

CHAPTER 4

Food, nutrition and health in the UK

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Food is one of the things we can experience in the same way people in the past experienced it. Some of the ingredients are slightly different but if you're making a heritage food, you can still get the same taste. It's sort of like a taste of the past, which is pretty cool

Jenet Harron

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Introduction

There is a rich and complex history to our daily meals. Traditional food is the term given to the use of particular food ingredients and food preparation methods has been passed on from one generation to the next (Weichselbaum et al., 2009). Ethnic food in turn can refer to authentic ethnic food (a food from countries other than the home market contributing to a different food culture than the traditional cuisine of the host country) and modified ethnic food (modified ethnic food was defined as “a commercially modified version of food as prepared in an immigrant’s country to suit the taste and preference of the host country”) (Khokhar et al., 2010). In a broader sense, ethnic food can be defined as an ethnic group’s or a country’s cuisine that is culturally and socially accepted by consumers outside of the respective ethnic group. For example, Greek food, Indian food, Italian food, Thai food, and Korean food are all considered ethnic food outside of their own countries (Kwon, 2015). Unfortunately, throughout Europe, some traditional and ethnic foods are at risk of disappearing due to altered lifestyles. This chapter gives data where the figures are available, and points to areas where they are lacking. It shows that knowledge about the links between food production, distribution and consumption and subsequent health pattern is now sufficient to enable these elements to be seen as parts of a greater whole. This whole is influenced by past and present food policies, and can influence future policy making.

Constant changes in the composition of national populations are an ordinary event in most Western countries. In Europe, immigrant groups represent between 9% (UK) and 15% (Austria) of the total population of certain European countries (Vasileva, 2011). The most widely- represented minority groups in Europe include South Asians in the UK (Statistics UK Census, 2018), Africans in France (Tribalat, 2004), Turks in Germany (Statistik Bundesamt Deutschland, 2004), Latin Americans in Spain (Instituto Nacional de Estadística, 2006) and Surinamese in The Netherlands (Centraal Bureau Voor De Statistiek, 2005). Alongside these demographic dynamics come alterations in lifestyle and eating habits for both the main-stream and migrant populations. The ethnic diversity of migrant populations in Europe and many other countries has brought an increased diversity in food cultures, eating habits and food items available in the host countries (Khokhar et al., 2013). The multicultural nature of European populations, together with increased travel and the globalization of the food supply, has led to an increase in the consumption of ethnic foods by both mainstream and ethnic populations (Khokhar et al., 2009).

The United Kingdom has a diverse society with a long history of immigration, and it has become increasingly multicultural in the last fifty years. In the 2011 Census (Office for National Statistics, 2001), approximately 14% of people living in the UK described themselves as belonging to non-white ethnic minority groups, compared with 9% of people in the 2001 census. The main ethnic minority groups include Polish (831,000), Indian

(795,000), Pakistani (503,000), and German (286,000). Across the English regions and Wales, London was the most ethnically diverse area, with the highest proportion of minority ethnic groups and the lowest proportion of the White ethnic group at 59.8%, in 2011. The West Midlands was the second most diverse with White ethnic group at 79.2% (Office for National Statistics, 2011). Ethnically diverse areas, such as London, had the greatest proportional changes since the 2001 Census, while areas such as Wales, which are the least diverse, had the smallest proportional changes. London had the greatest changes across the majority of the ethnic groups between the 2001 and 2011 Censuses. While White British decreased by 14.9 percentage points, Any Other White and Any Other Asian had increased by 4.4 and 3.0 percentage points respectively. The West Midlands also displayed significant changes across the ethnic groups: White British decreased by 7 percentage points and Any Other White, and Caribbean increased by 1.3 percentage points each. Wales and the North East had the smallest changes across the majority of the ethnic groups, with White British decreasing by 2.8 percentage points and all other ethnic groups increasing by less than a 1 percentage point (Office for National Statistics, 2001) (Table 1).

It is important to study and document traditional and ethnic foods to sustain important elements of European cultures. This chapter will focus on traditional and ethnic foods in the United Kingdom. The topic will be discussed from a historical perspective, proceeding to a geographical and agricultural landscape, and wrapping up with the present nutritional perspectives of the UK. Culture and traditions will be covered, as will food composition of representative traditional and ethnic dishes. The scope of this chapter will include the African-Caribbean, South Asian, and Caucasian ethnic groups of the UK, since they represent the largest population groups on the United Kingdom (Office for National Statistics, 2001).

Continuous growth in the population of ethnic minority groups increases the need to consider them when designing public health interventions. As a result of the link between diet and health, dietary acculturation (i.e., the changes in the diet that individuals undergo when they come into contact with the diet of another culture) has become an increasingly important public health issue. It has been reported that South Asians living in the UK may present a higher prevalence of the metabolic syndrome associated with dietary acculturation, including a reduction in vegetarianism, an increased intake of caffeinated drinks and altered meal patterns (Garduño-Díaz and Khokhar, 2013a).

Historical overview

British cuisine is the set of cooking traditions and practices associated with the United Kingdom. It has been described as “unfussy dishes made with quality local ingredients, matched with simple sauces to accentuate flavour, rather than disguise it” (Spencer, 2011). However, British cuisine has absorbed the cultural influence of those who have

Table 1 Components of traditional foods as defined by EuroFIR^a

Traditional foods		
<p><i>Traditional ingredients:</i> Raw material (species and/or varieties) or primary product, either alone or as an ingredient, which has been used in identifiable geographical areas and remains in use today (taking into account cases where use was abandoned for a time and then reinstated) and its characteristics are in accordance with current specifications of national and EU legislation.</p>	<p><i>Traditional composition:</i> The uniquely identifiable composition (in Terms of ingredients) that was first established prior to the Second World War and passed down through generations by oral or other means (taking into account cases where composition was abandoned for a time and then reinstated) and when necessary is differentiated from the composition defined by the generally recognized characteristics of the wider food group to which the product belongs.</p>	<p><i>Traditional processing:</i> The production and/or processing of a food that:</p> <ul style="list-style-type: none"> – Has been transmitted from generation to generation through oral tradition or other means and – Has been applied prior to the Second World War and remains in use (taking into account cases where composition was abandoned for a time and then reinstated) despite its adjustment to binding rules from national or EU food hygiene regulations or the incorporation of technological progress, under the condition that production and/or processing remains in line with methods used originally and that the food's intrinsic features such as its physical, chemical, microbiological or organoleptic features are maintained.

