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Abstract

Introduction This paper presents information on the nutrient composition of commonly consumed traditional dishes eaten by the three major South Asian Muslim groups residing in Britain, namely Bangladeshi, Pakistani and East African Ismaili Muslims.

Methods Information regarding the most common dishes consumed by South Asian Muslims originating from Bangladesh, Pakistan and East Africa (Ismailis) and living in London was obtained from 7-day menu records over two seasons. For each common dish, weighed recipes were collected in triplicate and the composition (energy and selected nutrients) was calculated from the ingredients and cooked weight of the dish.

Results The three Muslim groups showed considerable variation in traditional foods commonly consumed as well as variation in fat and energy contents of similar recipes both within and between groups. Nutrient composition of commonly consumed dishes is presented calculated from the recipe nearest the average in terms of fat and energy for a particular dish.

Discussion and conclusions The potential uses of the data, one of which would be to improve dietary compliance (especially to lower fat intakes) amongst the three diverse South Asian Muslim groups, are discussed.

Introduction

The UK census in 1991 was the first to identify the ethnic origin of respondents. It revealed that members of ethnic minority groups formed 5.7% of the population, just over 3 million of a total British population of 56 million (Owen, 1994; CSO, 1996). Minority groups from India, Pakistan and Bangladesh (South Asians) made up the largest nonwhite population, numbering 1.57 million (49%), 3% of the population of Britain. South Asians are often seen to represent a homogeneous group of people sharing a common culture and hence common foodways. However, they represent a wide diversity in origin, language, religion and foodways.

Mortality from coronary heart disease (CHD) amongst peoples of South Asian origin is 40–50% higher than among the rest of the population of England and Wales (McKeigue & Marmot, 1988;

Williams, 1995). The pattern in the UK is consistent with observations of South Asian migrants in other countries (McKeigue *et al.*, 1989b). The prevalence of non-insulin-dependent diabetes mellitus (NIDDM) has been shown to be five times higher in South Asians than the general population (Mather & Keen, 1985). Diabetes and insulin resistance are risk factors for CHD and insulin resistance is strongly associated with obesity, particularly central obesity, which has been shown to be more common amongst South Asians than Europeans (McKeigue *et al.*, 1991; Bose, 1995). It has been suggested by some authors that this is paradoxical as the 'Asian' diet is lower in fat and higher in dietary fibre than the average UK diet (McKeigue *et al.*, 1985, 1989a; Smith *et al.*, 1993). However, as others working in the areas of nutritional epidemiology amongst South Asian minority groups in Britain have pointed out, there is a fundamental lack of information concerning the nutritional composition of cooked foods and eating habits of the different South Asian groups (Wharton *et al.*, 1984; McKeigue *et al.*, 1985; Stockley, 1988; Smith *et al.*, 1993). Changes in diet and greater physical activity have been proposed as important measures in prevention and management of CHD and NIDDM, with McKeigue & Sevak (1994) suggesting that lowering the amount of fat used in South Asian cooking might be the most effective measure. However, in order to identify dietary modifications to reduce fat and energy intakes to control obesity in these communities it is essential to have sound knowledge of what different South Asian groups are eating and until recently this information has been lacking.

We have previously reported data on the frequency of consumption and nutrient composition of composite dishes consumed by the Indian groups originating from Gujerat and the Punjab (Kassam-Khamis *et al.*, 1995, 1996). This paper therefore focuses on the diets of three South Asian Muslim groups residing in Britain, namely Bangladeshi, Pakistani and East African Ismaili Muslims. Most Bangladeshis in Britain originate from the Sylhet district of Bangladesh with the largest community in Britain being located in the borough of Tower Hamlets in the East End of London. They are the most recent migrants, having come to Britain after the 1971 East/West Pakistan war and have been reported to be of lower socio-economic status than other South Asian communities (CSO, 1996). Pakistanis in Britain originate from three main areas in Pakistan, Mirpur in Azad Kashmir, Punjab and North West Frontier Province (NWFP), with Mirpuris forming the largest Pakistani community in Britain. Most Pakistanis arrived in the late 1950s and early 1960s to work in textile and engineering industries and their homes are evenly distributed among the metropolitan counties (Owen, 1994). East African Ismailis are *Shia* Muslims unlike the other two groups where the majority are *Sunni* Muslims. They migrated as refugees from Uganda, Tanzania and Kenya, having already migrated from India (Gujerat and Kutch) to Africa during the 1920s to 1940s to work on the railways, and later entered commerce and the professions. Like the Bangladeshis the majority live in London, but are not concentrated in any single Borough.

The present study therefore aimed to identify the traditional dishes most commonly eaten by South Asian Muslims originating from Bangladesh (B), Pakistan (P) and East Africa (Ismailis, I), to obtain recipes for these and provide information on the nutrient content of a range of dishes.

Methods

Recruitment of all three groups was confined to the greater London area, as shown in Table 1. Methods of recruitment varied somewhat between the groups and were designed to overcome problems such as illiteracy which might have resulted in a biased response from some groups.

