for specific cultural issues when treating this group (see Table 1.3.11).

Recent evidence of good practice

There is little information on the evidence of good practice on cancer in the ethnic minority

population. The main focus of cancer care is on increasing awareness and improving the take-up of screening services. Another important area of work is targeting health messages at this population group. That is being done in conjunction with other diseases related to lifestyle factors, such as heart disease and diabetes.

Suggestions for the way forward

There is increasing evidence suggesting that healthcare provision for ethnic minority groups is poorer than for the majority population and same trend is found in cancer care (Lodge, 2001; Elkan *et al*., 2007). The main issues highlighted in the literature are communication barriers, lack of awareness and failure of providers to accommodate religious and cultural diversity. Dietary management should take into account the cultural and religious needs of the Pakistani population.

Evidence highlights health inequalities among ethnic minority groups in the UK. Lack of knowledge about cancer and cancer services leads to a low uptake of screening and preventative services.

Language and communication barriers are significant causes of the low uptake of health service in the Pakistani population.

Improvement in socioeconomic factors, the importance of cancer awareness and screening with targeted health promotion and regular monitoring are ways forward in cancer care in this population group.

Traditional intervention strategies are mostly designed for the majority White population and do not necessarily accommodate the needs of the ethnic communities. Therefore, intervention strategies should be devised, such as stopping smoking and chewing tobacco services, improving the use of screening services, education on cancer, targeted health promotion messages especially translated in Urdu with the use of audiovisual aids when necessary.

Further research about cancer in this group with systematic collecting and recording of data in cancer registries will help to develop good practice in the UK (Lodge, 2001; Thomas, 2001).

Resources in different languages and how to obtain them

Cancer Equality is a registered charity, which with the funding from the Department of Health established the National Black and Minority Ethnic Cancer Resource Centre in 2003. This is the first resource of its kind and has produced a directory of various cancer-related information resources in different languages for both health professionals and people affected by cancer. The directory is available at ethnicminoritycancerdirectory.pdf 590.64 Kb.

1.3.9 Maternal and child nutrition

Introduction

Many of the Pakistani immigrants and nationals living in the UK have largely retained their cultural and religious practices, some of which are reflected in their diet. This is particularly true of maternal and infant nutritional practices. Despite some dietary acculturation, dietary transition appears to be minimal between the first- and second-generation Pakistani communities, which may be attributed to the cohesive nature of the community (Parsons *et al*., 1999).

It is important to note that family, cultural traditions and religious beliefs have a powerful influence on maternal nutrition and weaning practices within the Pakistani community (James & Underwood, 1997).

Pre-conception and pregnancy beliefs

Many myths and traditions regarding nutrition and pregnancy/post-pregnancy are practised and widely advocated in many parts of Pakistan, some of which may be followed by the UK Pakistani population as well. Many women rely on the experience, knowledge, support of their friends and family to guide them through their pregnancy as well as rearing their children. However, often the advice given is not supported by any scientific evidence and may often contradict the advice and recommendations specified by local and international health professionals or governing bodies such as the Department of Health or WHO.

The following gives a brief insight into the typical traditions and practices within some of the Pakistani communities, however it is important to note that this is largely based on reported observations and variances may occur within the community.

During the first trimester of pregnancy, due to the increased risk of miscarriage, certain dietary

recommendations are advocated to ensure the latter is avoided. Women during this period are recommended to abstain from the consumption of 'hot' foods and the intake of 'cold' foods is recommended. The latter does not refer to the temperature of the foods, but to its energy properties (Homans, 1983). There are many intricacies attached to the two categories, some of which neatly map onto western medicine and some of which do not. One of the basic distinctions is between cold and heat, the logic behind it being that you consume cold and cooling foods when you are hot and consume hot and warming foods when you are cold. Pregnancy is thought of as a 'hot' condition therefore 'hot' food such as meat, fish, nuts, seafood and eggs are not recommended initially whereas 'cold' foods such as yoghurt, milk and some fruits and vegetables are encouraged (Caplan, 1997).

There are certain beliefs surrounding the association between nutrition and its contribution to the appearance and physical features or attributes of the child. Having a child who is fair-skinned is a generally desired attribute within some communities across the South Asian populations. It is perceived that if you drink light-coloured drinks – milk, water, fruit juice, etc. – this will result in a fairer baby, whereas the consumption of darker drinks – tea, coffee, cola, etc. – will result in a darker complexion. The latter are thus avoided. In addition, some women may choose not to take iron supplements as it is believed that iron can result in dark stools, and may have a similar effect on the skin tone of the child. However, there is no documented evidence to support these theories.

Iron deficiency anaemia

Iron deficiency anaemia is highly among pregnant women in Pakistan (Hassan *et al*., 1992; Hayat, 1997). This may be explained by the fact that iron-rich foods such as meat, fish and eggs are excluded from the diet in the initial stages of pregnancy. This may further be compounded by the fact that many women requiring iron supplementation as we have seen fail to take it. In addition, lengthy Asian cooking processes can result in loss of vitamins and minerals, particularly vitamin C, which can inhibit iron absorption (Alvi *et al*., 2003).

After giving birth, women are often recommended by family members to have a diet high in calories, protein and calcium in order to maintain energy levels throughout breastfeeding as well as to aid with recovery following labour (Ingram *et al*., 2003).

Panjiri, a Punjabi dish made from whole wheat flour fried in sugar and ghee, heavily laced with dried fruits and herbal gums, is often offered to nursing mothers as it is categorized as a hot food and is thought to promote the production of breast milk and restore the energy that the mother loses during labour (Laroia & Sharma, 2006). The seeds contained in this dish are a good source of protein and minerals, and so have many health benefits for the mother (Firdous & Bhopal, 1989; Laroia & Sharma, 2006). However, as the diet following a pregnancy can be high in sugar and fat, it is possible that many mothers will find returning to a healthy weight challenging.

It is also believed that the nature of cravings experienced during pregnancy can be an indication of the sex of the child: cravings for sweet foods indicate that the baby is female, whereas cravings for savoury foods indicate a male. However there is no scientific evidence to support this.

There is a lack of peer-reviewed evidence exploring many of the practices within the Pakistani community, many of which have evolved and have been unquestioningly practised over the centuries. However, it is clear that the appropriateness as well as the impact of food exclusions and dietary manipulations dictated by these practices may need to be further explored.

Vitamin D deficiency

It is thought that a significant number of the UK population have a low vitamin D status. This is particularly prevalent in the South Asian and East African Asian communities (Brooke *et al*., 2005). Although vitamin D deficiency in Asians originating from India, Pakistan and Bangladesh living in the UK was reported 30 years ago (Ford *et al*., 1972) and despite many successful campaigns to tackle this problem, there appears to be resurgence in vitamin D deficiency in this group over the last few years. Vitamin D deficiency has been implicated as a risk factor for diabetes, ischaemic heart disease and tuberculosis (Awumey *et al*., 1998; Shaw & Pal, 2002).

Most vitamin D comes from exposure to sunlight. Ethnic Pakistani women as well as those

from other South Asian groups are at greater risk of vitamin D deficiency because many cover themselves for cultural and religious reasons (Alfaham *et al*., 1995). They may also lack an adequate intake of dietary vitamin D and supplements are indicated (Shaw & Pal, 2002).

Newborn infants depend on foetal stores of vitamin D obtained from their mother (Clements & Fraser, 1988). Following delivery their vitamin D status is 60–70% of measured maternal vitamin D concentrations. Low maternal vitamin D may adversely affect the foetal brain. In addition to the known paediatric problems of infantile rickets, dental enamel hypoplasia, hypocalcaemic fits and congenital cataracts in early life, vitamin D deficiency has also been shown to affect postnatal head and linear growth (Brunvand *et al*., 1996).

Reliance on vitamin D supplements for infants or the amounts in infant formula is inadequate to overcome the impact of maternal vitamin D deficiency (Shaw & Pal, 2002). Supplementing all Asian women at risk of vitamin D deficiency may be a simpler way to improve maternal vitamin D status. However, there may be issues with compliance, particularly if supplements are recommended to be taken daily. The latter was demonstrated by a health programme in Norway, where women of Pakistani origin failed to achieve reduced vitamin D deficiency despite provisions of free supplements and advice (Brunvand *et al*., 1996). It is evident that there is a need for a renewed public health campaign to tackle this problem.

Low birth weight and childhood obesity

In the UK, low birth weight babies are particularly common in the South Asian populations, in particular in the Pakistani, Bangladeshi and Indian populations. Although generally babies born in the UK to mothers from South Asia have a birth weight greater than that of babies born in the South Asian subcontinent, it is still lower than that for the general UK population by about 300 g (Chetcuti *et al*., 1985; Margetts *et al*., 2002).

Low birth weight babies have an increased risk of developing type 2 diabetes, cardiovascular disease and obesity (Gillman *et al*., 2003). The latter has been illustrated by the rise in overweight/obesity in children of Pakistani origin in the UK (Ridler *et al*., 2009). It is thought that a small size at birth can result in an acceleration of linear and adipose growth, a process described as catch-up growth (Tanner & Whitehouse, 1975). Studies also demonstrate that foetuses that experience intrauterine growth retardation tend to show higher levels of adiposity than their peers during mid-childhood (Rogers *et al*., 2006).

Breastfeeding

Contrary to the custom of their native country, many mothers of Pakistani origin living in the UK adopt the habit of formula feeding instead of breastfeeding. Sarwar (2002) found that 73% of mothers in Pakistan breastfed their infants, whereas only 23% of mothers of Pakistani origin in the UK breastfed theirs. A study carried out in Cardiff observed that many women of Pakistani origin initiated and favoured breastfeeding, however more than half discontinued before the infant was three months old (Burton-Jeangros, 1995). This could be attributed to the fact that infant formula is readily available and accessible and support is available to individuals of even a low socioeconomic status in the UK.

Ingram *et al*. (2003) highlighted importantly that many South Asian women are very private and Muslim mothers in particular are required to be appropriately covered. Ingram *et al*. (2003) observed that while many South Asian women were exclusively breastfeeding at home, the majority use a dummy or bottles of water when outside. This may also be one of the reasons why many of the women in Hartley's audit (2003) discontinued breastfeeding while still in hospital, as even being behind a curtain may not provide the amount of privacy they require.

Mitra *et al*. (2004) illustrated that many Pakistani women are not fully aware of the benefits of breastfeeding.

There may be many plausible explanations for why women of Pakistani origin fail to initiate and continue with breastfeeding. Many live within a joint/extended family system, therefore pressures of housework and caring for other members of the family mean that breastfeeding may often be seen as a time-consuming chore. A survey by the Department of Health (1997) found that while 76% of Pakistani mothers in the UK initiated breastfeeding, only 36% continued and the most frequent

reasons given for discontinuing were due to perceptions that the milk was insufficient or difficulties in latching on.

A recent study looking at the relationship between breastfeeding and maternal mental wellbeing in the Pakistani and Bangladeshi populations found that mothers that breastfed exclusively were able to enjoy everyday activities and had better sleep and mood patterns in comparison to mothers that were formula feeding (Sayeda & Rousham, 2008). However, it indicated that there is a lack of support for breastfeeding mothers from a Pakistani origin living in the UK (Sayeda & Rousham, 2008).

Many mothers may experience problems in obtaining advice from health professionals, due to inaccessibility of appropriate primary health care services, language or cultural difficulties (Scheppers *et al*., 2006). Often the dietary knowledge of health professionals is inadequate and conflicting and many may lack the knowledge of cultural practices within certain communities. If the mothers are not approached in a sensitive manner, many may feel patronized or inadequate; as a result they perceive health professionals as inapproachable (Garret *et al*., 1998).

Although there appears to be an increased awareness of the benefits of breastfeeding as well as support networks (i.e., breastfeeding counsellors within the community), it is clear that advice needs to be tailored to meet the needs of Pakistani mothers, thus encouraging and providing them with confidence and conveying the benefits of breastfeeding (Dyson *et al*., 2006; Meddings & Porter, 2007).

Weaning practices

Weaning practices depend principally on the knowledge, beliefs, attitudes and resources of the infant's parents. Although common to all groups, ethnic minority groups are likely to experience particular challenges (Williams *et al*., 1989).

