

**HEALTH PROMOTION AND PREVENTION INTERVENTIONS
IN PAKISTANI, CHINESE AND INDIAN COMMUNITIES RELATED
TO
CVD AND CANCER:**

**A REVIEW OF THE PUBLISHED EVIDENCE IN THE UK,
OTHER PARTS OF EUROPE AND THE UNITED STATES**

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August 2008

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This research was funded by NHS HEALTH SCOTLAND

Terminology

Throughout this report, the term ‘minority ethnic’ is used to refer to groups defined by ethnicity which are present as a minority within the general population, including the three main ethnic groups that are the concern of this study. We acknowledge that the choice of this particular terminology takes place within the context of a debate on identity and language that is ongoing and shifting. The term ‘South Asian’ is used to refer to Indians, Pakistanis and others originating from the Indian sub-continent and currently residing in the UK. The term ‘Asian Americans’ is used to refer to Chinese, Koreans, Vietnamese and other groups originating from the Asia Pacific region.

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EXECUTIVE SUMMARY

A systematic review of health promotion interventions involving Pakistanis, Chinese and Indian communities related to CVD and cancer prevention and modifiable risk factors in the UK, the US and other countries where these ethnic groups are present as a minority revealed the following main findings:

- The evidence base relating to health promotion interventions in these areas for these minority ethnic communities is extremely limited.
- Targeted health promotion initiatives can bring about positive changes in knowledge, health-related attitudes and behaviours, and health status.
- However, given the time and resources needed to develop such initiatives, health promotion initiatives which target the general population should also take measures to include minority ethnic communities in such initiatives. Wherever possible, the collection and analysis of ethnically disaggregated data should be viewed as an essential component of wider health promotion initiatives.
- A wide range of activities have been carried out to make interventions more ‘culturally sensitive’ for the target communities. Greater understanding is needed of the varying strategies which are employed in this area and the relative contribution of these strategies in bringing about positive health-related changes.
- Community involvement in the design and delivery of interventions plays a valuable role in increasing the appropriateness and effectiveness of interventions. However, greater clarity if needed of the precise contribution of such involvement to effective interventions.
- There is value in exploring and understanding cultural norms and values which might support or limit the effectiveness of health promotion initiatives, including the extent to which these might be shared across and within ethnic groups.
- Greater understanding is required of the relationship between ethnic identification within minority ethnic communities and health-related attitudes and behaviour. It is important for health promotion initiatives to be attuned to varying degrees of such identification and levels of acculturation with the mainstream population.
- Health promotion initiatives and strategies should also address structural factors, such as poverty and alienation, in enabling minority ethnic communities to adopt healthier lifestyles, at a high, strategic level as well as at a grassroots level.
- High quality qualitative research which examines the relative contribution of cultural values and norms, structural factors such as poverty, and environmental factors in bringing about positive changes in health-related attitudes and behaviours in minority ethnic communities is needed. This should also include the development of theoretical models which predict the role of culture and ethnic identity in the outcomes of health promotion initiatives.
- There is a need for more robust quantitative research which evaluates the impact of interventions for minority ethnic communities in the short and long-term, including randomised controlled trials and quasi-experimental designs.

Introduction

The current policy context places an emphasis on preventative, anticipatory care, and health promotion and improvement. Other policy and legislative drivers are concerned with advancing racial equality and improving minority ethnic health. Recent research has established that although ethnic minority groups are heterogeneous in their health needs, attention should be concentrated on the main causes of mortality, that is, CVD and cancer and modifiable risk factors. These concerns motivated the current study, an international, systematic review of health promotion interventions and preventative studies in Pakistani, Chinese and Indian communities related to CVD and cancer. The communities were chosen to ensure the manageability of the review within limited resources since these were the largest minority ethnic communities in Scotland. However, the findings of the review and the lessons which have been learnt are likely to be of relevance to the planning, development and evaluation of health promotion initiatives for other minority ethnic communities in Scotland and for larger and smaller communities in other parts of the UK and elsewhere.

Methods

A systematic search of the main electronic databases was undertaken, with the help of an information scientist. Search terms were developed and refined following preliminary searches and a series of meetings involving members of the research team. The scope of the review was refined in consultation with members of an advisory group set up to oversee this project and the funders of the research, Health Scotland. A total of 21 interventions which explicitly targeted the minority ethnic communities that are the concern of the review were identified. In addition, a further 7 studies which included multi-ethnic samples and did not provide ethnically disaggregated data were also reviewed to optimise the learning from the research. With the exception of a single study, all the studies identified were based in the UK and the US.

Main findings

Nascent nature of the field

Perhaps the most noteworthy finding was the scarcity of evidence available. Among the small number of studies identified, all the CVD studies identified were based in the UK and targeted at the South Asian community. The cancer prevention studies, based in the US, targeted the Chinese and Asian American population. This reveals not only the dearth of research in this area, but the unequal concentration of attention and resources on certain ethnic groups, highlighting the need for a strategic approach to the planning, implementation and evaluation of health promotion initiatives in this area.

Value of targeted health promotion interventions

Health promotion interventions which targeted the communities concerned were effective in increasing knowledge and bringing about positive changes in attitudes, behaviour and health status. Many of these interventions involved individuals from the target communities in the planning and delivery stages, and this appeared to be beneficial in achieving the desired outcomes. However, more critical attention needs to be paid to the role of community involvement in such interventions and in understanding the precise nature of their contribution to effective interventions.

Mainstreaming of minority ethnic communities within wider interventions

Given the time and resources needed to develop targeted interventions, it is imperative that related interventions which are directed at the general population, such as smoking cessation or promoting physical activity take account of minority ethnic communities. Wherever possible, the commissioning and planning of such interventions by public agencies should make the collection and analysis of ethnically disaggregated data a requirement for funding.

Cultural adaptation of interventions

A number of studies reported carrying out a wide range of activities to make interventions more 'culturally sensitive' to the participants. One of the main methods for doing this was by involving individuals of the target communities in the design and delivery, and in some cases, the evaluation of the intervention. Ensuring effective communication of health promotion messages and programmes

through the involvement of bilingual individuals was one of the most common adaptations that were made. Other instances of cultural adaptations included exploring cultural norms and values which were consistent with the adoption of healthier lifestyles as well as identifying beliefs and practices which might act as barriers to change. Yet other instances of cultural adaptations included enlisting ethnic pride as means of increasing self-efficacy in adopting healthier lifestyles. The wide range of activities carried out under the banner of 'cultural sensitivity' call for greater clarification of the nature of the activities undertaken and the intended outcomes of such activities.

Need to take account of intra ethnic differences and inter-ethnic similarities

While there is clearly considerable value in exploring and working with cultural values and norms in enabling individuals to adopt healthier lifestyles, it is also important that health promotion initiatives take account of intra-ethnic differences related to gender, religion, age, socio-economic status and levels of education and acculturation. In particular, awareness of varying degrees of ethnic identification within the target communities is crucial in planning and delivering effective interventions. Greater understanding is needed of the relationship between ethnic identification and efforts to motivate individuals to consider, initiate and maintain health-related attitudinal and behavioural changes. Given the possibility of similarities across ethnic groups, there is also scope for examining the generalisability of existing and future health promotion interventions, and for identifying those aspects of interventions which are likely to be universally beneficial as well as aspects of interventions which are likely to be beneficial to only certain ethnic or cultural groups.

Need to take account of structural factors

The importance of addressing structural factors, such as poverty, racial discrimination and alienation, in enabling individuals to adopt healthier lifestyles should not be under-estimated. Such factors call for targeted action at the grassroots level as well as high-level, strategic initiatives. An example of work in the former would be working with community organisations to identify and address persistent barriers to change, such as long working hours and low-income levels, and providing adequate resources to penetrate deeper into such communities than short-term initiatives would allow. An example of the latter would be the involvement of health promotion agencies in anti-poverty and regeneration initiatives and the inclusion of minority ethnic communities in such initiatives.

Need for more qualitative research

High quality qualitative research which examines the complex factors which influence health-related knowledge, behaviour and attitudes, including those which either support or inhibit changes which are consistent with the promotion of healthier lifestyles is clearly needed. This should also contribute to the development of a firm theoretical foundation of the role of culture and ethnic identification in terms of predicting attitudinal or behavioural modification, as well as greater understanding of the extent to which established theories which predict such changes are relevant to minority ethnic groups. Such understanding would also contribute towards the development and design of more informed quantitative evaluations of health promotion interventions.

Need for more quantitative research

There is clearly scope for more randomized controlled trials, quasi-experimental studies and other pre- and post-intervention studies involving minority ethnic communities. Studies which involve large sample sizes and allow for follow-up measures to be taken would contribute to more robust evaluations of interventions, including the extent to which the impact of such interventions can be sustained over time. There is also a need for more cost-effectiveness studies of interventions to assist in the allocation of resources for such interventions. Finally, in order to assess the differential impact of interventions across ethnic groups, there is an urgent need for clearer definition of ethnic groups and ethnically disaggregated data, as well as data relating to other potentially crucial variables such as gender and socio-economic class.

Conclusions

There is an extreme shortage of health promotion interventions related to the main causes of mortality, CVD and cancer for the minority ethnic groups that are the concern of the review. This is a gap which should be urgently attended to. High quality qualitative and quantitative research is also needed to evaluate the interventions and inform future interventions, and ultimately provide better outcomes for service users.

CHAPTER 1: INTRODUCTION

1. The Policy context

There are clear policy and legislative drivers for improving the evidence base for the planning and delivery of health services for Scotland's minority ethnic communities. Fair For All (2003) has emphasised the need for a strategic approach to improving minority ethnic health while the Race Relations (Amendment) Act (2000) has placed an enforceable duty on key public bodies to promote race equality, in addition to widening the provisions of the 1976 Act. In parallel with this, key messages from the *National Framework for Service Change in the NHS in Scotland: Building a Health Service Fit for the Future* (Scottish Executive, 2005), *A Partnership for a Better Scotland* (2003) and *Partnership for Care: Scotland's Health White Paper* (2003) all focus on preventative and anticipatory care, or health promotion and improvement, and emphasise a shift from acute care to communities. These agendas also need to take account of minority ethnic communities. The current study supports the creation of an evidence base for service development, policy-making and allocation of resources for improving minority ethnic health.

A Partnership for a Better Scotland (2003) and *Partnership for Care: Scotland's Health White Paper* (2003) prioritise the reduction of coronary heart disease, cancer, premature mortality and accidents and safety. These priorities are consistent with a recent ground-breaking health care needs assessment of black and minority ethnic groups (Gill et al, 2005). The study established that although ethnic minority groups are heterogeneous in their health needs, attention should be concentrated on the main causes of mortality in all these groups, including:

- Diseases of the circulatory system
- Neoplasms
- Accidents, injuries and poisonings

Gill et al (2005) argue that this approach should be taken since these are the most common health problems and diseases with which health professionals will be confronted.

2. Health promotion for minority ethnic communities

The need for effective transmission of health promotion messages to minority ethnic communities was one of the main themes emerging from a wider audit of research on minority ethnic issues commissioned in 2000 by the then Scottish Executive (Netto et al, 2001: 93-94). A review of health promotion interventions targeted at minority ethnic communities conducted as part of the review of ethnicity and health research revealed that the forms of cultural adaptations most commonly employed are those that were intended mainly to ensure the effective transmission of health messages by overcoming communication barriers (Netto et al, 2001). These have largely involved the matching of intervention materials and messages to observable, superficial characteristics of the target population by using people, places, languages and locations familiar or preferred by the target population (Johnson et al, 2001). Specific methods employed included providing forums for open discussion in safe and familiar settings, employing bilingual workers, meeting the target groups' preferences for the ethnicity, gender and age of health workers, disseminating translated material on identified areas of concern, conducting outreach work and liaising with minority ethnic agencies. However, other studies, some of which have been built on anthropological and sociological theory, have suggested that more considered adaptations informed by knowledge of the target groups' cultural beliefs, knowledge and understanding are required to effect health-related behavioural changes. It has, for instance, been argued that while initiatives that match interventions to superficial, observable characteristics, such as language, will increase the 'receptivity' of these messages, it is only those interventions that engage with the cultural, social, historical, environmental and psychological forces that influence health behaviour, which will effect behavioural change (Resnicow et al, 1999).

Consistent with this, others have argued that health education must be responsive to differences in health beliefs between ethnic groups that appear to be culturally related in order to be effective

(McAllister et al, 1992. For instance, emphasising the importance of user perspectives and beliefs, Greenhalgh et al (1998) have argued that rather than designing education programmes to rectify 'deficiencies' in knowledge or 'incorrect' behaviour, health promotion programmes should attempt to build on the beliefs, attitudes and behaviours that already exist within the target group to promote healthier lifestyles, improve quality of life and address practical barriers to positive health.

3. Focus of the current study

The study originally submitted to Health Scotland included a review of studies related to knowledge, attitudes and behaviours related to the top three main causes of mortality and the main modifiable risk factors, as well as related health promotion interventions. Following a systematic and rigorous search of electronic databases that yielded a vast amount of potentially relevant material, discussions were held with the advisory group of the project and Health Scotland. In August 2007, the scope of the study was subsequently revised in order to make the review manageable within the allocated resources. Firstly, the current study is only concerned with the two main causes of mortality – CVD and cancer – and the main modifiable risk factors, that is, diet, obesity, exercise, smoking and alcohol. Secondly, the focus of the study is on health promotion interventions relating to these disease conditions and risk factor. Studies relating to knowledge, attitudes and behaviours of minority ethnic communities pertaining to the main disease conditions and risk factors are excluded from the review.

The communities that are the concern of the study are the Pakistani, Chinese and Indian communities, Scotland's largest established minority ethnic communities. In addition to focusing on ethnicity as a variable, the review will also investigate the effect of other variables such as gender, age, class and religion.

4. Aims of the original research

The original aims of the review were to:

- a) Identify and assess the quality of qualitative and quantitative Scotland- and England-based studies which evaluate the effectiveness of health promotion interventions and preventative care measures in Pakistani, Chinese and Indian communities related to CVD, cancer and accidents and injuries
- b) Review and synthesise the research material and consider the implications for improving health promotion interventions and preventative care measures aimed at reducing the main causes of mortality in these communities in Scotland.
- c) Structure the review in a systematic and concise manner for ease of access by policy-makers, practitioners, academics and the communities concerned.
- d) Identify gaps in research and make recommendations for future research in this area.

5. Modification of the aims of the review

It soon became clear that the number of health promotion interventions targeted at minority ethnic communities in the UK is small. Consequently, in order to optimise the learning generated from the study, the review includes studies conducted in the UK, other parts of Europe, the United States, Australasia and South Africa, where the communities that are the concern of the review are studied as minority groups. To ensure the review was still feasible, we decided that studies relating to accidents and injuries would not be included in the review since a number of factors contribute to these causes of mortality. Instead, we broadened our study of CVD and cancer to include studies related to the main risk factors, that is, diet, obesity, physical activity, smoking and alcohol.

The review includes all studies that have been identified to date, including in the grey literature. While only the findings of the studies that are conducted in the UK might be directly applicable to the communities that are our concern, it is likely that the other studies will provide useful information of the issues that need to be considered in planning and delivering appropriate interventions for minority ethnic communities.

