

Psychology & Developing Societies

<http://pds.sagepub.com>

New Foods for Old? The Diet of South Asians in the UK

Mary Sissons Joshi and Roger Lamb

Psychology Developing Societies 2000; 12; 83

DOI: 10.1177/097133360001200106

The online version of this article can be found at:
<http://pds.sagepub.com/cgi/content/abstract/12/1/83>

Published by:

 SAGE Publications

<http://www.sagepublications.com>

Additional services and information for *Psychology & Developing Societies* can be found at:

Email Alerts: <http://pds.sagepub.com/cgi/alerts>

Subscriptions: <http://pds.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations (this article cites 15 articles hosted on the SAGE Journals Online and HighWire Press platforms):
<http://pds.sagepub.com/cgi/content/refs/12/1/83>

South Asians in Britain suffer from a higher rate of coronary heart disease than the indigenous population and it has been suggested that elevated levels of dietary fat play an important role in this disease pattern. Ahmed (1999) has argued that these fat levels are primarily due to the traditional South Asian methods of cooking, while McKeigue and Chaturvedi (1996) have additionally implicated Western fast food. A survey was conducted of 149 South Asians residing in and around London to ascertain their dietary beliefs and practices in relation to the percentage of energy derived from dietary fat. Subjects were drawn from two groups in order to investigate the effects of age and acculturation: employees at ICI (mean age 39 years) and students at London University (mean age 21 years). The data showed that both vegetarians/nonvegetarians and younger/older South Asians were consuming far too much fat in their diet. Western fast foods (i.e., potato chips) played a part but the primary factors were curried meat for older nonvegetarians, and butter for everyone else. Despite this high fat content and their awareness of the general relationship between fat and coronary heart disease, the subjects erroneously believed that they had a healthy diet. Butter was consumed on toast, sandwiches and potatoes, and the responses of the younger participants revealed that they considered this high fibre food healthy and overlooked the amount of fat content in butter. Results are discussed in relation to their implication for health education and concepts of a multicultural diet.

New Foods for Old? The Diet of South Asians in the UK

MARY SISSONS JOSHI*

Department of Psychology, Oxford Brookes University, Oxford

ROGER LAMB

Department of Psychology, Oxford Brookes University, Oxford

Introduction

It is well established that the South Asian population of the UK not only has a high absolute risk of coronary heart disease, but also

* Thanks are due to the Health Education Authority, UK who funded the project, and to Jane Thomas and Kaushik Bose (Department of Nutrition and Dietetics, King's College, London) for dietary analysis and data entry.

Psychology and Developing Societies 12, 1 (2000)
Sage Publications New Delhi/Thousand Oaks/London

a greater relative risk compared to the indigenous population. Across all age groups, the rates of coronary heart disease are 40 per cent higher amongst those of Indian, Pakistani and Bangladeshi origin (McKeigue & Chaturvedi, 1996). Within the UK this higher rate of heart disease is found in all the main South Asian groups irrespective of region of origin, religion and consumption of vegetarian or nonvegetarian diet. Furthermore, these high rates of coronary heart disease are found amongst South Asians who have migrated to other parts of the world, and are evident in urban India as well (Chadha, Radhakrishnan, Ramachandran, Kaul, & Gopinath, 1990; Raheja, 1990). While lively debate surrounds the causes of this disease pattern (Smaje, 1995; Williams, Bhopal, & Hunt, 1994), many researchers consider obesity and dietary fat to be important components of the clinical picture (Balarajan & Raleigh, 1995; McKeigue & Chaturvedi, 1996).

Within the UK only a few studies have documented the relationship between ethnicity and percentage of energy derived from fat in any detail. Some authors have focused on the amount of dietary fat consumed. Reddy and Sanders (1992) found that Gujarati female Hindus derived 38 per cent energy from fat as compared to 40 per cent characteristic of indigenous females. Sevak, McKeigue, and Marmot (1994) observed that in Punjabi males the average fat intake was 36 per cent of total energy, compared to 38 per cent in the general population. However, as McKeigue and Chaturvedi (1996) have pointed out, not only are these figures of 38 per cent and 36 per cent higher than the 33 per cent recommended in *The health of the nation* (Department of Health, 1992) document, they are extremely high in comparison with rural India where fat accounts for less than 15 per cent of total energy intake (Achaya, 1987). Indeed, in view of the very high rates of coronary heart disease among urban and migrating South Asians, it has been suggested that genetic factors may interact with dietary change to cause heart disease (McKeigue, Shah, & Marmot, 1991). If this is so, a target figure of 30 per cent of energy to be derived from dietary fat may be more appropriate for those of South Asian origin as compared to 33 per cent for those of Caucasian origin (McKeigue & Chaturvedi, 1996).

Other authors have focused on the types of food eaten by South Asians in an attempt to identify the high fat items in their diet. All those who have done work in this area emphasise the importance

of the role of fat—and especially ghee—in the traditional “Indian” diet. Fat is used to fry spices in curried meat and vegetable preparations, to deep fry snacks, to prepare pickles, and breads (Ahmed, 1999). Full-fat milk is preferred and used for yoghurt and sweetmeats (Khajuria & Thomas, 1992). It is generally asserted that the use of fat in South Asian cuisine increases with affluence (Ahmed, 1999). Thus, it is often postulated that those of Indian origin who retain their traditional diet even when living in a Western environment are very likely to be eating a high fat version of this diet. The empirical data on this issue, however, are inconclusive. Studies by Butt (1993) and McKeigue, Pierpoint, Ferrie, and Marmot (1993) show that ghee (whether made from butter or vegetable oil) is not used by South Asians in the UK as much as was originally supposed. There remains the possibility that the liberal use of regular cooking oil, a common feature of South Asian cooking in the UK, may be adding to the quantity of fat in the diet (Samanta et al., 1987).

