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Synthesis report No 3:

Ethnic Groups and Foods in Europe

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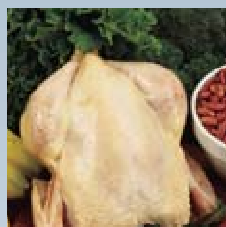

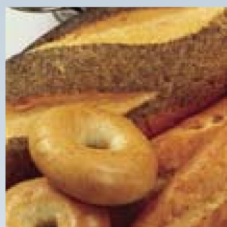

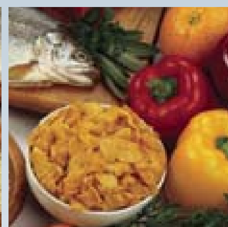

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1. Introduction and definitions

The term 'ethnic groups' can be used to refer to people of the same race or nationality with a 'long shared history and a distinct culture' (ESRC 2005). Membership of any ethnic group can be based on a combination of categories, including country of birth, nationality, language spoken at home, parents' country of birth in conjunction with country of birth, skin colour, national/geographic origin, racial group and religion (National Statistics 2003).

Ethnic groups form a significant part of the population in European countries and the ethnic minority population in Europe is increasing. Inequalities in health status of many ethnic minority populations compared with the general population have been widely reported, together with differences between individual ethnic minority groups. Contributory factors might include genetic susceptibility and poor socioeconomic status as well as lifestyle factors, including diet.

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. 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 globalisation of the food supply, has led to an increase in the consumption of ethnic-style foods by the mainstream population. The composition of these ethnic-style foods, referred to as 'modified ethnic foods' in this report (see definitions below), is therefore also of interest.

Definitions

The following working definitions for ethnic and modified ethnic foods have been developed within the EuroFIR workpackage on ethnic foods (see section 7):

Ethnic food: food from countries other than the home market contributing to a different food culture than the traditional cuisine of the host country. The food may be adapted by combining local and imported ingredients and is prepared at home.

Modified ethnic food: a commercially-available version of a food that has been modified to suit the taste and preference of the host country. Food may be adapted by combining local and imported ingredients.

Source: http://www.eurofir.net

This report:

- outlines some of the main ethnic groups in Europe, together with their size and significance;
- describes the features of selected ethnic diets, in terms of foods consumed and traditional methods of cooking and preparation;
- discusses the health status of ethnic groups;
- summarises the market for modified ethnic foods;
- discusses the availability of and need for food composition data on ethnic foods;
- outlines work being undertaken on ethnic foods within the EuroFIR network.

2. Size and significance of ethnic groups in Europe

This section summarises available data on the size and type of ethnic groups in selected European countries, i.e. those participating in the ethnic foods workpackage within EuroFIR (www.eurofir.net see section 7).

Belgium

Before the 1960s, most migrants to Belgium were Europeans, needed for manual labour; the majority of immigrants are still from Europe. In the 1960s, people arrived from Morocco and Turkey, followed by Africa after the independence of Zaire. In 2005, immigrants accounted for about 8.3% of the population and recent data suggest that there are over 1 million immigrants (Department of Federal Immigration Belgium, 2006), excluding those who have become Belgian nationals.

Most immigrants are from the EU, especially Italy, France and the Netherlands. Of the non-EU immigrants, most come from Morocco (8.1% of immigrants), Turkey (4.1%) or the Democratic Republic of Congo (2.1%) (Department of Federal Immigration Belgium, 2006).

Denmark

In 2005, immigrants (6.5%) and their descendants (2.0%) comprised 8.5% of the total Danish population (463,235 persons); more than half of these originated from a European country. The majority were from Turkey, Germany or Iraq. However, a substantial number came from Norway, Sweden, Lebanon, Bosnia-Herzegovina, Pakistan, Iran or Somalia (Statistics Denmark, 2006).

Table 1: Examples of the distribution of ethnic groups in Denmark, 1 January 2006

Country	Number (in thousands)
Turkey	55.6
Iraq	26.9
Lebanon	22.5
Bosnia-Herzegovina	21.0
Pakistan	19.3
Ex-Yugoslavia	17.4
Somalia	16.6
Iran	14.4
Vietnam	12.9
Afghanistan	11.2

Source: Statistics Denmark (2006)

France

France has a long tradition of receiving immigrants, although the rate has now slowed. In 1999, there were 4.3 million immigrants in France, comprising 7.4% of the total population (Tribalat, 2004). About 14 million people (23% of the total population) could be described as of 'foreign origin' (i.e. immigrants, first generation immigrants with at least one immigrant relative, or second generation immigrants with at least one immigrant grandparent). The distribution of these is shown in table 2.

Table 2: Population of foreign origin in France, 1999

Origin	Number (in thousands)			
	Immigrants	1st generation	2nd generation	Total
Maghreb[1]	1300	1430	270	3000
Other Africa[2]	390	290	-	680
Turkey	170	150	-	320
Southern Europe[3]	1270	2080	1820	5170
Other EU (15)	360	650	790	1800
Rest of world, especially Asia[4]	810	940	760	2510
Total	4310	5530	3640	13480

[1] Algeria (53%), Morocco (33%), Tunisia (14%)

[2] Senegal, Mali, Ivory Coast, Cameroon

[3] Italy, Spain, Portugal

[4] there are an estimated 450,000 persons of Chinese origin in France

Source: Tribalat (2004)

Israel

During the twentieth century, Jews from Europe, Asia, Africa and America emigrated to Israel, each group bringing their own traditional and cultural foods. Newly published statistics indicate that, of the Jewish population in Israel in 2005, only 34.4% were born in Israel. Of the remainder, 13.0% were born in, or had a father born in, Asia, 16.1% in Africa and 36.5% in Europe-America (Central Bureau of Statistics 2006).

The diversity of the Jewish population in Israel is illustrated in table 3 (adapted from Central Bureau of Statistics 2003).

Table 3: Jewish population by country of origin, 2003

Country of birth	Percent of the Jewish population
Asia – total *of which:*	**12.8%**
Turkey	11.4%
Iraq	34.4%
Yemen	20.4%
Iran	19.3%
India and Pakistan	6.5%
Syria and Lebanon	5.1%
Other	2.6%
Africa – total *of which:*	**15.7%**
Morocco	57.3%
Algeria and Tunisia	14.2%
Libya	8.1%
Egypt	6.7%
Ethiopia	11.3%
Other	2.3%
Europe and America *of which:*	**40.2%**
Former USSR	53.0%
Poland	9.8%
Romania	10.6%
Bulgaria and Greece	2.4%
Germany and Austria	3.6%
Czech Republic, Slovakia and Hungary	3.2%
France	2.4%
UK	1.6%
Europe, other	2.8%
North America	5.9%
Argentina	2.8%
Latin America	1.8%
Israel	**31.2%**

Although an Israeli culture has gradually developed that is a mixture of all groups, people from different countries of origin still tend to have their own habits (Shahar et al., 2003).

The Negev (South of Israel) is home for the Bedouin population as well as having a relatively high percentage of people from the former Soviet Union and Ethiopia. The Bedouins are a Moslem population in transition from a nomadic to a settled lifestyle; they have their own culture and a low socio-economic status (Cohen et al., 2005).

Italy

At the end of 2005, it was estimated that there were 3.0 million immigrants in Italy (approximately 5% of the total population), compared with 144,000 in 1970. Of these, most (48.8%) are from Europe, with the remainder from Africa (23.1%), Asia (17.4%), America (10.6%) and Oceania (0.1%) (Caritas/Migrantes 2006). The same source indicates that most of these people live in Northern Italy (59.5%) and Central Italy (27.0%); of the remainder 9.8% reside in Southern Italy and 3.6% in the Islands.