Areas in London with a high concentration of residents of Bangladeshi origin were identified and the research worker (T.K.K.) went from door-to-door, with a Link worker, explaining the background to the study and potential benefits to the community of participation. A letter translated into Bengali was distributed to those in the family who were literate. Assuring the households that the study had no relation with the Local Authority or Home Office was important in gaining the confidence of the community and consent. Fifty households were approached and 30 (60%) agreed to participate.

Table 1 Sample recruitment area and method

Group	Area	Method
Bangladeshi	Tower Hamlets; Camden; Islington	Door to door with Link worker
Pakistani	Southall; East Acton; Ealing	Letters; telephone calls to random addresses from telephone directory
Ismaili	London	Letters; telephone calls to random addresses from Ismaili National Council

The Pakistani sample was recruited by means of letters, explaining the study and potential benefits, sent at random to 160 households identified by surname from the West London telephone directory. Similar letters were sent to 120 Ismaili households whose addresses were taken at random from a list provided by the Ismaili National Council. A consent form was attached to these letters to be completed by the head of household if the family was willing to participate in the study. A stamped-addressed envelope was enclosed for reply. Letters were followed up by a telephone call to clarify the details of the study if no reply was received. In this way 31 Pakistani households and 31 Ismaili households were recruited.

All members of each household aged over 12 years kept a 7-day menu record in the winter (October–March) and summer (April–September) noting all foods and drinks consumed (without quantity), time of consumption and source of food (i.e. purchased vs. home-made). Where subjects could not read or write (9%) repeat 24-h recalls were conducted by one of the authors (T.K.K.). A total of 291 (B = 100, P = 108, I = 83) subjects from 92 households participated in the study. There were no significant differences according to generation or gender between the Muslim subgroups. Of the 92 households who provided 7-day menu records in winter, a total of 13 (14%) households did not continue to provide records in the summer. Five families had moved away and a further eight households declined to take any further part in the study. The reasons given were, travel abroad (three), family crises (three) and lack of time (two).

The most commonly consumed traditional dishes, defined as 'those consumed by one or more persons in at least 20% of households, within a group, once or more during the recorded period' were identified from the menu records. Using these records, households were approached for collection of recipes selected and the food preparer asked to take part in the second part of the study. This involved the collection of precise weighed recipes for the commonly consumed traditional dishes. Recipes for each dish were collected from three different households within each Asian group. Each of the main food preparers was trained to use a scale (Soehnle 0–2500 × 2 g; 2500–5000 × 5 g) to weigh out the recipes accurately and provided with a recipe booklet to write down weights of ingredients and the final cooked weight for each dish. The scales were left in the household for a 1-month period in which 3–4 *named* common traditional dishes were weighed. Where subjects were illiterate the researcher (T.K.K.) observed the preparation and cooking and herself weighed the ingredients and final weight of the common traditional dishes. It was stressed that the dish should be cooked as normal and that the family, not the researcher, would be consuming the dish to minimize changes in recipes. Interpreters were present where necessary and all written material was translated into Bengali (Sylheti), Urdu and Gujerati.

In addition, as the Pakistani sample (from Southall, London) originated from a different area to the majority of Pakistanis living in Britain (Mirpuris), a sample of Mirpuris living outside London, in Bradford and Rochdale, were approached and a food frequency checklist of commonly consumed dishes eaten by Pakistanis in London was administered (n = 17). This checklist was also sent to the London sample and returned by 18 households. In this way the representativeness of the samples most commonly consumed traditional Pakistani dishes was checked.

Nutrient composition of recipes was calculated using the recipe function in COMPEAT (version

4.0, Lifeline UK). The nutrient data base was the 5th edition of *McCance and Widdowson's Food Composition Tables* and the available supplements to the *Composition of Foods* (Tan *et al.*, 1985; Holland *et al.*, 1988, 1989, 1991, 1992, 1993). The recipe ingredients were entered as raw foods and final cooked weight of the dish used to derive energy and nutrient content per 100 g. Where commonly consumed foods were not prepared at home but purchased from retail outlets (or in the case of some Ismaili dishes, from the local Mosque), samples were purchased from outlets mentioned by the subjects and were analysed directly in the laboratory according to standard AOAC (1975) procedures. The study was approved by King's College Research Ethics Committee.

Results

Commonly consumed dishes

Table 2 shows the variety of traditional dishes consumed by the three Muslim groups demonstrating that the Bangladeshis consumed the greatest variety of traditional dishes, followed by the Pakistanis and Ismailis.

Tables 3, 4 and 5 demonstrate that some seasonal variation was present, which appears partly to be due to seasonal availability, particularly with Bangladeshi imported fish and fresh spinach. Some foods such as 'khadhi' (a yogurt and chickpea soup) were viewed as warming foods and eaten more often in the winter season. Consumption of other foods such as fried snacks or sweetmeats appeared to be related to 'special occasions', e.g. timings of religious festivals rather than season *per se*. The Ismaili group were less likely to cook traditional foods but were seen to purchase more traditional 'common' dishes that were usually higher in fat.