Food is a crucial aspect of culture (Douglas, 1975; Goody, 1982; Mennell, Murcott, & van Otterloo, 1992), and particularly so for South Asians for whom it signifies religion, caste and occasion, and is the focus of much taxonomic and moral thought (Appadurai, 1981; Joshi, 1995; Khare, 1976; Marriott, 1968). Given the vital significance of food to identity, social scientists have considered it of great importance in the study of migrant communities. Some authors have suggested that dietary practice is an aspect of culture people are most likely to retain when they migrate and to maintain for many years thereafter (Calvo, 1982). This very assumption has led to questions on food preference being used in measures of acculturation (Ghuman, 1999; Stopes-Roe & Cochrane, 1990).

If South Asians in the UK tend to retain traditional ingredients and techniques of preparation, Ahmed's (1999) suggestion that the increased level of fat in their diet is a result of such techniques of food preparation would be supported. This is more likely in the case of first generation migrants, particularly those who migrated at a later age because, as Rao (1986) pointed out, food preferences are formed in the first 16 years of life and are difficult to change later. However, in the case of younger people the picture would be more complex. In considering the experience of the second generation UK South Asians, the theme of living in two cultures is a constant. Early authors were afraid that the second generation would be uneasily located between two contrasting cultures but

recent research has revealed a picture of creative biculturalism (Ballard, 1994; Bhachu, 1993; Ghuman, 1999; Hutnik, 1991; Modood et al., 1997). Inhabiting two cultures may be psychologically advantageous for the younger South Asians in the UK but may unfortunately place them at a health risk.

McKeigue and Chaturvedi (1996) have argued, "with increasing westernization in South Asian communities, food consumption outside the home will increase and this will be accompanied by increased consumption of fast foods or manufactured foods which are high in fat such as potato crisps, chips and biscuits" (p. 58). Thus, if South Asian migrants eat an Indian diet supplemented by Western food, they and their descendants risk having a diet with high fat levels contributed by the cuisines of both cultures. It may reasonably be feared that the young South Asians would be particularly at risk from such a mixed high fat diet since they would be constantly exposed to the eating habits of the host culture through school attendance, friendship circles and the media. Furthermore, in Western cultures, eating different food from their parents constitutes a well-worn path of rebellion amongst adolescents and young adults (Brannen, Dodd, Oakley, & Storey, 1994; Lupton, 1996). In interviews with adolescent women in Canada, Chapman and Maclean (1993) found that high fat junk food in particular symbolised autonomy and differentiation, and although associated negatively with body weight it was also associated with enjoyment, pleasure and being away from parents or home.

There are two further reasons for this interest in the diet of young South Asians in the UK. First, it is generally the case that wherever habit and lifestyle play a significant role in the development of disease, there is most concern about the habits of the young. They have most to gain from the establishment of satisfactory habits, and are perhaps better able to change their habits than those who are older. Second, in the UK the South Asian population is demographically biased towards the younger age groups (Peach, 1996). Should this age group develop the same health problems as their parents, they and the wider community would face a health crisis (Feehally et al., 1993; Roderick, Clements, Diamond, Storkey, & Raleigh, 1998). Little is known about the eating patterns of this age group and it would be important to discover whether their dietary attitudes and practice are liable to place them at greater or less risk of coronary heart disease than their parents.

The aims of the study are to investigate: (a) the extent to which both older and younger South Asians in the UK derive a high percentage of their energy from fat in their diet; (b) whether among the South Asians in the UK a higher percentage of energy derived from fat is associated with eating Western or Indian foods;¹ (c) whether Western high fat foods are more likely to play a major role in the high fat components of the diet of younger South Asians; (d) the effects of acculturation on the high fat items in the diet; and (e) South Asians' awareness of their heightened risk of coronary heart disease and its possible relation to fat in their diet.

Method

The study analyses data drawn from a larger survey of dietary habits and attitudes of 149 members of the population of the London area. The majority of the respondents were employees at an ICI division in Slough, west of London, or students at King's College, University of London. South Asians identified themselves in response to a standard question on ethnicity (Dale & Marsh, 1993). The respondents also provided information on demographic variables such as age, gender, place of residence (for students), and education and occupation for those in work. Details of place of birth, length of residence in Britain, and religion were also obtained.

All the respondents provided details of everything they ate and drank on the previous day (24-hour recall food diary).² If, for some reason, what they had eaten on the previous day was not typical, they were asked to describe what they typically ate and drank. Using 5-point scales, the respondents were asked whether they considered that they were eating a healthy diet and to register their agreement or disagreement with a brief set of statements about diet and health:

¹ The term "Indian" will from now on be used to refer to South Asian food. In this we follow a variety of authors in the field (Ahmed, 1999; McKeigue & Chaturvedi, 1996; Razzaq, 1993), and have also been influenced by Khare and Rao's comment that "The South Asian social diversity, though enormous, is not without an overlapping gastronomic culture" (1986, p. 3).

² This method has been found to be a valid index of dietary intake (see Bingham et al., 1994).

People of South Asian origin in Britain are at greater risk of getting coronary heart disease than others.

People can lower their risk of coronary heart disease by reducing the amount of fat they eat.

It's really important that people make an effort to improve their health by eating less fat.

I am committed to eating a low fat diet.

