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What are the barriers to primary prevention of type 2 diabetes in black and minority ethnic groups in the UK? A qualitative evidence synthesis.

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Abstract**Background:**

This review aimed to synthesise available qualitative evidence on barriers and facilitators to the implementation of community based lifestyle behaviour interventions to reduce the risk of diabetes in black and minority ethnic (BME) groups in the UK.

Methods:

A search of medical and social science databases was carried out and augmented by hand-searching of reference lists and contents of key journals. Qualitative evidence was synthesised thematically.

Results:

A total of 13 papers varying in design and of mainly good quality were included in the review. A limited number of intervention evaluations highlighted a lack of resources and communication between sites. A lack of understanding by providers of cultural and religious requirements, and issues relating to access to interventions for users was reported. Behaviour change was impeded by cultural and social norms, and resistance to change. There were variations in the way dietary change and physical activity was approached by different groups and contrasting practices between generations.

Conclusions:

Qualitative data provided insight into the ways that providers might improve or better design future interventions. Acknowledgement of the way that different groups approach lifestyle behaviours may assist acceptability of interventions.

Introduction

In the UK 100,000 people are diagnosed with type 2 diabetes every year and many more may have the condition (Diabetes UK 2006). Impaired Fasting Glucose (IFG) and Impaired Glucose Tolerance (IGT) are risk factors for type 2 diabetes which together are often described as hyperglycaemia, or Impaired Glucose Regulation (IGR). Between 33% and 66% of people with such risk factors will go on to develop type 2 diabetes over a period of 3–6 years (Diabetes Prevention Programme Research Group 2002; Lindstrom *et al.* 2003; Pan *et al.* 1997; Ramachandran *et al.* 2006). Therefore, identifying and intervening with those at risk could reduce the prevalence of T2DM in the long term (US DPP 2002; Tuomilehto *et al.* 2001). Whilst major international trials have focussed on prevention in populations that already have impaired glucose levels, groups at higher risk due to ethnicity, and / or low socio-economic circumstances may also benefit from targeted intervention.

A systematic review of UK literature was carried out to identify available evidence on community promotion of healthy lifestyle behaviours among adults aged 18-74 from black and minority ethnic (BME) groups in the UK. Data for this review was limited to that produced within the UK to increase feasibility in terms of resources, as well as applicability to UK practice. A review of reviews that assesses non-UK evidence on interventions for high-risk groups (low socio-economic groups and BME) is available online (O'Mara *et al.* 2010).

This paper reports on the synthesis of this evidence, focussing on barriers and facilitators to the implementation of interventions and behaviour change relating to preventing diabetes and pre-diabetes. A range of study designs was considered including evaluations, surveys, interviews and focus groups.

Methods

Search strategy

Searching for relevant literature was carried out in 2009 by an information specialist. An emergent, rather than exhaustive search strategy (Booth 2008) was utilised. This method was developed in order to achieve maximum specificity in the context of complex review questions such as those addressing public health topics. The method entailed close working between the information specialist and reviewer, with the reviewer identifying relevant terms that were further explored by the information specialist. Initial mapping searches were carried out to identify the range of available literature relating to the review question (Grant & Booth 2009). This literature was

then used to expand searches in order to focus on the strategies and terms that were fruitful, as well as those that might fill the gaps in retrieved literature.

The following electronic databases were searched: Medline via OVID SP; Embase via Ovid SP; CINAHL via EBSCO; British Nursing Index via OVID SP; PsycInfo via OVID SP; The Cochrane Library via Wiley; Science Citation Index via Thomson ISI; Social Science Citation Index via Thomson ISI, EPPI Centre Databases – Bibliomap, DoPHER, TRoPHI, The database on Obesity and Sedentary behaviour studies. These databases were selected in order to cover both medical, health and social science topics.

Additional websites searched for the initial mapping review include Diabetes UK; NHS Evidence specialist collection for Diabetes; NHS Evidence specialist collection for Ethnicity and Health. From sourced articles, further searches were carried out using key phrases, words, and authors. Details of the full search strategy are available upon request.

Inclusion / exclusion criteria

Papers that were included in the review addressed the prevention of pre-diabetes and other related conditions (e.g. cardiovascular disease (CVD), obesity) with adults (over the age of 18 years). Although inclusion of evidence was not restricted by study type, though there was a focus on study designs that elicited the views of professionals and users, or that included relevant process evaluation information. Retrieved papers were restricted to those published in the English language after 1990.