Tables 3, 4 and 5 show that commonly consumed dishes were very group specific and different amongst the Muslim groups. Even staples differed, with Bangladeshis consuming mainly rice, Pakistanis consuming more 'roti' (unleavened bread similar to chappatti) and Ismailis eating either. Fish was an important part of the traditional diet for Bangladeshis only, whilst 'dhals' (pulses) were consumed by all groups but more varieties were consumed by the Pakistani group (channa, masoor, mung, urad). The Ismaili group commonly consumed fried snack foods ('thepla'; 'ganthia'). Ismailis in Britain originate from Gujerat and, as has been shown elsewhere (Kassam-Khamis *et al.*, 1995), fried snacks are also commonly consumed by Gujeratis. Fewer traditional vegetable dishes were commonly eaten by the Ismaili group, whereas Bangladeshis often had stir fried vegetables ('bhajis') or added vegetables to meat and chicken curries. Pakistanis tended to eat either vegetable curries on their own or with meat. Pakistanis commonly ate sweet dishes more than the other groups (kheer, sevia, mithai). Chewing of 'paan' (betel nut) was common only amongst Bangladeshis.

Table 6 shows that although there were some differences in the percentages of Pakistani subjects consuming certain dishes in Southall and Bradford (Mirpuri), the same types of dishes appeared on both lists, suggesting that the recipes would be representative of the Pakistani diet in general.

Nutrient composition

The data for the triplicate recipes collected showed variation within a group in fat content. Within the Bangladeshi and Pakistani groups, 60% of dishes had a variation of at least 5 g/100 g between the lowest and highest fat recipe. However, in the

Group	Total summer dishes	Total winter dishes	Common summer dishes	Common winter dishes	Common summer bought dishes	Common winter bought dishes
Bangladeshi	149	115	35	26	1	2
Pakistani	104	103	28	27	3	3
Ismali	119	105	20	15	6	3

Table 2 Variety of traditional dishes consumed by three Muslim groups of Bangladeshi, Pakistani and Ismaili origin. Numbers of different dishes made or purchased in summer or winter.

Table 3 Traditional dishes consumed by at least 20% of Bangladeshi households during the 7-day survey period.

Name of dish	Percentage of households consuming	
	Summer ($n = 30$)	Winter ($n = 25$)
Rice	100	100
Chicken curry	83	72
Masoor dhal	77	84
Lamb curry	70	68
Potato bhaji (stir fry)	57	64
Paan	53	52
Mixed vegetable bhaji (stir fry)	50	48
Bual fish curry	50	28
Illish fish curry	47	32
Rui fish curry	40	36
Chapatti	37	36
Lamb and potato curry	37	(16)
Lamb keema curry (mince)	30	32
Chicken and potato curry	30	24
Lamb chops curry	27	(16)
Gargot/Ayr fish curry	27	32
Koi fish curry	27	28
Spinach bhaji (stir fry)	27	(16)
Ukni (meet pilau)	23	28
Prawn bhuna (dry curry)	23	40
Pabda fish curry	23	32
Shutki (dried) Gojar fish curry	23	(8)
Egg curry	23	20
Cauliflower bhaji (stir fry)	23	(16)
Rice pitta	20	20
Shandesh (fried sweet)	20	(0)
Chicken bhuna (dry curry)	20	36
Tengra fish curry	20	(16)
Ketchki fish curry	20	(16)
Magur fish curry	20	(12)
Baing/Bam and potato fish curry	20	(12)
Shutki (dried) Hidol fish chutney	20	(12)
Kebab (from outside)	20	20
Bhindi (okra) bhaji (stir fry)	20	(4)
Aubergine bhaji	20	(8)
Samosas (from outside)	(17)	24
Paratha	(10)	20
Sardines fish curry	(10)	24
Rui and potato fish curry	7	24

N.B. ( ) = dishes consumed by fewer than 20% of households in one season.

Table 4 Traditional dishes consumed by at least 20% of Pakistani households during the 7-day survey period

Name of dish	Percentage of households consuming	
	Summer ($n = 30$)	Winter ($n = 25$)
Roti/Chapatti	90	93
Channa Dhal	87	70
Chicken Curry	77	81
Rice	71	67
Lamp Curry	52	59
Mixed Vegetable Curry	42	37
Naan (from outside)	45	55
Meat Pilau	23	22
Vegetable Pilau	48	36
Palak (spinach)	42	(19)
Paratha	39	30
Aloo Gosht (lamb and potato)	39	30
Kebab	39	52
Keema Curry (minced lamb)	35	(19)
Gosht Palak (lamb and spinach)	32	30
Roast Chicken	32	30
Kofta Curry (meatballs)	29	26
Bhindi (okra)	29	22
Masoor Dhal	26	48
Sevia (sweet vermicelli)	26	37
Kheer (rice pudding)	26	37
Mithai (sweetmeats) (from outside)	26	(15)
Potato Curry	26	33
Aloo Keema (mince and potato)	23	(19)
Whole Channa Curry (chickpeas)	23	30
Mung Dhal	23	37
Pakora (bhajia)	23	(19)
Samosas (from outside)	23	30
Matar Keema (minced lamb and peas)	(16)	22
Dhal Maash	(10)	22
Biriyani (from outside)	(3)	37
Khadi (yogurt curry)	(3)	30

N.B. ( ) = Dishes consumed by fewer than 20% of households in one season.