Among the 149 participants in the study, 80 were males and 69 females. The mean age of the employees was 39.3 years, and of the students 21.2 years. Also, 65 per cent of the employees had a college education. According to self-reported ethnicity, 77 per cent of the sample was Indian, 20 per cent Pakistani, and 3 per cent Bangladeshi. Further, 47 per cent of the sample was Hindu, 17 per cent Sikh, 34 per cent Muslim, and 2 per cent gave no religion.

Results

Amount of Fat in the Diet

The 24-hour food diaries were analysed using the COMPEAT programme to calculate the respondents' intake of total energy (kcal), grams of fat, protein, carbohydrate, fibre, and milligrams of cholesterol. The percentage of each participant's energy derived from dietary fat (hereafter referred to as per cent fat) was calculated as follows: $\text{total fat} \times 900 / \text{kcal}$.

The per cent fat for male and female employees and students is shown in Table 1. The overall average was 37 per cent and did not differ by gender or age of the respondent group. The classification of the respondents according to per cent fat is presented in Table 2. Only 18 per cent of the respondents had a figure of 30 per cent, while over twice that number had a figure in excess of 40 per cent. Vegetarians constituted 26 per cent of the sample. The proportion of vegetarians was the same among older and younger participants. Vegetarians had a lower average per cent fat (35 per cent) than nonvegetarians (38 per cent) ($t : 2.107, df : 147, p : 0.037$).

For each individual, the COMPEAT programme defined the sources of fat and analysed how much of the total fat was provided by each of the items eaten. It was therefore possible to isolate the

Table 1
Percentage Energy Derived from Dietary Fat

<i>Respondent</i>	<i>Gender</i>	<i>% Fat Mean</i>	<i>N</i>	<i>SD</i>
Employees	All	36.67	79	7.69
	Male	37.12	53	7.93
	Female	35.76	26	7.23
Students	All	37.27	70	7.22
	Male	36.14	27	7.18
	Female	37.98	43	7.24
Total sample		36.95	149	7.45

Table 2
Proportions of the Sample Categorised by Different Percentages of Energy Derived from Dietary Fat

	<i>% Energy Derived from Dietary Fat</i>			
	<i>< 30%</i>	<i>30-35%</i>	<i>> 35% < 40%</i>	<i>40%+</i>
Employees	17%	18%	30%	35%
Students	20%	19%	21%	40%
All	18%	18%	26%	38%

four food items which contributed most fat to each individual's diet. Four was chosen as an appropriate cutoff point as it was usually the case that more than 80 per cent of dietary fat was provided by four items. The different categories (II) of food into which the great majority of high fat food items fell are depicted in Table 3. The two age groups differed on a number of items. Employees were more likely to have curried vegetables among their high fat items than were students ($t : 4.542, df : 139.7, p : <0.001$). Students were more likely than employees to include vegetables ($t : 2.281, df : 108.6, p : 0.025$) and biscuits ($t : 2.313, df : 139.6, p : 0.022$) in their list of high fat items.

Are Western or Indian Items Predicting per cent Fat in the Diet?

A series of regression analyses investigated the relationship between the occurrence of these food items and per cent fat in the

Table 3

The 11 Items Found to be Major Contributors to Dietary Fat and the Percentage of Participants for Whom Each Item Contributed to Fat in the Diet

<i>Item</i>	<i>All</i>	<i>Employees</i>	<i>Students</i>
Butter ^a	67%	72%	61%
Milk	47%	45%	49%
Cheese	24%	23%	26%
Biscuits ^b	44%	35%	54%
Potato chips ^c	35%	29%	41%
Curried meat	26%	28%	25%
Curried vegetables	38%	55%	20%
Curried fish	6%	9%	3%
Meat ^d	24%	25%	22%
Vegetables ^e	11%	5%	17%
Fried fish	3%	3%	3%

Notes: Bold indicates a significant difference between employee and student proportions.

^a "Butter" refers to butter or margarine.

^b "Biscuits" refer to biscuits, cakes or confectionery bars.

^c "Potato chips" refer to French fries or prepackaged snack crisps/wafers.

^d Usually cooked dishes with sauces—such as spaghetti bolognese, and lasagne.

^e Usually served with mayonnaise, such as potato salad, and coleslaw.

respondents' diets (see Table 4). In an all-in regression, curried meat dishes made the principal contribution to per cent fat in the diet ($\beta : 0.307$, $t : 3.289$, $p : 0.001$). The only other clearly significant contribution was made by butter ($\beta : 0.176$, $t : 2.039$, $p : 0.043$), but potato chips also made an important contribution ($\beta : 0.171$, $t : 1.827$, $p : 0.07$). Since vegetarians had lower per cent fat than nonvegetarians, this regression was repeated for meat eaters alone to eliminate any possible confounds. When vegetarians were excluded from the sample, curried meat remained the principal predictor of per cent fat ($\beta : 0.275$, $t : 2.431$, $p : 0.017$), and potato chips continued to be an important predictor ($\beta : 0.218$, $t : 2.014$, $p : 0.047$). The number of vegetarians was too small to permit a separate regression analysis but an examination of the zero order correlations revealed that the main predictors of their per cent fat were cheese ($r : 0.379$, $N : 38$, $p : 0.009$, 1-tailed) and butter ($r : 0.275$, $N : 38$, $p : 0.047$, 1-tailed). Consuming these was associated with having a higher per cent fat diet. Curried vegetables were marginally significant as a predictor of per cent fat but not in the expected direction ($r : -0.295$, $N : 38$, $p : 0.072$, 2-tailed).