Findings

Identification of retrieved papers

In order to identify the barriers and facilitators to the effective implementation of an intervention, data were derived from studies evaluating interventions as well as from qualitative studies that focussed on the views of target groups in relation to behaviour change. A range of study designs including action research, questionnaires, interviews and focus groups were used to obtain the views of patients and professionals on interventions and behaviour change aimed at preventing pre-diabetes and other related conditions.

Quantity of available evidence

Initial mapping searches yielded a total of 3416 abstracts for screening, after de-duplication. Of these, 90 were deemed relevant to this review, with 82 being rejected on further scrutiny of full texts. Focussed searches yielded 237 abstracts after de-duplication, with 235 being rejected on further scrutiny. Web searches yielded 3 relevant papers. On examination of full texts, 13 papers were found for inclusion in the review of barriers and facilitators to intervention implementation and behaviour change.

Data Extraction and analysis

Qualitative data relevant to the research question was extracted from all 13 included papers. A data extraction tool developed for qualitative studies was piloted on two papers and adjusted to ensure the optimum extraction of relevant material to address the review question. Data was extracted and the papers assessed for quality by two reviewers (MJ; EEH) who double-checked each other's extractions and assessments. Thematic analysis was carried out with the qualitative data extracted from each included paper, taking into account different settings and sub-groups.

Quality

The quality of included studies was assessed by one of two reviewers (MJ, EEH); all quality assessments were double checked by a reviewer not involved in the initial assessment. Quality criteria and ratings were based on those developed for the methods guide for development of NICE public health guidance (2009a). Quality ratings from – (poor) through + (good) to ++ (very good) were designated to papers in relation to transparency of reporting, validity of the conclusions given the data provided, as well as relevance to the research question. The general quality of the thirteen included studies was good. Two qualitative studies were rated as ++ and eleven qualitative studies were rated +. The quality ratings are shown for each study in Table 1.

Settings

This review was limited to UK evidence. Four studies were carried out in the North of England, 3 in London, 3 in Scotland and the remaining 3 in a range of UK locations.

Populations

Nine studies focussed specifically on South Asian populations, with a further 2 studies including South Asian groups. One of these two studies also included Caribbean and African communities, whilst the other study included African (Somali and Zimbabwean) women. One study focussed on a Somali community and another on a Gypsy Traveller site. Whilst it is likely that a degree of acculturation into UK society, or exchange of cultural norms would take place within groups participating in the included studies, this issue was not explicitly discussed by the authors.

Two studies included health professionals and leaders as well as target groups for interventions. Five studies focussed on female users, two of which explored the views of overweight or obese women. Details of included studies are set out in Table 1.

Main themes from included studies

Barriers and facilitators to intervention implementation

One included study explored health professional, co-ordinator and organiser views on intervention provision (Carroll *et al.* 2002). From the findings of the survey part of a study evaluating 'Exercise on Prescription' (EoP) for South Asian Muslim women, a lack of financial resources was reported, as well as a lack of communication between different teams that were organising the intervention in different parts of the country.

Views of users and providers highlighted lack of understanding of black and ethnic minority groups by health professionals, organisers and other users as a barrier to successful implementation. There were particular gaps in understanding reported in relation to religious beliefs, male-female dynamics in Islamic culture and perceived body image in the way they impact on health and health promoting activities. For example, South Asian Muslim women commented on a non-Muslim perception that the practice of Islam and physical activity are incongruent (Carroll *et al.* 2002), a belief that was refuted by both lay members of the community and religious leaders (Grace *et al.* 2008).

"I think it is really bad for women like me who can't speak English. I can understand it most of the time but I can't reply or read or write it. Sometimes I think that white people don't understand our needs. They just think we don't want to be healthy and exercise – but we do" (Carroll et al. 2002).

A lack of understanding of how males and females interact within Islam was a barrier to provision of physical activity classes that respect the needs of Muslim men and women (Carroll *et al.* 2002). Health professionals in one study expressed the belief that Bangladeshi people associate obesity with good health and fertility, creating a perception that Bangladeshi communities are unwilling to manage their weight (Grace *et al.* 2008). In contrast, one evaluation showed that an understanding of the importance of timing interventions around religious events meant that attendance was optimised (Netto *et al.* 2007). These examples highlight the importance of cultural understanding and its impact on the motivation to organise facilities that are appealing and acceptable to specific groups.