Ismaili group there was less variation in recipes from different households for the same dish. Only 37% of dishes had greater than 5 g/100 g variation in fat content. Table 7 shows the energy and selected nutrient composition for the recipe which, of the three recipes collected for each dish, had intermediate values for energy and fat.

Of the 74 commonly consumed dishes analysed for nutrient composition across these three Muslim groups, only 11 dishes with similar names and ingredient lists were consumed by at least two of these groups and, as shown in Table 8, only six dishes were common to all three Muslim groups,

Table 5 Traditional dishes consumed by at least 20% of Ismaili households during the 7-day survey period.

Name of dish	Percentage of households consuming	
	Summer ($n = 31$)	Winter ($n = 27$)
Rice	94	78
Rotli/Chapatti	77	63
Ukni (meat pilau)	58	22
Chicken Curry	52	59
Meat curry	45	30
Samosas (from outside)	45	37
Bhajias (from outside)	45	22
Dar/Dhal	39	44
Mixed vegetable curry	32	30
Kebab (from outside)	32	30
Naan (from outside)	29	(19)
Biriyani (meat and rice)	29	(15)
Dhokra (steamed gram flour cake)	29	26
Thepla (fried sweet biscuit)	29	(15)
Paratha (from outside)	26	(15)
Ganthia (fried snack) (from outside)	26	(7)
Kitchadi (rice and lentils)	26	33
Keema curry (mince)	23	(19)
Masala fish and potatoes	23	(11)
Whole Mung curry	23	22
Chicken pilau	(19)	25
Khadhi (yogurt curry)	(13)	26

N.B. ( ) = dishes consumed by fewer than 20% of households in one season.

Table 6 Traditional dishes commonly consumed by at least 20% of Pakistani households at least once in 7 days, outside of London (Mirpuris) and within London (Non-Mirpuris) and compared to the original London Pakistani sample in the winter season.

Name of dish	Percentage of households consuming		
	Within London ($n = 18$)	Outside London ($n = 17$)	Original sample London ($n = 27$)
Roti	85	94	*93*
Naan	83	25	*55*
Rice	78	58	*67*
Channa dhal	78	41	*70*
Roast chicken	78	41	*30*
Aloo Keema	77	35	*19*
Masoor dhal	74	60	*48*
Gosht palak	73	42	*30*
Vegetable pilau	73	41	*37*
Palak (spinach)	68	47	*19*
Potato curry	62	36	*33*
Keema curry	62	41	*19*
Kofta curry	57	42	*26*
Aloo gosht	55	41	*30*
Shami Kebab	55	36	
Sheekh Kebab	50	23	*52*
Chicken curry	50	42	*81*
Paratha	50	25	*30*
Lamb curry	50	89	*59*
Mixed vegetable curry	50	52	*36*
Matar Keema	45	35	*22*
Bhindi (okra)	45	59	*22*
Meat Samosas	44	35	
Vegetable Samosas	23	30	*30*
Mithai (sweetmeats)	44	30	*15*
Meat pilau	40	53	*22*
Zarda (sweet rice)	40	42	*19*
Channa curry	39	41	*30*
Pakora (bhajia)	39	29	*19*
Kheer (rice pudding)	38	47	*37*
Dhal Maash	35	30	*22*
Biriyani	33	30	*37*
Mung dhal	30	35	*37*
Sevia (vermicelli)	27	52	*37*
Khadhi	22	(6)	*30*

N.B ( ) = dishes consumed by fewer than 20% of Mirpuri households in one season.

mainly meat and chicken curries, mixed vegetable curry and staples including meat pilau. A one-way analysis of variance, although not significant, showed a trend for the dishes made by the Ismaili subjects to have the lowest fat content for those dishes in common with other groups (mean = 8.1 g fat/100 g dish) with the Pakistani and Bangladeshi recipes higher in fat (mean = 12.6 g and 12.7 g fat/100 g dish, respectively).

Discussion

As previously noted with non-Muslim subjects originating from Punjab or Gujerat in India (Kassam-Khamis *et al.*, 1995), there was wide diversity in diets and in commonly consumed traditional foods even amongst South Asians sharing a common religion and hence common food laws and restrictions. This diversity has been noted by others (Hunt, 1977; Wharton *et al.*, 1984; Smith *et al.*, 1993) and emphasizes the need to take these differences into account when providing dietary advice to individuals or groups of South

Table 7 Nutrient composition of South Asian Muslim Dishes (per 100g). Median values from recipe supplied by three separate households.