^a The EuroFIR definition of traditional foods was acknowledged by the Food and Agriculture Organization (FAO) at the 26th FAO Regional conference for Europe in Innsbruck, Austria, on the 26th–27th June 2008.

settled in Britain, producing many hybrid dishes, such as the Anglo-Indian *chicken tikka masala* (Panayi, 2011).

Celtic agriculture and animal breeding produced a wide variety of foodstuffs for indigenous Celts and Britons. Anglo-Saxon England developed meat and savory herb stewing techniques before the practice became common in Europe. The Norman conquest introduced exotic spices into England in the Middle Ages. In the 18th and 19th centuries, the Colonial British Empire began to be influenced by India's elaborate food tradition of strong, penetrating spices and herbs (Spencer, 2011).

As for Scotland, traditional local food is highly reflective of the natural environment and diverse surroundings of the country. This includes Angus beef from Aberdeen, Sornoway Black Pudding, Shetland salmon and other well-known Scottish signatures such as

whisky, ale, scones, shortbread and Haggis (a savory meat pudding traditionally accompanied by mashed potatoes, turnips and a whisky sauce).

During the World Wars of the 20th century difficulties of food supply were countered by official measures, which included rationing. The problem was worse in World War II, and the Ministry of Food was established to address the problems. Due to the economic problems following the war, rationing continued for some years, and in some respects was stricter than during wartime. Rationing was not fully lifted until almost a decade after war ended in Europe, so that a whole generation was raised without access to many previously common ingredients. These policies, put in place by the British government during war-time periods of the 20th century, are often blamed for the decline of British cuisine in the 20th century (Zweiniger-Bargielowska, 2002).

Well-known traditional British dishes include full fried breakfast, fish and chips (battered, deep fried fish, cod, plaice), the Christmas dinner (turkey roast, port sausages and root vegetables, and Brussel sprouts), the Sunday roast (traditionally beef or pork or chicken with vegetables and potatoes), steak and kidney pie, shepherd's pie, and bangers and mash (Spencer, 2011). People in Britain however eat a wide variety of foods based on the cuisines of Europe, India, and other parts of the world. British cuisine has many regional varieties within the broader categories of English, Scottish (porridge, oats) and Welsh cuisine (leek soup, Welsh cake) and Northern Irish cuisine (soda bread, stew, Irish cream recipes). Each region has developed its own local dishes, many of which are geographically indicated foods such as Cornish pasties, Yorkshire pudding, Cumberland Sausage, Arbroath Smokie, and Welsh cakes. Much of modern British cooking also draws heavily on influences from Mediterranean, and more recently, Middle Eastern, South Asian, East Asian and Southeast Asian cuisines. The traditional influence of northern and central European cuisines is significant but fading. According to the research by supermarket application Ubamarket, 21.6% of 2004 respondents cited curry as their favorite food to make in the kitchen, putting it above spaghetti Bolognese in second - with the classic roast dinner forced to settle for bronze. Rounding off the top five were two more dishes borrowed from other countries: lasagne and chili con carne.

Geography and the natural agricultural landscape

In 2015, the agri-food sector in the UK accounted for a total estimated Gross Value Added (GVA) of £109 billion or 6.6% of national GVA. The United Kingdom has a total Utilized Agricultural Area (UAA) of 17.4 million hectares, with 508 thousand hectares of these being farmed organically (Department for Environment, Food and Rural Affairs, 2016). The dairy herd is at a production level of 1.9 million, while total pig numbers are 4.9 million. Sheep and lamb numbers reach 33.9 million. As for agricultural production, the top crops produced in the UK include cereals, temporary grass, and oilseeds.

Culture and traditions

Traditional Victorian food

The Victorians valued good cooking and food. However, there were great differences between what the rich and poorer people ate. The unemployed, and others with little money, survived on little more than potato parings, rotten vegetable refuse and scraps. For the destitute, hunger often forced them to seek a place in the workhouse where a diet of potatoes, cheese, bread and gruel was provided. Those on a slightly higher wage could occasionally purchase some bacon, cheese or sausage and workers in better-paid jobs had more choice and more wholesome food. Meal times were an opportunity for the rich to display their wealth. This was done through rich foods, use of fine cutlery, china and servants. At the start of the Victorian era, French cuisine was in fashion, with as many as 20 dishes served at the same time in two great courses. Tastes changed during the period and, by the 1860's, dishes were being placed on the sideboard and then served, one after another, by footmen. This was known as serving a meal "à la russe." Breakfast was an important meal. Even the simplest of middle class breakfasts consisted of bacon, eggs, ham, haddock, toast, coffee and fruits. It was the Victorians who first invented afternoon tea. This was because the evening meal was eaten later than in previous periods and people found they needed a light meal in the late afternoon.

From the 1860s, tinned meat was available. At first, this was mainly fat with just a few chunks of meat, but it provided a cheap alternative for the poor, being less than half the price of ordinary meat. The late 19th century saw the range of available tinned food greatly increase, as canners competed with each other, using novel foodstuffs, highly decorated printed labels, and lower prices. By the beginning of the twentieth century, the British taste for eating fish in combination with potato chips was well established, seeing the development of fish and chip shops.