It is difficult to identify a prevailing ethnic community, as this changes with time and varies by region. However, based on 2005 data, the largest ethnic group is from Romania (11.9%), followed by Albania (11.5%), Morocco (10.3%), Ukraine (5.2%), China (4.9%), The Philippines (3.4%), India (2.3%), Peru (2.2%) and Ecuador (2.1%) (Caritas/Migrantes 2006).

The Netherlands

Like many others, the Dutch population is becoming more multicultural, with a total ethnic population of over 3 million (CBS, 2005). The largest ethnic groups are currently from Surinam, Morocco and Turkey (Table 4).

Table 4: Ethnic population groups in the Netherlands, 2005 (CBS, 2005)

Population group	**Number (in thousands)**
Non-Western immigrants, *of which:*	1696
Africa	194
Asia	302
Latin America	68
Morocco	315
Netherlands Antilles and Aruba	130
Surinam	328
Turkey	358
Western immigrants, *of which:*	1422
EU	822
Other Europe	135
Indonesia	395
Other, non-European	69
Total ethnic population	3118

Spain

According to census data, the ethnic population in Spain in 2005 was just over 3.7 million, about 8.5% of the total population (Instituto Nacional de Estadistica 2006). Owing to similarities in language and some cultural traits, as well as special agreements with a number of South and Central American countries, a greater number of Latin Americans relocate to Spain compared with other European countries, and Latin Americans make up the largest ethnic group in Spain.

In terms of individual countries of origin, the largest ethnic group in 2005 was from Morocco (13.7%), followed by Ecuador (13.3%), Romania (8.5%) Colombia (7.3%), and the UK (6.1%). Argentina, Bolivia and Peru together provided a further 9% of the immigrant population. About 75% of the total immigrant population reside in only five of the 17 Autonomous

Communities (Madrid, Catalunya, Comunidad Valenciana, Andalucia and the Canary Islands).

United Kingdom

The UK is a diverse society with a long history of immigration, and it has become increasingly multicultural in the last fifty years. In the 2001 Census, about 7 per cent (4.6 million people) described themselves as belonging to non-white ethnic minority groups, compared with 3.0 million people in the 1991 census. The main ethnic minority groups are Indian, Pakistani, mixed ethnic backgrounds, Black Caribbean and Black African (Table 5).

Table 5: The UK population by ethnic group, April 2001

	Total population		**Minority ethnic population**
	Count '000'	**Percentage**	**Percentage**
White	54154	92.1	n/a
Mixed	677	1.2	14.6
Asian or Asian British			
Indian	1053	1.8	22.7
Pakistani	747	1.3	16.1
Bangladeshi	283	0.5	6.1
Other Asian	248	0.4	5.3
Black or Black British			
Black Caribbean	566	1.0	12.2
Black African	485	0.8	10.5
Black Other	98	0.2	2.1
Chinese	247	0.4	5.3
Other	231	0.4	5.0
All minority ethnic population	4635	7.9	100
All population	58789	100	n/a

Source: ONS (2001)

According to Census data (ONS 2001), in 2001 nearly half of the total UK ethnic minority population (45%) lived in the London region, while 13% lived in the West Midlands, 8% in the South East of England, 8% in the North West, and 7% in Yorkshire and the Humber. People from minority ethnic groups, and particularly Pakistanis and Bangladeshis, were more likely than white people to live in low-income households. Minority ethnic groups in the UK also have a younger age structure than the white population; this reflects both past immigration and the timing and number of births.

3. Features of ethnic diets (foods consumed and traditional methods of cooking and preparation)

There are many factors affecting food availability and preparation methods in ethnic groups (Khokhar et al. 2001), including:

- acculturation;
- age;
- convenience of food preparation;
- cost of food (traditional, non-traditional, imported);
- country/island/region of origin;
- customs and dietary beliefs;
- education;
- festivals, special occasions;
- food availability (seasonal);
- guests;
- health advice;
- religion (Christian, Rastafarian, Hindu, Muslim, Sikh);
- literacy level;
- language;
- gender;
- socio-economic status.

This section outlines some of the main features of some of the traditional ethnic diets, in terms of foods consumed and traditional methods of cooking and preparation. Where appropriate, some of the modifications to dietary habits seen in immigrant populations are mentioned.

South Asian

The term South Asian is usually used to refer to people from the Indian sub-continent. Within EuroFIR, foods consumed by South Asians living in the UK are under consideration and Asian foods consumed in France have also been prioritised for investigation (see Section 7). 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). Dietary and food preparation practices vary according to both place of origin and religion, but are summarised below (Table 6). Dietary practices specific to Gujaratis have been described elsewhere (Abraham, 1982) as has sub-ethnic variation in diet (Wharton et al. 1984; Thomas 2001).

Table 6: Food choices and food preparation practices of South Asians

Cereals:

- Asian meals are usually cereal-based with side dishes rather than being meat- or fish-based;
- chapattis (roti) are the main type of Indian bread, made from unleavened dough and often spread with oil or butter. The thickness and size vary according to the region of origin;
- parathas use the same dough as chapattis but the ghee or butter is often layered and they are shallow fried;
- other breads include puris, which are deep-fried; batura, also deep fried but larger and thicker than puris; and naan bread;

- rice is usually consumed boiled, although pilau (fried) rice may be consumed at weekends and on special occasions.

Meat, fish and alternatives:

- 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;
- fish, even if permitted, is not usually a major part of the diet, although it is more popular amongst Bangladeshis;
- pulses are a common component of South Asian cuisine, and include: moong, urad, toor, masur, channa, chick peas, black-eyed beans, and kidney beans.

Vegetables and fruit:

- common vegetables include: aubergines, bitter gourds (karela), valor (beans), okra, courgettes, dodi, spinach and cauliflower;
- 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;

- traditional fruits include mango, papaya, jack fruit, passion fruit, melon and custard pears, but fruits commonly available in the host country are likely to be consumed.

Dairy products:

- full-fat, rather than reduced-fat, milk is common;
- yoghurt is often served as an accompaniment to main meals;
- home-made curd cheese (paneer) is normally made from full-fat milk and often fried before consumption.

Other foods:

- fried snacks such as samosa, chevda, ganthia, sev, pakora and bhajia are common;
- Indian sweetmeats (e.g. burfi, halwa, jalebi, ladoo and gulab jaman), which are high in energy, are served on special occasions;
- pickles and chutneys, which are typically oily, salty or sweet, often accompany main-course dishes;
- spices are used individually or in specific combinations;
- tea consumed by Asian families is usually prepared by boiling water, milk, sugar and tea in quantities sufficient for the whole family (half milk, half water).

Cooking practices:

- commonest cooking methods include frying, deep-frying, or combining in the form of a curry;
- multi-ingredient recipes are usually cooked in a communal (one) pot;

- there is considerable variation in recipes, fat content and portion sizes of dishes between individuals and 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 & Williams 1983);
- curries are often reheated and eaten the next day (Wharton et al. 1983);
- 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).

Main sources (unless specified): Thomas (2001); Khokhar et al. (2001).

Anderson and Lean (1995) reported a move towards using healthier foods in a sample of South Asian migrant women in Glasgow, UK, with some people abstaining from using ghee/vegetable ghee and reducing their consumption of Asian tea. This might lead to increased variations in recipe composition within the community.

In addition to traditional food preparation practices, South Asians have adopted many cooking methods and foods as a consequence of acculturation to the host society (Simmons & Williams, 1997). There may be a tendency to replace healthier components of the Asian diet (e.g. fruits, vegetables and starchy cereal foods) with less desirable components of the Western diet (e.g. high-fat convenience and snack foods).

For example, in a study of South Asian groups in Coventry, UK, most South Asians ate Indian sweets and Western snacks. They consumed English high-fat foods (e.g. chips, crisps, cakes) and regularly consumed English meals. Crisps, ice cream, chips and fizzy drinks were also popular amongst a sample of Asian pregnant women in Birmingham, UK (Wharton et al., 1983). Jamal (1998) reported that the young generation of British-Pakistanis is increasingly consuming mainstream English foods while also retaining traditional Pakistani food in their diets. There is also a tendency towards consuming UK-style breakfasts (Wyke & Landman, 1997; Wharton et al. 1983).