Recipe	Main ingredients	Water (g)	Protein (g)	Fat (g)	CHO (g)	Energy (kcal)	Energy (kJ)
Vegetable dishes							
Ismaili mixed veg curry	new pots, fr mixed veg, onions, tomatoes, sunfl oil	78.9	2.2	4.2	11.4	89	374
Pakistani mixed veg curry	fr mixed veg., onions, tomatoes, sunfl oil	83.7	2.8	1.5	7.5	51	217
Bengali mixed veg bhaji	fr mixed veg, onions, new pots, veg oil, tomatoes	63.5	2.5	19.7	11.2	229	947
Pakistani spinach curry	spinach, butter ghee, onions, chilli, chick pea flour	78.2	3.0	9.2	3.7	109	450
Bengali spinach bhaji	spinach, onions, sunfl oil, coriander	60.2	6.8	10.8	5.1	145	596
Pakistani potato curry	new pots, tomatoes, onions, corn oil	80.2	1.3	8.5	7.8	109	451
Bengali potato bhaji	old pots, onions, green peppers, veg oil	69.4	2.4	5.7	18.7	130	546
Pakistani aloo pakora	chick pea flour, old pots, sunfl oil, onion, spinach	35.2	10.3	16.3	28.8	293	1228
Pakistani bhindi	okra, sunfl oil, onions, tomatoes	81.7	1.7	7.2	4.5	86	357
Pulse dishes							
Pakistani masoor dhal	split red lentils, butter ghee	70.1	6.2	6.3	14.5	135	566
Bengali masoor dhal	split red lentils, onions, corn oil	79.7	4.0	2.8	9.7	77	325
Pakistani channa dhal	chick peas, tomatoes, onions, butter ghee	73.3	5.1	6.2	11.6	119	500
Pakistani chick pea curry	chick peas whole, potatoes, atoms, corn oil	69.0	4.4	9.3	12.9	149	623
Pakistani mung dhal	mung beans, veg oil, onions	76.7	5.3	5.1	9.2	101	421
Ismaili whole mung curry	mung beans whole, onions, tomatoes, sunfl oil	76.0	4.2	5.9	8.1	98	410
Pakistani dhal maash	urad gram, onions, veg oil	69.1	6.9	5.5	11.9	123	517
Ismaili dhal/dar	pigeon peas, split red lentils, tomatoes, veg oil	81.5	4.1	2.1	9.9	69	294
Ismaili kadhi	low fat yogurt, onions, chick pea flour, veg oil	87.7	2.6	3.1	4.4	49	206
Pakistani kadhi	low fat yogurt, onions, corn oil, chick pea flour	66.4	5.0	12.7	10.4	170	705
Ismaili kitchadi	white rice, mung beans, veg margarine	79.8	2.5	1.6	15.1	81	343
Rice dishes							
Bengali meat pilau/ukni	basmati rice, onions, lamb, new pots, veg oil, butter	54.5	4.5	13.6	25.6	244	1013
Ismaili meat pilau/ukni	lamb, basmati rice, old pots, onions, saffl oil	66.9	6.2	8.1	16.8	165	685
Ismaili chicken pilau	chicken, basmati rice, onions, tomatoes, sunfl oil	67.5	7.7	4.0	19.0	143	599
Pakistani meat pilau	lamb breast, basmati rice, onions, corn oil	55.3	7.0	16.1	20.0	253	1050
Ismaili biryani	chicken, basmati rice, onions, tomatoes, yogurt	57.8	12.8	4.5	22.7	183	766
Pakistani vegetable pilau	basmati rice, peas, onions, veg oil	54.9	4.3	3.0	35.4	187	782
Ismaili rice	white rice, sunfl oil	72.1	1.9	4.3	20.4	129	538
Bengali rice pitta	rice flour	74.9	1.8	0.2	22.6	103	432
Other cereal dishes							
Pakistani paratha	white chapati flour, water, veg oil	35.9	5.7	12.2	45.4	303	1274
Bengali paratha	white chapati flour, water, butter ghee, veg oil	35.6	4.6	23.1	36.0	361	1507
Pakistani roti	brown chapati flour, water	37.2	8.2	0.9	52.8	238	1016
Ismaili rotli	brown chapati flour, water, sunfl oil	24.1	8.6	10.9	55.2	339	1432
Bengali chapati	white chapati flour, water	36.4	7.1	0.4	56.1	242	1031
Ismaili dokhra	buttermilk, semolina, sunfl oil, coriander leaves	63.0	5.3	4.5	26.9	162	666
Meat dishes							
Ismaili lamb curry	lamb, tomatoes, onions, veg oil	75.0	12.3	8.8	1.8	133	556
Pakistani lamb curry	lamb breast, tomatoes, onions, corn oil, yogurt	59.7	9.1	25.9	2.6	276	1142
Bengali lamb curry	lamb, onions, corn oil	60.2	16.1	17.4	2.8	229	953
Ismaili lamb keema	lamb mince, tomatoes, onions, tomato puree	75.9	6.8	13.7	2.0	158	653
Pakistani lamb keema	lamb mince, onions, sunfl oil, tomatoes	60.0	6.3	26.8	3.2	275	1133
Pakistani matar keema	lamb mince, onions, peas, tomatoes, veg ghee	59.3	14.4	16.9	5.1	227	944
Pakistani aloo keema	beef rice, old pots, onions, tomatoes	60.7	11.4	15.9	9.1	222	923
Bengali lamb keema	lamb mince, onions, veg oil	51.3	12.3	29.1	3.1	320	1324
Pakistani aloo gosht	lamb leg, onions, old pots, sunfl oil	68.2	8.9	12.4	7.6	174	724
Pakistani kofta	lamb mince, onions, sunfl oil, tomatoes	60.0	10.2	24.3	2.5	268	1106
Pakistani gosht palak	lamb leg, spinach, tomatoes, coriander seed	75.1	9.5	9.4	2.0	126	523
Ismaili chicken & potato curry	chicken, new pots, tomatoes, onions, corn oil	78.0	10.1	5.3	4.5	104	435