6 Structure of the report

Chapter 2 discusses the methods used for the review and presents an overview of the studies identified. Studies which explicitly identify one of the main ethnic groups that are the focus of the review, that is, Indians, Pakistanis or Chinese or UK South Asians are discussed in Chapters Three to Six. Chapter 3 discusses studies relating to Cardiovascular Disease and Cancer. In Chapter 4, 5 and 6 studies relating to one of the main risk factors are reviewed, that is, Physical Activity, Smoking Cessation and Diet. Chapter 7 reviews multi-ethnic studies which are targeted at Asian Americans, where it is not clear whether people of Chinese origin, are included and where no ethnically disaggregated data is presented. Finally, Chapter 8 summarises and synthesises the main findings emerging from earlier chapters and considers the implications of this for the planning, implementation and evaluation of future health promotion interventions for minority ethnic communities. Recommendations for future policy, practice and research are also presented.

CHAPTER 2: METHODS AND OVERVIEW OF THE STUDIES

This chapter is divided into two sections. Section 1 provides a detailed description of the methods used for the review while Section 2 provides an overview of the studies identified in terms of ethnic composition, country and setting.

1. Methods

1.1 Search strategy

The scope of the study and the search strategy was defined and refined over the course of four discussions between the research associate, Angela Jackson (AJ), the lead investigator, Dr. Gina Netto (GN) and the consultant, Professor Raj Bhopal (RB). Additionally, AJ met twice with an information scientist at the University of Edinburgh, Marshall Dozier.

The inclusion criteria relating to key variables are detailed below:

- Ethnic groups: 'Asian', 'South Asian', 'Indian sub-continent', 'Indian', 'Pakistani', 'Punjabi', 'Gujerati', 'Hindu', 'Gujerati' 'Muslim', 'Sikh', 'Chinese' and 'East Asian.'
- Countries: Europe (any); USA & Canada; Australia & New Zealand; South Africa AND either or both of the following:
 - Conditions: Coronary heart disease', 'CHD', 'heart disease' 'coronary artery disease', 'CAD', 'stroke', 'angina', 'myocardial infarction', 'heart attack', 'heart failure', 'cerebro-vascular disease', 'atherosclerosis', 'neoplasms' 'tumour' and 'cancers'
 - Evaluations of Health Promotion Interventions relating to diseases or conditions OR key modifiable risk factors

At this stage, studies relating to the third main cause of mortality, that is, accidents and injuries and those relating to the knowledge, attitudes and behaviours of the target communities with respect to the main causes of mortality were also included.

A systematic search was undertaken by AJ, including the following databases:

- MEDLINE 1950-Mar 2007 (all dates)
- EMBASE 1980-Mar 2007 (all dates)
- Web of Knowledge (all dates)
- CINAHL (all dates)
- PsycINFO (all dates)

The search was restricted to English articles. Additionally, the following websites were also searched:

- Specialist Library on Ethnicity and Health (SLEH)
- Health Development Agency
- Cochrane Library
- Campbell Collaboration
- Centre for Reviews & Dissemination (University of York)
- National Institute for Clinical Excellence (NICE)

1.2 Stage One Screening

Table 1 presents the total number of articles identified from the main electronic databases as well as those identified from Stage 1 screening of these articles. Stage 1 screening was undertaken by AJ to identify articles of potential relevance based on title/ abstract information.

Inclusion criteria:

- Ethnic groups: 'Asian' / Indian / Chinese / Pakistani immigrant populations
- Countries: Europe (any); USA & Canada; Australia & New Zealand; South Africa
- Pertaining either to: a. Conditions: CHD, CVD, Cancers or, Accidents, Injuries and Poisoning OR b. Key Modifiable Risk Factors: smoking, exercise / physical activity, alcohol, diet (nutritional content & obesity)
- Health Promotion Interventions; or, Evaluations; or, Risk factor prevalence; pertaining to the risk factors / disease conditions or studies of knowledge, attitudes and behaviours

Diabetes studies were excluded.

To reduce researcher bias, AJ and GN independently screened a sample of titles and abstracts, compared results and discussed issues relating to the interpretation of the inclusion criteria with RB. GN and AJ again independently screened a sample of titles and abstracts. A high correlation in terms of screening results was achieved, reducing the possibility of researcher bias in the screening process.

The team agreed to exclude studies relating to secondary prevention, and those relating to prevalence data in terms of conditions/diseases and risk factors in all countries except Scotland.

TABLE 2.1: Number of articles identified by searching electronic databases and Stage 1 screening

DATABASE	Total articles	Stage 1 screening
MEDLINE:		
1. CHD & Ethnic groups	128	4
2. CVD & Ethnic groups	446	23
3. Neoplasms & Ethnic groups	561	20
4. Accidents; injuries; burns; fractures & Ethnic groups	216	11
5. 'Indian or Pakistani or Chinese or Asian' & 'public health', health promotion', 'prevention and control', 'health education', 'primary prevention' & CHD or CVD or Neoplasms or Accidents / Injuries	144	38
6. Diet & 'Indian or Pakistani or Chinese or Asian' / ethnic groups	954	67
7. Smoking & Indian or Pakistani or Chinese or Asian' / ethnic groups	2283	202
8. Physical activity / exercise & Indian or Pakistani or Chinese or Asian' / ethnic groups	1050	80
9. Alcohol & Indian or Pakistani or Chinese or Asian' / ethnic groups	1104	50
EMBASE:		
1. CHD & Ethnic groups	252	15
2. CVD & Ethnic groups	447	6
3. Neoplasms / cancers & Ethnic groups	214	5
4. Accidents / injuries & Ethnic groups or indian / Pakistani / Chinese / asian	133	2
5. 'Indian or Pakistani or Chinese or Asian' & 'public health', health promotion', 'prevention and control', 'health education', 'primary prevention' & CHD or CVD or Cancers or Accidents / Injuries	380	20
6. Diet & 'Indian or Pakistani or Chinese or Asian' / ethnic groups	1965	104
7. Smoking & Indian or Pakistani or Chinese or Asian' / ethnic groups	2847	180
8. Physical activity / exercise & Indian or Pakistani or Chinese or Asian' / ethnic groups	1620	104
9. Alcohol & Indian or Pakistani or Chinese or Asian' / ethnic groups	1560	100
CINAHL:		
Indian or Pakistani or Chinese or Asian & heart / CVD / cancer / accidents / injury	1228	149
Indian or Pakistani or Chinese or Asian & smoking / diet / alcohol / physical activity / exercise	1073	167
PSYCINFO:		
Indian or Pakistani or Chinese or Asian & Diet (no limits)	142	10
Indian or Pakistani or Chinese or Asian & Smoking (English, human)	397	135
Indian or Pakistani or Chinese or Asian & Exercise / Physical Activity (English, human, Europe/N.Am/NZ/Aus/S.Af)	96	18
Indian or Pakistani or Chinese or Asian & Alcohol (English, human, Europe/N.Am/NZ/Aus/S.Af)	390	55
Indian or Pakistani or Chinese or Asian & Cancer / Heart / Accidents / Cardiovascular (English, human & country limits)	285	78
WEB of KNOWLEDGE:		
1. CHD & Health Promotion & ethnic groups	11	4
2. CVD & Health Promotion & ethnic groups	19	6
3. Cancer & Health Promotion & ethnic groups	1	1
4. Accidents / Injuries & Health Promotion & ethnic groups	3	1
5. Ethnic groups & Smoking	1000	66
6. Ethnic groups & Diet	502	32
7. Ethnic groups & Physical Activity	584	35
8. Ethnic groups & Alcohol	1007	59

SEARCH OF MAIN WEBSITES	Total articles	Stage 1 Screening
Specialist Library on Ethnicity and Health: Total documents available within relevant areas (classified as 'Guidance & Pathways'; 'Evidence'; 'Reference'; 'Education')	159	20
Cochrane Library Separate searches within 'Cochrane Reviews' & 'Other Reviews' under 'ethnic', 'public health', 'health promotion'	/	2
Campbell Collaboration 'Health'	185	0
Disease / condition categories	0	0
'Ethnicity' [& related categories]	0	0
NICE NICE Guidelines database	/	0
HAD 'minority ethnic' identified as most relevant classification	17	10
Centre for Reviews & Dissemination (University of York) <i>All databases:</i> <i>'minority ethnic' classification</i>	44	13

Table 2 summarises the number of potential articles identified from searching each database.

TABLE 2.2: Total number of identified potential articles after Stage 1 screening

DATABASE	All identified potential articles (stage 1 screened)
MEDLINE	344
EMBASE	152
Web of Knowledge	341
CINAHL	445
PsycINFO	20
Specialist Library on Ethnicity and Health	1
Health Development Agency	284
Cochrane Library	10
Campbell Collaboration	0
Centre for Reviews & Dissemination (University of York)	13
National Institute for Clinical Excellence (NICE)	0
Other sources (personal recommendation)	2
ALL DATABASES TOTAL ARTICLES	
-including duplicates	1199
-excluding duplicates	973

The total number of studies was further reduced by eliminating:

- 48 studies that on closer scrutiny were found to be mistakenly included
- 61 papers which were related to cancer screening
- 10 non-selected risk factors or issues
- 286 further duplicates including studies which appeared in more than one risk factor search

This resulted in a total of (973-319) 568 studies. Of these papers, 55 studies were initially identified as relating to health promotion interventions.

Following discussion with Health Scotland, we agreed that to in order to ensure continued feasibility of the review, the review should only concentrate on health promotion interventions, excluding studies relating to knowledge, attitudes and behaviour of the minority ethnic communities concerned.

1.3 Stage 2 Screening

JK and NL were involved in Stage 2 screening. This involved reading of the entire paper to assess whether the studies concerned met the selection criteria of the refocused study. The inclusion criteria for this included

- Studies which provided qualitative or quantitative evaluation of a health promotion intervention for the minority ethnic communities concerned that were related to cancer and CVD and the key modifiable risk factors of diet, weight management (or obesity), physical activity, alcohol and smoking in the selected countries

Studies that were excluded from the review included:

- Studies that only describe the developmental stages of a health promotion intervention
- Studies that only describe prevalence data
- Studies that only describe knowledge, attitudes and behaviours relating to the main disease conditions/risk factors

See Appendix A which indicates which studies were included and which studies were excluded from the review, briefly stating the reason for this.

1.4 Data extraction and synthesis

Data extraction forms were adapted from those produced by White et al, 1998 and refined to accurately extract information on relevant features and results of selected studies relating to the research questions, study quality assessment and analysis. The extraction forms were piloted and finalized before data extraction began to ensure that all required information was extracted. Each data extraction form was filled in by one reviewer and cross-checked by at least one other reviewer to ensure that all relevant information had been extracted and checked for accuracy and relevance. These have been systematically organised according to the main chapter headings of the report and within this, according to alphabetical order of lead author in Supporting Material.

1.5 Study quality assessment

Study quality assessment was undertaken throughout the process of Stage 2 Screening, data extraction, analysis and writing up stages of the report. The data extraction forms included several items which related to study quality, particularly in relation to study design (see Supporting Material). Assessment of the quality of studies was continually refined with growing appreciation of the scarcity of the work undertaken; the exploratory and innovative nature of many of the studies; the diversity of the interventions evaluated in terms of purpose, scale, groups targeted and assessed outcomes; the wide variation in study design and the developing stage of this area of research. As it became increasingly clear that the limited evidence base was not going to permit generalisations relating to the relative effectiveness of different interventions to be made, it became apparent that an important contribution of the review would be to increase understanding of the factors that need to be considered in planning, designing and evaluating interventions for minority ethnic groups in different settings, including community, school-based and religious settings.

The main criterion that was used was the extent to which relevant studies contributed to our understanding of the issues that need to be considered in planning, developing, implementing and evaluating interventions for the minority ethnic groups that are the concern of this review. Drawing on the guidance produced by the Centre for Reviews and Dissemination (CRD, 2006); Fischbacher et al, 2004; Netuveli, 2001; Platt, 2007, other criteria against which studies were assessed were:

- the extent to which the ethnicity of the participating groups was either made explicit or the ethnicity of the groups was able to be inferred, for example through languages spoken by the participants
- the extent to which the complex factors which influence health-related knowledge, attitudes and behaviour are taken into account
- the extent to which measures are taken to ensure internal validity, including in the selection of participants, study and intervention procedures and research instruments used
- the extent to which interventions are underpinned by theory
- the extent to which limitations of the studies are acknowledged
- the extent to which the results are presented transparently and without preconceived bias
- the reflective treatment of ambiguity in the results
- the strength of the interpretation in conveying key insights and accounting for specific findings

The adoption of this approach has resulted in the inclusion of studies at various levels of the study design hierarchy proposed by the CRD, including experimental studies, quasi-experimental studies and observational studies, while acknowledging the limitations of each of the studies. Many of the observational studies were exploratory in nature and included despite weaknesses relating to one or more of the above criteria for their innovative contribution in engaging with groups which are commonly perceived to be 'hard-to-reach.' Others increased our appreciation of varying interpretations of widely used concepts such as 'cultural sensitivity' and 'cultural modification' or 'enhancement' or 'tailoring' of interventions. Yet other studies increased understanding of the differences and similarities between and within ethnic groups that are the concern of the review in areas which were relevant for the effective communication and retention of health promotion messages. Finally, other studies included in the review increased knowledge and understanding of factors which would either facilitate or hinder the promotion of health messages.

2. Overview of studies identified

In this section, we present an overview of the studies identified by country, ethnic composition and setting. Despite the major contribution of CVD and cancer to mortality and morbidity, the number of health promotion interventions for the groups that are the concern of this review and related to the prevention and reduction of these diseases and associated risk factors is small.

As Table 7.1 shows, twenty one studies which explicitly targeted the groups that are the concern of the review were identified. Of these, eleven studies were carried out in the UK, including evaluation reports from the grey literature, indicating that the evidence base relating to the efficacy of health promotion interventions for Pakistanis, Indians and Chinese living in this country is extremely limited. The focus of health promotion interventions was mainly concentrated on physical activity, smoking cessation and CVD. No UK-based studies related to cancer prevention were identified. Neither were any studies identified which evaluated the effectiveness of interventions to prevent or reduce alcohol abuse among these groups.

Table 2.3: Analysis of Studies by Disease/risk factor and country

Disease or risk factor	Country	Number of interventions
CVD	UK	5
Cancer	US	1
PA	UK	2
	USA	3
	Norway	1
Smoking cessation	UK	2
	US	4
Diet	UK	2
	US	1
Multi-ethnic studies w/o disaggregated data		7
Total		28

A further seven studies which targeted Asian Americans or multi-ethnic samples, in which Chinese Americans might have been included, were reviewed in order to maximise learning from multi-ethnic samples, including those carried out among young people in school-based settings.

As indicated by Table 2.4, the interventions in the UK focused mainly on South Asians, with 9 studies directed exclusively at these groups and a further two studies focusing on UK Muslims. The review did not identify any studies which evaluated the Chinese population in the UK, one of the three ethnic groups which are the concern of the study. In the US, Chinese Americans were explicitly targeted in 8 studies.