Food during wartime

Getting food to the front line was often a problem. The soldiers' food was sometimes terrible. The British Army employed 300,000 field workers to cook and supply the food, but conditions were very challenging. 3,240,948 tons of food was sent from Britain to the soldiers fighting in France and Belgium during the First World War. As the size of the army grew, and more food supplies were blockaded, rations were cut to 6 oz of meat a day. Later, troops, not in the front line, only received meat on nine days out of every thirty. The soldier's food was often supplied in cans and was very monotonous. Most of the diet in the trenches was bully-beef (canned corned beef), bread and biscuits or Maconochie stew (a stew of sliced turnips, carrots and potatoes in a thin broth, named for the Aberdeen Maconochie Company that produced it.). By 1916, flour was in such short supply that bread was being made with dried, ground turnips.

Traditional feasts and celebratory foods

In February or March, Commonwealth countries celebrate Shrove Tuesday or Pancake Day, a feast that marks the beginning of Lent. This day is celebrated by consuming pancakes with sugar and lemon juice. Pancakes are associated with the start of Lent because they are a way to use up and milk, eggs and sugar before the 40-day fasting season of Lent.

Later in the year, during Easter celebrations, in the UK the main festive foods include chocolate Easter eggs and hot cross buns. Hot cross buns, a classic British Easter recipe, originated from the Saxons in the 5th and 6th centuries. The Saxons ate hot cross buns to honor their goddess Eostre, the namesake of the festival of Easter. The buns represented the moon with the cross symbolizing the moon's quarters. To Christians, the cross symbolizes the crucifixion. Hot cross buns are traditionally eaten warm with butter on Good Friday, but can also be part of the Easter Sunday feast (Barrow, 2013).

In the United Kingdom, Christmas dinner is traditionally made up of roasted turkey, vegetables, and Yorkshire puddings served with gravy. As described before, a significant festive eating occasion in the traditional British diet is the weekly Sunday roast.

Traditional South Asian diets

Migrants from the Indian subcontinent comprise the largest minority group in the UK. The term South Asian is usually used to refer to people from the Indian subcontinent. South Asians within the UK are not a homogenous group in terms of place of origin (e.g., Bangladesh, Punjab, Gujarat, Pakistan, or even East Africa) or religion (Hindu, Muslim, and Sikh). The traditional diets of South Asian people are greatly influenced by religious and regional background. In general, they comprise limited amounts of meat, fish and dairy; while copious amounts of rice, pulses, flat breads, vegetables and fruits are included. Dietary and food preparation practices vary according to both place of origin and religion. The main representative foods per category are summarized on the next section.

Traditional African/Caribbean diets

While most of the traditional African-Caribbean dietary practices are compatible with guidelines for healthy eating, most people consume a combination of African-Caribbean foods and European foods (e.g., breakfast cereals, cakes, biscuits, crisps, burgers and chips).

In a study that developed food frequency questionnaires (FFQ) to assess the diet of individuals in Cameroon, Jamaica and their migrants in Manchester, the FFQ for use in Jamaica contained 69 food items and that for Cameroon 76 items. However, a total of 108 items had to be included in the Manchester FFQ, owing to the need to cover both Caribbean and European foods (Sharma et al., 1996). Examples of the European foods include: fruit pie or crumble, crisps, grapes, sweets and chocolate bars, Brussels sprouts, and pizza.

In the UK, the food selection of the African–Caribbean population is influenced by social and economic factors, in addition to tradition, knowledge and experience. The availability of traditional foods in the near by surroundings, including staples such as corn-meal, cho-cho, green bananas, plantains, pumpkins, okra and yams, greatly determine the frequency of their consumption.

A study of Caribbean-born people and their younger British-born relatives reported that first generation African–Caribbeans consumed more green vegetables and fruit and had lower energy intakes from total and saturated fat compared with the younger UK-born African–Caribbeans (Sharma et al., 1999). Many older African–Caribbean people have maintained cultural food preferences and traditional diets. Men following a traditional diet obtained a lower proportion of their energy intake from fat compared with less traditional eaters.

Cooking methods of ethnic minority groups in the UK

Among South Asians in the UK, the most commonly used cooking methods include frying, deep-frying, or combining in the form of a curry. Multi-ingredient recipes are usually cooked in a communal (single) pot, yet there is considerable variation in recipes, fat content and portion sizes of dishes between individuals and even from day-to-day in the same household. Meat, vegetables, rice and pulse dishes are boiled, stewed or simmered, often for several hours (Wharton et al., 1983). Fish is usually baked, fried or curried (Simmons and Williams, 1997). Food waste tends to be limited as curries are often reheated and eaten the next day (Wharton et al., 1983). In addition, some families cook food without discarding water whereas others discard water (e.g., from canned vegetables) before cooking. In a study of Asian men, vegetable oils or vegetable ghee tended to be used in preparing vegetable curries, while ghee or butter tended to be used for preparing meat curries (Smith et al., 1993)

Typical foods and food products

British cuisine has historically, and perhaps wrongly, been regarded as bland and lacking in flavor and diversity, especially when compared to other European cuisines. Nevertheless, food historians have recognized and highlighted some of the top contributors of British cuisine. The history of British food has changes along with the Island's history, being influenced by conquests as well as by international trade and colonization. While great works have been written in respect to British food (Dickson Wright, 2011; Spencer, 2011), this section shall touch briefly upon key culinary representative dishes from the mainstream British population, and then proceed to discuss typical foods and food products of the main ethnic groups found in the UK.

Traditional British dishes

Representative British traditional foods include fish and chips, scrambled eggs made out of egg powder (popularized during the war and post war periods), pies, egg and bacon sandwiches, Sunday roast, custards and rice pudding.

As part of the mainstream British diet, fish and chips are a valuable source of protein, fiber, iron and vitamins. As one of the preferred option for take-away meals, fish and chips are widely available and frequently consumed. A study by [Caraher and Lloyd \(2010\)](#) found fish and chips to be one of the main sources of saturated and trans fats in the British diet. Other studies have found this dish to be a significant source of energy and, surprisingly, dietary fiber ([Benelam and Stanner, 2015](#)).