Barriers and facilitators to acceptability of interventions

Advice, information and encouragement

In one evaluation small changes to dietary practices such as cutting down the amount of fat, red meat, salt and sweetmeats consumed were attributed to appropriate support to change. This included adequate advice and encouragement from organisers. Similarly, one participant reported that staff had given support in how to exercise 'properly', that is, advising on the optimum speed, frequency and duration necessary to have an impact on health. (Netto *et al.* 2007).

Access to facilities

For South Asian Muslim women interviewed in the evaluation of EoP (Carroll *et al.* 2002), a barrier to attendance was lack of access to exercise facilities, which often required the use of public transport to the nearest venue. Four further studies provided evidence for the reluctance of South Asian women to travel unaccompanied during the evening (Darr *et al.* 2008; Grace *et al.* 2008; Khanam & Costerelli 2008; Williams & Sultan 1999). Close access to classes was a particular facilitator for a Gypsy traveller community, where attendance at physical activity sessions increased at events that were facilitated on-site (Kopp 2009). For all these groups, travelling away from home presented issues of safety.

For South Asian women, language was a barrier to travel for older members of the community, who found it difficult to read signs or ask for directions. There was also a reluctance to walk to venues in winter months (Williams & Sultan 1999). Issues of access were also raised by South Asian women in relation to potential cooking classes (Lawrence *et al.* 2007), with local schools being suggested as potential venues.

Family and work commitments

Lack of time for carrying out prescribed physical activity was cited by South Asian women due to childcare and other home care commitments (Carroll *et al.* 2002; Khanam & Costerelli 2008; Netto *et al.* 2007; Williams & Sultan 1999). There was a cultural expectation of Bangladeshi women in one study to remain within the home (Grace *et al.* 2008). For South Asian men in one study, working long hours limited access to organised physical activity (Netto *et al.* 2007).

A lack of childcare facilities within some Exercise on Prescription (EoP) establishments meant that women needed to be accompanied by a relative who would mind the children outside the venue during participation. Facilities were not consistent across schemes or across classes, with some women-only classes not being serviced by a crèche (Carroll *et al.* 2002). Lack of child care facilities also limited participation in non-prescription physical activity sessions (Grace *et al.* 2008; Kopp 2009).

Costs

Whilst EoP schemes are low-cost, they were still seen as too much of a financial burden for some South Asian Muslim women, particularly if transport was required. Women prioritised spending money on their children rather than on themselves (Carroll *et al.* 2002). Similarly, activities organised away from a Gypsy Traveller site were seen as too expensive (Kopp 2009).

Organisation of sessions

For South Asian women, physical activity classes in one evaluation were not long or frequent enough to make the effort associated with attendance (Williams & Sultan 1999). A lack of women-only sessions was a common problem in physical activity interventions for Muslim women. Where women-only sessions were available, these were often at difficult times of the day or week for women with families, or sessions were still visible to male members of staff, which conflicted with cultural and religious norms (Carroll *et al.* 2002). Some South Asian men also found attendance at mixed gender sessions uncomfortable (Farooqi *et al.* 2000; Grace *et al.* 2008).

There was a reported dislike of the gym environment by first generation Muslim women (Khanam & Costerelli 2008; Rai & Finch 1997); in particular, the use of loud

music, inappropriate television scenes and the need to dress in a culturally inappropriate way were cited as deterrents.

Language

For many South Asian study participants, language was a barrier to accessing and understanding information as well as communicating needs to those delivering services (Carroll *et al.* 2002; Grace *et al.* 2008; Khanam & Costerelli 2008; Rai & Finch 1997). Relatives were often recruited to accompany women and act as translators (Carroll *et al.* 2002).

Identified barriers and facilitators to behaviour change

Religious influences

Religious customs were reported as barriers or facilitators to lifestyle change in six studies. Change was more likely where participants believed they had some degree of free will despite for example, the presence of a family history of diabetes (Darr *et al.* 2008), though there were ambivalent reports regarding fatalistic attitudes. A perception that change might be impeded by fatalism (Grace *et al.* 2008) was countered by reports that health conditions could be the will of God and the responsibility to attempt to prevent ill health lies with the individual (Darr *et al.* 2008). However, health promotion activities must not conflict with religious teachings (Grace *et al.* 2008 ; Khanam & Costarelli 2008 ; Farooqi *et al.* 2000 ; Rai & Finch 1997 ; Carroll *et al.* 2002).