Table 4

The 5 Food Items which were Main Predictors of Variation in Percentage Energy Derived from Fat

Food Item	Participants		
	All β	Nonvegetarian β	Vegetarian r
Curried meat	0.307***	0.275*	—
Butter	0.176*	0.090	0.275
Potato chips	0.171	0.218*	0.078
Curried vegetables	-0.071	-0.046	-0.295
Cheese	0.065	0.008	0.379*

Notes: Other food items listed in Table 3 are omitted in Table 4 due to lack of statistical significance

*** $p < 0.001$.

** $p < 0.01$.

* $p < 0.05$.

(2-tailed)

Comparison of Predictor Items for Employees and Students

The predictive power of the five food items (curried meat, butter, potato chips, curried vegetables, and cheese) which made an important contribution to per cent fat in the diet was investigated for the two separate age groups by all-in regression. For employees, the regression was significant ($F : 4.899$, $df : 6/68$, $p < 0.001$) and accounted for 24 per cent of the variance. The only significant predictor of per cent fat was curried meat ($\beta : 0.428$, $t : 3.856$, $p < 0.001$). Whether or not the respondent was a vegetarian was included among the predictor variables but was not found to be significant. Further, 36 per cent of the employee nonvegetarians listed curried meat in their highest fat items. It was not associated with age or gender, but it was associated with education ($r : -0.277$, $N : 54$, $p : 0.043$). The higher the level of education the less likely the individual included curried meat in his/her high fat items.

In the case of younger age group the regression was also significant ($F : 2.613$, $df : 6/62$, $p : 0.025$) and accounted for 13 per cent of the variance. The only significant predictors were butter ($\beta : 0.291$, $t : 2.391$, $p : 0.020$) and potato chips ($\beta : 0.282$, $t : 2.325$, $p : 0.023$). Whether or not the respondent was a vegetarian was not significant. Overall, 61 per cent of the students included butter

in their highest fat items and 41 per cent listed potato chips. Neither was associated with age or gender. Curried meat made no contribution to the equation.

Acculturation

It was observed that 39 per cent of the respondents were born in the UK (15 per cent employees, 66 per cent students). Of those born outside the UK, the mean age at migration was 16.6 years (employees 18.2 years, students 12.2 years) and the mean length of stay in the UK was 20.2 years (employees 23.9 years, students 9.9 years).

In order to investigate the effect of acculturation on the employees' diet, a series of six multiple regressions were run to see whether birthplace (in or out of Britain), age at migration, years in the UK, and current age related to per cent fat or consumption of the five key dietary items. Per cent fat was not predictable from these acculturation variables. The only food item which was predictable was potato chips, age at migration being the variable with which it was associated ($F : 3.935, df : 3/68, p : 0.01$). Those who migrated at a younger age were more likely to include potato chips in their list of high fat items.

For students a further acculturation variable, place of residence, was also included in the six regressions investigating per cent fat and the five dietary items. There were no statistically significant relationships between the acculturation variables and per cent fat or any of the food items.

Participants' Beliefs about the Health of Their Diet

In the sample as a whole, 54 per cent considered their diet healthy and only 13 per cent considered their diet unhealthy. This perception did not vary as a function of being a vegetarian or non-vegetarian. Among the employees, 53 per cent perceived their diet to be healthy and only 9 per cent believed that it was unhealthy. As Table 5 shows, the perception of having a healthy diet was unrelated

to per cent fat. It was not related to total energy or to total cholesterol, carbohydrate, fibre or protein, but it was related to total fat. Those who were consuming more fat in absolute quantities recognised that they were eating a less healthy diet ($r: -0.220, N: 79, p: 0.025, 1\text{-tailed}$). Among the employees, those who consumed potato chips as a high fat item perceived their diet as less healthy than those who did not ($r: -0.188, N: 75, p: 0.05, 1\text{-tailed}$). None of the other categories of high fat food listed in Table 3 was related to the respondents' beliefs about the healthiness of their diet.

Among the younger participants, 54 per cent considered that their diet was healthy and 19 per cent believed it to be unhealthy. The perception of having a healthy diet was unrelated to per cent fat or total fat but was related to total fibre ($r: 0.189, N: 70, p: 0.03, 1\text{-tailed}$) and to total protein ($r: 0.180, N: 70, p: 0.034, 1\text{-tailed}$). Those who consumed more fibre and more protein believed that they had a healthier diet. There were marginal relationships between belief in a healthy diet and the consumption of potato

Table 5

Participants' Perceptions of the Healthiness of Their Diet in Relation to its Constituents

	Employees <i>r</i>	Students <i>r</i>
% fat in diet	ns	ns
Total fat	-0.220	ns
Total fibre	ns	0.189
Total protein	ns	0.180
Biscuits	ns	-0.190 ^a
Potato chips	-0.188	-0.175 ^b
Butter	ns	0.233 ^c
Fried fish	ns	0.299 ^d

Note: Other food items listed in Table 3 are omitted in Table 5 due to lack of statistical significance

Significance of the Differences Between the Correlations Listed Above as Superscript a, b, c, and d for Students:

Pairs of correlations	<i>t</i>	<i>df</i>	<i>p</i>
ac	2.184	66	<0.05
ad	2.350	66	<0.05
bc	2.241	66	<0.05
bd	2.305	66	<0.05

chips ($r : -0.175$, $N : 69$, $p : 0.075$, 1-tailed) and biscuits ($r : -0.190$, $N : 69$, $p : 0.059$, 1-tailed), i.e., there was a tendency for those who mentioned chips and/or biscuits in their list of high fat items to believe that their diet was less healthy than those who did not. In the case of students, the relationship between consumption of butter and the belief that they were eating a healthy diet was paradoxical. Those who thought that their diet was healthy were *more* likely to include butter in their high fat items than those who did not think that their diet was healthy ($r : 0.233$, $N : 69$, $p : 0.054$, 2-tailed). A similar paradoxical relationship was observed between their beliefs and consumption of fried fish ($r : 0.229$, $N : 69$, $p : 0.059$, 2-tailed). Those who perceived their diet to be healthy were eating more fried fish. Given the difference in the direction of the correlations noted above, a set of comparisons was made which revealed that the correlations between healthy diet beliefs and consumption of fried fish and butter were significantly different from the correlations between healthy diet beliefs and the consumption of potato chips and biscuits (see Table 5).