The British diet has undergone various adjustments in accordance to historical developments throughout history; war being one of the main modifiable factors. During war and post-war times, the government required a way to feed the population at home as well as those on the fighting front. One strategy was the development and popularization of egg powder as a response of the government to a wartime shortage of fresh eggs ([Trueman, 2015](#)). Among others uses, dried eggs could be used to make scrambled eggs or in a cake mixture.

Meat pie is an incredibly traditional British pie. It is usually eaten cold, and consists of a thick and crumbly crust pastry encasing pork filling. The pork is roughly chopped, seasoned and moistened slightly with pork jelly that lines the pastry sides. Some of the more popular pies include shepherd's pie, beef and ale pie, mince pie, fish pie, and game pie. The British kitchen also has a long tradition of noted sweets, particularly with puddings, custards, and creams. Mince pies have been eaten as part of a traditional British Christmas since as long ago as the 16th century. Then, they were made of meat, but are now made with sweet mincemeat, a mixture of dried fruits, sugar, spices, and brandy.

Perhaps the most representative of all British family dishes in the Sunday roast. As part of the British culture it represents the coming together of family members and a significant weekly ritual of the various social classes throughout history. Traditional Sunday dinner consists of roasted meat, potatoes, peas, cauliflower, carrots, and accompaniments such as Yorkshire pudding, stuffing, vegetables and gravy.

Over the last decades, marked interesting changes have occurred in the British diet. Part of these changes have stemmed from wide-reaching social issues that affect modern eating culture, including the fast pace of today's lifestyle, whereas others have occurred as a result of alterations in food processing and technological advances. The consumption of meat and meat products, in particular, has seen a great deal of fluctuation, and as meat is an important source of various nutrients in the diet, this is an area that merits further investigation for its public health implications.

The influence of ethnic foods on traditional British eating behaviors

The diets of minority groups can vary significantly from the mainstream population of a country. That dietary patterns of migrant group populations differ from those of mainstream populations is well known. In addition, it has been established that all dietary assessment methods possess advantages and disadvantages with a need to develop and validate ethnic-specific dietary assessment tools.

Food composition databases provide important data that can be used in a variety of ways to improve the nutritional quality of food and the health of the populations (Khokhar et al., 2009). However, the information that is available on the composition of ethnic foods is currently incomplete and fragmentary which both prevents effective health and disease interventions and limits the provision of dietary advice and information.

Following, we present partial findings of the work developed by the ethnic foods work package within the European Commission's FP6 Network of Excellence EuroFIR (Church et al., 2005). These data will be focused towards the South Asian population as they represent one of the largest minority ethnic group in the United Kingdom (Office for National Statistics, 2001).

Meat, fish, and dairy

As one of the largest ethnic groups in the United Kingdom, the eating practices of the South Asian population have shaped, and been shaped by, the mainstream traditional eating practices. Hindus generally eat no beef and are mostly lacto-vegetarians. Muslims will not eat pork or products derived from pigs, and will only consume meat that has been ritually slaughtered (Halal meat). As a group, Sikhs tend to be less strict, but they are unlikely to consume pork or beef. These meat-related preferences limit the incorporation of traditional British dishes which will either need to be modified in accordance to ethnic preferences, or avoided all together.

As for dairy, traditional products such as Stilton and Cheddar cheese are not part of the regular diet of ethnic groups. Rather, home-made curd cheese (paneer) is normally made from full-fat milk and often fried before consumption. Full-fat, rather than reduced-fat, milk is common, while yoghurt is often served as an accompaniment to main meals.

Vegetables and legumes

Unlike the cuisine of the mainstream British population, pulses are a common component of South Asian cuisine, and include: *moong* (green gram), *urad* (black gram), *toor* (split pea), *masur* (lentil), *channa* (red lentil), chickpeas, black-eyed beans, and kidney beans. Vegetables are usually cooked in fat or oil or as a component of dishes such as curries, although side salads are often eaten at main meals; Commonly consumed vegetables include: aubergines, *karela* (bitter gourds), *valor* (beans), okra, courgettes, *dodi* (*white gourd*), spinach and cauliflower.

Grains

South Asian meals are usually cereal-based with side dishes rather than being meat- or fish-based as is the case of the mainstream British population. *Chapattis (roti)* are the main type of Indian bread, made from unleavened dough and often spread with oil or butter. *Ghee* is also typically used as a source of fat for cooking. Rice is usually consumed boiled, although *pilau* (fried) rice may be consumed at weekends and on special occasions.

Beverages and other foods

Tea consumption is a practice historically adopted by both British and South Asian populations. Tea consumed by Asian families is usually prepared by boiling water, milk, sugar, spices and tea in quantities sufficient for the whole family (half milk, half water). Similarly to the practices of the mainstream British population, tea is drunk throughout the day, often along side snacks, both sweet and savory. Fried snacks such as samosa, chevda, ganthia, sev, pakora and bhajia are common. Indian sweetmeats (e.g., burfi, halwa, jalebi, laddoo and gulab jaman), which are high in energy, are served on special occasions.

The process by which minority groups adopt the dietary practices of the host country—referred to as “dietary acculturation”—is multidimensional, dynamic, and complex; in addition, it varies considerably, depending on a variety of personal, cultural, and environmental factors. Traditional local foods are often incorporated into the eating practise of the country of origin, with ingredient or preparation modifications as required to make the food more familiar. Likewise, the acculturation process flows both ways, with the local population adopting practices from migrant groups. This is easily observed in the UK where ethnic foods have been amply adopted by the mainstream population, both through restaurants and as part of home cooking.