Table 2.4 Analysis of interventions by ethnic/religious groups and disease/risk factor

Ethnic/religious groups	Disease or risk factor					No of studies
	CVD	Can	PA	SC	Diet	
UK South Asians	5		2		2	9
UK Muslims				2		2
Chinese Americans		1	3	4	1	9
Asian Americans						
Other Indians/Pakistanis			1			1
Multi-ethnic sample without disaggregated data	4	1	1	1	0	7
	9	2	7	7	3	28

As revealed by Table 7.3, analysis of studies by setting revealed that the majority of the studies were carried out in community-based settings, including community centres, homes and mosques. This was followed by studies of school-based interventions, most of which were carried out in the US. The absence of school-based interventions in the UK is worth noting given the importance of encouraging healthier lifestyles at a young age in addressing CVD and cancer. School-based settings also provide an easy means of engaging with communities which are often perceived to be 'hard to reach.'

Table 2.5: Analysis of interventions by setting

Setting	Disease/risk factor					No of studies
	CVD	Can	PA	SC	Diet	
Community-based	4	2	6	5	2	19
School	5			2	1	8
Other			1			1
Unknown						
Total	9	2	7	7	3	28

Table 2.6 shows that most of the interventions were carried out with adult males and females with relatively few studies targeting children.

Table 2.6: Analysis of studies by gender and age

Age and gender	Disease or risk factor					No of studies
	CVD	Can	PA	SC	Diet	
Adult males					1	1
Adult females			2		2	4
Adults males and females	5	2	5	4		16
Male children/adolescents				1		1
Female children/adolescents	1					1
Male and female children/adolescents	3			2		5
	9	2	7	7	3	28

Summary

The total number of studies identified was extremely small, with the majority of the studies based in the UK and the US. In the UK, communities originating from the Indian sub-continent were the focus of attention, while in the US Chinese Americans were the group most likely to be targeted. Interventions were most commonly based in the community, and most likely to address adults.

CHAPTER 3: REVIEW OF CVD AND CANCER INTERVENTION STUDIES

1. Introduction

This chapter discusses studies related to the prevention of the two main causes of mortality, that is, CVD and cancer. Five UK-based CVD health promotion interventions which targeted at least one of the ethnic groups that are the concern of the review were identified. One of the interventions was the subject of two studies, one qualitative (Netto et al, 2007) and the other, quantitative (Matthews et al, 2007). Only one study of a health promotion intervention related to cancer prevention was identified. The intervention was carried out in the US and targeted people of Chinese origin. The studies relating to CVD will be reviewed first followed by the study relating to cancer.

In addition to these studies, four US-based studies of CVD interventions which targeted multi-ethnic samples including Asian Americans (among whom Chinese people are likely to be included, although this was not explicitly stated) were identified, and are discussed in Chapter 7. One US-based multi-ethnic study relating to cancer was identified and discussed in the same chapter.

2. Overview of CVD studies

All the CVD interventions reviewed were multi-faceted, focussing on more than one risk factor to prevent heart disease and involving several different approaches. Only two of the interventions lasted for more than a year (Kunti et al, 2007; Matthews et al, 2007). Four of the interventions were community-based interventions, while one was school-based (Khunti et al, 2007). None of the studies followed up the effects of the intervention after the intervention had ended.

Details of the studies, including the sample, the study design, type of intervention and cultural adaptation are provided in Table 3.1 while the baseline and outcome measures used, results and conclusions are provided in Table 3.2.

2.1 Characteristics of the participants

As Table 3.1 reveals, all five interventions focused on the South Asian community. One intervention targeted only males (Akhtar et al, 2001) while the rest of the interventions targeted both males and females. Three studies (Akhtar, 2001, Kunti, 2007 and Ali et al, 2006) provided data which indicated the disadvantaged nature of the participants either in terms of socio-economic status or the deprived nature of the area they were living in.

2.2 Purpose and type of intervention

The most common risk factors addressed by the interventions were diet, obesity, physical exercise and smoking cessation. One intervention also addressed additional factors such as alcohol consumption and stress management (Mathews et al, 2007; Netto et al, 2007).

Farooqi and Bhavsar (2001) aimed to improve the effectiveness of primary and secondary prevention of CVD in volunteer general practices as well as increase awareness of lifestyle risk factors amongst the South Asian community through a peer education programme. The intervention in Ali et al (2006) was mosque-based and involved a series of campaign activities in the Muslim month of Ramadan, while the school-based intervention aimed to identify barriers to healthy lifestyles and evaluate the effectiveness of an action research approach to altering lifestyles (Kunti et al, 2007). The remaining two interventions adopted a structured programme of health screening, education and promotion in the South Asian community. All five interventions aimed to increase participants' knowledge of CVD and associated risk factors; however only one intervention was evaluated in terms of its impact on health status (Matthews et al, 2007; Netto et al, 2007). Farooqi and Bhavsar (2001) was the only study to undertake some evaluation of organisational change.

2.3 Study design

Only two of the five interventions were evaluated using qualitative approaches (Khunti et al (2007); Netto et al (2007)). None of the studies reported the theory underpinning the design of the intervention although Matthew et al (2007) used working definitions derived from the Transtheoretical Model to assess participants' stage of change in relation to their motivation to address lifestyle behaviours (Matthews et al, 2007).

Ethnically disaggregated data relating to the impact of the intervention on the groups targeted within the intervention were not provided. It is thus not possible to examine the differential impact of the intervention in the ethnic groups covered by the term 'South Asian', that is, Indians, Pakistanis and Bangladeshis, despite evidence that the use of overly broad ethnic categories can obscure important differences. The exception to this is Netto et al's study (2007) which provides some qualitative evidence of similarities and differences between these groups, discussed under results.

2.4 Study quality assessment

Of the quantitative studies, Matthews et al (2007) and Akhtar et al, 2001 were the only ones to use methods other than self-reports to assess the impact of the intervention. Measures taken to ensure internal validity in Matthews et al's (2007) study included the standardising and calibration of equipment for anthropometric measurements and ensuring face validity of questionnaire items for the target group. Khunti et al (2007)'s study made adjustments for the potential confounding influence of age, gender, ethnic group and school attended (although not for differences in socio-economic status). In contrast, there was little evidence to support asserted improvements in organisational and systems change in health care provision for minority ethnic communities in Farooqi and Bhavsar's (2001) study, but the innovative recruitment and training of peer educators makes this study worthy of inclusion. Similarly, Akhtar et al's (2001) study provided little evidence in support of the intervention but is included since it illustrates the potentially useful role that district or community-based nurses working in inner city areas can play in public health promotion through the deployment of limited resources.

The two studies which employed qualitative methods (Netto et al, 2007 and Kunti et al, 2007) made connections to existing bodies of knowledge and systematically recorded findings. In addition, Kunti et al (2007) compared and contrasted the views of teachers and students on the impact of the intervention and corroborated these findings with quantitative methods. In Netto et al (2007) the themes emerging from each of the twelve focus group discussions were analysed for common themes and differences. The findings of this study were also confirmed by the quantitative study of Matthews et al (2007) of the same intervention.

2.6 Cultural adaptation

The extent to which interventions were adapted to take into account the cultural framework(s) of the target group varied greatly. One of the main mechanisms for increasing the relevance of the interventions to the communities concerned was through community involvement. Communities were involved in the design of the process, the recruitment of participants and the delivery of the intervention.

Table 3.1 Summary of CVD Studies

Study, year published, country and setting	Sample details	Study design	Intervention type, duration, length, frequency and theory	Cultural adaptations
1a) Mathews et al., 2007 Country: UK Setting: community, Edinburgh	a) Sample size: 304 at initial screening, 140 at follow-up. Ethnicity: Bangladeshi, Indian, Pakistani and other South Asian Gender: Both Age: 13 – 81 Other information: Not stated	a) Study design: Longitudinal study, no randomisation; follow-ups averaging between 6-12 months b) Qualitative research; focus groups were organised at the beginning of the intervention and six months later	Intervention type: Screening, advice, exercise and diet sessions Duration: 2.5 years Length: 30-minute initial screening appointment, followed by 30-minute consultation 1-2 weeks later to discuss results and set goals. Other sessions not specified. Frequency and theory: Not stated	a) Facilitator(s): Community nurse, doctor and project team. b) Project tailored to needs identified by local people c) Flexible delivery of activities. d) Research questionnaires included culturally familiar items. e) Language support available in intervention and study f) Taxis arranged to facilitate access to group discussions. g) Separate sessions held for men and women.
1b) Netto et al., 2007 Country: UK Setting: community, Edinburgh	2b) Sample size: 55 in first focus group and 36 in the second round. No control group. Ethnicity: Bangladeshi, Indian, Pakistani Gender: Both Age range: Not stated. Other information: Not stated			
2. Akhtar et al., 2001 Country: UK Setting: General practice and health centre, Bradford	Sample size: 196 No control group Ethnicity: South Asians Gender: Male Age range: 40+ Other information: Local area is deprived.	Quasi-experimental design; pre-and post measurement; time interval between measurements not stated	Type of intervention: Health screening and informal education sessions Duration: 26 weeks; Length: 20-minute screening session; 90-minute health promotion and education sessions; Frequency: One-off screening session and weekly health promotion sessions. Theory: Not stated.	a) Facilitator(s): Health promotion facilitator, community-based nurses a) Staff used focus groups to identify target groups' needs in developing intervention b) Urdu-speaking health promotion facilitator dealt with cultural or religious issues at screening sessions.

3. Ali et al., 2006 Country: UK Setting: Community locations, London	Sample size: 249 Ethnicity: Indian, Pakistani, Bangladeshi (63%), Black African (16%) Gender: Both Age range: 16-65+ Other information: 28% of mosque goers had no educational background, 45% were not working	Study design: Cross-sectional; pre- and post quantitative survey of mosque goers 5 months after campaign; qualitative survey of Imams 3 months after campaign; review of campaign.	Type of intervention: Media campaign Duration: 8 weeks; Length: 1 day training of Imams and volunteers; 5 week media campaign Frequency: 8 advertisements and 4 programmes daily Theory: Not stated	a) Facilitator(s): Researchers, community leaders and sessional workers. b) Use of ethnic foods as basis to promote healthier cooking. c) Use of ethnic media to deliver media campaign. d) Mosques used to disseminate health messages during Muslim fasting period (Ramadan).
4. Farooqi and Bhavsar, 2001, Country: UK Setting: Community, Leicestershire	Sample: 45 people trained in peer education programme 20 general practices in training programme. Ethnicity of peer educators: Indian, Pakistani and Bengali Gender: Both Age: 13-70 Other information: Not stated	Study: Controlled trial, no randomisation; time interval between measurements not stated	Intervention type: Peer-education and health professional training programmes Duration of peer education programme: 1 year Health professional training programme: 9 hours Length, frequency and theory: Not stated	a) Facilitators: not specified b) Modules were tailored to problems in Asian communities. c) Bilingual individuals were trained as peer educators d) South Asian media were used to disseminate health messages
5. Khunti et al., 2007 Country: UK Setting: Secondary schools in Leicester	Sample size: 5 schools with 4,763 pupils; 309 staff No control group Ethnicity: multi ethnic sample (77 % South Asians, mainly Indians) Gender: both Age range: 11-15 Other information: Schools were in deprived areas	Quasi-experimental design, pre- and post measurements, qualitative action research	Type of intervention: varied approaches in individual schools, including diet and PA interventions Duration: Two years Length, frequency and theory: not stated	a) Facilitator(s): Research team in partnership with school staff members b) Food intake questionnaire had previously been modified for use in the local ethnically diverse population.

Table 3.2 Summary of measures used, impact of interventions and conclusions

Study and Measures	Impact of intervention	Conclusions and Recommendations
<p>1a) Matthews et al., 2007 Blood tests, individual CHD risk factors and goal setting Self-reported medical history, health behaviours and motivational stage Height, weight, BMI and waist circumference; Systolic and diastolic blood pressures.</p> <p>1b) Netto et al., 2007 Focus groups explored: Knowledge and understanding of CHD Steps taken to reduce CHD and barriers to taking these steps; Views of the intervention</p>	<p>Knowledge: Increased knowledge of CVD, risk factors and the importance of a healthy diet and physical activity among many participants. Attitude: 50.4% of returnees reported increased motivational status to changing lifestyles; Some participants increased positive attitudes towards diet and exercise Persistent barriers to change were also identified Behaviour: Positive changes in: Salt intake women eg women = 29.2% (95% CI 19.9, 38.5) Physical activity eg men = 47.2% (95% CI 29.2, 65.1) Alcohol consumption = 2.7% (95% CI -9.0, 14.0) Smoking = 13.9% (95% CI 2.6, 25.2). Health status: Reduction in: Cholesterol = 0.19mmol/l (95% CI 0.1, 0.37) Systolic blood pressure = 3.7mm Hg (95% CI 0.98, 6.7) Triglycerides = 0.29mmol/l (95% CI 0.14, 0.47) BMI = 0.30 (95% CI 0.12, 0.49). Stress in women only = 21.3% (95% CI 9.6, 33.0) Reduction in mean risk factor score for men from 28.22 to 18.14 ($p < .0005$).</p>	<p>Conclusions: The project increased knowledge about CVD and reduced CVD risk factors, although some persistent barriers to lifestyle change were identified. Recommendations:</p> <ul style="list-style-type: none"> a) Adopt targeted community approaches b) Ensure adequate resources, c) Address barriers to change d) Offer ongoing support e) Involve community organisations f) Offer a holistic model of health g) Include South Asians in wider alcohol and smoking interventions h) Monitor outcomes through longer follow-up period. i) Evaluate through RCTs j) Collect cost-effectiveness data
<p>2. Akhtar et al., 2001 (i) Risk assessment of patients with no history of CHD; (ii) blood pressure; urine analysis; weight and BMI; smoking status; (iii) baseline physical activity and dietary intake (iv) health knowledge and motivation for change</p>	<p>(a) Knowledge: Increased among all participants; felt able to pass on knowledge to family and friends. (b) Attitudes: Increased motivation for change among most participants (c) Behaviour: N/A (d) Health status: N/A</p>	<p>Conclusions: The intervention was successful in influencing attitudes and promoting lifestyle changes Recommendations: Community-based nurses should initiate public health interventions and move from an illness- to a public health-based service</p>