Cultural and social influences and differences

Both dietary and physical activity practices were influenced by cultural identity in a number of studies. Food is symbolic of generosity and economic status as well as representing traditional health beliefs passed down through generations (Rai & Finch 1997; Grace *et al.* 2008; Lawrence *et al.* 2007; Netto *et al.* 2007). The use of fat in south Asian cooking, especially for guests, represents good hospitality. Traditionally, reducing the amount of ghee or oil renders the food unattractive as well as being shameful (Grace *et al.* 2008; Netto *et al.* 2007). For Somalis in one study (McEwen *et al.* 2009) meat consumption was associated with wealth while fruit and vegetables were valued less because of their relative cheapness back in the homeland. Conversely, fruit and vegetables were more readily eaten by Gypsy Travellers (Kopp 2009) precisely because they were relatively cheap.

Medicinal properties, including prevention or management of diabetes were associated with certain fruit and vegetables in a study of South Asian dietary practices (Pieroni *et al.* 2007). Foods could be 'good' or 'bad' for a healthy body. Second generation South Asians and Somalian males were reported to be consuming more take-away food as a change from their traditional fare (Grace *et al.* 2008; McEwen *et al.* 2009). Traditional dietary practices were differentiated from Western eating habits ('our' food; 'your' sorts of food) by women whose choices were informed by both cultures (Bradby 1997). However, some South Asian women are beginning to cook traditional meals in more healthy ways, such as reducing the amount of fat (Netto *et al.* 2007). Women from Zimbabwe were not used to cooking for themselves as in Africa maids had done the cooking; having to cook in the UK was seen as time consuming (Lawrence *et al.* 2007).

Just as dietary behaviours were reported as having different associations and practices in the homeland compared with the UK, physical activity also had a different purpose and association 'back home', where every-day activity such as housework or river bathing was the norm and vigorous exercise was seen as unnecessary, or unacceptable (Darr *et al.* 2008; Rai & Finch 1997; Grace *et al.* 2008; Farooqi *et al.* 2000; Khanam & Costarelli 2008; Carroll *et al.* 2002).

Swimming and slow walking were preferred ways to remain active (Rai & Finch 1997; Khanam & Costarelli 2008). In the UK, organised activities such as attendance at swimming or dance classes or membership of a gym are the typical method of exercise (Khanam & Costarelli 2008; Rai & Finch 1997; Kopp 2009; Carroll *et al.* 2002).

Authors used the terms 'separate' and 'integral' to describe these two approaches to physical activity (Rai & Finch 1997), with 'separate' activity typically incurring travel and attendance costs as well as having further potential barriers regarding access to venues, lack of childcare facilities and cultural insensitivity in the organisation of classes and facilities (Darr *et al.* 2008; Rai & Finch 1997; Farooqi *et al.* 2000; Grace *et al.* 2008; Khanam & Costarelli 2008; Netto *et al.* 2007; Carroll *et al.* 2002).

"Facilities are provided, but there are very few sessions per week only for women. In Bangladesh it was possible to go swimming at any time of the day, as it was close by and the males were aware of us being in the river." (Khanam & Costarelli 2008)

In addition, the South Asian belief that sweating is beneficial to well-being is less likely to be achieved in a cold climate (Rai & Finch 1997). In a similar way to dietary

behaviours, some young people were adopting Western practices by going to the gym. However this was not so much associated with the aim of achieving greater levels of physical fitness, rather it was a means of filling time, escaping from social conditions and keeping up with fashion trends (Rai & Finch 1997).

Understanding and carrying out health related behaviour change

Limited access to information in the home language was reported as a barrier to obtaining information regarding healthy lifestyle behaviours (Netto *et al.* 2007; Grace *et al.* 2008; Khanam & Costarelli 2008; Carroll *et al.* 2002), as well as accessing activities and shopping facilities outside the neighbourhood (Grace *et al.* 2008).

Knowledge of risk factors in maintaining health was reported as a high in South Asian communities (Grace *et al.* 2008; Lawrence *et al.* 2007; Netto *et al.* 2007) and low in male Somali participants (McEwen *et al.* 2009). As is well documented, however, knowledge alone does not always translate to change in practice (Lawrence *et al.* 2007; Netto *et al.* 2007), though education can be a first step in resisting restrictive practices (Grace *et al.* 2008).