continued

Table 7 *continued*

Recipe	Main ingredients	Water (g)	Protein (g)	Fat (g)	CHO (g)	Energy (kcal)	Energy (kJ)
Ismaili chicken curry	chicken, tomatoes, onion, corn oil	77.7	10.2	5.2	4.9	106	442
Pakistani chicken curry	chicken, tomatoes, onions, corn oil	69.3	8.7	15.7	2.6	181	751
Bengali chicken curry	chicken, onions, veg oil, lemons	67.6	15.1	10.5	2.6	163	679
Bengali chicken bhuna	chicken, onions, sunfl oil, coriander	64.5	19.5	10.3	2.0	174	726
Bengali chicken & potato	chicken, old pots, tomatoes	72.2	12.3	9.6	4.1	150	624
Pakistani roast chicken	chicken, yogurt	68.9	23.6	5.1	0.3	140	588
Egg dishes							
Bengali egg curry	eggs, onions, corn oil	55.0	10.5	23.9	5.7	275	1137
Fish dishes							
Ismaili masala fish		67.1	8.7	8.4	11.3	150	627
Bengali boal fish curry	boal fish, onions, corn oil	71.9	8.9	8.8	2.0	120	500
Bengali illish fish curry	hilsa (illish) fish, onions, veg oil	58.3	14.0	20.4	1.5	243	1005
Bengali gargot (ayr) curry	ayr fish, onions, veg oil	79.5	7.8	7.7	0.7	101	419
Bengali rui fish curry	rohu (rui) fish, onions, corn oil	73.7	9.0	9.8	1.7	126	522
Bengali prawn bhuna	prawns, tomatoes, onions, veg oil	63.7	15.9	11.1	3.8	178	742
Bengali rui fish & potato	rohu, old potatoes, onions, corn oil	74.6	8.3	7.1	5.7	118	490
Bengali sardines curry	sardines, onions, veg oil	81.5	7.0	7.7	1.1	98	408
Bengali pabda fish curry	pabda fish, onions, sunfl oil	76.4	11.2	5.1	4.3	106	441
Bengali magur fish curry	magur fish, onions, sunfl oil	76.5	10.3	8.8	3.0	129	534
Bengali koi fish curry	koi fish, onions, sunfl oil	67.9	7.2	15.8	4.1	181	750
Bengali baim fish & potato	gojar (baim) fish, old potatoes, onions, veg oil	64.9	15.3	7.4	6.3	144	600
Bengali hidol fish chutney	onions, dry hidol fish, veg oil	62.8	7.3	14.6	6.2	168	698
Bengali ketchki fish curry	ketchki fish, onions, veg oil	68.3	11.1	8.7	4.9	134	557
Bengali gojar shutki curry	onions, dry gojar fish, veg oil	42.1	19.0	24.3	4.3	300	1241
Sweet dishes							
Pakistani kheer	milk, white rice, sugar	65.3	2.9	3.0	29.4	151	637
Pakistani sevia	sugar, vermicelli, veg ghee, almonds, coconut	54.6	3.7	10.8	30.0	226	945
Pakistani zarda	basmati rice, sugar, sunfl oil, almonds	29.0	4.5	9.9	56.0	330	1379
Ismaili thepla	white flour, sunfl oil, sugar, eggs, semi-skim milk	11.6	5.9	26.6	57.4	477	1997
Bengali shandesh-sweet	white flour, corn oil, sugar	41.3	3.9	16.2	40.0	311	1304

Table 7 *continued*

	Starch (g)	Sugar (g)	NSP (g)	Na (mg)	K (mg)	Ca (mg)	Iron (mg)
Vegetable dishes							
Ismaili mixed veg curry	8.0	3.1	1.6	513	284	22	0.6
Pakistani mixed veg curry	2.2	4.3	2.5	428	176	36	0.9
Bengali mixed veg bhaji	6.4	3.9	3.0	281	227	27	0.6
Pakistani spinach curry	1.6	1.8	2.2	562	457	146	2.0
Bengali spinach bhaji	0.8	4.1	4.9	2203	1173	383	4.9
Pakistani potato curry	5.8	1.8	0.7	268	226	16	0.7
Bengali potato bhaji	16.7	1.6	1.6	616	402	11	0.6
Pakistani aloo pakora	25.1	1.9	5.6	347	631	104	4.5
Pakistani bhindi	0.2	3.5	2.2	273	245	77	0.8
Pulse dishes							
Pakistani masoor dhal	13.1	0.6	1.3	121	205	18	2.2
Bengali masoor dhal	8.3	0.8	0.9	503	142	12	1.4
Pakistani channa dhal	9.5	1.3	1.8	369	263	15	1.3