<p>3. Ali et al, 2006</p> <p>Baseline measures: Information on salt consumption behaviour, knowledge of health risks associated with salt consumption, smoking behaviour, knowledge of sources of help in quitting smoking and knowledge of health risks associated with smoking.</p> <p>Outcome measures: as above</p>	<p>(a) Knowledge: Knowledge of health risk associated with smoking increased significantly for heart disease from 88.8% to 97%</p> <p>Knowledge of sources of help in quitting smoking rose from 31% to 67%</p> <p>Knowledge of risks of high blood pressure associated with salt consumption rose from 84.2% to 87.2%</p> <p>(b) Attitudes: N/A</p> <p>(c) Behaviour: % of respondents reporting 'very low' salt intake increased from 9% to 20.1%.</p> <p>% of respondents that said that they 'smoke now' dropped from 38.1% to 29.8%</p> <p>(d) Health status: N/A</p>	<p>Conclusions: The campaign was effective in improving health knowledge and behaviour</p> <p>Recommendations:</p> <p>Given the globalisation of international communication a global campaign on smoking cessation in Ramadan should be considered.</p>
<p>4. Farooqi and Bhavsar, 2001</p> <p>Peer education programme was evaluated by pre-and post course questionnaire</p> <p>Numbers of participants in training programme for health professionals and practices achieving various stages of organisational development were provided</p>	<p>(a) Knowledge: No change in knowledge of CHD among peer educators, but 55% reported increased understanding of peer education, methods of delivery and access to funding.</p> <p>(b) Attitudes, behaviour and health status: N/A.</p> <p>Organisational structure: All practices progressed in developing planned care.</p>	<p>Conclusions: Intervention had a beneficial effect in enabling peer educators and developing planned care.</p> <p>Recommendations:</p> <p>(a) Mainstream ethnic-specific projects within the NHS.</p> <p>(b) Assess the long-term impact of the intervention on general practices</p>
<p>5. Khunti et al., 2007</p> <p>Country: UK</p> <p>Setting: Secondary schools</p> <p>Study design: Quasi-experimental design, pre- and post measurements (taken after approx. 1 yr) and qualitative design</p>	<p>(a) Knowledge: Increased awareness of lifestyle issues.</p> <p>(b) Attitudes: N/A</p> <p>(c) Behaviour: Improved dietary behaviour eg. decreased proportion of pupils consuming chocolate Positive change p<.644 (95% CI .522, .795)</p> <p>Improvement in PA for 5 of the 8 PA indicators eg. increased light exercise on ≥6 days in past 2 weeks p<.0013 (95% CI 1.140, 1.723)</p> <p>(d) Health status: N/A</p>	<p>Conclusions: The action research project involving secondary schools was a useful, but challenging collaboration. Although pupils' lifestyle habits remained poor overall, some limited changes were indicated.</p> <p>Recommendations: Include provision of implementation resources including dedicated staff time</p>

(Abbreviations: N/A = Not Applicable, P = Positive change, PA= Physical activity, CHD = Coronary Heart Disease, CVD = Cardiovascular Disease, BMI = Body Mass Index, CI = Confidence Interval, NHS = National Health Service)

Community involvement in the design of the intervention

While community involvement and consultation in the design of the intervention was reported in three studies (Akhtar, 2001; Farooqi and Bhavsar, 2001 and Matthews et al (2007), the nature of the 'needs' or 'problems' that emerged or the measures taken to meet them were not explicitly stated. However, it is likely that such involvement played an important role in publicising the intervention and obtaining 'buy-in' from the community, and in raising issues that needed to be addressed in order to ensure the accessibility and appropriateness of the intervention.

Community involvement in the recruitment of participants

Two studies reported community involvement in the recruitment of participants: through the systematic training of 'peer educators,' (Farooqi and Bhavsar, 2001) and through community organisations, GPs and other health workers in making referrals to the project (Matthews et al, 2007).

Community involvement in the delivery of the intervention

Community involvement in the delivery of the intervention took many forms:

- the enlisting of role models from the same community and peer and family support to help achieve health behaviour changes
- the employment of bi- and multilingual health workers as facilitators and translators of the health promotion curriculum and research instruments
- the training of religious leaders to communicate health education messages in their sermons

In many of these studies, community involvement in the design and delivery of the intervention played a crucial role in overcoming language barriers, thus ensuring effective communication of health promotion messages. However, what remains unclear is the extent to which the involvement of representatives from the target community added value to the effectiveness of the intervention due to other factors, for example, due to greater understanding of cultural beliefs relating to the cause and prevention of CVD or the norms, values and lifestyles of that community. Another way of exploring this issue might be, assuming that there were no language barriers to overcome, to what extent would it be useful to involve people from the same community in the design and/or delivery of the intervention?

A partial response to this might be formulated by considering other steps that were taken to increase the accessibility and relevance of the intervention to the target community. For example, Matthews et al (2007) highlighted the need for sensitivity in the planning of activities around religious events and flexibility in terms of rescheduling events at short notice. The same study reported including culturally familiar items in questionnaires to ensure the validity of the research design for the participants. Both measures require either knowledge of the target community or contact with reliable informants in the planning process and help to ensure effective delivery and evaluation of the intervention.

Generally, less attention was directed towards engaging with the target groups' current knowledge, attitudes and beliefs concerning the causes of CVD and the nature of preventive measures that can be taken. Akhtar et al (2001) highlighted the need for sensitivity towards participants' cultural and religious beliefs in giving health advice but

no mention was made of what these might be or how they might differ from those of the majority population.

Other cultural adjustments

To facilitate access to the interventions, community settings and health centres were used. Local ethnic specific media, such as television and newspapers, were also used to disseminate health messages.

2.7 Results

As Table 3.2 indicates, all of the interventions reviewed produced some evidence of effectiveness. However, barriers to change were also identified in two studies. Netto et al's study, 2007) illustrated the nature of persistent structural barriers which could impede participants' ability to alter their behaviour, including poverty, alienation from the majority population and fear of racial harassment. These issues were most dominant in the discussions organised with the Bangladeshi and Pakistani communities. The same study also articulated the complex interplay between limited knowledge of CHD, risk factors and preventive measures, ingrained health beliefs and attitudes relating to the disease, social deprivation, lifestyle and environmental changes following from migration to the UK, long working hours and adherence to social rituals and community norms around hospitality. It strongly suggests that unless some of these fundamental barriers to lifestyle change are addressed, efforts in this direction are likely to be limited.

Khunti et al (2007)'s study of secondary school children also evidenced persistent barriers, including low prioritization of impact on health in making lifestyle choices, image and peer pressure. Issues raised by staff which hindered their attempts to influence students to adopt healthier lifestyles included lack of physical education facilities; external barriers such as competition from local food retail outlets and lack of dedicated staff time for such activities. Both staff and pupils raised the cost of healthier food as an issue and indicated that engaging in physical activity may be more difficult for girls than boys. The latter was supported by observational visits where many more boys were seen engaging in physical activity than girls. Both groups also highlighted religious barriers such as attending faith schools as restricting the time available for physical activity. Both studies demonstrate the value of targeted CHD interventions as a means of increasing awareness of the disease, providing guidance on preventive measures and support to initiate and maintain behavioural changes.

3. Cancer

Only one study relating to cancer prevention which explicitly mentioned the inclusion of Chinese Americans (along with Koreans, Vietnamese and Cambodians) was identified, a qualitative study of a media campaign (Ma et al, 2004). Details of the study, the sample, study design, intervention and cultural adaptations are provided in Table 2.3, while details of the measures used, results and conclusions are provided in 2.4. Both tables also provide details of a cancer prevention intervention using a multi-ethnic sample in which Chinese Americans might have been included, discussed further in Chapter 7.

The study aimed to raise awareness of cancer and consisted of a newspaper and radio campaign. These were assessed as successful based on analysis of survey data and volume of phone calls received by a relevant service provider. Ma et al (2004) conclude that the findings support the importance of using local targeted media outlets and

Table 3.3 Summary of study details, sample details, study design, intervention type and adaptations of cancer studies

Study, year of publication country, and setting	Sample details	Study design	Intervention details	Adaptations to target group
1. Ma et al., 2004 Country: USA City: Philadelphia	Sample size: 28 for newspaper campaign, 110 for radio programme Ethnicity: Asian-Americans (Chinese, Koreans, Vietnamese, Cambodians, among others) Gender: Both Age range: 36%, 60 plus Other information: Not stated	Cross sectional study	Intervention: newspaper and radio programmes Duration: news campaign not stated; radio programme ran for 8 weeks. Length: 12 minutes in each language for radio programme Theory: Rogers' diffusion and innovation theoretical model	a) Facilitator(s): Researchers in partnership with Asian community-based organisations and cancer information services b) The communication content incorporated expertise on cancer and knowledge of populations' attitudes and cultural values. c) Media messages were produced in various Asian languages. d) Local Asian media were used to disseminate health messages.
2. Emmons et al., 2005 Country: USA Setting: Health centres, Massachusetts	Sample size: 2,219 Int = 1,088, Con = 1,131 Ethnicity: 41% were racial/ethnic minorities (2.3% Asian) Gender: Both Mean age: 50. Other information: 62% educated below B.A. degree level; 85% above poverty guidelines; 53.7% unemployed or working class. 40% were first or second generation immigrants.	RCT design; follow-up after eight months.	Type of intervention: Social contextual and community-based: individual counselling session, up to 4 telephone calls, 6 mailings of tailored materials Duration: 5 months Length: Counselling session 20 minutes; follow-up telephone calls 10 minutes Theory: Social and behavioural theories to incorporate social context in behaviour change interventions	a) Facilitator(s): Health advisors b) Intervention material was tailored to the participants' risk factors, gender, self-efficacy and contextual factors such as social support and barriers to change. c) Material was in English and Spanish. d) A community advisory board was set up to provide advice e) Trained bilingual health workers were used

(Abbreviations: Int = Intervention, Con = control, RCT = Randomised Control Trial)

TABLE 3.4: Summary of measures used, impact and conclusions of cancer studies

Study and measures	Post intervention	Conclusions and Recommendations
<p>1. Ma et al, 2004 Outcome measures: Self-administered questionnaire to assess newsprint (article) media impact. Analysis of call volume data and telephone tracking questionnaire to measure impact of radio campaign.</p>	<p>Knowledge/awareness: 18 of 22 found newspaper columns useful, 22% indicated interest in obtaining more information on cancer and 18% indicated interest in participating in clinical trial. Number of calls received during radio programme increased by 84%. Survey data revealed that more than 96% found the programme helpful and 97% indicated an interest in calling to obtain more information on cancer information. Behaviour, attitude and health status: N/A</p>	<p>Conclusions: Intervention had positive impacts on cancer awareness and utilisation of available cancer resources in Asian communities. Recommendations: a) Carry out sustained and targeted campaigns to increase cancer awareness in vulnerable groups b) Identify what type of media and messages are most effective in changing attitudes and behaviours c) Carry out randomized studies with short and long-term follow-up</p>
<p>2. Emmons et al, 2005 Baseline measures: Servings of fruit and vegetable per day; servings of red meat per week; time spent in moderate or vigorous PA per week and average days per week of multivitamin consumption via self reported behaviour/questionnaire. Outcome measures: See above</p>	<p>Knowledge: N/A Behaviour: Significant increases in fruit and vegetable consumption in intervention group from 13.9% to 17.2% ($p<.005$), compared to a decrease of 3.6% in control group. Significant increase in multi-vitamin uptake in intervention group from 39.2% to 68.6% ($p<.001$), compared to 8% of control participants. Significant decrease in red meat consumption in intervention group from 39.2% to 68.6% eating three or fewer servings of red meat/week ($p<.001$), but no change in control group. No confounding effect, including gender, education, race and birth country was observed. No significant differences in PA in both groups. Attitudes and health status: N/A</p>	<p>Conclusions: The intervention led to significant improvements in health behaviours among the sample, regardless of ethnicity and socio-economic status. Recommendations: (a) Attend to social contextual factors, which may maximise the overall success of health behaviour interventions. (b) Use health care settings for developing appropriate interventions for multi-ethnic, low income individuals.</p>

(Abbreviations: N/A = not applicable, PA = Physical Activity)

developing effective cancer prevention messages. Factors identified as contributing to the impact of the media campaign include:

- Using the respective languages of each of the ethnic groups targeted
- Ensuring the credibility and quality of the communication content by combining the expertise of the cancer information service and the knowledge of the Asian community-based organisation of the target groups, perceived to originate from cultures where usage of tobacco is acceptable

4. Conclusions of the review

The number of studies of health promotion interventions targeted at reducing or preventing CVD and cancer in the minority ethnic communities that are the subject of this review are extremely limited. This is despite well-documented evidence of excess mortality and morbidity due to CVD in communities originating from the Indian sub-continent. It is also worth noting that only UK-based interventions have been identified for CVD. Similarly, it is worth highlighting that the only cancer prevention study which was identified was based in the US. Also worthy of mention is that only one intervention, based in Scotland, has been evaluated both qualitatively and quantitatively, providing convincing evidence of its effectiveness. This review suggests that there is an urgent need for the planning, delivery and intervention of health promotion interventions for minority ethnic communities related to the prevention of CVD and cancer. Also worthy of mention is the absence of initiatives targeting the Chinese population in the UK, a gap which should be filled in future initiatives and evaluative research.

The studies identified are diverse in terms of the nature of the interventions, their scale, duration, frequency, setting and the different ethnic and age groups covered. The nature of the interventions reviewed were complex and multi-faceted, adding to the challenges posed in evaluating their effectiveness. Further, only two studies lasting for more than year were identified, limiting the availability of evidence relating to the potential of the interventions to bring about sustained attitudinal and behavioural modification and physiological changes. None of the studies reviewed provided any evidence of cost or cost-effectiveness, information which is obviously valuable in the planning of future policies and interventions.

Despite their weaknesses and the likelihood of publication bias in favour of positive results, the studies suggest that a targeted approach with minority ethnic communities can bring about positive changes in knowledge, attitudes, behaviour and health status. All of the studies reviewed illustrated the involvement of minority ethnic communities in the design and delivery of interventions, and in some cases, the recruitment of participants. There is little doubt that such involvement is beneficial, for instance, in the overcoming of language barriers and in addressing cultural issues and religious beliefs. However, there is considerable scope for more critical attention to be paid to the role of community involvement and the precise nature of its contribution to effective interventions.

In parallel and jointly with the development of targeted interventions, there is also a need for the planning of mainstream interventions to include the communities concerned in initiatives such as alcohol and smoking cessation programmes. It is likely that given evidence of the considerable diversity within minority ethnic groups in terms of degrees of affiliation with traditional cultural norms and values and levels of acculturation, mainstream health promotion messages and interventions are likely to have some relevance to some sections of these communities. This is perhaps most likely to be the case among young people, particularly those who have been born in the UK. This suggests greater scope for the development of school-based interventions and curricula which take into account the multi-ethnic composition of the student population.

Many of the studies reviewed reported working with the cultural norms and values of the communities concerned, and putting into place measures to address this, such as the employment of individuals from the target communities. However, it was the exception rather than the norm for critical

discussion of the issues which emerged among target communities, or how these were addressed within the intervention, especially where traditional values and norms conflicted with health promotion messages. Attention to how such issues should be addressed and of the processes needed to effect attitudinal and behavioural change is clearly important in achieving desired outcomes. These issues point to the importance of designing interventions which are underpinned by theories which predict such changes. Sadly, few of the interventions reviewed in this chapter were underpinned by theory, and none considered the relationship between cultural change and health-related attitudinal and behavioural change. The latter is important given the dynamic, fluid nature of both culture and ethnic identification over time and the potential for successful outcomes from health promotion interventions that are attuned to such identification.

There is also scope for greater attention to be paid to addressing the contribution of structural factors, such as poverty, minority ethnic status and racial discrimination, in initiatives which seek to enable targeted communities to make positive health-related attitudinal and behavioural changes. This is likely to involve identifying and addressing persistent barriers to lifestyle changes and working with community organisations over a prolonged period of time to penetrate deeper into such communities, raise awareness of available preventative services, and support individuals who have already made some changes to maintain them. It is also likely to involve extending interventions beyond community settings where they are most commonly located to workplaces, schools and health care settings. Indeed, one study suggests that given the influence of international global communication, there might be scope for planning interventions at an international (global) level, rather than at a local, national or regional level. At a higher and more strategic level, efforts in this direction also call for the involvement of health agencies in anti-poverty and regeneration initiatives and the inclusion of minority ethnic communities in such initiatives.