The recommendations for weaning in Pakistan are the same as those advocated by the WHO and the UK Department of Health, namely exclusive breastfeeding or formula feeding until six months, with the introduction of solids not recommended before four months (Shamim, 2005). However, generally food is introduced by the age of four months, commencing usually with semi-solids and gradually progressing to solids at or after six months. Sarwar (2002) found that women living in Pakistan and mothers living in the UK of a Pakistani origin commenced weaning between three and four months. However some infants within these populations were not weaned until seven months or later as mothers perceive breast milk to be an adequate source of nutrition. Delayed weaning can lead to many feeding difficulties caused by the lack of opportunity to develop chewing skills, becoming accustomed to different tastes and textures and overall poor feeding skills (Northstone *et al*., 2001). In addition, delayed weaning may result in a delay in speech and language development (Hutchinson, 2001). Research by Shamim (2005) demonstrated that poor weaning practices are a public health issue in many parts of the country.

Common first weaning foods are baby rice, cereal, boiled mashed eggs, banana, rice and yoghurt as well as expensive cereals given in diluted form (e.g., Cerelac). Cerelac is commonly used as a weaning food in the UK South Asian population and is particularly favoured within the Pakistani community. Following on, infants living in Pakistan are likely to progress to fruits and vegetables and eventually family foods. In contrast, in the UK, in addition to fruit and vegetables infants are likely to progress to meat and convenience foods, particularly the sweeter varieties (Sarwar, 2002). Many have observed that it is difficult to progress to family foods as a result of late introduction, a pattern observed with older children as well. In the latter case where family foods are refused or where infants are more difficult to feed, parents may offer sweet foods, which infants usually have a natural preference for (Godson & Williams, 1996).

Although many mothers commence weaning between the ages of three and four months, milk often remains the principal source of nutrition in the infant's diet and can be so until the age of two years. As a result many children are at risk of iron deficiency anaemia (Harbottle & Duggan, 1992). In addition, many mothers may give their children traditional tea made with water and milk, where tannins contained in the tea can inhibit iron absorption (Lilly, 1995).

Many infants of Pakistani origin in the UK and particularly in the Muslim community (Bedi, 1989)

are offered and weaned on a diet of convenience foods and drinks high in sugar. This has been shown to have potential adverse effects on dental health (Shahid *et al*., 2009). Sarwar (2002) found that some mothers in Pakistan gave their children chapatti and rusks in a bottle as many found that offering solids in this manner was easily accepted by the child. However, the latter is discouraged and it is recommended that non-milk drinks should be given from a cup or a feeder to avoid the risk of dental decay (Watt, 2000).

Suggestions for the way forward

Following appropriate weaning guidelines and practices is imperative. There is a clear need to provide better and more accessible information for mothers which is sensitive to their culture, beliefs, attitudes, knowledge and expectations as well as their economic status. Many mothers newly arrived in the UK may find it difficult to obtain foods they are familiar with and be influenced by mass advertising for baby foods and infant formulas. In addition, they may experience difficulty in learning new ways of preparing the foods they are encountering for the first time. Language can also be a barrier in effectively conveying appropriate advice (Horsfall *et al*., 2003).

Hence it is important to ensure health professionals are aware of family dynamics and have detailed knowledge of the background and culture of ethnic minority groups. It is also essential that all health professionals involved in providing advice on nutrition are consistent and in line with national/international recommendations. Health professionals that do not have a nutrition background (community nursery nurses, health visitors, etc.) involved in providing dietary advice need to ensure adequate training is accessed and received from appropriate professionals (i.e., registered dietitians).

Vitamin D deficiency in the Pakistani population was highlighted earlier and it is clear that measures need to be taken to increase awareness of this within this population. This can be achieved by ensuring women at risk are identified and supplemented appropriately. Local policies may need to be implemented on maternity units to ensure women at risk of vitamin D deficiency are receiving and taking supplements (Sharma *et al*., 2009).

There are many opportunities for women to access support groups and receive advice in the community. Many of these are channelled through the National Children Centre programme, which is in place as part of the Every Child Matters Initiative (Department for Education and Skills, 2002). However, specific to the Pakistani community, efforts need to be made to identify issues within this population and strong links need to be built with the community to ensure better health outcomes.

More research needs to be conducted into the feeding practices, attitudes, family dynamics and beliefs within this community to enable health professionals to understand better what motivates many of their practices. It is also important to note that there are few studies looking at the differences in attitudes, beliefs and practices with regard to maternal and infant nutrition between the first- and second-generation Pakistanis. Many studies conducted on the latter where undertaken in the 1990s. Research on present trends would give us a better insight into the current degree of acculturation and dietary transition.

1.4 Bangladeshi Diet

Kalpana Hussain, Thomina Mirza

1.4.1 Introduction

The South Asian subcontinent comprises India, Pakistan, Bangladesh and Sri Lanka. Four per cent of the total UK population are classified as 'Asian' or 'Asian British' and this group makes up 50.2% of the minority ethnic group population in the UK (UK Census, 2001).

'South Asians' is 'a term which defines many ethnic groups with distinctive regions of origin, languages, religions and customs, and include people born in India, Bangladesh, Pakistan or Sri Lanka' (Fox, 2004).

Bangladesh is located on the northern coast of the Bay of Bengal, bordering India. It also shares a border with Myanmar in the south-east. The country is low-lying riverine land criss-crossed by the many branches and tributaries of the Ganges and Brahmaputra rivers. Tropical monsoons and frequent floods and cyclones inflict heavy damage in the delta region (see Figure 1.4.1).

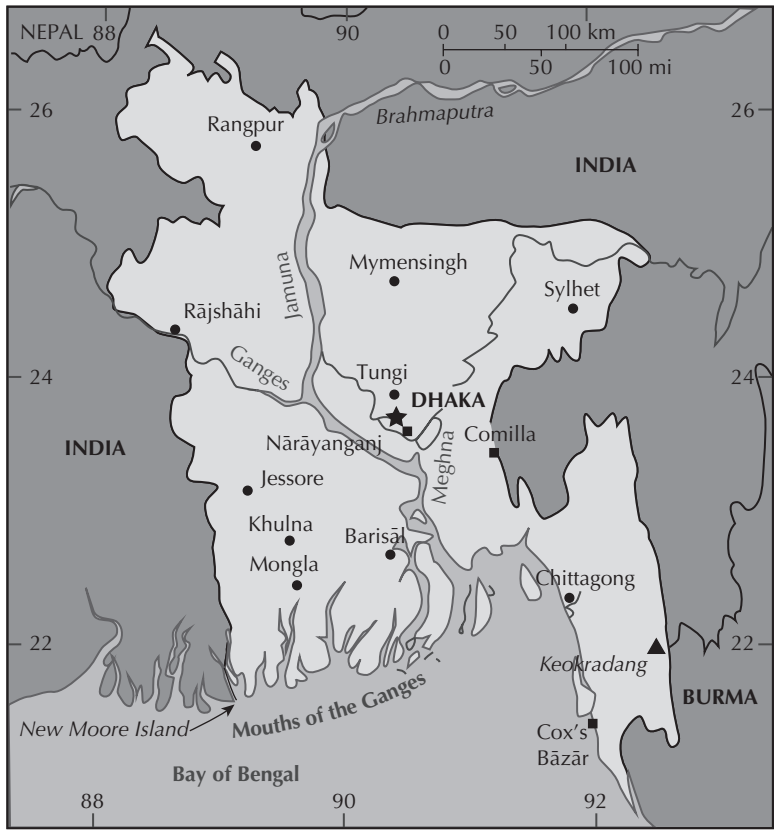


Figure 1.4.1 Map of Bangladesh

What is now called Bangladesh is part of the historic region of Bengal, the north-east area of the Indian subcontinent. Bangladesh consists primarily of East Bengal (West Bengal is part of India and its people are primarily Hindu) plus the Sylhet district of the Indian state of Assam.

The Bengali people are the ethnic community of Bengal (now divided between Bangladesh and India) in South Asia with a history dating back four millennia. They are an eastern Indo-Aryan people, who are also descended from Austro-Asiatic and Dravidian peoples, and closely related to the Oriya, Assamese, Biharis and other East Indians, as well as to Munda and Tibeto-Burman peoples. As such, Bengalis are a homogeneous but considerably diverse ethnic group with heterogeneous origins.

Bangladesh has a population of about 127 million; 124 million of these are Bengalis and almost 1 million are tribal or indigenous people. Of the Bengalis, 88.3% are Muslim, 10.5% Hindus and 1.2% Buddhist, Christian or animist (www.idex.org, 2002).

History

Bangladesh came into existence in 1971 after the Indo-Pakistan war and is now one of the poorest nations in the world. Before its existence, Bangladesh used to be part of India which was a colony of the British Empire. Present-day Bangladesh had a turbulent colonial history, which affected many features of the country, among them the culture, economy and a large population. There is little modernization of towns and villages and as a result it has a predominantly rural environment (Hillier & Rahman, 1996). The delta consists of many small rivers, creeks and streams, thus making fishing a popular livelihood and fish an important

part of the diet. Agriculture is another principal means of living and hence many Bangladeshi migrants have an agricultural background.

Language

The official language is Bengali, however many dialects are spoken. These vary from region to region and depend on geographical location. The three most commonly spoken languages are Bengali, Sylheti and English. Some people speak Urdu. Sylheti is a dialect of Bengali and is not written. Those who have access to education in Bangladesh can read and write standard Bengali (Hamid & Sarwar, 2004).

Migration to the United Kingdom

Adams (1994) notes that many Bangladeshis opted to migrate to the UK in search of work because Bangladesh used to be a part of the British Empire. Initial migration was during between the 1940s and 1960s, when mostly single men from small landowning families sought employment in the UK as workers in factories or the clothing trade. Almost 95% of the Bangladeshi migrants in the UK came from the Sylhet region and so speak the Sylheti dialect. During these years they maintained close ties with their country of origin by making frequent trips to Bangladesh throughout the year. The introduction of strict immigration legislation in the 1970s meant that the men had to choose to bring their wives and children into the UK or risk permanent separation; therefore during the 1970s–1980s immigration peaked as wives joined their husbands in the UK with their children. During this period, migrants from other countries also entered the UK. As a consequence 5.5% of the UK population are now composed of ethnic minority groups. The population of South Asian ethnic minorities in the UK tends to be younger than the general population, with the number of 65 year olds among migrants being the lowest for those of Pakistani and Bangladeshi origin (Landman & Cruickshank, 2001).

The UK has a particularly strong tradition of what the general population call Indian cuisine which is in fact a misnomer as the restaurants in question are mainly run by people of Bangladeshi origin. In the second half of the 20th century there was a burgeoning in the development of so-called Anglo-Indian cuisine, as families from countries such as Bangladesh (particularly from the Sylhet region) migrated to London to look for work. Some of the earliest restaurants were opened in Brick Lane in the East End of London, a place still famous for this type of cuisine and is now popularly known as 'Bangla Town', with even the street signs bilingual (wikipedia.org/wiki/East_End_of_London).

In the 1960s, a number of inauthentic 'Indian' foods were developed by British Bangladeshi chefs, including the widely popular chicken tikka masala. This tendency has now been reversed, with subcontinental restaurants being more willing to serve authentic Indian, Bangladeshi and Pakistani food, and to offer their regional variations.

Bangladeshi food has become a staple of the British national cuisine. Until the early 1970s more than three-quarters of Indian restaurants in Britain were identified as being owned and run by people of Bengali origin. Most were run by migrants from East Pakistan, which became Bangladesh in 1971. Bangladeshi restaurateurs overwhelmingly come from the northern district of Sylhet. Until 1998, as many as 85% of Tandoori restaurants in the UK were Bangladeshi but by 2003 this figure declined to just over 65%. Currently the dominance of Bangladeshi restaurants is generally declining in some parts of London and the further north one travels. (en.wikipedia.org/wiki/Sylhet).

The cuisine of Bangladesh is popular, as Bangladeshi restaurateurs have established themselves by creating new businesses throughout Britain. The number of Bangladeshi-owned restaurants has increased rapidly over the years. In 1946 there were 20 restaurants, today there are 7,200 owned by Bangladeshis out of a total of 8,500 Indian restaurants in the UK. Surveys show that Bangladeshi curries are among the most popular of dishes.