Food preservation, shelf life and environment

A quick look at history books shows there has always been a strong tradition of preserving food using all sorts of clever methods. In the past, food was preserved as the seasons changed to ensure sufficient food during winter. Today, with increased food availability the processes are more focused on extending a product’s shelf life for transportation and trade at a global scale. At a household level, food processing refers more to cooking methods, with the usual aim being to optimize flavor, taste and nutrient intake. This section will focus on traditional food preservation methods in the UK, followed by a look at the most commonly used cooking methods of ethnic minority groups in the UK.

Traditional food preservation methods in the UK

Traditional or home preservation of food in the UK is said to have reached its peak in the 19th century, by which time many methods had been developed and put into regular

practice in order to maximize the benefits of produce from farms and kitchen gardens, to deal with surpluses, and to prolong the life of high quality foods.

Pickling is a form of food preservation that uses either vinegar or brine to keep food from spoiling. Good cooks in all households, rich or poor, throughout British history had to know what they were doing if they were to get maximum yield and minimum waste from their home-grown produce, whether a tiny vegetable patch or a large kitchen garden. Pickling in brine is essentially curing with salt, this is not to be confused with the brining of vegetables before being pickled in vinegar. Any vinegar can be used, however for long-term preservation a vinegar that is 5% acetic (ethanoic) acid is required. Though not strictly essential, herbs and spices give pickles an extra aromatic dimension and take the edge off the harsh vinegar astringency. Most herbs can be used with great effect: thyme, rosemary, bay, savory, oregano, dill and fennel have all been used in traditional British pickling techniques.

Salting was also used for traditional food preservation at different stages of British history. There are essentially two types of salting: dry salting, where salt is sprinkled over vegetables and left overnight to drain, and brining, where the produce is immersed in a strong salt solution for 12 to 24 h. A typical brine contains 85 g of salt per liter of water. Vegetables as well as meats have been traditionally preserved by salting.

Canning and preserves have also played a significant role as traditional food preservation methods in Britain, especially around the time of the First and Second World Wars (Longmate, 1971). These were the days before refrigeration and freezing was common in household kitchens so housewives still knew and used preservation techniques such as canning. The Ministry of Food educated people with leaflets, radio programs and community demonstrations on the latest and greatest food preserving techniques, to ensure that no food went to waste. For example, eggs could be kept fresher for a bit longer by rubbing them with lard to seal the pores, or for longer periods, by storing them in crocks under water with isinglass mixed in, or by turning them into pickled eggs.

Preserving of fruits and vegetables was largely done in Kilner jars: glass jars with glass lids with a spring on them. The procedure involved putting a rubber ring around the neck of each jar before sealing it, and replaced the rubber rings each season. Even if fruit was grown at home, making jams and preserves from it was tricky around this time as sugar was rationed. Many people started saving up their sugar rations right at the start of the summer to help with canning time. Some years, during the summer, the Ministry of Food was able to double the sugar rations to encourage home preserving.

The Ministry of Food also advised people on how to cure and preserve meat. Pork or lamp chops could be preserved for up to six weeks by first cooking them, and then putting them in a crock completely covered with fat (Zweiniger-Bargielowska, 2002).

Nutrition and health

As the burden of chronic non-communicable diseases in the UK remains high ([Office for National Statistics, 2001](#)), diet and nutrition continue to be important public health issues because of their role in prevention. Current dietary guidelines on food consumption set in England and Wales by the Department of Health, in Northern Ireland by the Public Health Agency, and in Scotland by the Scottish Government include recommendations to consume more starchy foods, wholegrain where possible, more fruit and vegetables and less fatty and sugary foods ([Scottish Government, 2006](#); [Food Standards Agency, 2010](#); [Public Health Agency, 2010](#)). Guidelines also exist at the nutrient level based on the 1991 Committee on Medical Aspects of Food Policy (COMA) report ([Department of Health, 1991](#)) and state, for example, that intakes of non-milk extrinsic sugars and saturated fats should each contribute no more than 11% food energy. They also state that the population average for non-starch polysaccharides intake in adults should be 18 g/d. The National Diet and Nutrition Survey assesses the diet, nutrient intake and nutritional status of the general population of the UK. For 2018, updates are available for years 7 and 8 combined of the on-going data collection and analysis, allowing for an up-to-date description of the current dietary habits of the UK population as described below ([National Diet and Nutrition Survey, 2018](#)).

In all age groups, mean intake of free sugars exceeded the government recommendation of providing no more than 5% of daily total energy intake for those aged 2 years and over. In all age groups, the mean intake of AOAC fiber was below the new recommendations set by the Scientific Advisory Committee in Nutrition and adopted by the UK Government.

Mean consumption of fruit and vegetables in years 7 and 8 (combined) was 4.3 portions per day for adults aged 65 to 74 years and 3.4 portions per day for adults aged 75 years and over. Mean consumption for women aged 75 years and over was significantly lower in years 7 and 8 (combined) than in years 1 and 2 (combined) (3.2 portions and 4.0 portions respectively), but a significant difference was not seen for men or for the those aged 65 to 74 years. Thirty-one per cent of men and 32% of women aged 65 to 74 years, 18% of men and 20% of women aged 75 years and over met the “5 A Day” recommendation. There were no significant differences in the proportion meeting the 5 A Day recommendation between years 7 and 8 (combined) compared with years 1 and 2 (combined) for any age-sex group.

The mean daily intake of oily fish indicated that its consumption in both older age groups was below the recommended portion (140 g) per week.

The mean consumption of red and processed meat for men aged 75 years and over (66 g), women aged 65 to 74 years (54 g) and 75 years and over (43 g) met the current recommendation that adult average intakes should not exceed 70 g per day. However, mean consumption for men aged 65 to 74 years (73 g) exceeded the recommendation.

Mean intake of trans fatty acids provided 0.5–0.7% of food energy for all age/sex groups, and thus met the recommendation (no more than 2% food energy).