In addition to accessible information, there was evidence that advice and encouragement were appreciated and were instrumental in motivating behaviour change (Netto *et al.* 2007). Sources of encouragement to increase physical activity included the media, where role models such as successful sporting personalities could be inspirational, particularly when they represented a minority culture. Family and friends were also major sources of encouragement (Rai & Finch 1997), though in some cases family members could pose limitations to behaviour change when such change was perceived as conflicting with social norms (Netto *et al.* 2007; Carroll *et al.* 2002).

*I think that some husbands believe that women dress disrespectfully when they exercise, so they [the husbands] have to be told that it is not like that.” (Carroll *et al.* 2002)*

Medical personnel were also reported to be sources of advice and motivation to change (Rai & Finch 1997).

Barriers to adopting healthier lifestyles were also reported in regard to access and affordability. First generation migrants in particular were more likely to use traditional foods for cooking which were not always available locally and were reported to be expensive (Grace *et al.* 2008; Lawrence *et al.* 2007; McEwen *et al.* 2008). Yet

travelling to shops, or indeed to physical activity classes, created problems in respect of navigating the public transport system with a limited use of the English language. There were also fears regarding safety when travelling out of the neighbourhood (Grace *et al.* 2008).

Five included studies reported body image issues as potential barriers or facilitators to healthy lifestyle behaviours. Differences were reported between expectations and associations of body image in the UK and in other cultures (Darr *et al.* 2008; Grace *et al.* 2008; Lawrence *et al.* 2007; Khanam & Costarelli 2008; Netto *et al.* 2007). Aspiring to a culturally ideal body size was reported as an important factor in attracting a partner (Rai & Finch 1997), in motivating healthy behaviour change (Lawrence *et al.* 2007), and in giving an impression of prosperity (Netto *et al.* 2007).

The extent to which importance was attached to an ideal body size differed by gender, age and culture (Darr *et al.* 2008; Rai & Finch 1997; Netto *et al.* 2007); it was not always women that were keen on managing weight (Darr *et al.* 2008). For older people such change was seen as potentially weakening (Netto *et al.* 2007).

Discussion

Qualitative data from 13 studies of generally good quality using a range of methods provided data on the barriers and facilitators to implementing population level lifestyle interventions for prevention of type 2 diabetes in BME groups. Evaluations provided information about positive and negative aspects of interventions from the perspective of users and providers. Interviews and focus groups gave an insight into the cultural and social norms that might facilitate or impede healthy behaviour change in order to prevent blood glucose disorders.

From searching the evidence for this review, and from other sources (e.g. Kumanyika 2008) it is clear that knowledge relating to BME groups in respect of how to prevent diabetes is sparse. Certainly, the evidence base is lacking in trial and evaluative research that could inform future decisions on provision. O'Mara *et al.* (2010) assessed the effectiveness and cost-effectiveness of population- and community-level interventions to improve modifiable risk factors associated with pre-diabetes among BME and low-income / low-SES groups. Their review of review-level evidence was not limited to UK data yet concluded that there was scarce good quality evidence in this field and most evidence focussed on the African American population. There was a suggestion of positive outcomes for dietary and physical

activity outcomes, particularly in interventions that included both components. A systematic review of obesity prevention in US multi-ethnic adults (Seo & Sa 2008) concluded that multi-component interventions (both individual and group) that focus on favourable health related changes based on daily routines and with the support of family members showed the greatest effect.

Whilst our review could not examine the effectiveness of components, it is clear from qualitative evidence that health changes need to be favourable to those targeted, and that daily routines and family support would be facilitative to behaviour change. Our review also provides possible reasons for these conclusions, by assessing the views of people involved in providing and using lifestyle interventions. For the interventions that have published evaluations, resource and organisational issues were impediments to successful implementation, whilst acknowledging and acting upon the specific religious and cultural needs of users was crucial to acceptability. For example, provision of single-sex classes with child-care facilities in accessible locations would appear to facilitate attendance. Providers need to be aware of the specific requirements of particular groups and provide appropriate advice, information and encouragement.

Conclusion

This review has examined factors that impact on people from BME groups who are attempting to make behavioural changes. Cultural and religious factors were most likely to influence first generation migrants, with language barriers and access issues preventing full engagement with activities and changes at home. Younger people were adopting UK behaviours to some extent but not necessarily the more healthy options. Traditional beliefs around foods and physical activity were contrasted with UK practices. Some UK practices, such as attending the gym were seen as separate to daily life, expensive and in some cases inaccessible compared to the traditional way of being active as part of everyday living.