Current UK population

A high proportion of Bangladeshi migrants settled in Tower Hamlets, an inner city borough of London, one of the most deprived areas in the UK. Here the largest Bangladeshi community lives, with 33% of the population being of Bangladeshi origin and 42% White British (UK Census, 2001). Deprivation

adversely affects standards of living – a significant proportion of council housing in Tower Hamlets does not meet government standards. Poor housing, which is also usually associated with overcrowding, can lead to poor health (The Tower Hamlets Partnership, 2006). The rest of the UK Bangladeshi community is largely settled in the London borough of Camden, and in the North.

1.4.2 Religion

The majority of Bangladeshis are Sunni Muslims and follow the dietary laws stipulated in the *Qu'ran* (the holy book of Islam) and the *Hadith*, a collection of the sayings and actions of the prophet Muhammad (Kassam-Khamis *et al*., 1999).

Islam

Religious dietary restrictions

Muslims are required to eat only permitted (*halal*) food that has been earned lawfully and are expected to avoid eating any prohibited (*haram*) foods and drinks. In order for any meat to be *halal*, it must be prepared according to the Islamic laws of slaughter (Khan, 1982). Lawful foods include the flesh of any animals that are cloven hoofed and those that chew the cud. Fruits, vegetables, rice, wheat, cereals, pulses, milk, milk products and eggs are also permitted and do not require any special preparation other than ensuring that they are clean and safe to consume. All fish with fins and scales are also lawful. The flesh of pigs, blood, carrion and foods offered to idols or deities except God (Allah) are forbidden. All carnivorous animals and birds of prey are prohibited, as well as land animals without ears such as frogs (Fieldhouse, 1995).

Consumption of alcohol is prohibited. In a survey looking at the health of South Asians, Nazroo (1997) found low consumption of alcohol among Bangladeshi men – only 3% drank alcohol – and virtually no consumption of alcohol among Bangladeshi women – less than 1% – compared to 56% of White men drinking alcohol once a week or more in the UK. As alcohol consumption is related to cultural and religious practice, Aspinall and Jacobson (2004) point out that Muslims who do drink alcohol are unlikely to admit it, thus highlighting that a level of under-reporting may exist.

Fasting

All Muslims are expected to fast during Ramadan, the ninth month of the Islamic calendar. Ramadan usually lasts for 29 or 30 days and the fast involves abstinence from food and water between sunrise and sunset. Eating and drinking are permitted during the night and a pre-dawn meal is eaten before the daytime fast begins. The fast is broken at sunset with a meal called *iftar*.

Although one of the aspects of Ramadan is moderation of food and drink, due to the number of social engagements with family and friends during this month, there is usually an abundance of foods prepared, especially fried snacks such as samosa and *pakora* and Indian sweets. Indian sweets are prepared using a combination of sugar, ghee, full-cream milk powder, nuts, chickpea flour and sweetened condensed milk, and thus are very energy dense and high in fat and sugar. These foods are also eaten on other special occasions and festivities such as weddings and *Eid* (Kassam-Khamis *et al*., 1999).

Religious festivals and holidays

Eid ul Fitr: The end of Ramadan is signalled by the sighting of the new moon and is celebrated with a festival called *Eid ul Fitr*, which is associated with the serving of sweet foods and engaging in many social events with family and friends (Fieldhouse, 1995).

Eid-ul-Adha: A celebration marking the pilgrimage (*hajj*) to Mecca. Sheep or goats are sacrificed in remembrance of Prophet Abraham's willingness to sacrifice his son to Allah.

Hinduism

Hinduism is the second largest religion in Bangladesh, and is followed by a little over 9% of the population. Hindus believe in the principle of *ahimsa* (avoidance of violence) and this is universally observed. Therefore some Bangladeshi Hindus are vegetarians, but abstinence from all kinds of meat is regarded as a higher virtue so high-caste Bangladeshi Hindus, unlike their counterparts elsewhere in South Asia, ordinarily eat fish and chicken. The same is found in the Indian state of West Bengal, which being climatologically

similar to Bangladesh, has led Hindus (regardless of caste) to consume fish as it is the only major source of protein.

Durga Puja

A giant named Durg had acquired such terrifying psychic powers that he threatened to turn the whole of creation upside down. The Gods then appealed to the Goddess Parvati, and each of them donated a special divine power to her. Armed with these powers, depicted as a number of hands, the Great Mother mounted her 'vehicle', the lion, and attacked the monster. As the demon's name was Durg, the triumphant Mother Goddess took the feminine form of the name, Durga. Nine of her ten arms hold various weapons. Images of her four children – the warrior-God, Kartik, the benign, elephant-headed Ganesh. the Goddess of wealth, Lakshmi, and the Goddess Saraswati – are also featured. The biggest festival of the Hindu community continues for nine days, the last three days being the culmination with the idol of the Goddess Durga immersed in rivers. The festival occurs in September/October (www.indiantravelportal.com).

National holidays

Pahela Baishakh: The advent of the Bengali New Year is joyously observed throughout the country. The day (in mid-April) is a public holiday.

Bhasha Andolon Dibosh: Language Movement Day or Language Revolution Day is a national day to commemorate protests and sacrifices to protect Bengali as a national language during the Pakistani regime in 1952.

Independence Day: Independence is celebrated on 26 March.

1.4.3 Traditional diet and eating pattern

The traditional Bengali cuisine consists of vast range of rice dishes with various preparations of freshwater fish and or vegetables cooked in a spicy sauce. Green leafy vegetables are seasonal and locally grown and they form part of the daily diet. Fruit is only eaten when it is in season (and never in large quantities). Imported fruits such as apples and grapes are expensive. Fruits such as strawberries are now grown in Bangladesh, though peaches, plums, kiwis and cherries are not usually found. Pulses such as split yellow lentils dal and plain rice (*bhat*) are popular Kwan, 2005. Meat, eggs and milk are expensive and their consumption depends on their affordability. Unlike some Asian cultures, milk and dairy products are not part of the traditional diet. Milk is expensive in Bangladesh and it is mainly only affluent farming households that have access to it. Fresh cow's milk is always boiled before consumption. Due to the limited supply of milk most families use imported powdered milk. Adults tend to have milk in tea (*chai*) only (Kwan, 2005); otherwise it tends to be seen as suitable for babies or very young children. Milk is also viewed as a high-energy food leading to weight gain. Yoghurt is not regularly eaten, although it is occasionally used in cooking dishes such as korma on special occasions (Zannath & Edholm, 2004). Oil is used very sparingly and processed foods such as cakes, biscuits, crisps and chocolates are not part of the traditional diet.

Bangladeshi puddings and desserts are creamy, sweetened with sugar and flavoured with nuts, saffron or cinnamon. One of the most popular is a sweet rice pudding called *kheer* (Kwan, 2005). As alcohol is prohibited, cold drinks include fresh lime sodas and tender coconut water *dub*; (Kwan, 2005). Almost all food is prepared and cooked at home and is often eaten with the fingers. Village people tend to eat that way. Middle-class urban people may or may not use cutlery. It is considered polite and a mark of respect to use the right hand when giving or receiving anything, particularly food. You might hold a glass of water with your left hand, or use both hands to break bread, but food goes into your mouth from your right hand only (Kwan, 2005) (see Tables 1.4.1 and 1.4.2).

Herbs and spices

A wide variety of herbs and spices are now available in the UK and there has been an increase in the use of ginger, garlic and chillies. These fresh herbs are ground together into green masala and added to dishes in addition to ground coriander, ground cumin and turmeric power. Other spices used are cardamom, cinnamon, bay leaves, fenugreek seeds, black onion seeds, cloves and fennel seeds. Ready-made pastes are also used to marinade meat and

fish at home, but different colourings are mainly used in the restaurants.

Paan

Chewing *paan* is a very common habit in Bengali society, practised by both men and women, and is easily available in Britain. The heart-shaped betel leaf, or piper betel, is preferably picked when it is still young and tender and its taste is at its best. Betel is slightly sour but is a popular mouth freshener. It is often used as an aromatic stimulant and anti-flatulent. One of the most important ingredients of a betel preparation is the areca nut (a seed),

Table 1.4.1 Traditional meal pattern and dietary changes in Bangladeshi diet on migration to the UK

Meal	Traditional meal	Dietary changes on migration to the UK	Healthier alternatives
Breakfast	Tea with sweet biscuits and/or sweet bread Sometime rusks are eaten or leftover curry or with rice. On special occasions *shemai, shuji* with *paratha* or *muri* with tea	Cereal with milk (e.g., Rice Krispies or a sugar-coated variety). Chocolate-coated breakfast cereals are popular with children. Fried bread or crumpets with fried eggs Tea with rusks or *muri*	High-fibre cereal with low- fat milk Whole meal bread/toast with poached/boiled egg. Tea
Lunch	Boiled rice (no ghee) with dal, fish/meat/chicken curry (seasonal)	As traditional meal Fish and chips, potato fritters Kebabs in naan bread Burgers, sandwiches, pizzas	Boiled rice with curry (made with minimal oil) Curries to include vegetables. One curry per meal. Salad to accompany the meal Grilled kebab with naan bread and salad Baked potato and salad
Evening meal	Rice (boiled, biryani, kedgeree), dal, vegetables, fish and meat/chicken curry, pickle, salad, naan bread	As traditional meal, Fish and chips Potato fritters Kebabs in naan bread Burgers, sandwiches, pizzas	Boiled rice with curry (made with minimal oil) Curries to include vegetables. One curry per meal. Salad to accompany the meals Grilled kebab with Naan bread and salad Baked potato and salad
Puddings/Desserts	Asian sweets (*burfi, gulab jaman shandesh, ras malai,ras gulla, cham cham, raskadam, sevian* (milk pudding) orange-flavoured sweet rice (*zarda*), fruit	Traditional sweets Ice cream Cakes	Fresh fruit/fruit salad
Snacks	*Nimki, shingara* (samosas)	As traditional snacks Chocolates biscuits, cakes	Oven-baked samosas, nuts, fruit Asian sweets eaten only on special occasions
Drinks	Water, tea, *lassi*, soft drinks, milk	Water, tea, soft drinks, fruit drinks, fruit juice, squash	Water, tea Unsweetened fruit juice, diet soft drinks, *lassi* made with low-fat milk and yoghurt and sweetener

the fruit of the areca palm, areca catechu (*katha*). The orange-coloured conical fruit is enjoyed both as a raw and a soft fruit. Seed (locally known as *supari*) is the most popular ingredient in a *paan*. Its narcotic value is appreciated by all who chew *paan* and is produced when lime is added. Its stimulating effect increases the more it is chewed (www.indiaprofile.com). The ingredients of *paan* vary according to individual preference and may contain other seeds, nuts and herbs. The leaves can be plain or sugar-coated. It is usually eaten after meals. Adults often add tobacco to the mixture. The ingredients are often grown at home, so *paan* is easily available and cheap. When chewed, the mixture turns a brilliant red colour, staining the teeth. The colour is considered attractive on the lips of young women. Betel nut is addictive and can cause dizziness and perspiration; it may also be linked to diabetes. Chewing tobacco has the added risk of causing cancer of the mouth, throat and stomach.

Smoking

Cigarette smoking is common among men, both older and younger generations. The Bangladeshi ethnic group has the second highest rate of smoking, with over 50% of Bangladeshi men reporting to smoke. Smoking among Bangladeshi women, however, is low, with fewer than 1% reporting it (Nazroo, 1997). The Health Survey for England (1999) reported similar findings, with 44% of Bangladeshi men smoking compared to 27% of men in the general population (Erens *et al*., 2001). In a survey researching health in ethnic minorities in Britain, 17% of Bangladeshis described their health as poor – the highest figure to be reported in comparison to other ethnic groups (Nazroo, 1997). Smoking through water pipes (*shisha*) has become popular among the Bengali community, especially since the increase in the number of *shisha* cafés and bars.