continued

Table 7 *continued*

	Starch (g)	Sugar (g)	NSP (g)	Na (mg)	K (mg)	Ca (mg)	Iron (mg)
Pakistani chickpea curry	10.3	1.8	2.3	332	283	34	1.8
Pakistani mung dhal	8.2	0.4	2.2	171	264	9	1.2
Ismaili whole mung curry	5.6	1.7	1.7	956	275	18	1.2
Pakistani dhal maash	10.0	1.0	2.3	17	276	50	1.9
Ismaili dhal/dar	8.8	0.7	0.8	151	238	16	1.1
Ismaili kadhi				295	125	65	0.7
Pakistani kadhi	4.9	4.8	1.4	641	289	124	1.3
Ismaili kitchadi	14.7	0.1	0.6	374	91	3	0.4
Rice dishes							
Bengali meat pilau/ukni	24.5	0.8	0.4	342	91	12	0.7
Ismaili meat pilau/ukni	19.2	0.7	0.6	170	184	13	1.0
Ismaili chicken pilau/ukni	18.5	0.4	11.3	377	147	11	0.5
Pakistani meat pilau	19.5	0.5	0.3	265	103	15	1.0
Ismaili biriyani	20.8	1.6	0.5	128	263	27	1.0
Pakistani vegetable pilau	34.1	0.8	1.3	225	93	16	0.9
Ismaili rice	20.4	0.0	0.1	325	28	5	0.3
Bengali rice pitta	22.6	0.0	0.6	56	68	7	0.5
Other cereal dishes							
Pakistani paratha	44.2	1.2	1.9	273	117	49	1.5
Bengali paratha	35.1	1.0	1.4	285	93	39	1.2
Pakistani roti	50.5	2.3	4.5	28	200	62	2.4
Ismaili rotli	52.8	2.4	4.8	68	210	64	2.6
Bengali chapati	54.6	1.5	2.2	11	145	61	1.8
Ismaili dokhra	23.9	2.9	0.8	136	172	71	1.0
Meat dishes							
Ismaili lamb curry	0.5	1.0	0.4	268	284	16	1.4
Pakistani lamb curry	0.7	1.6	0.4	349	253	24	1.3
Bengali lamb curry	0.3	1.4	0.4	689	353	26	2.1
Ismaili lamb keema	0.3	1.6	0.4	121	237	13	0.8
Pakistani lamb keema	0.4	2.1	0.6	633	213	21	0.9
Pakistani matar keema	1.5	2.5	1.4	478	397	28	2.6
Pakistani aloo keema	7.0	1.7	1.1	231	389	18	1.9
Bengali lamb keema	0.5	1.5	0.6	928	286	36	2.6
Pakistani aloo gosht	4.2	2.0	0.8	404	372	34	1.4
Pakistani kofta	0.3	1.4	0.4	589	285	23	1.3
Pakistani gosht palak	0.1	1.5	0.9	320	325	67	1.8
Ismaili chicken & potato curry	3.5	0.9	0.4	341	276	14	0.9
Ismaili chicken curry	4.0	0.7	0.4	231	292	14	0.9
Pakistani chicken curry	0.6	1.7	0.4	531	268	27	1.3
Bengali chicken curry	0.3	1.5	0.6	460	316	34	1.8
Bengali chicken bhuna	0.2	1.1	0.4	384	411	34	1.8
Bengali chicken & potato	2.8	0.8	0.4	210	294	20	0.9
Pakistani roast chicken	0.1	0.2	0.0	343	387	18	0.9
Egg dishes							
Bengali egg curry	0.0	3.6	1.0	543	288	83	2.7
Fish dishes							
Ismaili masala fish	7.9	3.0	1.2	412	508	25	1.0
Bengali boal fish curry	0.1	1.4	0.4	N	N	59	1.1
Bengali illish fish curry	0.0	1.0	0.4	593	174	128	2.0
Bengali gargot (ayr) curry	0.0	0.5	0.1	N	N	187	0.7

continued

Table 7 *continued*

	Starch (g)	Sugar (g)	NSP (g)	Na (mg)	K (mg)	Ca (mg)	Iron (mg)
Bengali rui fish curry	0.0	1.1	0.3	400	236	N	1.2
Bengali prawn bhuna	0.1	2.7	1.1	1053	297	98	2.3
Bengali rui fish & potato	4.7	0.7	0.5	350	272	N	0.7
Bengali sardines curry	0.2	0.7	0.2	172	15	36	0.9
Bengali pabda fish curry	0.1	1.2	0.4	547	N	187	1.3
Bengali magur fish curry	0.1	0.6	0.2	357	N	324	1.1
Bengali koi fish curry	0.1	1.1	0.3	466	N	206	1.7
Bengali baim fish & potato	4.1	0.8	0.6	1859	N	151	1.2
Bengali hidol fish chutney	0.0	4.4	1.1	1283	N	538	5.4
Bengali ketchki fish curry	0.2	1.8	1.9	537	N	432	5.3
Bengali gojar shutki curry	0.0	1.9	0.7	3037	N	02	2.1
Sweet dishes							
Pakistani kheer	5.0	24.4	0.0	43	115	90	0.1
Pakistani sevia	7.6	22.4	0.9	36	150	82	1.1
Pakistani zarda	42.8	13.2	0.4	4	79	16	1.0
Ismaili thepla	35.4	22.0	1.4	20	102	84	1.4
Bengali shandesh-sweet	31.8	8.3	1.3	1	63	58	0.8

N indicates that a significant amount of the nutrient is present but no value is available.