Red blood cell folate concentration below the WHO clinical threshold indicating risk of anemia (305 nmol/L) was found in 15% of boys aged 11 to 18 years, 28% of girls aged 11 to 18 years, 11% of women aged 19 to 64 years, 14% of men aged 65 years and over, and 10% of women aged 65 years and over. Serum folate concentration below the WHO clinical threshold indicating possible deficiency (13 nmol/L) was found in 16% of children aged 4 to 10 years, 49% of boys aged 11 to 18 years, 73% of girls aged 11 to 18 years, 46% of men aged 19 to 64 years, 45% of women aged 19 to 64 years, 38% of men aged 65 years and over and 27% of women aged 65 years and over. This includes 9% of boys aged 11 to 18 years, 12% of girls aged 11 to 18 years, 8% of men aged 19 to 64 years and 11% of women aged 19 to 64 years who had a serum folate concentration below the WHO clinical threshold for folate deficiency (7 nmol/L).

According to [Garduño-Díaz and Khokhar \(2013b\)](#), Caucasians in the UK have an overall higher diet quality than ethnic minority groups. Between African-Caribbean, South Asian and Caucasian ethnic groups in the UK, there are significant differences in the individual components of the diet, specifically for dairy product and breakfast consumption, type of fat used for cooking and regular physical activity. Results from a UK study of diet quality comparison between ethnic and mainstream populations are comparable with those obtained by [Gao et al. \(2008\)](#) where Caucasians scored higher on overall dietary quality than minority ethnic groups in the United States. However, results are contradictory to those of [Nicolau et al. \(2006\)](#) comparing Surinamese and Dutch populations in The Netherlands, where the former scored higher on overall diet quality.

When compared with Caucasians, minority ethnic groups in the UK tend to consume more dairy products ([Garduño-Díaz and Khokhar, 2013b](#)). These findings differ from other studies where milk consumption was found to be lower among African-Americans than for Caucasian-Americans ([Gao et al., 2008](#)). Regular dairy consumption has been associated to lower risk of osteoporosis, hypertension, obesity and type 2 diabetes ([Choi et al., 2005](#)). However, full fat versions of milk and dairy products contain high quantities of saturated fat; hence recommendations for their consumption should be distinguished from reduced-fat versions.

Among minority ethnic groups in the UK, oil is used most often for cooking among Caucasians, while African-Caribbeans prefer hard fats, including butter and margarine. Fat-rich diets tend to be more flavorful; however, they are also usually higher in energy content. Although dietary recommendations for a reduced intake of total fat exist, attention must be emphasized on the type of fats that are being consumed. The difference in the choice of fat used for cooking may be a significant factor on the overall diet quality and disease prevalence between ethnic minority groups.

Similarly, in the UK, regular breakfast consumption is most frequent among Caucasians and less frequent for African-Caribbeans. It has been long concluded and accepted that regular breakfast consumption greatly enhances the overall diet quality ([Morgan et al., 1986](#)).

The intake of fruits and vegetables, being important sources of vitamins and minerals as well as fiber and phytochemicals, is a component frequently used in various diet indices describing overall diet quality as their intake is found to be inversely-correlated with risk of chronic disease (Antony and Visweswara Rao, 2007). The results by Garduño-Díaz and Khokhar (2013b) show no significant difference between ethnic groups in the UK for fruit and vegetable consumption, although there was a slightly higher intake of fruits and vegetables among the African-Caribbean group; this confirms previously reported results where African-Caribbeans consumed more fruit and green vegetables than their British counterparts (Sharma et al., 1999). The lack of significant difference in fruit and vegetable intake between ethnic groups in the UK may suggest the possibility to rule out this factor as a significant contributor to the difference in prevalence of chronic diseases across the various population groups.

Although overall diet quality did not differ greatly across ethnic groups, the differences found in the components of the diet stand out as key aspects to address when planning public health campaigns aimed at reducing the incidence of diet-related non-communicable diseases in both the mainstream and ethnic population of the UK.

Summary

Food reflects everything; it is a microcosm of what is going on at the time. Migrants from the Indian subcontinent comprise the largest minority group in the UK. With the process of migration come alterations in lifestyle and eating habits (Garduño-Díaz et al., 2014). Lack of food composition data, recipe information and portion sizes for ethnic foods are commonly reported problems for dietary assessment of ethnic minority groups. Among ethnic minority groups in the UK, typical adult South Asian diets included traditional cereals (*chapatti*, rice and *paratha*) and low consumption of meat dishes; with vegetable curries contributing most towards energy intake (Khokhar et al., 2013).

Reliable data on the composition of foods is needed to better understand individual diets, measure nutrient intakes and provide nutritional guidance for improving the health of the populations. Ethnic foods are becoming increasingly popular among all European consumers, and are the main source of nutrients in the diets of ethnic groups. However, there is limited information on the nutrient composition of ethnic foods in Europe (Khokhar et al., 2010).

Prevalence rates of diet-related diseases are increasing worldwide. Ethnic groups suffer from similar diet-related diseases that are common in the mainstream population, including obesity, cardiovascular disease and diabetes, but the risk has been reported to be higher in immigrants as compared with the host population. For instance, African Caribbeans living in the United Kingdom are three times more likely (Sproston and Mindell, 2004) and South Asians resident in the United Kingdom are five times more likely (Cleland and Sattar, 2006) to suffer from diabetes than are Caucasians. Changes in dietary patterns are important determinants of health outcomes because of resultant

changes in nutrient intakes, including energy, fat and other essential nutrients (Gilbert and Khokhar, 2008).

Many ethnic foods are consumed because of perceived or real health benefits, including the medicinal effect of herbs and spices and presence of bioactive compounds. This emphasizes the need for a more rigorous understanding of diet-related health effects. The importance of ethnic foods is increasingly being recognized by nutrition researchers and health professionals across Europe and the United States of America, as the popularity of such foods grows and evidence emerges about potential nutritional benefits or otherwise.