5. Recommendations for future interventions

The recommendations emerging from each study are provided in Table 3.2 and 3.4. Based on the above, we recommend:

- a) Developing targeted interventions which prevent or reduce CVD and cancer for the ethnic groups concerned, taking into account cultural values, beliefs and lifestyles of the communities concerned, socioeconomic status and poverty
- b) Working with community organisations
 - to design and plan interventions, including the types of media and messages that are most effective in changing attitudes and behaviours.
 - to identify and address persistent barriers to change
 - to penetrate deeper into communities and raise awareness of preventative services
 - to offer ongoing support for individuals who have already begun to make changes
- c) Extending interventions beyond community settings to schools, workplaces and health care settings
- d) Developing and commissioning qualitative research which investigates the impact of the methods and messages which are most effective in enabling people to consider lifestyle changes in the short and long-term
- e) Developing and commissioning quantitative research, including randomized controlled trials and quasi-experimental studies, to evaluate the impact of interventions in the short and long-term
- f) Commissioning evaluative research which includes minority ethnic communities in wider health promotion initiatives and assesses the differential impact of such initiatives through ethnically disaggregated data
- g) Developing and commissioning evaluative research into health promotion interventions which collect and analyse cost effectiveness data
- h) Closer collaboration between health improvement agencies and other government bodies involved in anti-poverty and regeneration initiatives

6. Summary

There is an urgent need to plan, implement and evaluate targeted approaches to prevent and reduce coronary heart disease and cancer for the minority ethnic communities concerned. These approaches should take into account the cultural values and beliefs of the groups concerned as well as structural factors such as poverty. In parallel, with this there is a need for wider interventions to ensure that minority ethnic communities are included in related initiatives. Further research, both qualitative and quantitative, is needed to evaluate the effectiveness of these interventions, in the short- and long-term.

CHAPTER 4: REVIEW OF PHYSICAL ACTIVITY INTERVENTION STUDIES

Six interventions met the inclusion criteria and were included in the review.

Evaluation of one of the interventions resulted in two outputs, a PhD thesis and a published paper (Davey 1998, Davey et al, 2000). Three interventions were carried out in USA, two in the UK and one in Norway. All the studies were community-based.

Four of the interventions employed some form of walking programme as a physical activity (PA), including an annual walkathon, individual walking-jogging programmes and a group walking programme. One intervention used a traditional form of activity for the Chinese participants that were its target group, Tai Chi. Most of the interventions were short-term, with four interventions lasting between five and twelve weeks. There were two long term studies, lasting for about three years, with one study highlighting the factors underpinning the planning and implementing of an annual community walkathon (Lew et al, 1999), and another study assessing the impact of a district-wide intervention (Jenum et. al, 2006). None of the studies followed up the effects of the intervention after the intervention had ended. Details of the study, sample, study design, intervention and cultural adaptations made are provided in Table 4.1 while the measures taken, results and conclusions and recommendations from the studies reviewed are summarised in Table 4.2. Details of multi-faceted CVD interventions discussed in Chapter 4 which include PA are also listed in Tables 4.1 and 4.2. Table 4.1 and 4.2 also summarises the details relating to Collins et al (2004), which evaluates the impact of a PA intervention targeting a multi-ethnic sample. This is discussed in Chapter 7.

1. Purpose and focus of Interventions

All six interventions were concerned with evaluating the effects of exercise on risks related to CVD. Chiang (2005) examined the effects of a walking program with and without cultural modification among older Chinese immigrants with hypertension while Taylor-Piliae et al (2006) examined performance-based physical functioning after Tai Chi exercise in participants from the same ethnic group at risk of CVD. The net effect of PA on risk factors for Type 2 diabetes as well as CVD was also the focus of study (Jenum et al (2006; Davey 1998, Davey et al, 2000). Yet another study evaluated the effectiveness of a PA programme with special provision for South Asian Muslim women to inform practice in Exercise On Prescription schemes, which are often the preferred course of treatment for a range of conditions, including CHD (Carroll et al, 2002). The intervention studied by Lew et al (1999) aimed to promote PA among American Asians (including people of Chinese origin) by institutionalizing a community and business supported annual community wide walkathon, as part of a wider cardiovascular health education effort.

There was considerable variation in the focus of the intervention. Two studies were concerned with examining changes in attitudes to PA, including self-efficacy, perceived barriers to exercise, stage of change and motivational readiness (Chiang, 2005; Carroll et al, 2002). Three studies examined the extent to which the intervention had led to changes in the duration, intensity or frequency in PA undertaken by participants (Jenum et al, 2006; Chiang, 2005; Carroll et al, 2002). Among the interventions which examined changes in health status, one study was concerned with examining the extent to which PA led to improvement in balance, strength and flexibility (Taylor-Piliae et al, 2006). Davey (1998)'s study examined the impact of PA on insulin sensitivity at intervals of within 24 hours and five days later while Jenum et al (2006) examined the impact of PA on a battery of physical measures listed in Table 3.2. In contrast, the only physical change that Chiang's (2005) study was concerned with examining was hypertension.

Table 4.1: Summary of Physical Activity Studies

Study, year, country, setting	Sample	Design and follow-up	Intervention type, duration, length, frequency and theory	Adaptations to target group
1.Carroll et al, 2002 Country: UK Location: Beeston area of Leeds Setting: Church Hall	Sample size: 36 Ethnicity: South Asian Gender: Women Religion: Muslim Age Range: NA Other details: At risk of osteoporosis and CHD.	Design: One group Pre and Post Intervention Test after 6 weeks	Intervention Type: Moderate Exercise Duration: 5 week period Length: 1 hour, twice weekly Theory: Self efficacy, Transtheoretical model of behaviour change	a) Facilitators: Bilingual female health and fitness assessor, instructor and researcher b) Design: Women only sessions in church with crèche facilities c) Recruitment: Broadcasts on Urdu channel, distribution of Urdu posters in public places. d) Local community groups were involved in recruitment.
2. Chiang, 2005 Country: USA Setting: Not stated	Sample size: 128 Int: 58, Con: 70 Ethnicity: Chinese-American Gender: Both Age range: 65-89 Other information: most had low incomes	Design: Quasi-experimental design; pre-test and post test after eight weeks Int: Culturally modified walking group Con: non-culturally modified walking group	Intervention type: Int group: Culturally modified walking group Con group: Non-culturally modified walking group Duration: Eight weeks Length: 30min/day. Frequency: Three times a week. Theory: Self-efficacy theory, Stages of Change Model and Culture Care Theory	a) Facilitator(s): Researcher and nurse b) Walking protocol and questionnaires were translated into Cantonese. c) Sample was recruited using community organisations d) Bilingual nurse, multi-lingual investigator and a translator were involved.
3. Davey, 1998; Davey et al, 2000 Location: London borough of Ealing Setting = Home	40 South Asians and 47 Europeans Male = 55, Female = 32 Age = 35 to 50 yrs Other details: High scores on index linked to insulin resistance	RCT; 3 groups stratified by sex and ethnicity: no change in PA/wait list (NE), PA with follow-up tests 24 hours after last session (E1) and PA with follow-up 5 days after last session (E5)	Intervention type = Individually prescribed walking - jogging programme over 12 weeks Frequency: Three sessions per week plus circuits once weekly Length:30 minutes each	a) Advice given on what forms of Indian dress to wear for exercise b) Separate sessions for women were organised (which were not taken up) c) Training partnerships between women were encouraged for safety and support

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4. Jenum et al., 2006 Country: Norway Setting: Community based, Oslo	Sample size: 2,950 Int = 1,497 (intervention district) Con = 1,453 (control district) Ethnicity: Urdu, Turkish, Tamil and Vietnamese speaking communities Gender: Both Age range: 30-67 Other information: lived in most deprived area	Design: Pseudo experimental cohort design; follow-up after 3 years.	Intervention type: Theory-based activities to promote walking and other PA Duration: 3 years Length: Not stated. Frequency: Not stated. Theory: Social-psychological and ecological models and perspectives on empowerment and participatory approaches.	a) Facilitators: Local political leaders, welfare workers and research team participated in planning and delivery of intervention. b) Community-based resource group was established. c) Access to areas for PA increased through labelling walking trails, and lighting. d) Questionnaires were translated into the main languages of immigrant groups.
5. Lew et al,1999 Country: USA City: Setting: community setting	1 st walkathon attendance: 300 people 2 nd walkathon: 400 Ethnicity: Predominantly Chinese American Gender: Both, Age= all	Design: Observational study 3 walks were arranged annually.	Intervention Type: Annual Walkathon Duration: Three years. Theory: Social marketing	a) Recruitment: Flyers translated into Cantonese and distributed in Chinatown street festival. b) Area close to ethnic concentration was chosen for walk. c) Community coalition formed d) Ethnic-specific entertainment organised.
6. Taylor-Piliae et al,2006 Country: USA City: San Francisco Setting: Community Centre	Sample Size:39 Etnicity: Chinese American Gender: Both Age: 45+yrs(Other Information: at least 1 major CVD risk factor, low fitness scores and low income	Design: Repeated-measure intervention study Follow Up: 6 weeks,12 weeks	Intervention type: Tai chi exercise class Duration: three times per week for 12 weeks Length: 60 minutes,. Participants were also encouraged to practice the same at home. Theory: Self Efficacy theory	a) Facilitators: The PI was fluent in Cantonese a translator was also available. b) Conducted where a large number of Chinese immigrants live. c) Information disseminated through brochures and newspapers. d) Tai Chi, a traditional Chinese exercise chi was selected as PA

<p>7a) Mathews et al., 2007 Country: UK Setting: community, Edinburgh</p> <p>1b) Netto et al., 2007 Country: UK Setting: community, Edinburgh</p>	<p>a) Sample size: 304 at initial screening, 140 at follow-up. Ethnicity: Bangladeshi, Indian, Pakistani and other South Asian Gender: Both Age: 13 – 81 Other information: Not stated</p> <p>b) Sample size: 55 in first focus group and 36 in the second round. No control group. Ethnicity: Bangladeshi, Indian, Pakistani Gender: Both Age range: Not stated. Other information: Not stated</p>	<p>a) Study design: Longitudinal study, no randomisation; follow-ups averaging between 6-12 months</p> <p>b) Qualitative research; focus groups were organised at the beginning of the intervention and six months later</p>	<p>Intervention type: Screening, advice, exercise and diet sessions Duration: 2.5 years Length: 30-minute initial screening appointment, followed by 30-minute consultation 1-2 weeks later to discuss results and set goals. Other sessions not specified. Frequency and theory: Not stated</p>	<p>a) Facilitator(s): Community nurse, doctor and project team. b) Project was tailored to needs identified by local people c) Planning of activities was flexible. d) Research questionnaires included culturally familiar items. e) Language support was available in intervention and study f) Taxis were arranged to ensure access to group discussions in community locations. g) Separate sessions were held for men and women.</p>
<p>8. Khunti et al., 2007 Country: UK Setting: Secondary schools in Leicester</p>	<p>Sample size: 5 schools with 4,763 pupils; 309 staff No control group Ethnicity: multi ethnic sample (77% % South Asians, mainly Indians) Gender: both Age range: 11-15 Other information: Schools were in deprived areas</p>	<p>Quasi-experimental design, pre- and post measurements, qualitative action research</p>	<p>Type of intervention: varied approaches in individual schools, including diet and PA interventions Duration: Two years Length, frequency and theory: not stated</p>	<p>a) Facilitator(s): Research team in partnership with school staff members b) The food intake questionnaire had previously been modified for use in the local ethnically diverse population.</p>

9) Collins et al., 2004 Country: USA City: San Francisco Setting: Adult education/job training site in community	Sample size: 82 Ethnicity: Latina (74%), African-American (4%) Asian (3.7%), White (16%), Gender: Women Mean age = 32 Other information: Majority of participants had low educational levels and incomes and spoke a language other than English at home.	Design: Quasi experimental design; post survey after 8 weeks.	Intervention type: Preparatory course (Phase 1) and PA (Phase 2) Duration: Eight-week course and 10-month PA programme Length: Each Phase 1 class lasted one hour. Frequency: Weekly Theory: Trans-theoretical model	Facilitator(s): Health educators Delivery of intervention: Use of bilingual ethnically matched health educators to assist participants in both the assessment and intervention components. Participants were divided into small groups in order to increase privacy.
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(Abbreviations: N/A = Not Applicable, EOP = Exercise on Prescription, Int = Intervention, Con = Control, RCT = Randomised Control Trial)

Table 4.2: Summary of Measures, Impact of the intervention and Conclusions

Study and measures	Impact of Intervention	Conclusions and recommendations
1. Carroll et al, 2002 Qualitative interviews at baseline and follow-up	<p>Positive feedback received, with some women reporting weight loss, feeling more relaxed and sleeping well. Others reported making positive behavioural changes and a positive outlook to PA.</p> <p>High satisfaction levels with programme.</p> <p>Barriers included lack of crèche facilities and transport.</p>	<p>Conclusions: Significant barriers prevent South Asian women from participating in PA, (eg culture of exercise, language, religion) and need to be taken account of in EOP schemes.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> (a) Organise transport facilities (b) Plan consultation sessions between instructor and participants (c) Arrange sessions at different times in local venues (d) Plan a suitable range of activities
2. Chiang, 2005 Baseline measures: Blood pressure, stage of change and readiness for physical activity, perceived barriers to PA, exercise self-efficacy and duration of walking Outcome measures: See above	<p>(a) Knowledge: N/A</p> <p>(b) Attitudes: An increase of 7% of participants in the maintenance stage of change.</p> <p>Significant changes in some perceived barriers for non-modified group only, eg perceived barriers of social influence (mean change score = .15 int and -.22 con group, $p<.01$),</p> <p>(c) Behaviour: No difference in duration of walking between walking groups</p> <p>Participants with lower education walked more minutes per week than those with higher education ($M = 271.27$ and 224.16, respectively, $p<.05$).</p> <p>Taoists or Buddhist walked more than Christians ($M = 291.07$ and 216.33, respectively, $p<.05$).</p> <p>(d) Health status: Significant decrease in systolic blood pressure in non-modified, but not in culturally modified group (mean change of -9.87 mm Hg, $p<.001$).</p>	<p>Conclusions: The walking programme decreased some of the perceived barriers, increased self-efficacy, and decreased diastolic and systolic blood pressure although the results for the non-modified walking group were either not significantly different from or better than those in the culturally modified walking group, ie the programme was successful without additional cultural modifications.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> a) Examine other components of Chinese culture in developing walking protocols or b) apply the walking protocol to Chinese-Americans with other chronic diseases.