Other Health Beliefs

Regarding the other health belief items, Table 6 shows the means for both groups. There was a large degree of uncertainty among both employees and students about whether people of South Asian origin in Britain are at a greater risk of getting coronary heart disease. The mean for both groups was around 3.0, i.e., the midpoint of the 5-point scale which was labelled uncertain, and this was also the modal response for each group. There was, however, a significant difference between the two groups ($t : 2.028$, $df : 147$, $p : 0.044$). Whereas only 29 per cent of the employees recognised the risk factor, 43 per cent of the students did. In contrast 94 per cent of both groups recognised that "People can lower risk of coronary heart disease by reducing the amount of fat they eat". Similarly, a large majority of both groups believed that "It's really important that people make an effort to improve their health by eating less fat". However, agreement on this item was more widespread among employees (92 per cent) than students (80 per cent) (comparison of means, $t : 2.889$, $df : 147$, $p : 0.004$).

Table 6

Participants' Beliefs about Coronary Heart Disease and Dietary Fat.*Means and Standard Deviations*

<i>Item</i>	<i>All (149)</i>	<i>Employees (79)</i>	<i>Students (70)</i>
People of South Asian origin in Britain are at greater risk of getting coronary heart disease than others	3.13 1.03	2.97 1.00	3.31 1.04
People can lower their risk of coronary heart disease by reducing the amount of fat they eat	4.40 0.68	4.46 0.75	4.34 0.59
It's really important that people make an effort to improve their health by eating less fat	4.12 0.73	4.28 0.70	3.94 0.72
I am committed to eating a low fat diet	2.76 1.01	2.88 1.09	2.63 0.90

Notes: Bold indicates a significant difference between employee and student means.

Participants responded to each statement on a 5-point scale:

Strongly agree (5), Agree (4), Uncertain (3), Disagree (2), Strongly disagree (1).

Only 52 per cent of both groups were committed to eating a low fat diet. In the case of employees commitment to a low fat diet was correlated with having a lower per cent fat ($r : -0.224$, $df : 78$, $p : 0.049$, 2-tailed) but did not predict the inclusion or exclusion of any particular high fat items in the diet. In the case of students, in contrast, commitment to a low fat diet was not correlated with per cent fat but did predict the exclusion of biscuits ($r : -0.268$, $df : 69$, $p : 0.026$, 2-tailed) and, at a marginal significance, with the exclusion of potato chips ($r : -0.176$, $df : 69$, $p : 0.148$, 2-tailed). Students who were committed to eating a low fat diet also showed a marginal tendency to increase their consumption of butter ($r : 0.189$, $df : 69$, $p : 0.120$, 2-tailed).

Discussion

The first question concerned the average per cent of energy derived from fat in the diet. Overall, per cent fat was 37 per cent. This is disturbingly high compared to the recommended limit of 30 per cent—the maximum advisable for this population, and

although vegetarians had a lower figure (35 per cent versus 38 per cent), this figure was still high in absolute terms. The mean figure of 37 per cent in this study is of the same order as figures reported in previous studies of middle aged South Asians in the UK (Reddy & Sanders, 1992; Sevak et al., 1994). Two further aspects of the data are: (a) four-fifths of the sample were above the recommended level and two-fifths actually had a per cent fat figure of over 40 per cent, and (b) the figure for the younger participants (37.3 per cent) was only marginally higher than the figure for the older participants (36.7 per cent). Inasmuch as dietary fat intake across the lifespan is related to coronary heart disease and other major life-threatening conditions, these figures are alarming and indicate that this community continues to be at risk.

The second of the five questions pertained to whether the highest per cent fat consumption among South Asians in the UK was associated with eating Western or Indian food. For nonvegetarians, the principal predictor was curried meat, with potato chips adding to the variance explained. For vegetarians, the picture was very different—cheese and butter were associated with higher fat levels, and curried vegetables were associated with lower fat levels. Thus, Ahmed's (1999) suggestion that the traditional preparation of food is principally responsible for fat in the South Asian diet is only supported in the case of nonvegetarians. The curried method of preparation did not increase the amount of fat in the diet of vegetarians. This was predicted by cheese and, to a certain extent, by butter.

The data strongly suggest that the predictors of fat in the diet are age dependent (the third question). While the younger participants were just as likely as the older participants to include curried meat as a high fat item, it did not predict per cent fat in their diet. Instead this was predicted by butter. The role of butter as a high fat item in the diet of students and vegetarian employees does not fit Ahmed's (1999) model but is not entirely compatible with McKeigue and Chaturvedi's (1996) model either. The 24-hour diaries revealed that butter was usually consumed on toast at breakfast and, frequently with cheese, in sandwiches and baked potatoes at midday. These items cannot be considered fast food in the normal sense of the phrase (Beardsworth & Keil, 1997; Fieldhouse, 1995; Ritzer, 1993).