Asian origin in this country. Bangladeshi and Pakistani subjects were found to eat more traditional meals than the Ismaili group, who mostly ate traditional foods only at the main meal of the day (Kassam-Khamis *et al.*, 1996). As current dietary advice to those South Asians with diabetes and heart disease does not appear to be effective (McKeigue & Sevak, 1994), it may be postulated that amongst the more traditional Bangladeshi and Pakistani groups targeting traditional cooking practices may be a more effective measure to lower fat intakes than suggesting western alternatives (e.g. boiling, grilling, steaming instead of frying). Variation in fat and energy content of traditional dishes was also noted within and between groups. In many cases this was due to the amount of fat used in cooking, particularly with vegetarian dishes where fat content reflects added fat rather than any intrinsic fat as is present in meat dishes. During recipe collection the researcher (T.K.K.) noticed the common practice of 'pouring' oil into the pan rather than measuring it first. The amount of oil used in cooking could be reduced markedly by promoting spooning the oil into the pan. In addition, leaner cuts of lamb/mutton (generally higher in fat) or preferably white meat (chicken was always cooked with skin removed) could be promoted. All groups, but particularly Ismailis, who were seen to eat more purchased traditional foods, need to be made aware of the high fat content items such as fried snacks (samosas, kebabs, pakoras, bhajias, ganthia) and sweets (mithai, thepla, shandesh, kheer, sevia).

Larger variations in fat content of recipes were found for Bangladeshi and Pakistani dishes. The availability of authentic lower fat recipes, presumably palatable to those consuming them, could therefore be used to decrease fat intakes in members of these communities. The Ismaili group appeared to be the most affluent and westernized of the three Muslim groups, eating a less traditional diet and more conscious of healthy eating messages. Overall, their recipes tended to be lower in fat. In contrast, the higher fat content of Bangladeshi recipes may not be surprising. They are the most recent arrivals in Britain from a poor rural setting (Sylhet). Although living in the least affluent area in East London, commodities such as cooking oil and meat are probably both desirable and more affordable after migration (Fieldhouse, 1995), which may

Table 8 Variation in fat content (g per 100 g of dish) of dishes common to two or more Muslim South Asian groups.

Name of dish	Ismaili	Pakistani	Bengali
Mixed veg curry	8	4.8	13.9
Spinach curry/bhaji		9.2	10.8
Potato curry		8.5	5.7
Masoor Dhal		6.3	2.8
Kadhi	3.1	12.7	
Meat Pilau	7	16.1	13.6
Paratha		12.2	23.1
Roti/Rotli/Chappati	10.9	0.9	0.4
Lamb Curry	8.8	25.9	17.4
Keema Curry	13.7	26.8	29.1
Chicken Curry	5.2	15.7	10.5

ANOVA: Single Factor
Summary

Groups	Count	Sum	Average	Variance
Ismaili	7	56.7	8.10	12.39
Pakistani	11	139.1	12.65	66.63
Bengali	10	127.3	12.73	78.69

ANOVA
Source of variation

	SS	*df*	*MS*	*P*
Between groups		4	61.378	0.38556
Within groups		77	58.281	
Between groups	110.44	2	55.21	0.3992
Within groups	1448.84	25	57.95	

explain their greater use. Lip *et al.* (1995) also found that the highest fat foods were purchased weekly by South Asian households of lower social classes (IV and V) which were also the classes of our Bangladeshi sample**.** Thus, variation in fat content of recipes may be a reflection of relative socio-economic and educational status, rather than differences between the three Muslim groups *per se* (Kassam-Khamis *et al.*, 1996)

Whilst a representative list of commonly consumed Pakistani dishes has been identified, further investigation is necessary to identify any differences in these dishes when prepared by Mirpuris which might influence nutrient composition. This could be done by comparing weighed recipes from Mirpuri households with the recipes obtained from our London sample.

Conclusions

Although epidemiological evidence does not suggest that South Asian diets explain the higher rates of CHD seen amongst these groups, there is a higher prevalence of central obesity and insulin resistance amongst South Asians than amongst Europeans. The most effective measure to control obesity is through reduction of fat and energy consumption. Current dietary advice to South Asians suffering CHD and NIDDM does not appear to be effective (McKeigue & Sevak, 1994). As traditional foods are still widely eaten by all generations in South Asian Muslim communities, strategies for fat and energy reduction which focus on traditional cooking practices and promotion of lower fat authentic versions of recipes for commonly consumed dishes may be more successful. This paper has described the traditional dishes commonly consumed by different South Asian Muslim groups and their nutrient composition. It is hoped that this information will be useful to dietitians and other health professionals working with members of these communities, to help assess diets and promote change. In addition, it should be of value to those involved with research into the links between diet and health in these populations.

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