In contrast to other research, a study of young (3 year old) children found few dietary differences between children born to first- and second-generation Pakistani Muslim mothers (Parsons et al. 1999). Most children consumed traditional foods, with the main changes occurring in the areas of drinks and snacks. Possible reasons include the cohesive nature of the Pakistani community or because all young children may be subject to similar dietary and cultural expectations and pressures.

A study of the dietary habits of Asian manual workers in Bradford, UK, also reported that the men still followed a traditional pattern, with main meals comprising curry eaten with chapattis or, less frequently, rice (Smith et al. 1993). A survey of health and lifestyles amongst black and ethnic minority ethnic groups in England also reported that traditional foods constituted a major component of diets eaten at home by South Asians, although eating traditional foods away from home was less common (Johnson et al. 2000).

African

The three Maghreb countries (Algeria, Tunisia and Morocco) form an important part of the ethnic population in France. The cuisine is characterised by cooked, spiced, aromatic dishes containing fatty meats (e.g. sheep), semolina, vegetables and legumes. Typical dishes include

tagines (of lamb, veal, chicken or fish with almonds, prunes, chick pea, vegetables, olives, etc) and keftas (meat or fish balls with herbs and spices).

Mutton or lamb is the most popular meat, but veal, poultry and fish are also consumed. Couscous (wheat semolina) is the cereal product that dominates Maghrebi cuisine and is the main accompaniment to traditional dishes. The main legumes consumed are broad beans, chickpeas and lentils, while the vegetables are those usually consumed in France, with the addition of okra. The major fats and oils used include olive oil, peanut oil, butter and ghee. Dairy products are consumed in the form of milk, fermented milks and cheese spread. Fermented milk products include: laban (made from whole milk with lactic fermentation at room temperature); lben (fermented partially or completely skimmed milk), and kefir (a naturally carbonated and slightly alcoholic fermented milk) (www.novodiet.com).

A study of ethnic groups living in France from Italy, Spain, Portugal and Maghreb reported lower consumption of meat and dairy products and higher consumption of starchy foods and dried vegetables compared with the native French population (Wanner et al. 1995)

A comparative study in Brussels, of ethnic groups from Turkey, Morocco and the Democratic Republic of Congo reported that Congolese immigrants consumed less complex carbohydrates, fruit, vegetables, fat, meat and alcohol, but more fish and starch compared with the Belgian population. Moroccan and Turkish groups consumed more fruit, vegetables and grains and less fat and meat
(http://homepages.ulb.ac.be/~aleveque/epitraumac/nutrition.htm#Nutrition).

African-Caribbeans

The term African-Caribbean group refers to people of African descent who come from the Caribbean islands (West Indies), many of whom moved to the UK in the latter half of the 20th century and now comprise a major ethnic group in that country. West Indians in the UK are generally Creoles, people predominantly of African descent, whose ancestors settled in Montserrat, Jamaica and Barbados (Carlson et al. 1983). A sub-group, Rastafarians have specific dietary habits, which have been described elsewhere (Springer & Thomas 1983).

There is a wide variation in dietary and food preparation practices amongst African-Caribbeans. However, in general, the basis of the Caribbean diet is cereals (rice, corn, wheat) and starchy vegetables. One-pot dishes in which starchy vegetables, such as cassava, dasheen, yams, green bananas, breadfruit or plantain, are added to a highly flavoured soup base, are commonly consumed (Carlson et al. 1983).

The main features of the cuisine of African-Caribbean populations are summarised below (Table 7). Traditional foods eaten by African-Caribbeans are also described in more detail elsewhere (Sharma & Cruickshank 2001).

Table 7: Food choices and food preparation practices of African-Caribbeans

Starchy foods:

- generally form the main part of the diet;
- primarily consist of rice, corn and cornmeal, oats and wheat-based foods;
- starchy fruits (e.g. green bananas, plantain, breadfruit), roots and tubers (e.g. cassava, yam, sweet potato, dasheen, coco yam) are also an important part of the meal. They are usually peeled and boiled like potatoes or mashed, creamed, baked, boiled, roasted or fried.

Fruits and vegetables:

- vegetables (e.g. callaloo (spinach), kale, peppers, karela and carrots) are often used in soups, stews and one-pot meals;
- other vegetables commonly consumed include sweetcorn, okra, cabbage, tomato, aubergine, pumpkin and cho cho (christophene).

Meat, fish and alternatives:

- popular fish include snapper, red bream, red mullet, mackerel and canned fish as well as salted fish;
- pulses are commonly used, and peas and beans are commonly cooked with rice and coconut milk (rice 'n' peas) or added to stews and one-pot meals.

Other foods:

- traditionally, condensed and evaporated milks are used in preference to fresh milk;
- sweetened foods and beverages are popular;
- hot sauces, hot peppers and other condiments may be used at the table to flavour prepared dishes;
- herbal teas are commonly consumed.

Cooking practices:

- food preparation methods include grilling, boiling, poaching, frying, barbecuing, baking, braising, and stewing;

- one-pot dishes (all ingredients in one large pot) are commonly prepared and it is common practice to add water and extra ingredients to complex stews and soups throughout the cooking and reheating process;
- all meat and fish is seasoned before cooking and a combination of cooking methods is used in preparing dishes (e.g. meat first fried then stewed).

Main sources: Thomas (2001); Khokhar et al. (2001).

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.

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.

Turks

The composition of foods consumed by Turkish communities is the focus of research by several EuroFIR partners (see section 7). A study of Turkish immigrants in the Netherlands reported that breakfast was typically bread (pide or somum), white cheese (Turk peyniri), olives, cooked eggs, jam and honey, and sometimes meat products (sucuk, which is a Turkish dry-fermented sausage, or salam (salami)). Lunch was usually a bread meal or warm dish (Hulshof et al. 1995).

Dinner might comprise:

- soups;
- meat-containing casseroles made of legumes, vegetables and potatoes (meat, onions and tomatoes principal ingredients);
- pilav (prepared from rice or bulghur);
- kofte (minced meat dish);
- pasta (makarna) or stuffed pasta (manti);
- sarma (Chinese cabbage leaves wrapped around a filling);
- borek (a dish made of thin layers of wheat-flour dough, interfilled with meat or cheese);
- lahmacun (pizza) and fried potatoes.

Accompaniments included: bread, salad, pickles (tursu), ayran (yoghurt drink), water or tea. Desserts might include yoghurt, fruit, compote or pastry, while typical snacks included nuts, seeds, biscuits and fruit.

Consumption of pulses, fruit, rice, cereal products and bread were higher in Turks than in Dutch people, while consumption of potatoes, vegetables and milk products (excluding cheese and butter) was lower in Turks. Mutton and ewe cheese were more important in the Turkish diet.

It has been suggested that Turkish people living in Sweden might adapt a traditional Turkish dinner by, for example, replacing vegetables with meat, and a yoghurt drink and fruits with fruit syrup and ice cream (Koctürk 1996).

Israel

During the twentieth century, Jewish people from Europe, Asia, Africa and America emigrated to Israel, each group bringing its own traditional and cultural foods. While an Israeli food culture evolved out of a merging of all groups, people from different countries of origin still maintain their unique culinary habits.

The population can be divided into two major categories: Sephardic Jews from Asia or Africa, and Ashkenazai Jews who came from Europe or the Americas. The eating patterns of these groups differ in several ways including the amounts consumed of particular items, ethnic foods and mixed dishes (Shahar et al. 2003).