The fourth question concerned McKeigue and Chaturvedi's (1996) suggestion that acculturation would lead to the consumption

of high fat fast foods, and that this would play a role in the elevated dietary fat of South Asians in the UK. It was found that 83 per cent of the employees were migrants to the UK and the majority had been in the UK for at least 20 years. The findings revealed that those who had migrated at a younger age were more likely to mention potato chips in their list of high fat items,³ in line with McKeigue and Chaturvedi's model. Acculturation, however, was neither related to per cent fat in the employees' diet, nor did potato chips play a primary role in predicting variation in the fat in their diets. The impact of these Western fast foods was not as McKeigue and Chaturvedi (1996) have supposed. For students, the great majority of whom were either born in the UK or had been in the UK for over 10 years, none of the acculturation variables predicted per cent fat or high fat component in the diet.

The last question was related to the respondents' beliefs about diet and health. Given the high level of energy derived from fat, it is alarming that only 13 per cent of the subjects considered their diet unhealthy. Curried meat dishes were not perceived as being related to the healthiness of the diet by either employees or students but potato chips were seen as unhealthy. Students also perceived biscuits as unhealthy but they believed that diets containing fried fish, butter, high fibre, and high protein were healthy.

The other health belief items showed that very few respondents realised that people of South Asian origin are at a greater risk of getting coronary heart disease than others, and the most common response to this was uncertainty. While there was a general recognition that there is a relationship between fat and coronary heart disease, only half the sample was committed to a low fat diet and, as already noted, the sample as a whole indeed have a high per cent fat level. It is reassuring to note that employees who claimed that they were committed to eating a low fat diet did consume diets characterised by a lower per cent of energy derived from fat.

In contrast, in the case of students there was no relationship between commitment to a low fat diet and level of fat in their diet. The data suggest that this lack of relationship was because they were only alert to some of the sources of fat in the food they were

As noted in Table 3, potato chips encompassed French fries and prepacked crisps. These two varieties were eaten in equal proportion and predominantly with meals by both employees and students

eating. In particular, students were eating fat which was disguised or overlooked because it accompanied high fibre food which they rightly considered to be healthy. They realised that biscuits and, perhaps, potato chips were high fat items and therefore avoided them, but they were inclined to eat sandwiches and baked potatoes, overlooking the fact that these items contain a large amount of butter. In other words, students were eating "hidden" fat, but it was not "hidden" as an ingredient in biscuits and cakes as frequently alluded to by nutritionists (Gurr, 1998). Ironically, perhaps the students' desire to eat a healthy high fibre diet exposed them to butter as a source of fat. Further research is required to establish whether this error is widespread among all British students since there is no reason to suppose that it is only restricted to South Asian students in the UK.

Additional research is also needed to establish the reliability of the findings reported here. The sample was small. A particularly important benefit of a larger sample would be the inclusion of an adequate number of vegetarians to permit separate analyses of their responses. A larger sample would also permit an investigation of the dietary habits and attitudes of different culinary subgroups of South Asians (such as Punjabi, Gujarati, and Bengali) in the UK. The sample was predominantly college educated and 77 per cent were of Indian origin which makes it relatively unrepresentative, because according to the 1991 Census, the Indian group accounts for 56 per cent of the South Asian population in the UK (OPCS, 1993). As students or employees, almost all the subjects were eating their midday meal away from home. Thus, their diets may not reflect the practice of groups such as housewives or the unemployed who are likely to spend more time in the home.

Conclusion

Few writers on this topic doubt that the percentage of energy derived from dietary fat is in drastic need of reduction among urban South Asians at home and abroad. The results of this study bear this out for South Asians in the UK, given the high per cent fat consumption of most of the respondents. While the majority realised that a high fat diet poses a risk for coronary heart disease, only

a minority was aware that people of South Asian origin in Britain are at a high risk or that their own diet may also place them at increased risk.

Different suggestions have been made about the source of fat in urban South Asian diets. According to Ahmed (1999), it is predominantly due to the methods of preparing curried foods whereas McKeigue and Chaturvedi (1996) have argued that a primary source may be Western fast foods. The findings of this study provide some support for both these suggestions but in doing so imply that neither suggestion tells the whole story. Support for the involvement of traditional methods of preparation was provided by the finding that over the whole sample, and particularly among older nonvegetarians, curried meat dishes were the principal constituent of a high fat diet. Support for the fast food model was provided by the fact that potato chips were a factor in the respondents' high fat diets, and that acculturation did play a part insofar as potato chips were more likely to be a factor for those older respondents who had migrated to the UK at a younger age. Although younger subjects were eating curried meat dishes, they were not a predictor. This group provided no support for the view that traditional food preparation is primarily responsible for the dietary fat of South Asians in the UK. Furthermore, the data make it clear that butter was a serious source of hidden dietary fat among older vegetarians and all younger South Asians. The authors cited above have not taken this source of fat into account. Health educators must not make the same mistake.

When considering advice which may be necessary to give South Asians in the UK the opportunity to improve their dietary health, educators do not seem to need to inform them about the unhealthy nature of fast foods such as potato chips since it appears that the respondents already recognise the risk.⁴ Older nonvegetarians may need reminding of the potential danger of the use of too much oil in the preparation of curried dishes as has often been noted by culinary and medical authors (Dalal & Pirmal, 1992; Razzaq, 1993). However, most important is the need to increase younger South Asians' awareness of the hidden fat in foods which they rightly

This is a good example of the fact that knowing that something is not good for one is not sufficient to make one give it up, a point recognised since antiquity and stressed by contemporary health psychologists (Fishbein & Ajzen, 1975).

consider to be healthy. For they appear actually to be increasing their fat intake due to their motivation to consume a more healthy diet⁵

It would be patronising to give advice to South Asians on the assumption that they are victims of their own traditional cuisine or alternatively suckers for the most obviously unhealthy constituents of the Western diet. The true picture seems to be that younger South Asians in particular forget that the healthiest foods are often accompanied by items such as butter which are just as high in fat content as fast foods which they recognise as unhealthy and sometimes avoid.