Whilst attendance at gyms might be beneficial to weight management, it might be prudent to re-think the approach that Western populations have taken regarding physical activity. In the same way, traditional South Asian cooking, adapted to use less fat, could be a healthy option for the general population. There was evidence of perceived shame associated with choosing healthier options such as low fat cooking and particular physical activities that involve certain dress codes. Traditional

resistances to such change are required however, and this may need to start with education to prevent the 'complex value hierarchy' (Grace *et al.* 2008).

There is therefore a need for providers to take into account the varied needs of particular groups. For example, assessing the language needs of BME groups in terms of accessing information, whether this is related to dietary and physical activities or for example finding one's way around the city. In addition, provision of single-sex classes and crèche facilities at the gym, and dietary classes that include the use of familiar traditional foods, is likely to increase the acceptability and therefore the attendance of those interventions.

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Table 1: Summary of study characteristics

Study Author; Quality; Setting	Area of research	Design	Participants	Intervention / Control
Bradby 1997 + Glasgow, UK.	Understandings of the way food and health are related.	Interviews Participant observation.	n = 47 Punjabi 20-30 years All females.	None
Carroll 2002 + UK	The extent of provision of Exercise referral schemes for South Asian Muslim women.	Evaluation using questionnaires and interviews.	137 practices. 58 Leisure Centres. 5 EoP organisers. 10 GPs. 8 leisure centre staff 35 South Asian Muslim women on the EoP schemes.	None
Darr 2008 + West Yorkshire, UK	Illness beliefs of South Asian and European patients with CHD about causal attributions and lifestyle change.	Interviews.	n=65 BME groups (Pakistani Muslim, Indian Sikh, Indian Hindu): 40-82 years 26 males 19 females European groups: 40-83 years 10 males 10 females	None
Farooqi 2000 + Leicester, UK	Knowledge of and attitudes to lifestyle risk factors for CHD among South Asians.	Focus groups	n=111 South Asian (Muslim, Hindu and Sikh) 40-72 years 24 male 20 female	None
Grace 2008 ++ Tower Hamlets, London, UK	Lay beliefs and attitudes, religious teachings and professional perceptions in	Focus groups	n=137 29 Islamic scholars/ religious leaders 28 health professionals	None

	relation to diabetes prevention in the Bangladeshi community.		80 lay people 54 males 83 females	
Khanam 2008 + Tower Hamlets, London, UK	Attitudes and beliefs held by overweight and obese UK Bangladeshi women on health and physical activity.	Interview-guided questionnaire	n=25 Bangladeshi 30-60 years All female All overweight / obese	GP PA referral 40-minute 3 sessions p/week, by professionally supervised.
Kopp 2009 + Wakefield UK	Health and health care needs of a Gypsy and Traveller population.	Needs Assessment	38 plots 31% Irish Travellers 69% English Gypsies 18-24 years 26% 25-34 years 26% 35-44 years 23% >45 years 25% Female 89%	None
Lawrence 2007 ++ Dundee, Scotland and South England / Hampshire	Food choices of girls and young women of African and South Asian descent	Focus groups	n=20 African South Asian (Pakistani and Bangladeshi) 10-35 years (only those > 18 years included in review) All female	None
McEwen 2009 + North London, UK	Dietary beliefs and eating behaviours of Somalis in the UK	Focus groups	n=62 Somali 18% aged <30, 52% aged 30-39 17% aged 40-49 13% aged >50 years 58 male 12 female	None
Netto 2007 + Edinburgh, UK	Service user perspectives on culturally focused CHD prevention interventions for South Asian groups	Action research –focus groups	n=91 Indian 32 Pakistani, 27 Bangladeshi 32 >16 years 39 men, 52 women	Khush Dil ('happy heart') Access to CHD prevention services for South Asian communities. Nurse-led CHD risk clinic; nutrition workshops;

				voluntary healthy lifestyles initiatives.
Pieroni 2007 + Bradford, UK	Traditional culinary use of and health perceptions of vegetables	Semi-structured interviews Questionnaires	n=150 19 interviews 93 aged > 60 years 10 males 140 females	None
Rai & Finch 1997 + A range of locations in England	Attitudes towards and barriers to physical activity among South Asian and black communities in England.	Focus groups	n=175 18-50 years 87 men, 88 women	None
Williams & Sultan 1999 + Trafford, Manchester, UK.	Follow-up of women who participated in a pilot group of the Asian women's healthy eating and physical activity group.	Semi-structured interviews.	n = 15 South Asian All female All overweight or obese.	Healthy eating and physical activity group. 14 weeks