A study of the dietary habits within the Negev population in Israel (i.e. the Southern part of Israel) reported that diets were quite heterogeneous with distinct patterns in groups of different origins. Each ethnic group was characterised by items that were not consumed by the other groups. For example, hummus and leben (buttermilk) were consumed by those born in Israel; alcoholic beverages and turkey breast were consumed by those originating from Asia and Africa; and chicken and milk were consumed by people originating from Europe and the Americas. In terms of nutrient intake, the main differences appeared to be in energy, calcium and vitamin E intakes (Shahar et al. 2003).

Bedouin Arabs in Southern Israel are a traditionally semi-nomadic/nomadic population undergoing a rapid process of urbanisation that is accompanied by rising chronic disease rates. For both urban and rural (more traditional) Bedouins, main meals rely heavily on traditional foods, but for snacks and drinks many manufactured products are used. Rural areas rely more on traditional milk products, which are produced in such a way to render them non-perishable. Urban populations use more meat products and ready-prepared meals because of the availability of electricity and refrigeration. Traditional foods and drink and the traditional way of eating (i.e. use of a common plate) is still a very important part of the Bedouin way of life. One of the greatest changes is the reliance on modern beverages, which are often high calorie but without much additional nutritional value (Fraser et al. 2001).

Ethiopians are another ethnic group present in Israel. The vast majority of these immigrants had been rural and subsistence farmers and craftsmen in remote highland areas of Ethiopia. The traditional Ethiopian diet consisted of unrefined flours, legumes, grains, beans, vegetables, minimal amounts of meat and few refined sugars and processed foods. Many of the traditional Ethiopian staples were unattainable in Israel and, on arrival, most immigrants, who were housed in special refugee centres, were served Israeli-style food. The traditional Ethiopian diet is based on a sour-dough pancake called injera, usually made from teff, an indigenous Ethiopian grain rich in protein, vitamins and iron. However, in Israel Ethopians had to produce this pancake from refined white flour (Levin-Zamir et al., 1993).

EuroFIR is investigating the composition of foods commonly consumed by a number of ethnic groups within Israel (see section 7).

Spain

Migrants into Spain are mainly from Latin American, African and Eastern European countries, and this has influenced the priorities adopted in EuroFIR (see Section 7). It has been reported that first and second generation immigrant children consume more fruit and vegetables, legumes, eggs but less fish and dairy produce compared with Spanish children (Montoya et al., 2003).

Traditional Latin American cuisine is varied, being a blend of foods and preparation styles of native Central and South Americans together with the culinary traditions of the Europeans who settled there.

In Spain, the predominant ethnic groups from Latin America come from Ecuador and Colombia. The cuisine in these two countries is based on products of vegetable origin such as tubers (yucca, yam, sweet potato and potato), vegetables and pulses. Rice is a staple food, which is present in almost all the meals, in contrast to Spanish cuisine, where bread is a staple. The orography in both countries is quite diverse, leading to many regional variations in food consumption. In the Andean zones of South America with their colder climate and higher altitudes, greater consumption of corn varieties (Ecuador) and potatoes and yucca (Ecuador and Colombia) as well as more energy dense meals are observed. In the coastal areas, rice and plantains predominate, as well as higher fish consumption compared with the interior mountain regions.

Women in Madrid who have migrated from South America often have demanding and irregular work schedules that interfere with their traditional role of child rearing and food preparation. This responsibility is by necessity shared with the partner, and sometimes even children take on the task of preparing the meals. The incorporation of easily prepared meals is also observed; for example, beef steak and salad for lunch instead of the traditional hearty soup, rice and beans. Traditional recipes are simplified

(less pulses, etc) and food is prepared in batches for a number of days. The latter practice is not usual in the countries of origin owing to a lack of adequate refrigeration and common power shortages. Preparing food just before it is served is the more common way of food preparation and consumption, but this changes upon living and working in Spain.

Fruit consumption in the countries of origin is much higher and there is more variety compared with that consumed in Spain. Owing to the prohibitive costs of commonly consumed tropical fruits that are imported into Spain, fruit consumption decreases (although it is still higher than the Spanish population). There is also a tradition of drinking fruit juices in Ecuador and Colombia owing to the lack of potable drinking water. In Ecuador colada (water from boiled oats mixed with fruit pulp) is commonly consumed with meals and considered very nutritious, being a common beverage for children. Once in Spain, water is often consumed with meals (as it is perceived to be free of contamination), but cola drinks and sugared fruit juices are also very popular, especially with children and young people.

The most striking differences and changes observed in these groups are as follows:

- The differences in timetables (Spanish eat meals at later times) and meal presentation (in Spain, the first and second courses are served separately followed by dessert; in the home country, an appetizer (usually soup) and then a rice dish accompanied by vegetables, starchy plant/root and small quantities of meat are served all at the same time).
- The generalised use of olive oil. In the countries of origin, blander oils such as cottonseed and corn are used. For salad dressings, these blander oils are mixed with lemon, in contrast to the Spanish stronger tasting oil and vinegar dressings.
- The absence of rice and soups (staple foods in both Ecuador and Colombia) in Spanish cuisine. The rice eating tradition is one of the

food customs that remains intact in these immigrant groups after their relocation to Spain. However, in the younger age groups the tradition of eating rice at meals (especially lunch) is being lost; the same is happening in those who are worried about excess weight gain (a common phenomenon in immigrant groups due to diet and lifestyle changes). Long grain rice is consumed in Ecuador and Colombia, whereas in Spain the short grain variety is more common. It was also observed that cooking time for rice was longer in the host countries, and although these ethnic groups liked paella, the texture was harder compared with rice dishes in the country of origin.

- Salads are readily accepted in the diets of these ethnic groups for their ease of preparation, although in the countries of origin their consumption was scarce owing to unhealthy drinking water and the lack of available/prohibitive cost of lettuce varieties. In Colombia, salad is considered a status food reserved only for the wealthy.
- Dairy product consumption is also increased. In both communities, it is consumed at breakfast, for snacks and even served as a dinner option.
- Preferred Spanish dishes included, for both groups: paella (with meat and not seafood for Ecuadorians), potato omelette, beef steak, pasta with tomato and meat sauce, salads and, for Ecuadorians, fried foods (tuna or meat patties, croquettes, etc.) (Public Health Institute of the Autonomous Community of Madrid, 2002).

In Central America, corn (often as tortillas) and beans tend to be the staple components, with chillies often providing the flavour base. Well-known dishes include tacos and enchiladas but there are many other typical dishes, including spicy stews (Pehanich, 2003). Although the Mexican population is less numerous in Spain, Mexican food is very popular and is commonly found at the commercial level as well as in restaurants (Alimarket, 2004).

The Bubis are the native ethnic group from the Island of Bioco (Equatorial Guinea), off the Cameroon coast, who have been emigrating to Spain for several decades, owing to former Spanish rule over this territory. The Bubis traditionally had a staple diet of yams, cocoyams, plantains and cassavas, but they have incorporated rice and dried fish into their habitual food intake, and their diet also included many fruits. However, Bubi immigrants in Madrid showed food and nutrient intakes closer to the prevalent diet in Madrid than to the diet of their native land, in a recent study (Gil et al., 2005).

Chinese

The Chinese communities in Europe are not a homogenous group, with migrants originating from across the regions of mainland China and from other countries. As might be expected, there is considerable variation in food choices and cuisines. For example, rice is a major component of the diet in the southern areas while wheat-based products are more common in the wheat-growing north.

The main regions of China and their cuisines can be summarised as follows (Khokhar et al. 2001; Thomas 2001):

North (Shandong, Henan, Beijing):

- steamed wheat rolls and dumplings, with or without fillings, are very popular;
- noodles and bread are commonly consumed;
- grilling meat and hot pot cooking (meat and vegetables cooked in a common pot of simmering broth at the table) are common;
- many dishes are also stir-fried.