Table 1.4.2 Glossary of Bangladeshis foods

Bengali name	English name	Bengali name	English name
Aam	Mango	*Chuun*	Lime added to the *paan* leaf
Adda	Ginger	*dal*	Red spilt peas
Amloki	Indian gooseberry	*dal Chana*	Pulses
Amra	Hog plum	*Dhalim*	Pomegranate
Anaras	Pineapple	*Derish/Bindi*	Okra (ladies' fingers)
Ata Fol	Custard apple	*Doi*	Sweetened homemade creamy yoghurt, mainly shop-bought in the UK
Bandhakopi/ Kopi	Cabbage		
Bangon	Aubergine	*Doniya*	Coriander
Bel	Indian apple	*Dood*	Milk
Bhaat	Plain white/brown boiled rice	*Gajor*	Carrots
Borfi	Indian dry sweets	*Guyr Mangsho*	Beef
Boroi	Indian jujube	*Hilsa*	Herring
Cha	Tea	*Jambura*	Grapefruit
Chalta	Elephant apple	*Jamrul*	Star apple
Chana	Chickpeas	*Jorda*	Sweetener used in *paan* making
Cheeni	Sugar	*Kalajam*	Blackberry
Chitol	A large fish with a very soft oily stomach or frontal portion	*Kamla*	Orange
		Kamranga	Carambola

Table 1.4.2 (*cont'd*)

Bengali name	English name	Bengali name	English name
Kathal	Jackfruit	*Paani/ Jol*	Water
Kathbel	Wood apple	*Papaya*	Papaya
Kechuri	Soft, watery rice pudding, cooked with fried onions, ghee or butter. Given to help with ill health. Also eaten during *iftaar*	*Paratha*	Sweet or savoury chapatti cooked in oil
		Payara/Shofri	Guava
		Peetha	Steamed rice cakes, often deep-fried with onions or wheat flour
Kerela	Kerala		
Kheer/Finni	Sweet rice pudding	*Peyaz*	Onions
Kodu	Marrow	*Phol Peyaz*	Spring onions
Kola	Banana	*Phulkopi*	Cauliflower
Lebu	Lemon	*Roshun*	Garlic
Lichu	Lychee	*Shada*	Tobacco used in *paan* making
Maas	Fish		
Mamlet	Omelette	*Shak Shobzi*	Vegetables
Mangsho	Lamb	*Shalgom*	Turnip
Masala	The mixture in curry made with oil, onions, salt and spices	*Shemai*	Sweet vermicelli milky pudding. Ghee and milk can be added
Meeta Kudo	Sweet potatoes	*Shingara*	Samosas. .
Mola	Mooli	*Shuji*	Semolina pudding made with ghee and sugar. Sometimes with milk. Can be eaten with *parathas*
Morich	Chillies		
Motorshuti	Peas		
Muki	Eddos	*Shupari*	*Betel nut*
Murgi/Moorug	Chicken	*Sofeda*	Sapodilla
Muri	Puffed rice	*Tarcarry*	Curry
Naga	Chilli peppers	*Tarmuj*	Watermelon
Narikel	Coconut	*Tomato*	Tomatoes
Nimki	Flour crackers	*Urie*	Snow beans

1.4.4 Healthy eating

Key points

- Migration to the UK has resulted in an increase in oil and meat consumption, and a reduction in fruit and vegetable intake.
- Fruit in season is often eaten fresh and as a snack.
- Fruits are also preserved using spices and molasses, but not consumed commonly in this form.
- Processed foods are very popular among the young population.
- Salt is added to all foods.

Introduction

The traditional in Bangladesh is generally quite healthy as it is rich in complex carbohydrate (brown rice), fish, pulses and vegetables (added to curries)(see Table 1.4.3).

Table 1.4.3 Traditional Bangladeshi diet and healthier alternatives

	Traditional diet	Diet in the UK	Healthier alternatives
Bread, rice, potatoes and other starchy foods	Boiled brown and/or white rice, with no fat Chapattis *roti* on occasions	Boiled white rice, with no fat Basmati rice on special occasions (often in the form of *akhne* or *pulau*, oil or ghee is added)	Basmati rice is a healthier alternative and is low GI. However basmati rice is expensive even when bought in bulk. Also there is a difference in taste. Some people associate basmati rice with meat rather than fish
	Potatoes – added to curries as a vegetable, eaten as chips Sweet bread and sweet rusk, often taken with tea as breakfast Puffed rice (*muri*) – dried grains of uncooked rice, which is deep fried, the rice puffs into a white fluffy shape. Salt is added for flavour. Often eaten with tea at breakfast or as a snack with tea and biscuits. *Muri* can also be eaten on its own as a snack	Potatoes – added to curries as a vegetable, eaten as chips, Potatoes are also bought in bulk therefore they are often the King Edward type. Potatoes are not baked or boiled before adding to the curries. Chips are often either bought ready cooked from a take–away, or bought frozen and fried at home Potatoes are very rarely baked Bread – white is preferred toasted with butter or jam *Roti* – fried with butter served with fried egg Crumpets – fried with butter and served with fried egg Croissants – toasted, served with butter. Some add processed cheese Sugar-coated breakfast cereals or refined rice-based cereals are preferred. The older generation do not like breakfast cereals, especially the wholegrain varieties. Those who have been raised in the UK are accustomed to cereals. Rusk and sweet bread are imported and sold in Bangladeshi grocery shops. *Muri* is imported or prepared at home. Some people have *muri* for breakfast while others have it as a snack.	If potatoes are added to curries, then there needs to be a reduction in the amount of rice eaten. Chips to be kept to a minimum. Try thicker cuts of chips or potato wedges Baking the chips and potato products should be encouraged rather than frying Toast – whole meal bread. Avoid frying bread and egg Scrambled/poached egg Avoid using processed cheese Encourage breakfast cereals with a reduced amount of added sugar. Children should be encouraged to try healthier alternatives rather than sugar-coated cereals. Avoid rusk and sweet breads as they are high in saturated fats (made with ghee) and contain a lot of sugar. Alternatives include rich tea, digestives, low-fat /low-sugar crackers. Try wholegrain cereals as an alternative
Meat, fish and beans	Fish – mainly freshwater. Fish is never frozen, but bought fresh and cooked and eaten on the same day. Oily fish – *koi, chitol, ayre, rohi, pangash, elisha, mirka*. Non-oily fish – *katla, bual*.	The fish in the UK is imported and therefore not fresh. Fish is expensive. Fish is fried and added to curries. Traditional Bengali vegetables are commonly cooked with fish curries. Fish is also soaked in brine to increase its freshness.	Avoid soaking fish in brine Avoid frying the fish before adding the fish to curries and also use less oil in the curries Try to include oily fish in the diet as a good source of calcium and omega 3 Reduce the amount of spices and chilli especially if suffering from peptic ulcers

Table 1.4.3 (*cont'd*)

	Traditional diet	Diet in the UK	Healthier alternatives
	Can be fried before adding to a curry masala. Frying is not essential. After the fish is prepared, it may be left in brine for a few minutes. Small fish, e.g., *rani, keski*, similar to sardines in size. Cooked whole, with minimal oil and vegetables. Cheaper than bigger fish Dried fish (*shutki*) are sun-dried or oven-dried. The dried fish is boiled and the broth is added to boiling vegetables. No oil is added to this curry. Dried fish is very popular among the rural populations and especially women. It is customary to have the curry very hot and spicy	Small fish are also imported from Bangladesh and bought frozen. The method of cooking is no different Dried fish is also imported from Bangladesh and the cooking method is the same. Children born in the UK often do not like this curry European fish (tuna, mackerel, salmon, sardines, cod) are not found in Bangladesh. They can be cooked in curry or as dry curry. Fish are often fried first Fish fingers are very common among the younger population and are often fried	The quality and source of the dried fish is questionable, therefore there has been a reduction in supply from Bangladesh. Due to the fall in supply the price has increased. Try to avoid frying the fish, if frying to prepare the dry curry then shallow fry with minimal oil. Grill or bake fish fingers
	Prawns are a delicacy and are popular. Prawns can be fried or added to other fish curries	There is a higher consumption of prawns in the UK especially due to its popularity in restaurants. The cooking method is the same.	Avoid frying the prawns and use less oil in the curries
	Lamb/goat/beef are eaten, mainly on special occasions	Lamb is more commonly eaten and often bought in bulk. Lamb is mainly cooked in a curry. Grilled lamb chops and kebabs are often shop-bought. Lamb mince (*keema*) is used for samosas and meat balls. Beef and goat are eaten less. Beef burgers are available frozen and at fast food out lets. Beef/lamb burgers are often fried at home.	Reduce consumption of red meat. Trim off all fat and reduce oil when cooking curries. Try to use other vegetables as an alternative to potatoes. Grill meats and kebabs. Use chicken mince instead of lamb mince. Grill burgers rather than frying.
	Chicken is more commonly consumed	Chicken is commonly eaten. Chicken in curries and fried chicken with chips from fast food retailers. Chicken nuggets, and other products are very popular snacks. Chicken frankfurters are also popular with young children.	Try to limit fried chicken snacks. Try grilling meat. Use less oil in curries. Avoid fried chicken products.
	Eggs are often fried or boiled and then added to curry. Eggs are cheap but are ranked with meat. Hen's eggs and fish (seafood) never eaten together.	Eggs are commonly eaten more frequently for breakfast and used in curries.	Limit consumption of fried eggs.
	Roe is expensive and a delicacy. Often eaten in a curry	The attitude towards roe is the same.	

(*Continued*)

Table 1.4.3 (*cont'd*)

	Traditional diet	Diet in the UK	Healthier alternatives
	Yellow split peas (*dal*), *mossor dal, chana dal* and *chana* (chickpeas) are common pulses. Cooked as curries, eaten with rice as part of the main meal or as a snack	The same pulses are cooked in the UK, but the frequency has reduced. Chickpeas are now mainly eaten during Ramadan as part of the fast-breaking meal (*iftaar*) Baked beans are also popular, can be fried but often reheated in the microwave	Increase intake of pulses, but reduce oil when cooking.
Fats and oils	Vegetable oil and ghee	Vegetable, corn and sunflower oil are sold in barrels and cheaply available in the UK Butter and margarines are popular to cook with, especially with bread and used as spreads Ghee is used to cook *pilau* or *akhne*. Not used in everyday cooking	Olive oil is not commonly used in large quantities and is not very palatable in curries due to its after-taste when heated. Using less oil is the main message Use low-fat spreads and avoid ghee. Margarines can be used as an alternative
Fruits	Mango, papaya, guava, pineapple, jackfruit, banana, pomegranate, lychee, grapefruit, melon, hog plum, coconut, star fruit, Indian apple, custard apple, wood apple, sapodilla, elephant apple, carambola, Indian gooseberry, tangerines, oranges, grapes. Fruits are eaten after meals	Almost all of the fruits from Bangladesh and other Asian countries can be found in the UK. Due to their seasonal element, European fruits such as apple, pears strawberries and different varieties of banana; grapes are also eaten, along with exotic fruits like kiwi. Fruit is often sliced and one fruit is shared rather than eaten whole. Fruits are sprinkled with salt. The consumptionof fruit is reduced in the UK	Try to increase the intake of fruit
	Chutneys are made with sour fruit (unripe mango, grapefruit, oranges). They are mixed with garlic, fresh coriander and salt and eaten as a snack	Making chutneys is still common among some families	Reduce salt (and chilli if suffering from peptic ulcers)
Vegetables	Kerela, okra, onions, tomatoes, carrots, cabbage, spring onions, mooli, eddos, peas, snow beans, marrow, sweet potatoes, garlic, ginger, coriander, chillies, peppers, aubergine, cucumber and cauliflower	Most of the vegetables are available fresh in the UK and are relatively cheap. European vegetables such as sweet corn, lettuce, cress, squash, capsicum, broccoli are also used in cooking or in salads. Most people prefer to cook the Bengali vegetables with fish and use the European vegetables with meat dishes. Potatoes are thought to be a vegetable and therefore is the most common vegetable eaten	Try to avoid frying vegetables. Include a variety of vegetables in all curries Try to experiment with vegetables
	Chutneys are made with raw vegetables like tomatoes. Salt and coriander is added to sautéed onions. This chutney would be eaten with rice	Chutneys are not commonly made in the UK	
	Vegetable curry *(bhaji)* often eaten	Vegetable curries are often an accompaniment with other dishes	Try to steam vegetables and not overcook them, before adding them to the masala Use less oil in the curries

Table 1.4.3 (*cont'd*)

	Traditional diet	Diet in the UK	Healthier alternatives
Milk and dairy foods	Dried whole milk powder Sweet yoghurt – often shop bought Fresh milk	Fresh whole cow's milk is cheap and readily available	Try semi-skimmed milk.
		Cow's milk is boiled and the skin removed before adding to tea	Avoid boiling, there is no need to reheat pasteurized milk.
		Whole cow's milk is also given to children to drink and taken with breakfast cereals	
		Adults do not commonly drink milk	
		Children are often partial to the portion-sized yoghurts.	Children to try low-sugar/ low-fat yoghurts
		The elder generation prefer natural yoghurt. Yoghurts are eaten on special occasions (weddings and parties)	
		Cream, yoghurt and fresh whole milk are popular with a fruit and sweet rice dish, especially during Ramadan and during the summer months.	
		Some people like to use whole milk powder in tea and desserts	
Alcohol	Muslims in Bangladesh do not drink, some Hindu and other faiths may do. Alcohol is not widely available in Muslim areas	Those who have migrated or were raised in the UK may drink alcohol but will not always admit to it. Alcohol tends to be beer rather than wine, as it is more common for boys to drink than girls. Some girls also drink alcohol	Drink within the legal limits

1.4.5 Obesity

The mean body mass index of Bangladeshi men ($24.7\,kg/m^2$) is lower than that in the general population ($27.1\,kg/m^2$). Bangladeshi men are almost five times less likely to be obese than men in the general population. However, Bangladeshi men and women are more likely to have bigger waist circumference than the general population (Health Survey for England, 2004).