<p>3. Davey, 1998; Davey et al., 2000 Measures: Insulin sensitivity, maximal oxygen uptake, glucose tolerance, blood pressures, BMI, tobacco and alcohol consumption, diet, family history and daily activity.</p>	<p>(a) Knowledge, attitudes and behaviour: N/A (d) Health status: Data from E1 and E5 showed significant increase in cardio respiratory fitness compared to NE (+4.15 vs. -0.003 mL/kg/min, p<.001), representing a mean change of 12.1% on baseline levels. No significant between-group differences in fitness change comparing E1 and E5. Insulin sensitivity was significantly improved only in E1 compared to NE or E5 (.67 vs. +.30 min/pmol/L, p=.05), representing a 40% mean increase on initial values.</p>	<p>Conclusions: PA had a positive impact on participants' cardio respiratory fitness and insulin sensitivity; though for insulin sensitivity, an improvement was only demonstrable within 24 hours, but not within five days of the final exercise session. Recommendations: (a) Continue exercise training to maintain benefits in insulin sensitivity</p>
<p>4. Jenum et al, 2006 Baseline: Self reported behaviour, other physical risk factors (cholesterol, triglycerides, glucose, resting blood pressure, heart rate, body mass, height, obesity); prevalence of self-reported and other diabetes and stages of change construct Outcome: As above</p>	<p>(a) Knowledge and attitude: N/A (b) Behaviour: The increase in PA was highly significant for both sexes (p<.004). The net proportion quitting smoking was 2.9% (95% CI 0.1-5.7, p<.043). (c) Health status: The proportion who increased their body mass was 14.2% (p<.001) lower in the intervention district and across subgroups (27.5%, p<.001). Beneficial effects for both sexes in systolic blood pressure (3.6 mmHg [2.2-4.8], p<.001) and serum triglyceride levels (0.16 mmol/l 95% CI 0.06-0.25, p<.01 for men and p<.046 for women).</p>	<p>Conclusions: The intervention produced an increase in PA levels, reduced weight gain and resulted in beneficial changes in other risk factors for Type 2 diabetes and CVD Recommendations: (a) Plan theory-driven interventions to understand the processes underlying behavioural changes, especially intrapersonal, social and physical environmental factors. (b) Interventions should address the mediators of behaviour change, rather than attempting to address behaviour change directly</p>
<p>5. Lew et al, 1999 Levels of participation in the walkathons Survey conducted in 2nd walkathon</p>	<p>Increasing levels of participation in walkathon each year. 95% of participants felt it had encouraged them to exercise. Staff and coalition members reported that events had increased community members enthusiasm for PA.</p>	<p>Conclusion: The annual walkathons introduced PA to a diverse community of Asian-Americans. Recommendations: (a) Involve community in planning events (b) Employ bilingual/bicultural staff (c) Use culturally tailored publicity (d) Design specific programmes for each community</p>
<p>6. Taylor-Piliae, 2006 Measures: Functional reach (FR); single-leg stance(SLS); arms curl and chair stand; back scratch and chair sit</p>	<p>Adherence: 100% follow-up at 6 weeks and 97% on completion Health status: Pair-wise contrasts of mean differences between baseline and 12 weeks for FR, SLS, upper and lower body strength and flexibility all statistically significant at 95% confidence intervals eg for FR, F(df_{1,360}) = 4.71, (LBCI = 0.16, UBCI = 1.87)</p>	<p>Conclusions: Tai Chi is effective for improving balance, muscular strength and flexibility among older Chinese. Recommendations: (a) Use culturally appropriate exercise (b) Employ translators (c) Use a local centre to increase accessibility</p>

<p>7a) Matthews et al., 2007 Blood tests, individual CHD risk factors and goal setting self-reported medical history, health behaviours and motivational stage Height, weight, BMI and waist circumference; Systolic and diastolic blood pressures. 7b) Netto et al., 2007 Focus groups explored Steps taken to increase PA barriers to taking these steps</p>	<p>Knowledge: Increased knowledge of the importance of PA among many participants. Attitude: More positive attitudes towards PA among some participants Behaviour: Positive changes in:</p> <ul style="list-style-type: none"> • Physical activity eg men = 47.2% (95% CI 29.2, 65.1) <p>Health status: Some participants reported increased physical agility.</p> <p>Reduction in:</p> <ul style="list-style-type: none"> • Cholesterol = 0.19mmol/l (95% CI 0.1, 0.37) • Systolic blood pressure = 3.7mm Hg (95% CI 0.98, 6.7) • Triglycerides = 0.29mmol/l (95% CI 0.14, 0.47) • BMI = 0.30 (95% CI 0.12, 0.49). • Stress in women only = 21.3% (95% CI 9.6, 33.0) • Mean risk factor score ($p < .0005$). 	<p>Conclusions: The project increased knowledge about CVD and reduced CVD risk factors Recommendations</p> <ul style="list-style-type: none"> a) Adopt targeted community approaches b) Ensure adequate resources, c) Address barriers to change d) Offer ongoing support e) Involve community organisations f) Offer a holistic model of health h) Monitor outcomes through longer follow-up period. I) Evaluate through RCTs j) Collect cost-effectiveness data
<p>8. Khunti et al., 2007 Country: UK Setting: Secondary schools Study design: Quasi-experimental design, pre- and post measurements (taken after 1 yr) and qualitative design</p>	<p>Knowledge: Increased awareness of lifestyle issues. Attitudes: N/A Improvement in PA for 5 of the 8 PA indicators eg. increased light exercise on ≥ 6 days in past 2 weeks $p < .0013$ (95% CI 1.140, 1.723) Health status: N/A</p>	<p>Conclusions: The action research project involving secondary schools was a useful, but challenging collaboration. Although pupils' lifestyle habits remained poor overall, some limited changes were indicated. Recommendations: Include provision of implementation resources including dedicated staff time</p>
<p>9. Collins et al., 2004 Baseline measures: Health knowledge, perceived barriers to exercise, self-efficacy for physical activity scale, social support for exercise, self-reported PA, motivational readiness, processes of change and decisional balance. Outcome measures: As above.</p>	<p>(a) Knowledge: Increased score of 17.78% ($p < .0001$). (b) Attitudes: No significant decrease in perceived barriers and self-efficacy for PA Significant increase in total social support for PA = 3.33 ($p < .0001$) 48% of women in the pre-contemplation, contemplation, preparation or relapse stage at baseline, shifted forward one or more stages. (c) Behaviour: Significant increase in minutes of walking for exercise per week 26.9 at $p < .002$). (d) Health status: N/a</p>	<p>Conclusions: The preparatory course was effective in increasing knowledge and motivation to begin physical exercise. Class-based, theoretically grounded interventions can effectively promote PA Recommendations:</p> <ul style="list-style-type: none"> (a) Use pre-intervention preparatory courses to maximise the benefit of the intervention. (b) Make courses culturally sensitive to the target group. (c) Use adult education sites for PA interventions that include health education materials and are targeted at low-income women.

2. Characteristics of Participants

Chinese Americans were represented in three out of the six interventions (Chiang, 2005; Taylor-Piliae et al, 2006; Lew et al, 1999) and South Asians in the two UK-based interventions (Carroll et al (2002; Davey et al, 1998). Only one intervention (Carroll et al, 2002) focused on women and the same intervention was the only one of the interventions to specify the religious background of the women (Muslim). The Norway-based study (Jenum et al 2006) focussed on a multi-ethnic sample, comprising members from Urdu, Tamil, Turkish, and Vietnamese speaking communities; although their ethnicity was not explicitly defined, the inclusion of Urdu and Tamil speakers, strongly suggests that Pakistanis and Indians were included in the intervention, justifying the inclusion of the study in the review. Additionally, three studies indicated that their participants came from either low-income groups or lived in deprived areas (Chiang 2005; Taylor-Piliae et al, 2006 and Jenum et al (2006).

Sample sizes varied from 39 to 2,950 participants. Apart from the study by Lew at al (1999) which was for all age groups, the age of the subjects varied from 30 to 74 years. It is worth noting that none of the interventions identified targeted young people, a notable omission given the desirability of encouraging and supporting PA from a young age.

3. Theoretical basis and Design

As Table 4.1 shows, the interventions in five of the studies were based on theories which predicted behavioural change (Carroll et al, 2002; Chiang, 2005; Taylor-Piliae et al, 2006; Jenum et al 2006; Lew et al, 1999). Although not explicitly stated, the assumption underlying the use of the models in interventions which promote PA in minority ethnic groups seems to be that theories which have been developed and used to predict attitudinal and behavioural change for the majority population are equally relevant to minority ethnic communities. Chiang (2005) was the only study which employed a theoretical model to link the promotion of PA with the cultural values and lifestyles of the Chinese participants, discussed in the section on Cultural adaptations.

4. Design and assessment of study quality

As Table 4.2 shows, four interventions were evaluated quantitatively. Only one study used a randomized control trial (Davey 1998; Davey et al, 2000) Two of the studies adopted a quasi- or pseudo-experimental design (Chiang, 2005; Jenum et al 2006) while Taylor-Piliae et al (2006) used a repeated measures intervention. Comparing the control population and the intervention group on key factors, such as obesity, PA and socioeconomic variables, both Jenum et al (2006) and Chiang (2005) were satisfied that the results were not significantly influenced by selection bias. Measures were taken to ensure that sample size was sufficiently large to allow for attrition and to detect statistically significant changes in the variables of interest in two interventions (Chiang, 2005; Davey 1998; Davey et al, 2000). Two studies adopted a qualitative research design: Carroll et al (2002)'s evaluation of a pilot intervention programme and Lew et al's (1999) observational study of an annual walkathon.

Measures taken in the quantitative studies to attest to internal validity included the use of research instruments whose reliability and content-validity had been established in other studies, and the determination of internal consistency. Both qualitative studies made connections to existing bodies of knowledge and drew on different sources of understanding about the issues being compared. Lew et al (1999) used a case study approach to provide useful insights into the complexities of planning, implementing and evaluating a PA event as a community education strategy for diverse communities while in Carroll et al (2002), the design of the intervention was informed by a review of the literature and interviews with GPs and other health care providers. A common weakness in the studies reviewed was the assessment of PA undertaken by participants through self-reports only (Collins et al 2004; Chiang, 2005; Jenum et al, 2006).

5. Cultural adaptation

The extent to which the interventions were culturally adapted and the type of adaptation undertaken varied considerably. Chiang (2005) was the only study to compare the impact of a walking programme which had been 'culturally modified' by linking the activity to wider cultural values and

lifestyles of the Chinese participants based on Leninger's (1991, 2002) Culture Care Theory against a walking programme which had not been modified in this way. Based on evidence of differences in care constructs across cultures, what is proposed is that health-care which is culturally derived is likely to enhance the benefit the individuals' or groups' health or well-being. In Chiang's study (1995), examples of attempts to translate the Chinese cultural values of authority, family members' involvement, harmony and balance into practice included emphasising the opinions of persons respected by the participants such as older adults and involving family members in the intervention, by encouraging them to support and join the participants in the walking programme. Such examples are consistent with the practice of enlisting of social support for participants in making attitudinal and behavioural change in other interventions, indicating that there is scope for the construct of social support to be explored both theoretically and empirically, to distinguish between the dimensions which are universal as well as those which are culturally specific.

Increasing the cultural appropriateness of PA

Other interventions employed forms of PA that were designed to appeal to the cultural tastes of the target audience. For instance, Taylor-Piliae et al (2006) chose to examine the impact of a traditional Chinese activity, Tai Chi, which is popular among older people. Jenum and colleagues (2006) reported that they organised specifically designed activity groups to make intervention activities more culturally suitable, but details of these were not provided. Exercise sessions were made appropriate for South Asian Muslim women by organizing women only indoor sessions with crèche facilities and employing fitness assessors, instructors and researchers of the same sex (Carroll et al, 2002). In contrast, Lew et al (1999) used ethnic specific entertainment in the form of a Chinese Lion Dance, to increase levels of participation in an outdoor activity, a community wide walkathon.

Involving target communities in the design, recruitment and delivery of intervention

Interventions were also adapted by involving target communities in different stages of the intervention, including its design, the recruitment of participants and the delivery of the programme. For instance, both Jenum et al (2006) and Lew et al (1999) involved the local community in the planning and design of the intervention, with the former involving local political and lay leaders, and health and welfare workers, and the latter forming a coalition which was composed of members of the target communities and representatives of health services. The latter also carried out a pre-walkathon survey to assess community needs during a street festival. The same intervention involved volunteers from supporting agencies and the target communities in providing assistance during the event and carried out a survey during the second of three annual walkathons to assess levels of participation and obtain ideas for future walk events. All of these factors were identified as contributing to what was viewed as a successful community education intervention. Jenum et al (2006) cited the use of local meetings, organised walking groups and group-based activities as a means of enhancing perceived social support through family and friends, again attesting to the perceived importance of social support.

Overcoming language barriers

Many of the other adaptations were designed to overcome language barriers. These included measures such as the translation of intervention material (for example, posters) and study material (for example, invitation letters, questionnaires and process evaluation forms) into appropriate languages (Jenum et al., 2006; Chiang, 2005) and the use of ethnic-specific media and festivals to publicise the intervention (Lew et al, 1999; Carroll et al, 2002). Three studies involved bilingual/multilingual, ethnically matched health staff/fitness assessors/instructors to assist participants in both the assessment and intervention components, with translators available for those who could not speak English (Chiang 2005, Carroll et al, 2002; Taylor-Piliae et al, 2006). However, only Chiang (2005) stated using the strategy of translation and back-translation to ensure that the conceptual meaning and relevance of the constructs was the same in both cultures (cultural equivalence), and that constructs elicit similar responses in both cultures (functional equivalence).

Increasing the accessibility of the intervention

Other measures were designed to increase the accessibility of the intervention, including through delivery in places with a high proportion of the target communities and making sessions either free of charge or available at a low cost (Carroll et al, 2002). To support intervention activities, greater accessibility to areas for physical activity through labelling of walking trails and improving street

lightning, and gritting of pavements and trails in winter was achieved (Jenum et al., 2006). Reflecting the community-based nature of the interventions, community organisations, for example, churches and health care centres, were commonly used as channels for recruiting participants and as venues for the interventions.

6. Impact of the intervention

Various aspects of changes in attitude to PA were examined, including:

- Perceived barriers and self-efficacy for PA
- Cognitive and behavioural processes of change
- Stages of behaviour change
- Social support for PA

This, combined with the small number of relevant studies, make it difficult to identify any trends. Perhaps, the most counter-intuitive results were those reported by Chiang (2005) who found there was no main effect of walking groups on the perceived barriers of lack of time, energy, fear of injury and lack of resources but a significant effect on the remaining barriers of social influence, lack of will power and lack of skill with the effect being unexpectedly stronger for groups participating in the non-culturally modified than those participating in the culturally modified programme. There was a significant increase in self-efficacy but again counter-intuitively, only for the non-culturally modified walking group, not the culturally modified group. Chiang (2005) suggests that this might be explained by the transition of cultural attitudes and beliefs from traditional lifestyles to more Western ones among the Chinese participants. Other factors which might have contributed to these results were that the walking programme which was not intended to be culturally modified might have inadvertently been modified in some respects, and that participants of this intervention might have had more potential at pre-test to improve outcome variables than those in the modified programme. Chiang (2005)'s study suggests that future research should examine other components of Chinese culture to inform the design of walking interventions or that the walking protocol developed from the study should be applied to other Chinese-Americans. However, more generally, these findings raise more fundamental questions which are worthy of further investigation. These include: To what extent is cultural modification an essential component of interventions which seek to alter attitudes and behaviour related to PA? Assuming, as has been suggested by the majority of the studies reviewed, that cultural modification of interventions is important for bringing about behavioural change, what are the most effective means of incorporating cultural values and beliefs in the intervention? How can intra-ethnic differences in degrees of affiliation with traditional cultural attitudes and levels of acculturation to dominant prevailing attitudes be taken into account in designing PA interventions?