East (Lower Yangtze, Fujian, Taiwan, Hainen Island, Fukien):

- noodles are more common than rice;
- soups, stews and meat stocks are very popular including ‘red cooking’ (stewing in stock with soya sauce);
- seafood dishes are commonly prepared.

West (Szechuan, Jiangxi, Hunan, Hubei and Yunnan):

- noodles and steamed bread are eaten in preference to rice;
- food is highly spiced with ginger, garlic, chillies and fermented soya products;
- a single dish may have many flavours, e.g. hot, sour and salty.

South (Guangzhou [Cantonese], Hakka):

- rice is a major dietary component;
- ingredients are generally stir-fried in small amounts of oil in a very hot pan;
- it is also common practice to prepare complex mixed dishes;
- dim sum (small snacks made from chopped meat, vegetables or seafood wrapped in wafer-thin pastry or dough) is traditionally eaten at breakfast and mid-afternoon.

Main methods of food preparation include boiling (soups, rice or chicken stock), steaming (finely cut meat or fish), stir-frying, shallow frying (usually fish), braising or stewing (used to tenderise meat), barbecuing (meat or poultry), and baking (cakes). Commonly a limited number of complex dishes are prepared and soup containing vegetables may be boiled for extended periods. There are no standard recipes for most dishes; almost any

combination of vegetables and meat can be a dish. There will therefore be considerable variation in the composition of dishes. All meat and seafood is cooked thoroughly before eating and surplus fats from cooking meat or poultry are usually skimmed off and discarded (Khokhar et al. 2001).

A study in France reported that dietary habits of the children of first generation Chinese immigrants are still traditional in terms of the late and very gradual introduction of a mixed diet (weaning) and the composition of meals (including few dairy products and fresh fruit). However, Westernisation of dietary habits was also seen, including reduced breastfeeding and high consumption of soft drinks (Roville-Sausse 2005).

A survey of the health and lifestyles of the Chinese population in England reported that over 80% of respondents ate traditional Chinese foods either ‘all of the time’ or ‘most of the time’ (Sproston et al. 1999). Although Chinese mothers may sometimes give British foods to their children, they consider Western processed pre-cooked foods less health-promoting compared with fresh foods and characteristic Chinese foods predominate, especially for the evening meal (Carlson et al. 1984).

Diets in immigrant children

Two Scandinavian studies have illustrated the negative changes that can occur in young people who emigrate to a new country. Immigrant children in Copenhagen, Denmark generally had less healthy dietary behaviour and less dietary knowledge than native children. The low diet scores in immigrant children were mainly due to high intakes of cakes and sweets. Possible explanations suggested are differences in cultural habits, an unaccustomed food supply in the new country, and language and economical problems (Osler & Tornberg Hansen 1993).

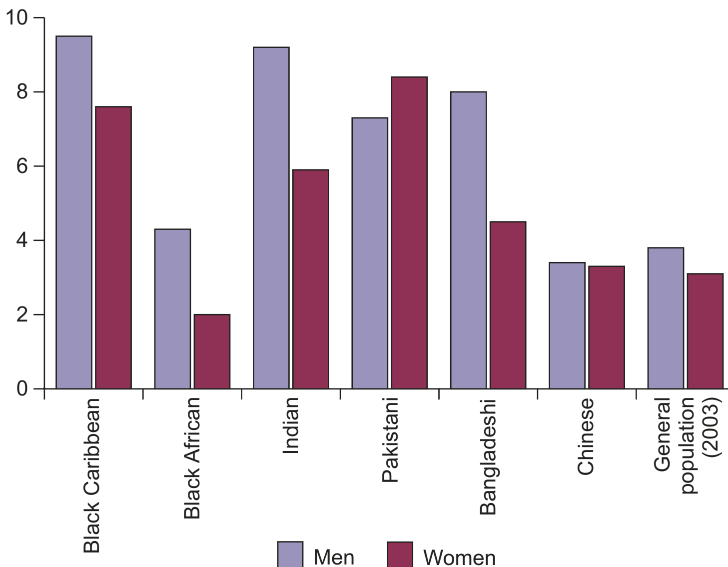
In a study of children aged 11-12 years in a suburb in Sweden with low socioeconomic status and a high proportion of immigrants and refugees, many of the children consumed large quantities of foods and drinks with a high sugar content, particularly sweet drinks. They also had low physical activity levels and 31% were obese or overweight (Magnusson et al. 2005)

4. Health status of ethnic groups

There are important differences in disease patterns amongst some ethnic minorities and the general population.

For example, in the UK, rates of coronary heart disease and non-insulin dependent diabetes (see Figure 1) are higher amongst South Asians, while hypertension and stroke are high among African-Caribbean and Bangladeshi populations (Sproston & Mindell 2006).

Figure 1: Prevalence of doctor-diagnosed type 2 diabetes, England, 2004



Source: adapted from Health Survey for England, 2004 (Sproston & Mindell 2006)

A study of the prevalence of diabetes mellitus and cardiovascular disease among Turkish and Moroccan ethnic groups in the Netherlands reported a higher prevalence of self-reported diabetes in the Turkish (12.3%) and Moroccan (12.4%) groups compared with the indigenous Dutch population (3.0%) (Dijkshoorn et al. 2003). Cardiovascular disease was also more prevalent among the Turks (10.6%), but not among the Moroccans (5.4%), compared with the indigenous Dutch population (5.0%). A systematic review of the prevalence of type 2 diabetes mellitus, other cardiovascular risk factors and cardiovascular disease in Turkish and Moroccan people living in North West Europe reported similar findings (Uitewaal et al. 2004). Diabetes mellitus was more prevalent in Turkish and Moroccan groups compared with the indigenous population.

The reasons for these inequalities are not clear-cut, with a range of biological, socioeconomic, cultural, lifestyle, and environmental factors suggested (Gervais & Rehman 2003). A UK review concluded that there is currently insufficient evidence to suggest why some former migrants but not others experience lower specific mortality compared with the general population (Landman & Cruickshank 2001). It has however been suggested that rapid transition of lifestyle in certain ethnic groups can have a significant impact on health, in particular the incidence of type 2 diabetes and atherothrombotic cardiovascular disease (see Stanner, 2005 for an overview). It has also been reported that the incidence of cardiovascular disease is accelerating dramatically in ethnic groups that have migrated from subsistence rural existence to Westernised urban environments (Cleland & Sattar 2004).

In addition, because of limitations in their diets, some ethnic groups are more prone to nutritional deficiency diseases, such as rickets, osteomalacia and iron deficiency anaemia (Wandel 1993). For example, rickets has been reported among immigrant children in the UK and other Northern European countries, while iron deficiency anaemia was reported to be the most common nutritional deficiency among immigrant children in Norway and Denmark.

South Asians

In some extended families (e.g. Gujaratis), women eat with children after the men have been served, and this may affect the adequacy of the women's diets (Abraham 1982).

The 2004 Health Survey for England (Sproston & Mindell 2006) reported on several aspects of the health of ethnic minority groups, including South Asians. For example, it found that:

- prevalence of cardiovascular disease in Pakistani men and Indian women had increased significantly since the last survey of ethnic minority groups, in 1999;
- doctor-diagnosed diabetes was much more prevalent in Bangladeshi, Pakistani and Indian men and women (2.5 to 5 times greater) compared with the general population;
- in addition, the increase in prevalence with age of type 2 diabetes was greater among minority ethnic groups than among the general population;
- with the exception of Pakistani women, South Asians had lower risk ratios for obesity compared with the general population. However, Pakistani and Bangladeshi men and women were more likely to have raised waist-hip ratio and raised waist circumference, both used as indicators of health risk from being overweight, and of the metabolic syndrome (insulin resistance syndrome), compared with the general population;
- prevalence of anaemia (29%) was highest in Indian women amongst ethnic minority women.

These findings are supported by a number of research studies, which have also suggested reasons for the high diabetes and coronary heart disease amongst Asians. See Stanner (2005) for an overview.