Future outlook

We are losing our relationship to traditional food. It has also been suggested that food intake habits of immigrant groups are likely to become less favorable as healthy dietary components of traditional diets are replaced by less-healthy and readily- available processed foods (Gilbert and Khokhar, 2008).

Health inequalities experienced by minority ethnic populations in the UK will, in part, be affected by dietary differences (Chowbey and Harrop, 2016). Information on dietary habits of ethnic groups and the composition of the food that they consume is important so that targeted dietary advice can be given to vulnerable groups. Validated instruments for groups with specific customary eating practices (e.g., shared dishes, eating from hand) are particularly needed (Almiron-Roig et al., 2017). There is also interest in the composition of ethnic foods in terms of the presence of bioactive compounds with putative health benefits. In addition, the multicultural nature of European populations, together with increased travel and the globalization of the food supply, has led to an increase in the consumption of ethnic-style foods by the mainstream population.

Sustainable diets

The overlap between what people are told is a healthy way of eating and what can be sustainably produced is not there. It is a contradiction to recommend one way of eating and a different way of food production. The aim of public health expert bodies ought to be to match up these two messages: to recommend a diet that will be both good for human health and for environmental sustainability. For this reason, current dietary guidelines need to be revised. Brazil is leading the way with meal-based recommendations considering the social and environmental aspect of dietary guidelines. New guidelines ought to be designed to be part of a larger, collaborative effort, involving improved public policies, the promotion of healthy environments, and targeted health services to support overall wellbeing. While there is not a single definition of a sustainable diet, because food production is not the same around the world, the principles behind the concept can be highlighted including: being protective and respectful of biodiversity and ecosystems,

culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources. This in turn will help fuel food and nutrition security, making food available, accessible and safe for people to meet their daily needs in a way that is socially acceptable. The first step in matching up dietary recommendations and sustainable diets is to revise and improve existing recommendations. Overall attention to the sustainability aspect of suggested dietary recommendations is lacking. Suggestions on how to improve dietary sustainability must consider regional differences in nutrient prioritization, agricultural practices, climate variations, economic and social requirements. While each country will need to develop tailored recommendations, general guidelines may be set as a starting point as long as consideration is given to the ever growing ethnic minority groups that populate European territories as is the case of South Asians in the United Kingdom.

References

- Almiron-Roig, E., Aitken, A., Galloway, C., Ellahi, B., 2017. Dietary assessment in minority ethnic groups: a systematic review of instruments for portion-size estimation in the United Kingdom. *Nutr. Rev.* 75 (3), 188–213.
- Antony, G.M., Visweswara Rao, K., 2007. A composite index to explain variations in poverty, health, nutritional status and standard of living: use of multivariate statistical methods. *Public Health* 121, 578–587.
- Barrow, M., 2013. British Life and Culture. Special Events. Available from, <http://www.projectbritain.com/easter/foods.html>. (Accessed 13 March 2019).
- Benelam, B., Stanner, S., 2015. Development of a methodology to assess the nutrient profile of popular UK meals. *Nutr. Bull.* 40 (4), 315–325.
- Caraher, M., Lloyd, S., 2010. Fish and Chips with a Side Order of Trans Fat: The Nutrition Implications of Eating from Fastfood Outlets: A Report on Eating out in East London.
- Centraal Bureau Voor De Statistiek, 2005. StatLine. Available at: <http://statline.cbs.nl/StatWeb/Start.asp?lp=Search/Search&LA=NL&DM=SNLN>. (Accessed 2 June 2018).
- Choi, H.K., Willett, W.C., Stampfer, M.J., Rimm, E., Hu, F.B., 2005. Dairy consumption and risk of type 2 diabetes mellitus in men: a prospective study. *Arch. Intern. Med.* 165, 997–1003.
- Chowbey, P., Harrop, D., 2016. Healthy Eating in UK Minority Ethnic Households: Influences and Way Forward. Discussion Paper, Race Equality Foundation.
- Church, S., Gilbert, P., Khokhar, S., 2005. Synthesis Report No. 3. Ethnic Groups and Foods in Europe. EuroFIR. Available upon request.
- Cleland, S.J., Sattar, N., 2006. Does Rimonabant pull its weight for type 2 diabetes? *Lancet* 368, 1632–1634.
- Department for Environment, Food and Rural Affairs, 2016. Agriculture in the United Kingdom. Annual report 2016. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672119/AUK-2016-08jan18.pdf. (Accessed 30 April 2018).
- Department of Health, 1991. Dietary Reference Values for Food Energy and Nutrients for the United Kingdom. Report on Health and Social Subjects, No. 41, HMSO, London.
- Dickson Wright, C., 2011. *A History of English Food*. Random House Editors, England.
- Food Standards Agency, 2010. Healthy Diet. 8 Tips for Eating Well. Available from: <http://www.eatwell.gov.uk/healthydiet/eighttipssection/8tips/>. (Accessed 16 May 2018).
- Gao, S.K., Beresford, S.A.A., Frank, L.L., Schreiner, P.J., Burke, J.L., Fitzpatrick, A.L., 2008. Modifications to the healthy eating index and its ability to predict obesity: the multi-ethnic study of atherosclerosis. *Am. J. Clin. Nutr.* 88, 64–69.
- Garduño-Díaz, S.D., Husain, W., Ashkanani, F., Khokhar, S., 2014. Meeting challenges related to the dietary assessment of ethnic minority populations. *J. Hum. Nutr. Diet.* 27 (4), 358–366.