Health educators and social scientists must beware of ethnic stereotypes. Throughout this paper we have followed other authors in treating Indian and Western food as distinct. In reality, most inhabitants of the UK are likely to be consuming food of many different ethnicities. Indian dishes are widely available in supermarkets in the UK, and many meals are eaten in Indian restaurants (Payne & Payne, 1993).⁶ This means that the hard and fast distinction between the "Indian" and the "Western" diet in the UK may be an exaggeration. In common nomenclature, however, some dishes continue to be recognised by their national origins (Italian, Mexican, and Indian) and some are not (cornflakes and hamburgers). It may be that the retention of the national identity signals the fact that these dishes are indeed still considered "foreign" by the host community but it is beyond the scope of this paper to address this issue. Nevertheless, the fact that Indian food is called "Indian food" in the UK may give us some confidence in retaining this distinction in this paper. But we must be aware of the fact that for the younger

⁵ The category "butter" included both butter and margarine for two reasons: (a) their total fat amount is the same as they both contain 82 grams per 100 grams of edible portion (MAFF, 1995), and (b) McKeigue and Chaturvedi (1996) have argued that the ratio of saturated to unsaturated fatty acids (i.e., the key distinction between butter and margarine) is not of great importance to the medical picture of health and the fat content in the diet of South Asians in the UK. The majority of participants in the study specified that they consumed butter rather than margarine. Dairy products are likely to be of particular significance to Hindu subjects, but the sample was not large enough to permit subgroup comparisons.

⁶ It has often been pointed out that when "ethnic" foods are marketed in a new cultural milieu, they change their character to maximise their market potential and are therefore sometimes far from authentic (Wood, 1995).

South Asians eating Indian food may be an element in their retention of their parents' cultural identity, but may equally be an instance of consuming a mixed diet widespread among "post-modern" youth. Their *perceptions* of their diet's symbolism and its meaning for their identity are topics which merit further investigation.

REFERENCES

- ACHAYA, K.T. (1987). Fat status of Indians—A review. *Journal of Scientific and Industrial Research*, 46, 112–126.
- AHMED, S. (1999). Coronary heart disease: The Indian Asian diet. *Nursing Standard*, 13(27), 45–47.
- APPADURAI, A. (1981). Gastro-politics in Hindu South Asia. *American Ethnologist*, 8, 494–511.
- BALARAJAN, R., & RALEIGH, V.S. (1995). *Ethnicity and health in England*. London: HMSO.
- Ballard, R. (1994). Introduction: The emergence of desh pardesh. In R. Ballard (Ed.), *Desh pardesh: The South Asian presence in Britain* (pp. 1–34). London: Hurst & Co.
- BEARDSWORTH, A., & KEIL, T. (1997). *Sociology on the menu: An invitation to the study of food and society*. London: Routledge.
- BHACHU, P. (1993). Identities constructed and reconstructed: Representations of Asian women in Britain. In G. Buijs (Ed.), *Migrant women: Crossing boundaries and changing identities*. Oxford: Berg.
- BINGHAM, D.J., GILL, C., WELCH, A., DAY, K., CASSIDY, A., KHAW, K.T., SNEYD, M.J., KEY, T.J.A., ROE, L., & DAY, N.E. (1994). Comparison of dietary assessment methods in nutritional epidemiology: Weighed records v. 24 h recalls, food frequency questionnaires and estimated diet records. *British Journal of Nutrition*, 72, 1–25.
- BRANNEN, J., DODD, K., OAKLEY, A., & STOREY, P. (1994). *Young people, health and family life*. Buckingham: Open University Press.
- BUTT, M.A. (1993). *A comparative study of risk factors of coronary heart disease in South Asians and Caucasians*. Unpublished PhD thesis, University of London (cited in McKeigue & Chaturvedi, 1996, *op. cit.*).
- CALVO, M. (1982). Migration et alimentation. *Information sur les Sciences Sociales*, 21(3), 383–446.
- CHADHA, S.L., RADHAKRISHNAN, S., RAMACHANDRAN, K., KAUL, U., & GOPINATH, N. (1990). Epidemiological study of coronary heart disease in urban population of Delhi. *Indian Journal of Medical Research*, 92, 424–430.
- CHAPMAN, G., & MACLEAN, H. (1993). "Junk food" and "healthy food": Meanings of food in adolescent women's culture. *Journal of Nutrition Education*, 25, 108–13.
- DALAL, T., & PIRAMAL, S. (1992). *Eat your way to good health*. Bombay: Health Publications.
- DALE, A., and MARSH, C. (Eds). (1993). *The 1991 census users' guide*. London: HMSO