McKeigue and colleagues reported higher prevalence of diabetes in South Asians compared with Europeans, together with higher blood pressure, higher fasting and post-glucose serum insulin concentrations, higher plasma triglyceride concentration, and lower HDL cholesterol concentration (McKeigue et al. 1991). They suggested the existence of an insulin resistance syndrome, prevalent in South Asian populations and associated with a pronounced tendency to central obesity in this group. However, some limitations to the approach used in this study have been suggested, including the use of mortality data, which are based on country of birth (Gervais & Rehman 2003).

Cleland and Sattar (2004) also suggested that the driving force behind diabetes and coronary heart disease incidence in South Asians is inherent insulin resistance and an increased sensitivity for development of the metabolic syndrome in the context of a Western lifestyle. They suggested that culturally sensitive healthy lifestyle advice should be targeted to specific groups from an early age in an attempt to delay or prevent premature morbidity and mortality.

Death rates from coronary heart disease in South Asians in the UK have declined at a slower rate than in the indigenous population (Kuppuswamy & Gupta 2005). It has been suggested that the increased prevalence of the metabolic syndrome and diabetes mellitus in this population is the most convincing and consistent explanation to date for the excess risk of coronary heart disease in South Asians.

South Asian migrants to Scotland appear to adopt adverse dietary elements (higher intake of fat and saturates than the general population and lower potassium and vitamin C), which are modified in subsequent generations, to become more similar to the general population (Anderson et al. 2005). It has been suggested that the common use of frying and deep-frying in Asian households together with the use of ghee, which is high in cholesterol oxides, might contribute to the higher prevalence of coronary heart disease

in Asians (Lip et al. 1995). However, data from smaller studies in the UK provide conflicting information about fat intake amongst South Asians (Landman & Cruickshank 2001). It has been suggested that the apparently healthy dietary pattern associated with some South Asian cuisines may be associated with vegetarianism rather than region of origin or religion.

A study of adult Pakistanis, Europeans and African-Caribbeans in inner city Manchester, England, reported that body mass index was highest in Pakistani women, and Pakistani diets provided the highest proportion of energy from fat and a low calcium intake (Vyas et al. 2003).

Israel

The four main ethnic groups (originating mainly from Yemen/Aden, the Middle East, North Africa, and Europe/America) in Israel have kept traditional and distinct lifestyle habits and exhibit different morbidity and mortality trends. Traditional ethnic food, acquired in their country of origin, has remained in the diet of ethnic migrant subgroups for generations and may play a role in the differences in morbidity and mortality patterns observed among the Israeli subpopulations.

In general, populations that maintain their traditional dietary habits have been shown to have a decreased risk of mortality compared with Westernised societies. A study of associations among ethnic background, lifestyle patterns (including diet) and all-cause mortality in a sample of the four main ethnic groups in Israel concluded that although ethnic origin and lifestyle habits are interrelated, each factor affects mortality rate independently (Lubin et al. 2003).

According to Trostler (1997) the overall picture emerging from the published data on both Ethiopian and Yemenite immigrants to Israel strongly suggests that these populations are at high risk for developing chronic, non-

communicable diseases. Data available suggest that characteristics of metabolic syndrome are present in Yemenites and Ethiopians and intervention programmes need to be initiated during the early stages of Westernisation. There was also an indication of the existence of early signs of risk factors for diabetes, which might not manifest itself clinically unless provoked, for example, by the individual becoming less active and/or having an excessive energy intake resulting in weight gain.

The Bedouins in the Negev are a population in transition from traditional nomadic to a western sedentary lifestyle, characterised by changes in dietary habits and reduction in physical activity, with substantial changes in morbidity patterns. A recent study reported that age-adjusted prevalence of diabetes is increased in the Bedouin population as compared to the non-Bedouin population in southern Israel. Overall control of diabetes was also poorer in the Bedouin population (Cohen et al. 2005).

Other and unspecified ethnic groups

A number of studies have reported higher prevalence of obesity in ethnic groups compared with the general population. For example, Surinamese/Antillean and Turkish immigrants in the Netherlands had a higher prevalence of overweight compared with the native Dutch (Cornelisse-Vermaat & Maassen van den Brink 2004). (However, it has also been reported that the diets of both Moroccan women and Surinamese men tended to approach the recommended daily intakes for macronutrients, compared with the Dutch population (van Erp-Baart et al. 2001).) A Spanish study reported that prevalence of overweight was high in all groups but especially in second generation immigrant children (Montoya et al. 2003). A comparative study of ethnicgroups in Brussels reported a higher prevalence of obesity in Turkish, Moroccan and Congolese immigrants compared with the Belgian population (http://homepages.ulb.ac.be/~aleveque/epitraumac/nutrition.htm#Nutrition).

However, a study of adolescents in Norway illustrated the variation between different minority groups (Kumar et al. 2004). Boys from sub-Saharan Africa and the Indian subcontinent and girls from the Indian subcontinent and East Asia had the lowest mean body mass index. Boys from the Middle East and girls from Eastern Europe had the highest mean body mass index.

A Swedish study reported that the age-adjusted risk of coronary heart disease was higher in most foreign-born groups than in Swedes, with those born in Finland, Poland, Bosnia, Turkey, Asia and Iraq having the highest incidence rates (Gadd et al. 2003). An inter-ethnic study in Brussels reported a higher prevalence of hypertension and type 2 diabetes in Turkish, Moroccan and Congolese immigrants compared with the Belgian population (http://homepages.ulb.ac.be/~aleveque/epitraumac/nutrition.htm#Nutrition).

According to the 2004 Health Survey for England (Sproston & Mindel 2006), Black Caribbean men and women have a higher risk of type 2 diabetes. Black Caribbean men (along with Irish men) had the highest prevalence of obesity. Risk ratios for obesity were higher for Black Caribbean women compared with the general population and they were also more likely to have a raised waist-hip ratio and raised waist circumference. Black Caribbean women were also more likely to have high blood pressure compared with women in the general population. In a separate study, African-Caribbeans in Manchester, UK were reported to have low iron intakes (Vyas et al. 2003).

Chinese men and women in England appear to be less prone to cardiovascular disease, obesity, diabetes, and high blood pressure compared with many ethnic groups, and in some situations, e.g. prevalence of obesity, they may fare better than the general population (Sproston & Mindel 2006). In the same survey (the Health Survey for England), a greater number of Chinese men and women consumed the recommended five portions of fruit and vegetables per day compared with most other ethnic groups. Interestingly, a rapid increase in the prevalence of overweight and obesity in China has recently been reported (Wu 2006). One of the

suggested contributory factors, alongside reductions in physical activity and labour intensity, is changes to the traditional diet.

The Policy Research Institute on Ageing and Ethnicity (PRIAE 2004) co-ordinated the Minority Elderly Care project, which collected information from 10 European countries via questionnaires. Amongst the project findings, which relate to people aged 50 years or over, were:

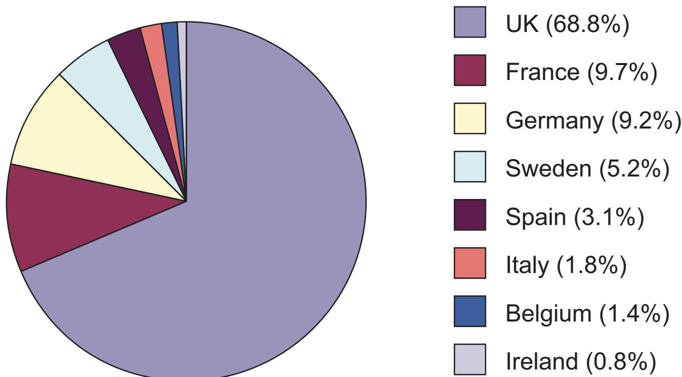
- Algerians in France were most likely to describe their health condition as poor or very poor, followed by Moroccans;
- The Surinamese population in the Netherlands has a high prevalence of cardiovascular conditions and diabetes;
- Moroccans in Spain were more likely to suffer from diabetes, musculoskeletal problems and kidney/urinary tract disorders, while Latin Americans were more likely to have gastric/intestinal complaints and thyroid disorders.