Bangladeshi men and women are less likely to participate in sports and exercise and less likely to meet the physical activity recommendations of at least 30 minutes of moderate or vigorous exercise on at least five days a week than the general population (37% of men, 25% of women). Bangladeshi men were, on average, shorter than men in the general population. Women in minority ethnic groups were on average shorter than women in the general population.

Other indicators of poor health include obesity and low physical activity levels. Studies examining the body composition in South Asian ethnic groups have found that South Asians have a tendency for central fat deposition. Research has identified that central fat deposition is associated with insulin resistance and a greater risk of developing coronary heart disease (Knight *et al*., 1992; Bush *et al*., 1995). Other studies have found that South Asian women tend to have a higher BMI than their European counterparts and a high waist circumference and a high waist/hip ratio (WHR), with higher measures among the longer resident South Asians (McKeigue *et al*., 1991; Bose, 1995). According to Bose (1992), a high WHR is correlated with impaired glucose tolerance, raised insulin levels, hypertension and high triglyceride levels and is associated with central obesity.

Exercise and physical activity levels appear to be very low in the Bangladeshi ethnic group, which is a cause for concern as it is another predisposing factor to poor health. The Health Survey for England (1999) found that both Bangladeshi men

and women did not meet the recommended guidelines for participation in physical activity and that the Bangladeshi ethnic group had the lowest figures for physical activity levels and exercise patterns of all ethnic groups (Erens *et al*., 2001). Rudat (1994) reported similar findings in the Health and Lifestyle survey, which found that only 45% of Bangladeshi men and 29% of Bangladeshi women participated in health-promoting activities. Studies have reported that the low levels of physical activity and regular exercise may pose a greater risk of developing obesity, cardiovascular diseases and other circulatory diseases (Rudat, 1994; Acheson, 1998).

1.4.6 Diabetes

Diabetes mellitus is a cause of both morbidity and mortality and a risk factor for a number of other diseases such as cardiovascular disease, renal failure, neuropathy and retinopathy. Numerous studies have ascertained that the prevalence of diagnosed type 2 diabetes among South Asians is reported to be over four times greater than among the White population (McKeigue *et al*., 1989). Mather *et al*. (1995) found that South Asians with diabetes attending the same clinic as Europeans had poorer glycaemic control, increased retinopathy and a higher prevalence of microalbuminuria. According to Raleigh (1997), mortality directly associated with diabetes among South Asian migrants is 3.5 times greater than that in the general population. Among the South Asian ethnic groups, Bangladeshis are reported to have the highest rates of diabetes and poor prognoses (Cappuccio *et al*., 1997; Nazroo, 1997). Aspinall and Jacobson (2004) showed that the age at presentation of type 2 diabetes is much earlier in South Asians than the general population, thus placing them at greater risk of developing complications.

Bangladeshi migrants also have a much higher premature mortality due to diabetes than those originating from India and Pakistan (Balarajan & Raleigh, 1995). Within a generation of migration to Britain, research has shown that diabetes had become widespread among Bangladeshis living in East London. The Health Survey for England (2004) reported diabetes among Bangladeshi men was almost four times as prevalent as men in the general population. Among women, diabetes was at least three times as likely in Bangladeshis compared with women in the general population. The ratio of type 2 diabetes among Bangladeshi men and women was higher than the general population. High levels of impaired glucose tolerance and high levels of insulin resistance were reported in this ethnic minority group (Kassam-Khamis *et al*., 1999). Studies suggest that insulin resistance may be a contributory factor responsible for the higher rates of coronary heart disease seen among South Asians (McKeigue *et al*., 1989). Hypertension is another common health problem among all ethnic minorities, and is more common in South Asians with diabetes (Mather *et al*., 1995).

1.4.7 Coronary heart disease and stroke

Key points

- There is a higher risk and incidence of stroke among the Bengali community mainly due to a higher rate of hypertension and diabetes.
- The traditional diet of Bangladesh is high in fruit and vegetables, complex carbohydrates, fish and pulses, and low in fat and processed foods.
- Diet should be promoted as a natural way of preventing and treating hypertension in combination with medication and physical activity.
- Health promotion strategies need to be specific to the Bengali community as their cardiovascular risk factors differ from the general population.

Studies have established that high rates of increased incidence of coronary heart disease, angina, stroke, hypertension, arrhythmia and diabetes are prevalent in all South Asians, but the rates are particularly high for Bangladeshis (Rudat, 1994; Karmi, 1996; Primatesta & Brooks, 2001). This may be related to the fact that Bangladeshi men and women are more likely to consume both red meat and fried foods frequently than adults from other ethnic groups. Bangladeshi adults were also found to have the lowest levels of fruit consumption, with only 15% men and 16% women consuming fruit six or more times a week (Health Survey for England, 1999; www.dphpc.ox.ac.uk). This is a particular concern as the causes of this are not clearly understood. Stress has been identified as another contributory factor, as psychosocial stress associated with migration and racial tensions are

realities that have to be faced by most South Asians. Other contributory stress factors include unemployment, long working hours from shift work, lack of social support and the widening generation gap between migrant parents and British-born children (Kassam-Khamis *et al*., 1999). Further research into the health of Bangladeshi migrants in the UK established high mortality rates from coronary heart diseases, a high proportional mortality ratio from ischaemic heart disease and that cardiovascular disease was more prevalent in the Bangladeshi community than any other South Asian ethnic group (Balarajan *et al*., 1984; Wild & McKeigue, 1997). Data from The Tower Hamlets Partnership (2006) also illustrate that high mortality rates from circulatory diseases and cancer were observed in Tower Hamlets in both men and women. HSE (2004) reports that mean systolic blood pressure (SBP) was lower in South Asian men, particularly Bangladeshi men, compared with men in the general population. Bangladeshi men were significantly less likely to have high blood pressure (hypertension) than men in the general population. However, Bangladeshi women were significantly more likely to have high blood pressure than women in the general population.

1.5 Sri Lankan Diet

Thushara Dassanayakem, Deepa Kariyawasam, Vanitha Subhu

1.5.1 Introduction

The South Asian subcontinent comprises India, Pakistan, Bangladesh and Sri Lanka. Four per cent of the total UK population are classified as 'Asian' or 'Asian British' and this group makes up 50.2% of the minority ethnic group population in the UK (UK Census, 2001).

'South Asians' is 'a term which defines many ethnic groups, with distinctive regions of origin, languages, religions and customs and include people born in India, Bangladesh, Pakistan or Sri Lanka' (Fox, 2004).

Sri Lanka is an island located about 31 km off the southern coast of India. It is approximately the size of Ireland, has a population of 20 million and a growth rate of 0.79% p.a. The majority of the population are Sinhalese (80%) with Tamils (10%), Moors (8%), Burghers and Malay forming the remaining 2% (see Figure 1.5.1).

Sri Lanka's ethnic diversity, proximity to India and agriculture-based economy combined with the influences of colonization successively by Portugal, Netherlands and Britain all contribute towards its language, customs, culture and dietary variation.

Language

The official languages are Sinhalese and Tamil, although English is the preferred language for commerce and medicine. Adult literacy rates are 90%, with no gender variation.

Migration to the United Kingdom

Annual settlement figures for Sri Lankans in the UK have decreased in recent years, possibly due to political changes in Sri Lanka. Between 1996 and 2006 immigration rates decreased from 7,600 to 1,600 people a year, with the purpose of migration falling predominantly into the categories of labour migration and political migration. In general, Sinhalese people migrated for labour/economic reasons whereas Tamil people were more likely to have migrated for political reasons (Sriskandarajah, 2002). For this reason the proportion of English speakers may vary between the groups, with unplanned migrants being less likely to speak English than planned migrants.

Current UK population

It can be approximated that Sri Lankans comprise the majority of the 0.4% (248,000 people) of the UK population classified as 'Other Asian' in the national census data (UK Census, 2001). Of these, approximately 96% are known to be of Tamil origin (Sri Lankan Embassy in the UK).

1.5.2 Religion

The four main religions in Sri Lanka are Buddhism (followed by 69.1% of the population), Islam (7.6%), Hinduism (7.1%) and Christianity (6.2%) (2001 census provisional data, Sri Lanka). The majority of Sinhalese people are Buddhists, the Tamils tend to follow either Hinduism or Christianity, and the Moors follow Islam (see Table 1.5.1).

Table 1.5.1 Religion and dietary influences

Religious groups	Dietary influences
Buddhists	Some are vegetarians but most eat meat. The Buddhist ethos of no harm is reflected in generally lower than average meat consumption. Some Buddhists may fast (*sil*) for one day a month to coincide with the full moon (*poya*). Those fasting will not eat beyond noon on that day.
Muslims	Forbidden: pork, fish without fins or scales and alcohol. Muslims fast during Ramadan.
Hindus	Can be vegan, lacto-vegetarian, lacto-ovo-vegetarian or meat-eating. Forbidden: Beef. Hindus may fast at various times.
Christians	No dietary restrictions. Lent: Christians may abstain from certain foods during Lent.

Religious celebrations and holidays

The Sinhalese and Tamil New Year is usually celebrated by two national holidays in April. Additionally, each major religion is granted at least one officially recognized national holiday. Political holidays include National Day (4 February), May Day (1 May) and National Heroes Day (22 May). Because the Buddhist calendar is based on the moon's phases, every full moon day (*poya*) in Sri Lanka is also a public holiday. Tamil festivals include Deepawali (Diwali), Pongal (mid-January) and Thai Poosam (full moon, January/February).

Customs and culture

A close family unit is an integral aspect of Sri Lankan culture, in terms of the nuclear unit and also in maintaining close ties with the extended family. Parents expect to provide their children with all their basic needs until they are self-sufficient. Family elders are treated with deep respect. Younger family members often seek the advice and approval of their elders and children are obliged to care for their elderly parents, when necessary.

Women have increasingly more economic opportunities outside the home, while retaining most household responsibilities. Freshly cooked food remains the cultural norm and value is placed on fresh ingredients and culinary skill. These values are likely to be retained on migration, with families eating fresh meals cooked daily.

Greetings

The greeting in Sinhalese is 'Ayubowan' or 'Vannakkam' if they speak Tamil, which means 'May you be blessed with the gift of a long life' in both languages. 'Hello' is universally understood.

Titles are important to Sri Lankans, and it is proper to address clients or acquaintances formally by their titles. Among close friends and relatives, familial titles of brother, sister, auntie or uncle replace formal ones. Due to its colonial past some Sri Lankans have names that originate from the Netherlands or Portugal (e.g., Vandenberg or Fernando) and therefore consideration should be taken when booking translators without first meeting the patient. Tamil names can usually be distinguished from Sinhalese ones by their endings. Tamil surnames usually end in a consonant (e.g., Karunanathan) whereas Sinhalese names usually end in a vowel (e.g., Karnadhara).