- DEPARTMENT OF HEALTH, (1992). *The health of the nation*. London: HMSO.
- DOUGLAS, M. (1975). Deciphering a meal. In M. Douglas (Ed.), *Implicit meanings* (pp. 249–275). London: Routledge and Kegan Paul.
- FEEHALLY, J., BURDEN, A.C., MAYBERRY, J.F., PROBERT, C.S.J., ROSHAN, M., SAMANTA, A.K., & WOODS, K.L. (1993). Disease variations in Asians in Leicester. *Quarterly Journal of Medicine*, 86, 263–269.
- FIELDHOUSE, P. (1995). *Food and nutrition: Customs and culture* (2nd edition). London: Chapman & Hall.
- FISHBEIN, M., & AJZEN, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- GHUMAN, P.A.S. (1999). *Asian adolescents in the west*. Leicester: BPS Books/The British Psychological Society.
- GOODY, J. (1982). *Cooking, cuisine and class: A study in comparative sociology*. Cambridge: Cambridge University Press.
- GURR, M. (1998). Fats. In J.S. Garrow, & W.P.T. James (Eds), *Human nutrition and dietetics* (pp. 77–102). Edinburgh: Churchill Livingstone.
- HUTNIK, N. (1991). *Ethnic minority identity: A social psychological perspective*. Oxford: Clarendon Press.
- JOSHI, M.S. (1995). Lay explanations of the causes of diabetes in India and the UK. In I. Markova, & R.M. Farr (Eds), *Representations of health, illness and handicap* (pp. 163–188). Chur: Harwood.
- KHAJURIA, S., & THOMAS, J. (1992). Traditional Indian beliefs about dietary management of diabetes—An exploratory study of the implications for the management of Gujarati diabetics in Britain. *Journal of Human Nutrition and Dietetics*, 5, 311–321.
- KHARE, R.S. (1976). *The Hindu hearth and home*. New Delhi: Vikas Publishing House Pvt. Ltd.
- KHARE, R.S., & RAO, M.S.A. (1986). Introduction. In R.S. Khare & M.S.A. Rao (Eds), *Food, society and culture* (pp. 3–18). North Carolina: Carolina Academic Press.
- LUPTON, D. (1996). *Food, the body and the self*. London: Sage.
- MAFF, (1995). *Manual of nutrition*. Reference Book 342. (10th edition). Ministry of Agriculture, Fisheries and Food. London: HMSO.
- MARRIOTT, M. (1968). Caste rankings and food transactions, a matrix analysis. In M. Singer & B.S. Cohn (Eds), *Structure and change in Indian society*. Chicago: Aldine.
- MCKEIGUE, P., & CHATURVEDI, N. (1996). Epidemiology and control of cardiovascular disease in South Asians and Afro-Caribbeans. In *Ethnicity and health: Reviews of literature and guidance for purchasers in the areas of cardiovascular disease, mental health and haemoglobinopathies*. York: NHS Centre for Reviews and Dissemination, University of York.
- MCKEIGUE, P., SHAH, B., & MARMOT, M.G. (1991). Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians. *Lancet*, 337, 382–386.
- MCKEIGUE, P.M., PIERPOINT, T., FERRIE, J.E., & MARMOT, M.G. (1993). Association of early-onset coronary heart disease in South Asian men with glucose intolerance and hyperinsulinemia. *Circulation*, 87, 152–161.
- MENNELL, S., MURCOTT, A., & VAN OTTERLOO, A.H. (1992). *The sociology of food: Eating*.

- diet and culture*. London: Sage Publications.
- Office of Population Censuses and Surveys / General Register Office for Scotland. (1993). *1991 census, ethnic group and country of birth*. London: HMSO.
- PAYNE, M., & PAYNE, B. (1993). *Eating out in the UK: Market structure, consumer attitudes and prospects for the 1990s*. Economist Intelligence Unit Special Report No. 2169. London: Economist Intelligence Unit Ltd.
- PEACH, C. (Ed.). (1996). *Ethnicity in the 1991 census, Volume 2, The ethnic minority populations of Great Britain*. London: HMSO.
- RAHEJA, R.S. (1990). Diet, diabetes and atherosclerosis. *Journal of Association of Physicians of India*, 38, 168–172/607–608.
- RAO, M.S.A. (1986). Conservatism and change in food habits among the migrants in India: A study in gastrodynamics. In R.S. Khare & M.S.A. Rao (Eds), *Food, society and culture* (pp. 121–140). North Carolina: Carolina Academic Press.
- RAZZAQ, R. (1993). *Indian low fat cooking*. London: New Burlington Books.
- REDDY, S., & SANDERS, T.A.B. (1992). Lipoprotein risk factors in vegetarian women of Indian descent are unrelated to dietary intake. *Atherosclerosis*, 95, 223–229.
- RITZER, G. (1993). *The McDonaldization of society*. Newbury Park: Pine Forge Press.
- RODERICK, P., CLEMENTS, P., DIAMOND, I., STORKEY, M., & RALEIGH, V.S. (1998). Estimating the demand for renal replacement therapy in Greater London: The impact of demographic trends in ethnic minority populations. *Health Trends*, 30(2), 46–50.
- SAMANTA, A., CAMPBELL, J.E., SPALDING, D.L., PANJA, K.K., NEOGI, S.K., & BURDEN, A.C. (1987). Dietary habits of Asian diabetics in a general practice clinic. *Human Nutrition: Applied Nutrition*, 47a, 160–163.
- SEVAK, L., McKEIGUE, P.M., & MARMOT, M.G. (1994). Relation of hyperinsulinemia to dietary intake in South Asian and European men. *American Journal of Clinical Nutrition*, 59, 1069–1074.
- STOPEs-ROE, M., & COCHRANE, R. (1990). *Citizens of this country: The Asian-British*. Clevedon: Multilingual Matters Ltd.
- SMAJE, C. (1995). *Health, 'race' and ethnicity*. London: King's Fund Institute.
- WILLIAMS, R., BHOPAL, R., & HUNT, K. (1994). Health of a Punjabi ethnic minority in Glasgow: A comparison with the general population. *Journal of Epidemiology and Community Health*, 47, 96–102.
- WOOD, R.C. (1995). *The sociology of the meal*. Edinburgh: Edinburgh University Press.

Mary Sissons Joshi is faculty at the Department of Psychology, Oxford Brookes University, Oxford. She has published in the areas of health beliefs and immigrant psychology.

Roger Lamb is at the Department of Psychology, Oxford Brookes University, Oxford. He has done research in the area of health and dietary habits.