5. Market for modified ethnic foods

The ethnic foods retail market in Western Europe was estimated to be worth over €3 billion in 2003, the vast majority of which would have been modified ethnic foods (Leatherhead Food International 2004).

Based on retail sales, the UK accounted for over two-thirds of the market value (just under €2.2 billion), with France and Germany each taking just under 10% of the market share and Sweden, Spain, Italy, Belgium and Ireland all making smaller contributions (Figure 2). In the UK, ethnic food sales via restaurants and takeaways were additionally worth approximately £3.2 billion (about €4.7 billion) in 2003, of which over half was Indian and a third Chinese (Leatherhead Food International 2004).

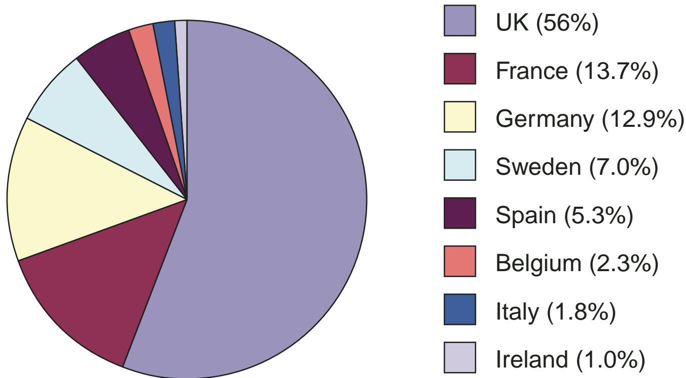
Figure 2: European ethnic foods retail market value by country, 2003



Source: Adapted from Leatherhead Food International (2004)
Total market value: €3.2 billion

Almost half of the retail market was accounted for by Chinese or Oriental products, which are well-established throughout many European countries (Figure 3).

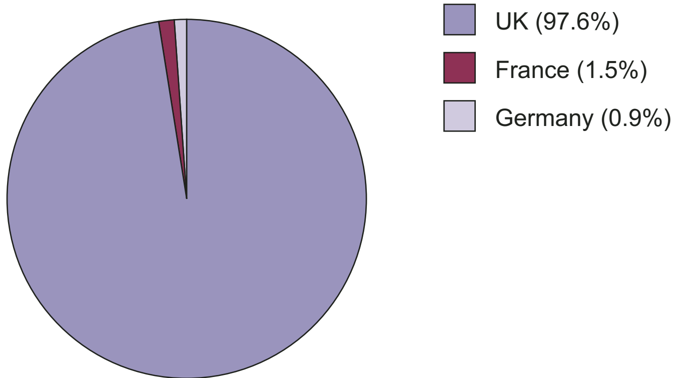
Figure 3: European Chinese/Oriental foods retail market value by country, 2003



Source: Adapted from Leatherhead Food International (2004)
Total market value: €1.4 billion

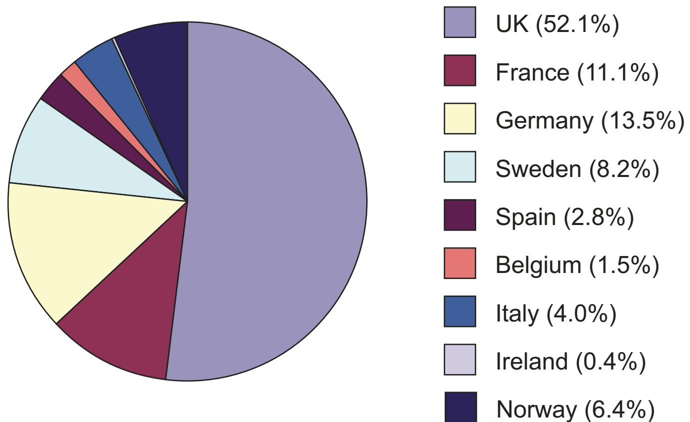
The remainder of the market in Western Europe comprised Indian products, which are dominated by the UK market (Figure 4), and Mexican products, which are popular in a greater number of European countries (Figure 5). The sales of products from other cuisines, e.g. Thai, Japanese, Latin American and African, are generally too low to break down in this way (Leatherhead Food International, 2004).

Figure 4: European Indian foods retail market value by country, 2003



Source: Adapted from Leatherhead Food International (2004)
Total market value: €0.9 billion

Figure 5: European Mexican foods retail market value by country, 2003



Source: Adapted from Leatherhead Food International (2004)
Total market value: €0.8 billion

Table 8 shows the relative popularity of different cuisines in selected European countries, again illustrating the dominance of Indian, Chinese and Mexican cuisines.

Table 8: Retail ethnic foods by sector, 2003

	Percentage of national sales					
	UK	**France**	**Germany**	**Spain**	**Italy**	**Ireland**
Indian	41.2	4.5	-	1.1	-	10.6
Chinese	30.6	63.9	63.7	76.8	45.6	56.6
Mexican	18.7	28.0	36.3	22.1	54.4	32.8
Other Oriental	6.2	-	-	-	-	-
Other American	1.9	3.6	-	-	-	-
Other	1.4	-	-	-	-	-
Total	€2.2b (£1.5b)	€307m	€289m	€98m	€57m	€24m

Source: adapted from Leatherhead Food International (2004)

There is little information on Scandinavian countries but Mexican food sales are relatively high and Chinese and Thai ready meals are also available in Sweden, Finland and Denmark. France has a large couscous market.

In the UK, retail sales of modified ethnic ready meals, which account for over half of ethnic food retail sales, have benefited from consumer demand for higher-value chilled ready meals. Ethnic meal accompaniments (e.g. prawn crackers, tortilla chips, naan bread and poppadoms) have benefited from consumers' inclination to reproduce the restaurant experience at home. Bite-size products have become popular party food fare. The retail Chinese food market in the UK is dominated by ready meals which account for just under two-thirds of the market, with the remainder shared between cooking sauces, noodles and other foods. Similarly, ready meals account for two-thirds of the retail Indian market in the UK, with accompaniments taking up a fifth, followed by cooking sauces and, to a lesser extent, curry powder (Leatherhead Food International, 2004).

In the Netherlands, modified ethnic foods available include those from the cuisines of Indonesia, China, Italy, Mexico, India, Thailand, Greece, Spain, France, the Middle East, Argentina, and the USA. Of these Indonesian and Italian dishes are the most important; Indonesia was formerly a colony of the Netherlands.

The non-European ethnic food market in Spain started in the early 1990s, with a predominance of Mexican and Oriental products, which are still the product leaders. Within the Mexican category, 'kits' (tacos, burritos, etc) are popular together with grain tortillas, aperitifs and salsas. For Asian products, spring rolls, frozen stir fry products and rice dishes are amongst the market leaders.

Sales of modified ethnic foods are expected to continue to rise, particularly in Italy, Belgium and Germany, owing to an increased range of products, interest in ethnic cuisines, and their growing popularity amongst younger age groups (Leatherhead Food International, 2004).

6. Food composition data on ethnic foods

Dietary assessment in ethnic groups

Interventions to promote and encourage healthy eating need reliable baseline data on dietary habits. However, this information is, in general, lacking for people in ethnic groups. While ethnic minorities are not deliberately excluded from national food consumption surveys, their relatively small numbers mean that separate analyses are not usually possible or meaningful. In addition, the survey design, in terms of both recruitment of participants and dietary assessment methodology, are not specific to the needs of any minority group.