Generosity and hospitality are valued in Sri Lankan custom, particularly in terms of treating guests. For example, a simple Sinhalese greeting translates as 'Have you eaten rice?' Visitors are customarily offered food, drinks or even meals by their hosts to show that they are welcome and taken care of. It is considered impolite to refuse such an offer, although one can ask for a substitute, such as water. It is traditional to bring small gifts



Figure 1.5.1 Map of Sri Lanka

(often food) when visiting. In some homes, people remove their shoes before entering.

1.5.3 Traditional diet and eating patterns

Sri Lankan cuisine has been influenced by most nationalities that have visited and traded over the years (e.g., Dutch, Portuguese, English, Arabs, Malays, Moors and Indians). Due to its tropical climate, fresh fruit, vegetables, coconut and spices are readily available and commonly used. Freshness and home cooking are key aspects of the diet, with households regularly preparing 3–6 fresh dishes each day. After migration this is likely to reduce to 2–4 dishes.

Typical meal pattern

A typical Sri Lankan meal will include boiled rice and 2–4 of the following:

- *Kirata*: a mild yellow vegetable or fish curry cooked with milk.

- *Mirisata*: a hot and spicy meat, fish or vegetable curry, often orange or brown in colour.
- *Parrippu*: a pulse curry or dish.
- *Malloun*: shredded, half-wilted, *al-dente* greens or green vegetables or *sambol* (raw shredded greens/vegetables/onions/coconut dressed with lime juice), or salad.
- *Thel dhaala*: meat, seafood or vegetables pan-fried with onions and chilli.
- Pickles, chutneys, papadums, salty preserved dried chillies or lemons.

It is customary to eat only one meat or fish dish per meal.

Certain Sri Lankan dishes are intricate, labour-intensive and time-consuming. Hoppers (bowl-shaped fermented, rice flour pancakes) and string hoppers (rice flour dough piped into thin strings onto palm-sized circular mats and steamed), *pittu* (steamed wheat and coconut crumble), *dosai* and *idli* (steamed rice cake) are examples of foods that are served as staples instead of rice. On migration, due to their time-consuming preparation, consumption of these foods is likely to decrease.

Although it is a staple, rice also features in auspicious dishes such as milk rice (*kiributh*). This is a fatty, sticky, coconut-flavoured rice dish traditionally served to mark new beginnings – it is thus the first solid food given to a baby and a significant feature at weddings and New Year's Day.

Coconut plays an important role in traditional cooking. It is grated or reconstituted every day and used in *sambols* and vegetable dishes such as *malloun* (shredded wilted greens), and desserts. Sometimes coconut is dry toasted and added towards the end of cooking a curry to thicken it and add a toasted flavour. It is also squeezed to obtain a white cream which is added to curries. In the UK, powdered coconut, creamed coconut or fresh cow's milk may be used as a substitute.

As in many tropical countries, the salt content of the Sri Lankan diet tends to be high. Salt is added during cooking, used to preserve some fish and vegetables and even added to certain chopped fruit to temper acidity. Although a tropical climate may favour the metabolism of excess salt, a reduction of salt in the UK's temperate climate is advisable.

Sri Lanka grows a wide range of tropical fruit, which is commonly eaten as, or in place of, dessert and as snacks throughout the day. Traditional desserts are often fatty and sweet and tend to be reserved for celebrations and special occasions (see Tables 1.5.2 and 1.5.3).

Table 1.5.2 Description of Sri Lankan foods

Food group	Pronunciation/description and language	Pronunciation/description and language
	Sinhalese	Tamil
Bread rice potatoes pasta and other starchy foods		
Hoppers	*Appa* (made from white rice flour)	*Appam*
String hoppers	*Indi appa* (made from red rice or white rice flour)	*Idiyappam*
Pittu	Steamed rice flour and coconut mix	
Roti	Lightly griddled wheat flour (with or without coconut)-based flatbread	
Idli (Tamil dish)	Steamed *urid dal* and rice cakes	
Upma (Tamil dish)	Semolina flour with spices	
Dosai (Tamil dish)	Pancake with *urid dal* and rice flour	
Kottu roti	Chopped *roti* mixed with meat or vegetables	
Vegetables		
Spinach	*Nivithi*	*Pasalai kurai*

Table 1.5.2 (*cont'd*)

Food group	Pronunciation/description and language	Pronunciation/description and language
	Sinhalese	Tamil
Potato	*Ala*	*Orulai kizhangu*
Cabbage	*Go*	*Gosu*
Aubergine	*Vambotu*	*Kathirikai*
Long beans	*Maykarel*	*Payathang kai*
Ladies' fingers (okra)	*Bandaka*	*Vendakai*
Ash plantain	*Alu kehel*	*Valakai*
Carrot	*Carrot*	
Green beans	*Bornchi*	
Bitter gourd (karela)	*Karavilla*	*Pavakai*
Capsicum (peppers)	*Miris*	*Kodai milakai*
Courgettes		
Drumsticks	*Murunga*	*Murungai kai*
Pumpkin	*Vatakka*	*Posani, parangi*
Sothi		Vegetable curry made with coconut milk and served with string hoppers
Sambar/sambol (Tamil dish)		Made from dal, coconut, okra, carrot, radish, pumpkin, potatoes, tomatoes, aubergine
Cassava/yam	*Manioc*	*Maravelli kizhangu*
Breadfruit	*Del*	*Eera pilakai*
Jackfruit	*Kos*	*Pala pazham*
Gotu kola		*Valarai*
Other English vegetables also eaten		
Fruit		
Mango	*Amba*	*Mambazham*
Papaya	*Gasslabu*	*Papali pazham*
Wood apple	*Diwul*	*Vilam pazham*
Avocado	*Alligata pera*	
Custard apple		*Seetha Pazham*
Other English fruits also eaten		
Meat, fish, egg, beans and other non-dairy sources of protein		
Lentils/dal	*Parripu*	*Paruppu*
Chickpeas	*Kadhala*	*Konadai kadhalai*
Maldive chips (dried fish flakes)	*Umbalakada*	
Salt fish	*Karavula*	*Karuvadu*
Coconut, onion and chilli *sambol*	*Pol sambol*	*Thenga chutney*
Spicy watery soup	*Rasam*	
Crème caramel-style pudding	*Wattalapam* (Sinhalese dish)	
Rice pudding made with coconut milk		*Payasam*

Table 1.5.3 Traditional eating pattern and healthier alternatives for Sri Lankan diet

Meal	Tamil	Sinhalese	Healthier alternatives
Breakfast	String hoppers or *Idli* or *dhosa* with *sambar* or *sambol*	Hoppers (rice flour pancakes, sometimes served with coconut milk) or milk rice (very thick rice pudding, cut into slices)	Traditional without coconut milk or cereal with semi-skimmed milk or bread, spread and jam Fruit
Lunch	Rice Vegetable curry Fish, meat or lentil curry Yoghurt	Rice Vegetable curry Fish or meat curry (beef often used as it is cheaper)	Traditional but without coconut milk and less oil Sandwiches, rolls with cheese or ham and salad Fruit
Evening meal	String hoppers or *pittu* *Sambar* or *sothi*	Rice (mainly) or string hoppers Vegetable or meat curry *Sambol*	Traditional without coconut milk If using oil, use 1 tablespoon monounsaturated oil
Puddings/ Desserts	Payasam fruit, especially mango, papaya, pomegranate	Rice pudding *Wattalappa* (caramel pudding with milk, egg, jaggery, sugar), jelly, trifle, cake	Fruit Milk pudding made with sweetener and semi-skimmed milk
Drinks	Tea/coffee (with milk) Water Fruit juice Yoghurt drinks Fizzy drinks	Tea/coffee (with milk) Water Fruit juice Yoghurt drinks Fizzy drinks	Tea/coffee (with semi-skimmed milk) Unsweetened fruit juice Low-fat yoghurt drink Water
Snacks	*Vadai* *murrukku* (*urad* and gram, shaped and deep-fried) *Bonda* (split chickpeas, boiled with sugar, coconut, in pastry and deep-fried)	Oil cakes (jaggery and rice flour, very difficult to make) Biscuits, cakes in general Crisps	Fruit Bread Plain biscuits

(Hamid & Sarwar, 2004)

Hot and cold foods

Some Sri Lankans observe the ayurvedic classification of foods into hot and cold categories. The classification of these foods has nothing to do with the temperature of the food or to any other observable or taste-related factor, but rather specifies the innate qualities of a food and its effect on the body.

The Sri Lankan rural study by Wandel *et al*. (1984) found that nearly everyone interviewed had some knowledge of the hot/cold system but did not always follow its guidelines. Hot foods are discouraged in conditions that are associated with too much heat in the body (e.g., skin allergies and inflammation). Alternatively, when the body is suffering from a 'cold' condition (e.g., phlegm or wheezing), cooling foods are avoided. Thus, it is during illness that particular emphasis is placed on the preventative and curative properties of this food classification system, and hence it may be prudent to ensure that, if appropriate, dietary advice is compatible with this categorization (see Table 1.5.4).

Table 1.5.4 Classification of hot and cold foods in South Asia

Hot	Cold
Chicken	Ghee
Tomatoes, mangoes and mushrooms	Cow's milk
Powdered milk	Bland vegetables
Some tuna, squid and shellfish	Green, leafy vegetables
Pork, beef and duck	Some shark and most freshwater fish
	Chicken and mutton
	Bananas and citrus fruits

*Betel (*paan*) chewing*

Betel (*paan*) is a leaf that is wrapped round an areca nut from the areca palm tree and chewed like gum. The lime reacts with compounds in the nut to produce alkaloids for a mild narcotic effect. Large amounts of red saliva are also produced, which chewers spit out. Betel nuts have been associated with oral malignancy (Trivedy *et al*., 2002) and should therefore be discouraged. Betel took on symbolic meaning and was a central element of traditional marriage ceremonies. Among Malays, betel would be sent to the parents of a prospective bride and, if they accepted it, it meant they consented to the marriage.

Alcohol

A survey carried out in Sri Lanka in 2002–3 showed that 63% of people had never consumed alcohol, 20% consumed alcohol more than twice a week with 8% consuming alcohol daily. These levels may change on migration with ease of availability and relatively low cost. A popular spirit in Sri Lanka is Arrack made from fermented coconut sap. Arrack may be drunk neat or mixed like other spirits. On migration to the UK, local beers, lagers and other alcoholic beverages are likely to be taken instead of Arrack.

Smoking

A questionnaire was administered to 1,565 Sri Lankan adults living in Sri Lanka to identify the prevalence of smoking and to assess respondents' attitudes to it. Of men, 41% were yearly smokers, 27.8% were monthly smokers and 21% were daily smokers. The corresponding figures for women were 3.4%, 2% and 0.6% respectively. Higher prevalence rates were observed among less educated, middle-aged men from underprivileged families (Perera *et al*., 2005). The levels of smoking by Sri Lankans living in the UK may be different but there are no available data.

1.5.4 Healthy eating

Key points

- Traditional Sri Lankan diets are low in fat and should be encouraged as part of a healthy eating diet.
- The main staple food is rice.
- Sri Lankans may have a higher fat mass for any given BMI and therefore a lower BMI cut-off is advisable (Wickramasinghe et al., 2005).

The energy breakdown in a typical Sri Lanka diet is 72.4% energy from carbohydrate, 8.8% from protein and 18.8% from fat (FAO, 2004). This is in contrast to the 48% from carbohydrate, 16% from protein and 36% from fat in UK populations. Animal proteins play a small role in Sri Lanka due to cost, and most protein comes from vegetable sources. The consumption of fish is greater than meat primarily due to agricultural, cultural and religious reasons. The main staple consumed is rice which is predominantly grown in Sri Lanka and the second most commonly consumed staple is wheat, which is entirely imported. As meat is relatively cheap in the UK, the intake of meat on arrival to the UK may increase. The intake of fats also seems to increase with higher household income and therefore may increase on migration. Although there are no data showing the intakes of Sri Lankans in the UK, it is thought that with more household income and easy access to food, Sri Lankans living in the UK are likely to obtain energy in a similar way to those in the UK. From a nutritional point of view, the lower fat intake of the traditional diet should be encouraged. Carbohydrate intake can be high as the proportion of staple eaten differs greatly

from the amounts in a typical balance of good health model (See Figure 1.3.2 page 50).