- Garduño-Díaz, S.D., Khokhar, S., 2013a. South Asian dietary patterns and their association with risk factors for the metabolic syndrome. *J. Hum. Nutr. Diet.* 26 (2), 145–155.
- Garduño-Díaz, S.D., Khokhar, S., 2013b. Assessment and comparison of diet quality and physical activity of African-Caribbean, south Asian and Caucasian groups in the UK. *Int. J. Food Sci. Nutr. Diet.* 2 (5), 45–50.
- Gilbert, P., Khokhar, S., 2008. Changing dietary habits of ethnic groups in Europe and implications for health. *Nutr. Rev.* 66 (4), 203–215.
- Instituto Nacional de Estadística, 2006. Spain in Figures. Available at: <http://www.ine.es>. (Accessed 12 June 2018).
- Khokhar, S., Ashkanani, F., Garduño-Díaz, S.D., Husain, W., 2013. Application of ethnic food composition data for understanding the diet and nutrition of South Asians in the UK. *Food Chem.* 140 (3), 436–442.
- Khokhar, S., Gilbert, P.A., Moyle, C.W.A., Carnovale, E., Shahar, D.R., Ngo, J., Bellemans, M., 2009. Harmonised procedures for producing new data on the nutritional composition of ethnic foods. *Food Chem.* 113 (3), 816–824.
- Khokhar, S., Marletta, L., Shahar, D.R., Farre, R., Ireland, J.D., Jansen-van der Vliet, M., De Henauw, S., Finglas, P., 2010. New food composition data on selected ethnic foods consumed in Europe. *Eur. J. Clin. Nutr.* 64, S82–S87.
- Kwon, D.Y., 2015. What is ethnic food? *J. Ethnic Foods.* 2 (1). Available from, [https://www.journalofethnicfoods.net/article/S2352-6181\(15\)00002-5/pdf](https://www.journalofethnicfoods.net/article/S2352-6181(15)00002-5/pdf). (Accessed 26 April 2018).
- Longmate, N., 1971. The kitchen. In: *How we Lived Then – A History of Everyday Life during the Second World War*. Random House.
- Morgan, K.J., Zabik, M.E., Stampley, G.L., 1986. The role of breakfast in diet adequacy of the U.S. adult population. *J. Am. Coll. Nutr.* 5, 551–563.
- National Diet and Nutrition Survey, 2018. Results from Years 7 and 8 (Combined) of the Rolling Programme (2014/2015 to 2015/2016). Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699241/NDNS_results_years_7_and_8.pdf. (Accessed 16 May 2018).
- Nicolau, M., van Dam, R.M., Stronks, K., 2006. Ethnicity, acculturation and education level in relation to quality of the diet: a study of Surinamese residents of the Netherlands. *J. Hum. Nutr. Diet.* 19, 383–393.
- Office for National Statistics, 2001. Census. <http://www.statistics.gov.uk/census/>. (Accessed 27 April 2018).
- Panayi, P., 2011. *Spicing up Britain*. Reaktion Books, London.
- Public Health Agency, 2010. Nutrition. Available from: <http://www.enjoyhealthy eating.info/primary-links/nutrition>. (Accessed 16 May 2018).
- Scottish Government, 2006. Dietary Targets. Available from: <http://www.scotland.gov.uk/Topics/Health/health/19133/17756>. (Accessed 16 May 2018).
- Sharma, S., Cade, J., Jackson, M., Mbanya, J.C., Chungong, S., Forrester, T., Bennett, F., Wilks, R., Balkau, B., Cruickshank, J.K., 1996. Development of food frequency questionnaires in three population samples of African origin from Cameroon, Jamaica and Caribbean migrants to the UK. *Eur. J. Clin. Nutr.* 50, 479–486.
- Sharma, S., Cade, J., Riste, L., Cruickshank, K., 1999. Nutrient intake trends among African-Caribbeans in Britain: a migrant population and its second generation. *Public Health Nutr.* 2, 469–476.
- Simmons, D., Williams, R., 1997. Dietary practices among Europeans and different South Asian groups in Coventry. *Br. J. Nutr.* 78, 5–14.
- Smith, Z., Knight, T., Sahota, P., Kernohan, E., Baker, M., 1993. Dietary patterns in Asian and Caucasian men in Bradford: differences and implications for nutrition education. *J. Hum. Nutr. Diet.* 6, 323–333.
- Spencer, C., 2011. *British Food: An Extraordinary Thousand Years of History*. Columbia University Press, New York.
- Sproston, K., Mindell, J., 2004. *Health Survey for England 2004, Volume 2: The Health of Minority Ethnic Groups*. The Information Centre.
- Statistics Bundesamt Deutschland, 2004. German Central Register on Foreigners. Available at: <http://destatis.de/basis/e/bevoetab10.html>. (Accessed 24 June 2018).
- Statistics UK Census, 2018. Available at: <http://www.statistics.gov.uk/cci>. (Accessed 24 June 2018).

- Tribalat, M., 2004. Integration des Populations d'origine _etrangere. Groupe X-Demographie-Economie-Population 2004. Available at: <http://xdep.polytechnique.org/tribalat04.html>. (Accessed 28 June 2018).
- Trueman, C.M., 2015. Dried eggs. Available from, <https://www.historylearningsite.co.uk/world-war-two/world-war-two-in-western-europe/britains-home-front-in-world-war-two/dried-eggs/>. (Accessed 9 February 2019).
- Vasileva, K., 2011. Population and Social Conditions. Eurostat Statistics in Focus 34/2011. Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-034/EN/KS-SF11-034-EN.PDF. (Accessed 13 June 2018).
- Weichselbaum, E., Benelam, B., Soares Costa, H., 2009. Traditional Foods in Europe. EuroFIR Project, Norwich. Available upon request.
- Wharton, P.A., Eaton, P.M., Day, K.C., 1983. Sorrento Asian food tables: food tables, recipes and customs of mothers attending Sorrento maternity hospital, Birmingham, England. *Hum. Nutr. Appl. Nutr.* 37A, 378–402.
- Zweiniger-Bargielowska, I., 2002. *Austerity in Britain: Rationing, Controls and Consumption, 1939–1955*. Oxford University Press, Oxford.