Many small-scale studies have been undertaken on specific ethnic minority groups. From these studies and a knowledge of the dietary and food preparation practices of these groups, a number of issues in the dietary assessment of ethnic groups has arisen (Khokhar et al., 2001):

- serving from a communal pot makes it difficult to assess food consumption of individuals without altering normal dietary practices;
- diets may include complex stews and soups, in which water and extra ingredients are added to an existing dish over a day or more, and portions are taken as needed. It is difficult to gather recipe information and estimate the nutrient content of portions consumed by individuals, and difficult to estimate water and nutrient loss on cooking;
- consumption of mixed dishes (e.g. Chinese) makes it difficult for participants to recall and assess items and amounts of food consumed during a meal;
- prolonged cooking and reheating of dishes for consumption the following day will both affect nutrient content;

- understanding of food terminology;
- lack of information on cooked dishes and recipes, culture-specific foods, and portion sizes;
- lack of food composition data;
- variation in household measures.

Variation in recipes and cooking practices between individuals can be a particular issue. For example, amongst South Asians, there is considerable variation in recipes between individuals (Anderson & Lean 1995); this is dependent on place of origin, availability of ingredients, preferred hotness (spiciness) or method of cooking (Carlson et al. 1984). The fat content of dishes also varies, particularly as a result of the method of preparation, from household to household and from day-to-day in the same household (Wharton et al., 1983; Kassam-Khamis et al. 1995; 2000). Wharton et al. (1983) reported that the fat content of vegetable curries ranged from 5-15% between and within Indian, Pakistani and Bangladeshi immigrant women attending a maternity hospital in Birmingham; meat curries varied more, owing to the variation in the fat content of meat.

Researchers have developed a number of strategies to deal with these issues:

- using international sources of food composition data;
- contacting researchers who had compiled food composition data in these populations;

- collecting detailed traditional recipe information or creating a database of ethnic recipes;
- use of food models or pictures for portion size, or supplying standard measures (e.g. bowls, utensils).

Issues specifically relating to the scarcity of food composition data are discussed further below.

Food composition data

While the composition of some of the foods consumed more widely by immigrants may be included in national food composition tables, the number of such foods and dishes is small and cannot encompass the full range of foods eaten. Even where foods are included, with limited budgets for food analysis, it has often not been possible to undertake specific analyses and data may be borrowed from other food composition tables or derived from recipes.

In the latest Dutch food composition table (Nevo; Westenbrink et al. 2006), the number of foods allocated as ethnic is 96, the majority of which are of Indonesian or Surinam origin, with a few Turkish dishes and Moroccan foods. The Indonesian foods listed include both ingredients and prepared dishes sold in Indonesian restaurants, while the Surinam foods are mostly raw basic foods from the fruit and vegetable groups.

In the UK, a supplement to the national food composition tables, covering immigrant foods, was published back in 1985 (Tan et al. 1985). More recently, nutrient content of a range of South Asian dishes, derived from recipe calculations, has been published, both in the scientific literature (e.g. Kassam-Khamis et al. 1995; 2000) and as a book (Judd et al. 2000). Other

studies have also found it necessary to compile additional food composition data for Asian foods and recipes not included in standard food composition tables (e.g. Wharton et al. 1983).

Similarly, in a study of people of African origin in Cameroon, Jamaica and Manchester, it was necessary to compile nutritional information on the cooked dishes eaten before dietary analysis could be undertaken (Sharma et al. 1996). In Israel, the USDA database was modified to suit the foods eaten by the Negev population being studied; ethnic-specific recipes were added together with food products unique to Israel (Shahar et al. 2003; Shai et al. 2003).

There is a clear requirement to compile and disseminate information on the composition of raw ingredients and processed foods consumed by ethnic populations in Europe. In addition, collation of recipes for commonly consumed dishes is needed, together with information on the effects of prolonged cooking and reheating practices.

7. Ethnic foods within the EuroFIR network

EuroFIR (European Food Information Resource Network of Excellence; www.eurofir.net) is a 5-year network of excellence funded under the EU 6th Framework Programme Food Quality and Safety Priority. This programme of work is an essential underpinning component of all food and health research in Europe.

The main objective of EuroFIR is to build and disseminate a comprehensive, coherent and validated databank to provide a single, authoritative source of food composition data in Europe for nutrients, and newly emerging bioactive compounds with potential health benefits.

One of the aims of EuroFIR is to identify and provide new information on missing data for nutrients and bioactive compounds for all food groups, including traditional and ethnic foods.

Therefore, one of the work areas within EuroFIR covers ethnic foods. The aims of the ethnic foods workpackage are to:

- gather information on ethnic populations and general dietary habits in Europe, and using these to set priorities for the collection and analysis of specific foodstuffs;
- provide new and reliable data on the composition of foods consumed by both ethnic- and mainstream populations for inclusion in national food composition databases;
- transfer scientific and technological knowledge to consumers (ethnic and mainstream populations) and industry; promoting knowledge of ethnic foods, thereby increasing consumer choice and market opportunities.

The partners in this workpackage include:

- the University of Leeds, UK (Dr Santosh Khokhar is workpackage leader);
- Agence Francaise de Securite Sanitaire des Aliments (AFSSA), France;
- Ben-Gurion University of Negev, Israel;
- Center for Superior Studies on Nutrition and Dietetics (CESNID), Spain;
- Danish Institute for Food and Veterinary Research (DFVF), Denmark;
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN), Italy;
- Ghent University, Belgium; and
- The Netherlands: NEVO Foundation until July 2006.

Partners within this workpackage are selecting priority foods for further investigation, of which a smaller number are being selected for analysis. The criteria for prioritisation include:

- the size and significance of the ethnic population in the country;
- popularity as assessed by food consumption data from dietary surveys;
- the size of the food industry; and
- the impact of a food on nutrient intake and health.

Full lists of the foods analysed will be available on the EuroFIR website (www.eurofir.net) in due course. However, examples of the types of cuisine to be targeted are given below:

Belgium: Most of the non-EU immigrants are from Morocco, Turkey and the Democratic Republic of Congo. Turkey is participating in EuroFIR work on traditional foods and Moroccan food has been included in the priority lists from other countries. Therefore, the focus will be on Congolese foods.

Denmark: The focus is on commodities rather than composite dishes, in line with usual practice in the Danish food composition tables. Cereals, legumes and their products, fruits, vegetables, halawa, ghee and palm oil are included in the priority foods for investigation.

France: Highest priority is being given to North African foods, as the size of this population is higher in France than in other European countries. Creole foods are included as this population is important in France. Asians are another large population group in France and there are many Asian restaurants and foods, so these foods are also included in the priority foods for investigation. The focus is on commercial composite or processed foods.

Israel: Ingredients (e.g. flour), bread and traditional dishes from a range of ethnic groups have been prioritised, including Bedouin, Jewish, Israeli, Mediterranean, Ethiopian, Russian, Moroccan and Arabic.

Italy: A range of mostly dishes or composite foods from Asian, Latin American, African and East European cuisines are included in the priority foods for investigation.

The Netherlands: The priority foods for further investigation are composite dishes from the three largest ethnic groups: Turkey, Morocco and Surinam.

Spain: For ethnic foods, priority is being given to Latin American cuisine, with a focus on commodities, as people from Latin America constitute the largest ethnic population group. For modified ethnic foods, the focus is on the market leaders, Mexican prepared products and Chinese prepared dishes.

UK: Asians, and particularly South Asians, are the largest ethnic group in the UK. Asian cuisine also represents the largest number of restaurants and there is a growing range of modified ethnic foods. It was therefore decided to focus on South Asian dishes.

Only a limited number of analyses will be undertaken within EuroFIR. However, the results of these analyses will be a first step towards the expansion of nutrient data on ethnic foods and modified ethnic foods. In addition, a framework (and a longer list of suggested priority foods) for future analyses will have been developed.

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