Traditionally, a rice or starch portion will constitute approximately two-thirds of a meal. Of the remaining third, vegetables, pulses or salad constitute approximately two-thirds of a meal (i.e., 2/9th of the whole plate) and meat or fish provide the rest (1/9th of the total plate). Healthy eating can be encouraged by advising a decrease in starchy foods and substitution with vegetable-based dishes (see Table 1.5.5).

Although there are not many studies looking at Sri Lankans food intake on migration, studies on Asian groups show that many Asians will eat a combination of native foods and Western foods (Smith *et al*., 1993). Time and food availability are factors that are likely to have an impact on food choices made by Sri Lankans living in the West. Households in Sri Lanka tend to have home helps to help with food preparation and thus working families in Sri Lanka can still enjoy fresh foods cooked daily. Sri Lankan households in the UK tend to rely on the female member of the family to prepare meals and both sexes are equally likely to work. The person who cooks may thus need to fit this in with her work schedule and therefore may cook in bulk and reheat dishes. Sri Lankans should be encouraged to reheat quantities as required rather than reheating the same dish several times in order to maximize the nutritional content with respect to heat-labile vitamins.

A typical Sri Lankan diet can be high in salt. Most Sri Lankan households prepare food freshly, using herbs and spices in preference to ready-made pastes or sauces. Most dietary salt is therefore likely to be added during cooking and also added to salads and acidic fruit. Additionally, some Sri Lankans in the UK consume Indian pickles that contain fairly high amounts of salt. Traditional Sri Lankan pickles and chutneys can be made with less salt and therefore these should be encouraged as a substitute to ready-made Indian pickles. Other excessively salty foods used in Sri Lankan cooking is *karavela* (saltfish) or Maldive fish (dry salted fish flakes added to curries) .

Table 1.5.5 Dietary modifications of Sri Lankan diet

	Limit	Try
Vegetable curries	Potato curries as an accompaniment to rice or other starchy food	Vegetable curry or dal (*parripu*) instead of high carbohydrate curries
Meat and fish curries	Fatty meats	Choose oily fish (mackerel, salmon sardines, fresh tuna) twice a week Choose lean meats
Cooking methods	Reheating whole dish	Reheating required amount only

Evolving and emerging nutritional health problems

Increasing urbanization, commercialization, higher exposure to western food and lifestyle and an increasingly sedentary lifestyle, together with the breakdown of traditional social frameworks, are starting to be reflected in a shift in Sri Lanka's nutrition-related health problems. There is a marked difference in major health problems between urban and rural areas, with the 'diseases of affluence' more prevalent in urban populations, while malnutrition and communicable diseases associated with rural areas. The Sri Lankan Ministry of Healthcare and Nutrition has identified the leading cause of death as ischaemic heart disease and that mortality due to non-communicable diseases is increasing. There are few migration studies relating specifically to the Sri Lankan population, however parallels can be drawn with the South Asian population in Britain, leading to the reasonable assumption that Sri Lankans are likely to be at higher risk of heart disease, diabetes and hypertension than the general population.

Obesity

Levels of obesity and overweight are similar to the UK and 24% of those living in Sri Lanka had a BMI > 25 and 5% had a BMI > 30. Those who were educated to O and A level and living in urban areas were more likely to be of a higher weight. Those from plantation estates were likely to be underweight and this may be due in part to the difficulties in obtaining adequate food on a limited income; also energy expenditure within the workers on plantation estates are greater.

Abdominal obesity levels are high in Sri Lanka (Arambepola & Fernando, 2005). An urban lifestyle and greater consumption of deep-fried foods and a lower consumption of wholegrain products were associated with higher levels of abdominal obesity.

The highest proportions of central obesity (waist/hip ratio [WHR] > 0.85) were observed among women from Sri Lanka (54.3%) and Pakistan (52.4%) as opposed to Turkey and Vietnam. For any given value of BMI, Sri Lankans and Pakistanis had higher WHR compared to those from Turkey, Iran and Vietnam (Kumar *et al*., 2006). They also had the lowest high-density lipoprotein (HDL) and the highest low-density lipoprotein of the groups (Glenday *et al*., 2006).

A similar study looking at Sri Lankan children born in Australia found that they have a higher fat mass in relation to their BMI. As central obesity leads to more health risks, it is important that weight gain is avoided. One study has also shown that Asians have cardiovascular risks at normal levels of BMI and waist circumference (Vikram *et al*., 2003) and Asians have also been found to have health risks at lower waist circumference cut-offs when compared to Caucasians. Misra *et al*. (2005) and Wickramasinghe *et al*. (2005) therefore suggest that different BMI cut-offs are produced for Asians. Migration may also affect the likelihood of developing obesity. Asian Indians in the UK and USA were also found to have a higher BMI, WHR and skinfold thickness compared to urban Indians living in India (Misra & Vikram, 2002). It is likely that Sri Lankans living in the UK will similarly have higher levels of obesity than their counterparts living in Sri Lanka.

Diabetes UK suggests that to avoid health risks, waist circumference should be less than 89 cm inches for South Asian men and 80 cm for South Asian women.

Dietary modification

A traditional low-fat diet should be encouraged but the traditional diet also consists of fairly high carbohydrate and therefore carbohydrate intake should be decreased and pulses increased.

The intake of fat can be quite high for those living in the UK as they may get fat from meats as well as from oil used for cooking and coconut added to dishes.

Coconut may be added to dishes in the form of coconut milk or fresh/dessicated coconut may be used to make sambols and mallung. The consumption of coconut should be limited due to its high saturated fat and energy content. Many Sri Lankans believe that coconut oil is beneficial but there is very little evidence for this (see Table 1.5.6).

Physical activity

Physical activity levels are lower in South Asians compared to Europeans. Some possible reasons for this are feeling uncomfortable about exercising in public and limited language skills. Older women also felt that spending time exercising was perceived as self-indulgent. South Asians with a family history of chronic diseases understood the benefits of exercise on health and also were aware of the benefits to body image (Sriskantharajah &

Table 1.5.6 Dietary modifications for weight reduction diet

	Limit	Try
Meat curries	Fatty meats	Lean meats
	Fried meat/fish	Boil/steam/grill meat/fish
Coconut milk-based dishes	Coconut milk-based dishes	Semi-skimmed milk as an alternative to coconut milk
Accompaniments	Coconut-based *sambols*/ chutney	*Mallung* or onion-based *sambols*, e.g., onion *sambol, katta sambol*
Snacks	Fried foods: *vadai*, cutlet, samosa, *muruku, pakoda*	Fruits, plain biscuits, unsalted roasted chickpeas
Food preparation	Reduce fats and oil	Cooking in non-stick pan

Kai, 2007) and therefore this awareness should be used to encourage physical activity. Another study found that the level of physical activity outside of work was lowest in South Asians and therefore this is a possible area to target for change (Pomerleau *et al*., 1999). Barriers to physical activity must be considered when encouraging physical activity. Single-sex exercise classes or activity that can be incorporated into daily life may be of benefit.

Diabetes

The prevalence of type 2 diabetes in Sri Lanka is approximately 5%, with a similar proportion having impaired glucose tolerance. Of those diagnosed as part of research, 21% were not aware they had diabetes (Wijesuriya, 1997).

In Sri Lanka a study has shown that smoking, low family income, BMI > 25, older age, duration of diabetes and diastolic blood pressure > 90 mmHg were significantly associated with the development of long-term complications. Peripheral diabetic neuropathy (25.2%) was the commonest complication among the study population with complications, followed by diabetic retinopathy and diabetic nephropathy (Amarasinghe *et al*., 2004).

Dietary modification

The dietary management of diabetes should consist of regular meals with complex carbohydrates and low simple sugars. Low glycaemic index foods such as basmati rice and pulses should also be encouraged. GIs of other rice has also been measured but the colour of the rice does not necessarily indicate a low GI (Hettiarachchi *et al*., 2001). The lowest GI Sri Lankan rice was parboiled red rice.

Some popular Sri Lankan drinks such as *Necto* (a squash-based drink) and *Milo* (a malted chocolate drink drunk hot or cold) are not always available in sugar-free versions, so patients should be advised to switch to an alternative. Soft drinks popular in the UK (e.g., cola, lemonade and orangeade) are also taken by Sri Lankans in the UK and while abroad. Diet versions should be encouraged and are available in Sri Lanka.

Herbs and ayurvedic treatments

Herbal and ayurvedic (traditional healthcare native to India and other parts of south Asia) treatment to help with diabetes control may be used by some Sri Lankans. Sri Lankans may take *karivilla* (bitter gourd) to help control blood glucose, as Indian communities do. Salacia oblonga has also been found to reduce postprandial glycaemia. S. oblonga seems to work by inhibiting alpha-glucosidase (Hertzler *et al*., 2007).

Renal failure

Those approaching or at end-stage renal failure may need to limit potassium- and phosphate-rich foods. Phosphate-rich foods in the Sri Lankan diet are similar to the phosphate-rich foods in the western diet (i.e., dairy foods, offal and seafood). Potassium-rich foods vary due to the different fruits and vegetables people eat and other foods that need to be restricted are those with significant amounts of coconut (e.g., *pol sambol*). Clients who eat meat/fish and have lentils at the same meal may need to decrease the amount of lentils or meat/fish as both are high in potassium. Vegetarians can have a generous serving of lentils as they are not having the potassium contributed by meat/fish. Other potassium-rich foods that need to be considered are nuts and chickpea snacks (*kadala*).

Cardiovascular disease and stroke

The energy breakdown in a typical Sri Lankan diet is carbohydrate 72.4%, protein 8.8% and fat 18.8%. Despite these figures the recent estimates for mortality from cardio- and cerebrovascular diseases (CVD) for Sri Lanka – 524 deaths per 100,000 – is higher than that observed in many western economies. With regard to the type of fat consumed, the ratio of saturated to polyunsaturated fat is 9:1 compared to the current recommendations of 1:1. This low PUFA intake combined with a high carbohydrate intake may contribute to high triglyceride levels and low LDL cholesterol levels (Abeywardena, 2003).

South Asians tend to have acute myocardial infarctions (MI) eight years earlier than ethnic groups that develop MI the latest, but when compared to the average person, Sri Lankans have MI only one year earlier. The main risk factors were current and former smoking status, a high $ApoB_{100}$ /Apo-I ratio, a history of hypertension and a history of diabetes (Joshi *et al*., 2007). Low daily consumption of fruits and vegetables, lack of regular exercise

and high WHRs observed among native South Asians compared with individuals from other countries may also contribute to the higher rates of coronary heart disease observed in South Asians. South Asians tend to have low folate intake possibly due to prolonged cooking of vegetables and therefore Sri Lankans should be advised to include lightly cooked vegetables.

Dietary modification

As with regular dietary advice for the management of coronary heart disease, individuals should be guided towards achieving a normal BMI through energy restriction and increased energy expenditure. Energy restriction can be achieved by portion size reduction, particularly of starchy staples such as rice, which is usually eaten in larger than recommended amounts.

Sri Lankans should be advised to include lightly cooked vegetables and increase the amount of salads, *sambols* and fresh fruit that they consume. Coconut oil should be replaced with a polyunsaturated oil and fried food should be discouraged. Coconut products should also be limited.

Sri Lankans often cook large quantities of vegetables which are then reheated before eating and this may be done more than once. This practice should be discouraged and the advice given that only the desired amount of food for those eating should be reheated.

Exercise is also beneficial with respect to CVD and a study in India showed that daily moderate intensity exercise for 35–40 minutes was associated with a 50% risk of CHD (Rastogi *et al*., 2004).

Oily fish is a common feature of a traditional Sri Lankan diet. The beneficial aspects of oily fish should be discussed and these should be encouraged with regard to cardiovascular health. *Balaya* (tuna), *thora* (Spanish mackerel), *thalapath* (swordfish) and *mora* (shark) are common types of oily fish in Sri Lanka of which the latter two should be avoided during pregnancy due to high levels of mercury.