More positively, Chiang (2005) reported evidence of changes in attitudes to PA in terms of shifts forward along the stages of change continuum, supporting the relevance of this model for Chinese Americans. Means of changing attitudes within specific communities were suggested by Lew et al (1999) which, based on evidence of increases in levels of participation in the second and third of three annual walkathons, reported that these community-wide activities increased enthusiasm for exercise. Complementing these studies, barriers identified by Carroll et al (2002) such as lack of crèche facilities and the non-availability of transport, point to the need for interventions to provide pragmatic, local solutions.

The three studies which examined changes in exercise behaviour (Jenum et al, 2006; Chiang, 2005; Carroll et al, 2002) reported significant improvements, using different measures. Chiang (2005) found no difference in the duration of walking between the culturally modified walking groups and the non-culturally modified group, but significant differences by education and religion, indicating the need for further consideration to be given to these variables. Finally, the five interventions which were assessed for improvements in health status all evidenced positive changes, the detail of which is provided in Table 4.2.

7. Conclusions of the review

Studies evaluating the effectiveness of interventions which either specifically target one or more minority ethnic communities or include them in multi-ethnic samples are extremely scarce, both in the UK and more widely. Among the studies identified, differences in the type of PA employed, the frequency, duration and length of the intervention, the ethnic groups targeted and measures of effect size employed make comparison of their impact difficult. However, the studies reviewed suggest that there is some evidence to support the application of theories for bringing about attitudinal and behaviour change such as the stages of change model and self-efficacy theory for PA interventions targeted at minority ethnic communities (Chiang, 2005; Carroll et al, 2002; Taylor-Piliae et al, 2006). Jenum et al (2006) also suggests that there is scope for further investigating the contribution of social-psychological and ecological models in terms of addressing barriers and encouraging initiation, adoption and maintenance of PA in multi-ethnic districts (Jenum et al, 2006). Fundamental issues are in need of further exploration for the promotion of PA more generally, as well as for the targeting of minority ethnic communities more specifically, including:

- the extent to which theory can predict or explain processes underlying behavioural changes, especially intrapersonal, social and physical environmental factors (Jenum et al, 2006).
- the extent to which theories and models of health attitudinal and behaviour change which underpin PA interventions are predictive of such change in minority ethnic communities (Taylor, 1998)
- the extent to which cultural modification of more general PA interventions are necessary in order for such interventions to be effective with minority ethnic communities, and if so which variables would benefit from adaptation
- the extent to which PA-related attitudes and behaviour, as well as mediators of these, are shared *within* ethnic groups given differences in country of residence, length of time since migration, socio-economic status, gender, age, educational levels, degrees of cultural and religious affiliation, and levels of acculturation to dominant cultural attitudes
- the extent to which PA-related attitudes and behaviour, as well as mediators of such attitudes and behaviour are shared *across* ethnic groups, especially those which originate from the same geographical regions, such as the Indian sub-continent or the Asia Pacific region
- whether interventions should address the mediators of behaviour change rather than be expected to change behaviour directly, as suggested by Jenum et al, (2006)
- more broadly, the relationship between culture and PA, including the identification of cultural constructs which inhibit or support certain forms of PA within and across cultures. These are potentially wide-ranging and might, for example, include the role of women, which might limit the time available for PA which is not work-related, or attitudes towards the countryside, which might support or constrain certain forms of PA in certain cultures
- the relationship between belonging to a minority ethnic community and PA, including for example, stressors associated with recent migration such as finding employment and housing, limiting the time available for PA, or perceptions and experiences of vulnerability to racial harassment, which might influence willingness to participate in outdoor forms of PA

In terms of planning interventions, the desirability of consulting with the communities concerned to identify types of PA which are likely to appeal to cultural and other tastes and to involve them in the discussion of such activities has been evidenced (Lew et al, 1999; Jenum et al, 2006; Carroll et al, 2002). Apart from the crucial role that such consultation will contribute towards informing the design of the intervention, it is likely that such involvement is likely to involve 'buy-in' from key organisations and facilitate the recruitment of participants from the target communities.

In terms of assessing the impact of such interventions, it is evident that there is a need for more rigorous evaluations to be undertaken, both qualitatively and quantitatively, and where multi-ethnic groups are targeted, for ethnically disaggregated data to be collected and analysed, wherever possible. The studies reviewed have not been replicated, indicating the need to establish consistent results with similar groups. Since the interventions have been developed for particular communities (primarily living in urban areas), the extent to which the results are generalizable to other communities, including those of different ethnic origins in the same country or those of similar ethnic origins but living in different countries or people living in rural areas, is currently unknown.

8. Recommendations of the review

Recommendations emerging from each of the studies reviewed are listed in Table 4.2. Several of these relate to the need to ensure that PA interventions are tailored to meet the cultural requirements of the ethnic groups in order to be effective, offering pragmatic suggestions as to how this might be achieved. For instance, on the basis that community involvement is an important part of this process, Lew et al (1999) recommends that it is essential to allow a long time frame and adequate resource allocation for the planning of the intervention. In terms of delivering PA interventions, the same study advocates the active recruitment of the target communities through community coalition and the institutionalization of community education events. Carroll et al (2002) identifies factors which are likely to encourage regular attendance in organised programmes of PA among Muslim women and support the promotion of PA in women across ethnic groups. More generally, the same study recommends considering ways of incorporating PA activities into a holistic programme of health promotion (Carroll et al, 2002), which is likely to have wider relevance to the targeting of other groups or communities which also take a holistic approach to health. The high adherence rate for Tai Chi evidenced by Taylor-Pillae (2000) suggests that for some ethnic groups, notably older people, traditional forms of exercise are likely to encourage greater participation. Chiang (2005) suggests the possible inclusion of family members in supporting individuals to consider PA attitudinal and behaviour change, a proposal which is broadly consistent with enlisting social support for affecting change in other modifiable risk factors covered by the review, which might also be relevant to the promotion of PA across ethnic groups. Other studies suggest drawing on ethnic specific opportunities, such as street festivals, for incorporating health messages (Lew et al, 1999) or utilizing ethnic-specific media (Carroll et al, 2000).

In terms of the assessment of PA interventions for the minority ethnic communities concerned, a key area for further development lies in the assessment of PA, more specifically, the requirement to develop and establish methods other than self-reports, and for these to be validated for content, internal consistency and reliability (Taylor, 1998). Methodologically, Carroll et al (2002) has suggested that trials with large samples, clear criteria for groups and intervention programmes, and outcome measures at specific intervals up to a year should be carried out. Taylor (1998) recommends more experimental designs, and short and long-term evaluations of outcome as well as process.

Based on the above, we recommend:

a) Developing and planning targeted PA approaches for the ethnic groups which are the concern of this review. This process should involve:

- community organisations in the design of the intervention, implementation and possibly, the evaluation of the interventions
- the identification of different concepts of PA, cultural tastes and values
- ensuring that interventions are sensitive to differences in cultural affiliation, socioeconomic status, religion and educational levels among participants
- the identification of factors which are likely to encourage attendance and adherence to the intervention, such as social support, and measures to incorporate them
- the identification of barriers to participation such as transport costs, working hours and language barriers and measures taken to address them
- a communication strategy for publicising the intervention, which takes into account opportunities such as ethnic specific events or media channels

b) Developing more rigorous methods of evaluating PA interventions, including

- Methods of assessment of PA, in addition to self-reports
- Qualitative research which explores concepts of PA across and within ethnic groups, and identifies factors which facilitate and inhibit adherence to programmes of PA in the short and long-term
- Quantitative research which evaluates the process and outcome of PA interventions, including large samples, randomised control trials, quasi-experimental designs, with clear inclusion and exclusion criteria for participation, in the short and long term.

9. Summary

The evidence base for PA interventions for the minority ethnic groups that are the concern of this review is extremely limited. There is an urgent need to develop targeted approaches for the groups concerned, taking into account the potential complexities arising from varying concepts of PA across cultures and intra-ethnic differences due to varying levels of cultural affiliation and differences in educational levels, economic status and religious affiliation. There is also a need for rigorous evaluation of the interventions reviewed, both qualitatively and quantitatively.

CHAPTER 5: REVIEW OF SMOKING CESSATION INTERVENTION STUDIES

Six publications met the inclusion criteria and were included in the review of smoking cessation studies. Of these, four were US-based studies which had been published while two were evaluation reports of UK-based projects which targeted the Muslim community (Taket et al, 2003; Paton, 2003). With the exception of one school-based study (Ma et al, 2004b), all the studies were conducted in community-based settings. Of the four US studies, two evaluated the effectiveness of individual counseling sessions combined with Nicotine Replacement Therapy (NRT) (Ma et al, 2004a; Fang et al, 2006) while the remaining two evaluated the impact of curricula designed to reduce or prevent smoking (Ma et al, 2004b; Ma et al, 2004c). The two UK-based studies consisted of media campaigns and one to many sessions designed to raise awareness of the dangers of tobacco and highlight sources of support for smoking cessation. Table 4.1 provides details of the studies reviewed, including the sample size, the interventions employed and the cultural adaptations made. The measures taken, the impact of the intervention and the conclusions of the studies are summarized in Table 4.2. For the sake of completeness, the same tables also include details of a general CVD intervention which encouraged participants to stop smoking (Matthews et al, 2007).

1. Characteristics of the participants

Only one of the US based studies, Ma et al (2004c) exclusively focused on one of the target ethnic groups that are the concern of this review, people of Chinese origin. In other studies, this ethnic group was targeted along with other culturally similar groups (Ma et al 2004a; Fang et al 2006; Ma et al 2004b). Two studies targeted Muslim communities (Taket et al, 2003; Paton A, 2003). Although the ethnicity of the participants was not explicitly stated in the latter study, the combination of languages spoken and their religious affiliation indicate that it is highly likely that people of Pakistani origin, one of the target groups that are the concern of the review, are included in the intervention. Table 5.1 reveals that males were more highly represented in interventions than females and that young people were the focus of two US-based interventions (Ma et al, 2004b and c).

2. Assessment of study quality

Criteria used for assessing study quality included the extent to which interventions were theoretically driven, sample size, the use of previously established research instruments for collecting baseline and outcome data, the presence of a control group, whether there was biochemical verification for quitting smoking, the extent to which studies acknowledged their limitations and the extent to which they provided further insight into adapting interventions for the ethnic groups that are the concern of this review. As Table 5.1 shows, four interventions were theoretically based on generic models. It is noteworthy that only one study (Ma et al, 2004c) sought to establish links between cultural identification and attempts to quit smoking, referring to the 'bicultural model of acculturation' which holds that retaining elements of both traditional and host cultures maintains individual self-esteem, which might be used to support young people in their quitting efforts.

Table 5.1: Summary of Smoking Cessation Studies

Study	Sample	Study Design	Intervention Type, Length, and Theory	Cultural and other adaptations
1. Ma et al, 2004a USA Community setting not specified	Size: 34 Ethnicity: Chinese (19) and Korean (15) Gender: males and females Age: Above 18 Other details: Smokers, with phones	One-group, pre-post test design Measurements taken at 1-week, 1-Month and 3-months after intervention	Counselling, and NRT, two hours long. Theory: Cognitive-Social Health Information Processing model	a) Recruitment of participants through Asian community networks. b) Bilingual counsellors' trained to adapt to the educational levels of participants. c) Native languages used. d) Counselling session tailored to the target group's health-related beliefs and values, including culturally relevant barriers and motivators to quit smoking.
2. Ma et al, 2004b USA Pennsylvania and New Jersey	Size = 161 Ethnicity = Asian American (42% Chinese) Gender = males and females Age = 10 - 22	One group, pre-post test-design Measurements taken immediately after intervention	Smoking cessation curricula; unspecified length and duration Theory: Theory of Reasoned Action.	a) Participants recruited from schools and Asian community based after school program. b) Facilitators: Asian peer health educators with input from Asian professional staff and community organisations c) Cultural elements included why Asian youths smoke and the tobacco industry's marketing of tobacco products to Asian youth
3. Ma et al, 2004c, USA Community setting Pennsylvania and New Jersey	Size = 31 (Int group = 14, Con = 17) Ethnicity = Chinese Gender = males Age = 14 to 19. Other details = viewed as 'High risk'	Pre-post quasi experimental design; comparison of culturally modified (CM) and standard smoking cessation curriculum (SC)	Smoking cessation curricula Length: SC programme = 50-minute session, CM unspecified Frequency: SC programme weekly, CM unspecified Duration: SC programme 6 weeks. CM lasted for 3 months. Theory: N/A	a) Recruitment was through community-based organisations with incentives for joining, bringing new recruits and attending all sessions. b) The CM was designed to tailor to bicultural (Eastern and Western) attitudes in participants and developed through literature review and input from Asian participants c) Cultural components, eg collective orientation, used to encourage quitting, develop self-efficacy, deal with stress and overcome cultural difficulties

4. Fang et al, 2006. USA Community setting in South Eastern Pennsylvania	Size = 66 (Int = 33, Con = 33) Ethnicity = Chinese and Korean Gender = male and female Age = above 18 Other details = with phones	RCT, Measurements taken 1-week, 1-month and 3-months after the intervention	Single one to one session lasting 90-120min with NRT compared to general health education session	a) Recruitment through Asian community networks. b) Counselling sessions involved discussion of cultural barriers to quitting, such as cultural norms and race-related issues, such as stress associated with immigration c) Cultural values and appropriate quitting strategies including the importance of familial support, employed to assist quitting efforts.
5. Taket et al, 2003, UK, Community settings in London	Size = 203 at start of Ramadan and 132 at end; survey of 1051 mosque goers; follow-up survey of 28 individuals Religion = Muslims Gender = Male	Evaluation of community project Pre and post intervention and follow-up after 3 months	Media campaign during Muslim fasting month of Ramadan, including radio advice, talks on smoking cessation and sources of help with quitting, distribution of calendars	a) Involvement of religious leaders in gaining access to mosques to reach participants. b) Month of Ramadan used to encourage Muslims to quit smoking. c) Calendars with fasting times and smoking cessation messages were widely distributed
6. Paton et al, 2003; UK Community settings Manchester	Religion: Muslims Other information: Urdu and Bangla-speaking religious leaders and mosque goers	Evaluation of community project Data collected on process indicators	1 to many smoking cessation sessions; brief interventions training to enable people to carry out talks on smoking cessation and to signpost people to smoking cessation services.	a) Involvement of religious leaders to organise smoking cessation sessions in mosques during month of Ramadan. b) Linkage of smoking cessation messages to Islamic faith and values. c) Motivation to quit smoking encouraged through highlighting inclusion of alcohol-related substances in cigarettes and through encouraging participants to improve the health of the Muslim community. d) Separate workshops organised for men and women in Urdu and Bangla with mixed English workshop. e) Calenders with smoking messages and fasting times widely distributed.