Cancer

A study in Australia (Grulich *et al*., 1995) showed that some rates of cancer on migration change to the levels found in Australia. Overall cancer incidence was lower in Sri Lankans living in Australia than in native Australians, and this difference reached significance in migrants born in China/Taiwan, the Philippines, Vietnam and India/Sri Lanka, and in male migrants born in Indonesia. For the majority of cancers, rates were more in line with those born in the Australia than to those in the countries of birth. For cancers of the breast, colorectum and prostate, rates were relatively low in the countries of birth, but migrants generally exhibited rates nearer those of the Australia-born. For cancers of the liver, cervix and oral cavity, in India- and Sri Lanka-born migrants the incidence was relatively high in the countries of birth but tended to be lower, nearer native Australian rates, in the migrants. For these cancers, environmental factors related to the migrant's adopted country, and migrant selection, appeared to have a major effect on the risk of cancer. For certain other cancers, the incidence was similar to that in the countries of birth. Melanoma had low rates in both the migrants and in those that were born and lived in Sri Lanka. For melanoma, it was probable that genetic or environmental factors acting prior to migration were important in causation (see Table 1.5.7).

Table 1.5.7 Cancer incidence and which types of cancer occur in levels similar to the country of residence

	Native levels	Migrant levels
Breast		√
Colorectum		√
Prostate		√
Cervix		√
Liver		√
Oral		√
Skin	√	

1.5.5 Nutrition support

Nutrition support may be necessary during periods of ill health when appetite and food intake may decrease. Food fortification can be considered as a first-line measure and foods such as coconut milk and other coconut products may be added to help increase calorie (energy) intake. Typical food fortification, such as adding milk, cream and butter to dishes, can also be encouraged.

In Sri Lanka 9% of the female population are severely underweight with a BMI value < 16 kg/m^2, while 25% of the women have a BMI between 16 and 18.5 kg/m^2 and are therefore mildly–moderately underweight (Ramanujan & Nestel, 2005). Although the prevalence of severe under-nutrition is slightly lower in men (5%), overall 37% of men suffer from under-nutrition (BMI < 18.5 kg/m^2). This low weight may resolve on migration, but some Sri Lankans may have a natural slim build despite eating well and do not need the same attention as those that are truly malnourished. Most of the underweight people in Sri Lanka are found within the plantation worker group. They are unlikely to be found in the UK and therefore the levels of malnutrition in Sri Lankans in the UK do not reflect the levels of malnutrition in Sri Lanka (see Table 1.5.8).

Points to consider when choosing nutritional supplements

Sri Lankans of Buddhist, Hindu and Christian Sri Lankans will take standard oral nutritional supplements but Muslims may request *halal*-approved oral nutritional supplements. It is advisable to contact individual manufacturers to find out which supplements are *halal*-approved. If a patient is a strict vegan, then many supplements with added vitamin D may not be suitable as it is derived from sheep wool. Most Sri Lankans are not vegans and therefore many supplements on the market will be suitable. The same applies for enteral feeds.

Table 1.5.8 Dietary modifications for nutritional support

Energy-dense foods	Energy- and protein-dense foods
Pol sambol (shredded coconut with chilli) Thengai chutney as an accompaniment to a meal	Cashew curry (cadju curry/*munthiri*) as an accompaniment to a meal
Pol mallung as an accompaniment to a meal	Yoghurt and treacle (*Kiri pani*) as a pudding/dessert
Mallung/ Keerai Kuttu – fried greens with coconut	*Wattalapam* – pudding/ dessert
Sweetmeats, e.g., *kaung, kokis, thala guli*	*Payasam* – pudding/ dessert
	Kadhala – chickpea snack
	Bombay mix/nuts

1.5.6 Maternal and child nutrition

Exclusive breastfeeding is not carried out for long in Sri Lanka; a survey found that 96% of babies in Sri Lanka were being breastfed at three months but 32% of these had already started formula milk. This demonstrates that efforts should be made to allow mothers to breastfeed exclusively until at least the fourth month. Many in Sri Lanka start early supplementation as full-pay maternity leave ceases at three months. Take-up rates of breastfeeding are high as hospitals encourage it and while in hospital mothers are not allowed to feed from the bottle without doctor approval. Exclusive breastfeeding for the first four months is carried out only by about 24% of mothers, whereas in India approximately 51% exclusively breastfeed for the first four months. Rates of breastfeeding among Sri Lankans in the UK are not available but may be different due to differences in lifestyle and maternity leave.

Weaning foods

In Sri Lanka about 25% of mothers in urban areas commence semi-solid feeding after the fourth month. Faltering growth (in comparison with NCHS standards) is commonly observed around the fourth month, mostly relating to late complementary feeding. Reasons for mothers being reluctant to feed earlier are because of a traditional rice-eating ceremony around the end of the year or until teeth have erupted (Soysa, 1988). Care should be taken to educate Sri Lankan mothers regarding the importance of timely weaning.

Common first weaning foods are soft-boiled mashed rice, potatoes, carrots and lentils. As weaning progresses, a greater variety of vegetables, greens, fish, meat and spices is added and food is often fortified with butter or margarine. It is traditional to encourage a variety of fresh food, textures and seemingly strong flavours, as and when it is judged the child can tolerate them. Initially, weaning foods are prepared separately; however, by one year children are fed from the

milder dishes prepared for family consumption, and sometimes graduate to eating highly spiced foods at a relatively young age. As with the adult population, dairy foods (cheese and yoghurt) feature minimally in the traditional weaning diet, however this is likely to change on migration.

Increasing commercialization and media advertising have begun to influence Sri Lanka's weaning patterns, with more affluent families choosing to wean using commercially prepared baby cereals and weaning foods. On migration to the UK, Sri Lankans are likely to be influenced by the same health messages and lifestyle factors relating to weaning as the general population.

1.5.7 Nutritional deficiencies

Due to a difference in intake on migration, it is likely that most of these deficiencies are rarely found in Sri Lankans living in the UK but may need to be considered in recent migrants.

Vitamin D deficiency

A study investigating Sri Lankans who have emigrated found that vitamin D levels of Sri Lankans appear to be low. About 32% of men and women (in almost equal proportions) were vitamin D-deficient. The risk of vitamin D deficiency increases with age. Those who were taking cod liver oil supplements were less likely to be deficient and 23% of the Sri Lankans in this study were taking cod liver oil. Those having an increased intake of fatty fish also had higher levels of vitamin D and hence oily fish should be encouraged for this as well as for cardiovascular reasons.

Iron deficiency anaemia

About 45% of pre-school children, 58% of 5–11-year-old children, 36% of adolescents and 45% of non-pregnant women suffer from anaemia. Women aged 18–45 years seem to be the most affected. Iron deficiency anaemia may still occur if certain food groups (e.g., meat) are omitted from the diet (FAO Nutrition Country Profiles).

Iodine deficiency

Nearly 19% of the population in Sri Lanka were diagnosed as iodine-deficient in the past but this is improving as most Sri Lankans (approximately 90%) have access to iodized salt (FAO Nutrition Country Profiles).

Vitamin A deficiency

More than 30% of pre-school children have marginal serum values of vitamin A (FAO Nutrition Country Profiles).

Suggestions for the way forward

Research looking at Sri Lankan migrants is limited as they are a small group in the UK. With regards to food composition, it would be valuable if data were available for the traditional foods, especially where micronutrients are concerned (e.g., potassium content of fruits and vegetables commonly consumed by the Sri Lankan population). Although traditional fruits and vegetables are similar to those eaten by all South Asian communities, other food groups, such as starchy foods and sweets, have very different names and if a diet sheet aimed at the Asian community is given to Sri Lankans, it is worth checking to see if it includes the types of food the patient may consume.

Websites

Gujarati Diet

www.virtualcurriculum.com/N3225/spring2006/inderjit/template2.html
For barriers Diabetes South Asians

Punjabi Diet

en.wikipedia.org/wiki/Sikh_beliefs#cite_note-0
www.bbc.co.uk/religion/religions/sikhism/ataglance/glance.shtml
punjabgovt.nic.in/WELCOME.html
www.publications.parliament.uk/pa/cm199900/cmhansrd/vo000307/halltext/00307h0
en.wikipedia.org/wiki/Southall
en.wikipedia.org/wiki/Sewadar
www.bhf.org.uk
The British Heart Foundation website has a useful Health Professionals section, including a number of fact files giving clear, concise and up-to-date information on heart health issues.
www.heartstats.org

A comprehensive and up-to-date data source on the incidence, prevention, treatment and causes of heart disease in the UK, including information on minority ethnic groups.

Pakistani Diet

Association for the Study of Obesity: www.aso.org.uk
British Heart Foundation: www.bhf.org.uk
Cancer Research UK: www.cancerresearchuk.org
en.wikipedia.org/wiki/Shiite
en.wikipedia.org/wiki/SunniIslam
International Association for the Study of Obesity: www.iaso.org
International Obesity Taskforce: www.iotf.org
Minority Ethnic Communities and Health: www.minorityhealth.gov.uk/index.htm
Muslim Health Network: www.muslimhealthnetwork.org
National Obesity Forum: www.nof.org
QUIT: www.quit.org.uk
The Ismaili Nutrition Centre: www.theismaili.org/nutrition
www.Diabeteshealth.com
www.carbs-information.com
www.heartstats.org
www.infoplease.com/ipa/A0107861.html
www.statistics.gov.uk
www.virtualcurriculum.com/N3225/spring2006/inderjit/template2.html
www.yespakistan.com

Bangladeshi Diet

www.virtualcurriculum.com/N3225/spring2006/inderjit/template2.html.
www.theismaili.org/nutrition.

Resources

Pakistani Diet

Al-Badr Health & Fitness
2nd Floor, 453 Leabridge Road
London E10 7EA
Tel: 020 8558 8819 or 020 8556 3889

Bengali Bridge Project
Suhas Khanderia, Pharmaceutical Adviser Islington Primary Care Trust
Tel: 0207 853 5558
Email: suhas.khanderia@nhs.net

Birmingham Food Net
Eleanor McGee, Projects Lead, Birmingham Community Dietitians
Tel: 0121 446 1021
Email: eleanor.mcgee@easternbirminghampct.nhs.uk

Bradford Trident Healthy Living Project weight management programme
Rukhsana Khan, Project Coordinator, Bradford Trident Healthy Living Project
Tel: 01274 436186/7
Email: rukhsanak@bilk.ac.uk

Cancer Equality
18 Boardman House
64 Broadway
London E15 1NT
Email:info@cancerequality.or.uk

The Coriander Club
Lutfun Hussain
Coriander Club
Spitalfields City Farm
London
Tel: 0207 247 8762

Coventry 5-a-Day Scheme
Helene Heath, 5-a-Day Coordinator, Coventry Health Promotion Service
Tel: 024 7624 6095
Email: Helene.Heath@coventrypct.nhs.uk

Dietary Intervention in High-Risk Families with CHD In Ealing
Professor J.S. Kooner, Head of Department of Cardiology, Ealing Hospital
Email: j.kooner@imperial.ac.uk

Hamara Healthy Living Centre
Khurshid Butt
Hamara Healthy Living Centre
Tel: 0113 277 3330
Email: Khurshid@hamara.co.uk

Khush Dil Project
Gill Mathews, Project Coordinator, Khush Dil
Tel: 0131 537 4585/7

Natalie Field, Assistant Director of Public Health
Avon HImP Performance Scheme
Tel: 0117 9002445
Email: natalie.field@bristolswpct.nhs.uk

Project DIL
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Tel: 0116 2954120
Email: Mina.Bhavsar@elpct.nhs.uk

QUIT
Kawaldip Sehmi, Director of Health Inequalities, QUIT
Tel: 0207 251 1551
Email: k.sehmi@quit.org.uk

Rochdale Healthy Living Centre
Geraldine Meagher, Health Connections Team Manager
01706 745125
Email: gergeraldine.meagher@rochdhale.gov.uk

SITARA
Alison Morby, Head of Physical Activity Development Team
Cultural and Leisure Services, Kirklees Metropolitan Council
Tel: 01484 234088
Email: alison.morby@kirklees.gov.uk

South Asian Living with Heart Disease Project
Habib Naqvi, Research Associate
Avon HImP Performance Scheme
Tel: 0117 9002653
Email: Habib.Naqvi@bristolswpct.nhs.uk

Using Ethnic Profiling to Improve Services for Black and Minority Ethnic Communities
Sarah Pollard, CHD Prevention Specialist Nurse
Tel: 0114 2264752
Email: Sarah.Pollard@sheffieldn-pct.nhs.uk

Walking for Health in Wolverhampton
Hayley Scott, Health Promotion Officer
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Further reading

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