<p>7a) Mathews et al., 2007 Country: UK Setting: community, Edinburgh b) Netto et al, 2007 Country: UK, community based, Edinburgh</p>	<p>a) Sample size: 304 at initial screening, 140 at follow-up. Ethnicity: Bangladeshi, Indian, Pakistani and other South Asian Gender: Both Age: 13 – 81 Other information: Not stated</p>	<p>a) Study design: Longitudinal study, no randomisation; follow-ups averaging between 6-12 months</p>	<p>Intervention type: Screening, advice, exercise and diet sessions Duration: 2.5 years Length: 30-minute initial screening appointment, 30-minute consultation 1-2 weeks later to discuss results and set goals Frequency and theory: Not stated</p>	<p>a) Facilitator(s): Community nurse, doctor and project team. b) Project tailored to needs identified by local people c) Flexible delivery of activities. d) Research questionnaires included culturally familiar items. e) Language support available in intervention and study f) Taxis arranged to facilitate access to group discussions. g) Separate sessions held for men and women.</p>
<p>8. Ali et al., 2006 Country: UK Setting: Community locations, London</p>	<p>Sample size: 249 Ethnicity: Indian and Pakistani (21%), Bangladeshi, Black African Gender: Both Age range: 16-65+ Other information: 45% were not working</p>	<p>Pre- and post quantitative survey of mosque goers 5 months after campaign; qualitative survey of Imams 3 months after campaign; review of campaign.</p>	<p>Type of intervention: Media campaign Duration: 8 weeks; Length: 1 day training of Imams and volunteers; 5 week media campaign Frequency: 8 advertisements and 4 programmes daily Theory: Not stated</p>	<p>a) Facilitator(s): Researchers, community leaders and sessional workers. b) Use of ethnic foods as basis to promote healthier cooking. c) Use of ethnic media to deliver media campaign. d) Mosques used to disseminate health messages during Muslim fasting period (Ramadan).</p>
<p>9. Johnson et al, 2004 Country: USA Setting: School Based, Southern California</p>	<p>Sample Size: 3157 Ethnicity: Hispanic, Asian (23%), African Americans Gender: Male+ female Mean age:11.32yrs</p>	<p>Sixth graders in 24 middle schools received a multicultural curriculum, a standard curriculum or a control condition over 2 years.</p>	<p>Intervention: Smoking prevention curricula. Duration: 2 years Length: Not stated Frequency: 8 activities over 2 years. Theory: Social influences models of Prevention</p>	<p>Young, ethnically diverse college students involved in data collection. Cultural Adaptations: Schools with at least 25% Hispanic or/and 25% Asian Americans were recruited Multicultural curriculum was designed with involvement of cultural experts and incorporated cultural values from Hispanic and Asian American cultures .</p>

(Abbreviations: N/A = Not Applicable, Int = Intervention, Con = Control, CM = Culturally modified smoking cessation curriculum, RCT = Randomised Control Trial, NRT = Nicotine Replacement Therapy, SC = Standard smoking cessation curriculum

Table 5.2: Summary of Measures used, impact of Intervention and conclusions

Study and measures	Impact of the intervention	Conclusions and recommendations
1. Ma et al, 2004a Baseline: Monitor-Blunter style Scale; Baseline and outcome: Risk perception; Self-Efficacy; Profile of Mood status (POMS); Nicotine Dependence; Stage of change and Quit History	Knowledge: N/A Attitude: From 0 at baseline, 58% had progressed to action stage at 1-week. 68% at 1 month and 62% at follow-up. Behaviour: Quit rate was 59% at 3-months post-intervention follow-up. Significant reduction in regular smokers from baseline (79.4%) to 1 month (6.5%) to 3-months (7.4%). Health status: N/A	Conclusion: The intervention can effectively move smokers between stages of change Recommendations: a) Use trained bilingual counsellors b) Communicate with participants on an individual basis c) Use randomized trial design and studies which focus on relapse at 3 months.
2. Ma et al, 2004b Baseline and outcome measures: Self administered written pretest included questions on demographic data, knowledge, attitudes, behavior intention related to smoking and satisfaction of the program	Knowledge: Significant increase in mean scores for tobacco use (4.1, p = .001). Attitude: Small but significant difference overall (0.5, p = 0.007) Behaviour: 90% of participants indicated intention to share information gained through the program with others. Behaviour intention was more closely associated with attitude ($r = 0.31$) rather than with knowledge change ($r = 0.04$)	Conclusions: The curriculum can increase Asian American youth's tobacco knowledge. Recommendations: (a) Use a quasi-experimental design with control and intervention groups, with measurements at 3 and 6 months post intervention (b) Use larger sample size and compare smokers and non-smokers.
3. Ma et al, 2004c Baseline and outcome measures Knowledge, attitudes and behaviour concerning tobacco use and relevant cultural factors.	Knowledge: Positive changes in beliefs in both groups Behaviour: 22% quit in the con group, 0 in the int group Int group showed a greater reduction in tobacco use than control group, eg, typical weekday ($M = 6.7$, $SD = 5.9$) At 3 month follow-up 23% reported having quit smoking in the control group and 18% in the intervention group. Health status: N/A	Conclusions: Culturally modified programmes are beneficial to Asian American youth. Longer exposure may be necessary for high risk group. Recommendations: Future research needs to be undertaken with a larger, more representative Asian-American group.

Study and measures	Impact of the intervention	Conclusions and recommendations
<p>4. Fang et al, 2006 Baseline and outcome measures: Fagestrom test of Nicotine Dependence; Perceived risks of smoking; Self-efficacy in quitting; Pros and cons of quitting; Point prevalence abstinence from tobacco</p>	<p>Behaviour: Reported reduction in smoking of 38% at 3-month follow-up, with higher reported quit rates in int group at 1 month eg. Chinese = 53%, compared to con, Chinese = 18% Attitudes: Across all participants, perceived risk increased over time $F(3,192) = 12.8, p < .001$. Significantly higher levels of self efficacy among int participants ($M = 11.8, SE = 0.3$), con ($M = 10.5, SE = 0.31, p < 0.01$). Participants showed greater pros of quitting over time $F(3, 192) = 8.73, p < .001$</p>	<p>Conclusion: The intervention changed smoking related cognitions and behavior. Recommendations: (a) Use ways of measuring smoking status other than self reports (b) Increase understanding of the factors that contribute to smoking cessation among Asian American women, (c) Use a longer follow-up period (e.g., 6 –12 months) to evaluate intervention effects</p>
<p>5. Taket et al, 2003 Baseline, outcome and follow-up measures: Smoking status, intentions about giving up smoking, knowledge of sources of help and attitude to giving up smoking over Ramadan</p>	<p>Data from smoker follow-up survey after 3 months (n = 28) Knowledge: N/A Attitudes: N/A Behaviour: 41% gave up smoking during Ramadan and 13% gave up smoking after the end of Ramadan. Data from mosque sample: 37% were smokers; 17% were ex-smokers of which 9% gave up smoking and 6% tried to stop smoking since the start of Ramadan. Health status: N/A</p>	<p>Conclusions: The campaign was effective in changing attitudes, knowledge and smoking behaviour. Recommendations: Use details of the sources of information recalled by different language groups and respondents living in different areas to plan future interventions.</p>
<p>6. Paton, 2003 Baseline measures: Not taken Outcome measures: number of people attending launch seminar and stop smoking awareness sessions; number of mosques and community centres participating in the intervention; views of religious leaders on the initiative</p>	<p>Knowledge: N/a Attitudes: N/A Behaviour: There was a light increase in the number of Asian clients in the smoking cessation service. Participation: 19 out of 26 mosques took part in some aspect of the intervention; 45 people attended the launch seminar; 18 mosques requested Ramadan calendars; 17 smoking awareness sessions were carried out in 13 mosques Health status: N/A</p>	<p>Conclusions: Intervention was successful in engaging the majority of mosques and raising awareness of smoking cessation. Recommendations: Consider planning initiatives in the month before Ramadan to encourage Muslim smokers to give up smoking since mosques are busy during Ramadan.</p>

<p>7a) Matthews et al., 2007 individual CHD risk factors and goal setting, self-reported medical history, health behaviours b) Netto et al, 2007 Qualitative research, at initial stages of intervention and six months later</p>	<p>Behaviour: Positive changes in smoking = 13.9% (95% CI 2.6, 25.2).</p>	<p>Conclusions: The project reduced smoking as part of a wider CVD prevention initiative. Recommendations: a) Adopt targeted community approaches b) Address barriers to change c) Offer ongoing support d) Involve community organisations e) Offer a holistic model of health f) Include South Asians in wider smoking interventions g) Collect cost-effectiveness data</p>
<p>8. Ali et al, 2006 Baseline measures: smoking behaviour, knowledge of sources of help in quitting smoking and health risks of smoking. Outcome measures: as above</p>	<p>Knowledge: Knowledge of health risk associated with smoking increased significantly from 88.8% to 97%. Knowledge of sources of help in quitting smoking rose from 31% to 67% Attitudes: N/A Behaviour: % of respondents that said that they 'smoke now' dropped from 38.1% to 29.8% Health status: N/A</p>	<p>Conclusions: The campaign was effective in improving health knowledge and behaviour Recommendations: Given the globalisation of international communication, a global campaign on smoking cessation in Ramadan should be considered.</p>
<p>9. Johnson et al, 2004 Baseline measures: Demographic data Smoking Behavior Socioeconomic scale Peer influence variables Parental variables Psychological/Cognitive variables Outcome measures: Programme effects on ever-smokers and never-smokers</p>	<p>Knowledge: N/A Behaviour: Never smokers who received multicultural curriculum were significantly less likely to have tried smoking between sixth and eighth grade relative to the control condition and standard curriculum (OR = 0.77, 95% CI = 0.61, 0.98). Multicultural curriculum was effective among Hispanic students within predominantly Hispanic schools, but not among Hispanic students within predominantly Asian/multicultural schools. Among Asian students in Asian/multiethnic schools, the standard curriculum was significant but the multicultural curriculum was not (OR=0.58, 95% CI=0.45,0.73)</p>	<p>Conclusion: Multicultural curriculum was most effective among Hispanic students in predominantly Hispanic schools Recommendations: Further research is needed to determine: a)Effective means of preventing smoking in predominantly Asian and multicultural schools and ethnic minority students b) Independent effects of socioeconomic and ethnic context on impact of prevention curricula. c)The extent to which such students internalize the norms and values of families' countries of origin in the context of urban US culture</p>

(Abbreviations: N/A = Not Applicable, M = Mean, r = correlation, OR = Odds Ratio, SD = Standard Deviation)

The scales used for measuring attitudinal style in Ma et al (2004a) and the stage of change model used in Ma et al (2004a) and (Fang et al, 2006) are scales which had been previously used in referenced studies. In both studies, self-efficacy and emotional distress were measured using validated scales, and the measurements for nicotine dependence were reported to be self-report scales with good internal consistency and test-retest reliability. Ma et al (2004a, b and c) Fang et al (2006) all acknowledge the limitations of small sample sizes. Taket et al (2003) and Paton et al (2003) have larger sample sizes. In common with Ma et al 2004 (a and b), neither study uses a control group. Some evidence of the effectiveness of the initiative in the Taket et al (2002) study comes from statistically significant differences in the results, between areas and between language groups which relate to the relative intensity of the initiative in different areas. All four of the US-based studies acknowledge the absence of biochemical verification for quitting smoking, a limitation which also holds for the UK-based evaluations.

3. Cultural adaptations

Community involvement in the design of the Interventions

The interventions were culturally adapted through community involvement in the design of the smoking prevention curricula and evaluation instruments in two studies (Ma 2004 b and c). In both studies, knowledge, attitudes and behaviour concerning tobacco use and relevant cultural factors among Chinese American adolescents and adult professionals were elicited through focus groups and informed the development of the culturally modified curricula.

Community involvement in the delivery of intervention

Individuals from the same ethnic/religious groups were involved in the delivery of the intervention as bilingual counsellors (Ma et al, 2004a), peer health educators (Ma et al, 2004b) and interviewers (Taket et al, 2003). In the last study, a social organisation, which had many key contacts in the Muslim community, led the campaign in partnership with other organizations. The involvement of religious leaders was key in both interventions which targeted the Muslim communities. Other cultural adaptations employed was gender segregation of the participants and workshop allocations on the basis of both gender and linguistic abilities (Paton et al, 2003). It is worth noting that where English was the medium of communication, it appeared that gender segregation was not felt to be necessary, suggesting an association between fluency in English and perceived acceptance of gender mixing.

Community involvement in the recruitment of participants

Recruitment of the sample of participants and researchers was undertaken through community networks and organisations (Ma et al 2004a and c; Fang et al, 2006) and from schools with a high representation of the target group and a community-based after school programme (Ma et al, 2004b).

Cultural adaptations in counselling interventions

In two studies which employed counselling interventions to encourage participants to quit smoking, different measures were taken to culturally adapt the interventions. Participants in Ma et al (2004a) were encouraged to explore their risk perceptions of smoking-related diseases and probed for their expectancies of, and beliefs related to quitting during individual counselling sessions, combined with NRT. The study reports that the intervention was designed to meet the target group's distinctive pattern of health-related beliefs and values; however, further details of these beliefs and values, and specific design features which addressed these, are not detailed.

In Fang et al's (2006) study of the impact of counseling with NRT, some information is provided of counsellors' attempts to identify concerns specific to Asian American smokers, such as cultural norms that support or promote smoking among Asian men, race-related issues including the stress associated with recent immigration, adaptation to American life, and difficulty in obtaining employment as a non-USA resident.

The planning of the 'brief' intervention in Fang et al's (2006) study and the inclusion criteria of possession of a mobile phone in both studies were pragmatic means of reaching a target group which tended to be characterized by long working hours, often 7 days a week. 'Culturally appropriate' quitting strategies' employed in the study included those which drew on familial support, concerns relating to children's health and adopting a healthy Asian diet.

Cultural adaptations in smoking prevention curricula

The two studies which examined the impact of smoking prevention curricula demonstrate the considerable potential for educational curricula to be adapted along 'cultural' dimensions (Ma et al, 2004b and Ma et al, 2004c). The first, which targeted Asian youth, especially new immigrants, included information on cultural elements such as reasons why Asian teens smoke, awareness of the tobacco industry's marketing of tobacco products to Asian youth through use of Asian images and faces, and reference to Asian celebrities and other potential role models.

In contrast, the cultural adaptation of a smoking cessation programme for Chinese-American youth was based on the themes of interdependency and collective orientation, harmony, persistence, hard work, success and education, and Asian pride and social norms (Ma et al, 2004c). These themes were incorporated through role-plays, demonstrations, modeling, videos designed for Asian teens and accounts of personal quitting strategies. Some of these themes were used for dealing with stressors faced by such young people such as high parental expectations, while others were used as strategies for dealing with social norms which encouraged or tolerated smoking, while yet other themes were used to help them to either quit smoking or to enhance cultural pride and self-efficacy in quitting smoking. Further, the study reported awareness of the need for sensitivity to the blending of Eastern and Western attitudes that might be present in participants.

More generally, analysis of the various measures taken to modify counseling and educational interventions for the target group highlight the need for greater clarity and specificity among academics and health professionals in terms of what is communicated by terms such as cultural 'tailoring', 'modification' or 'enhancement' and the need for a typology of cultural adaptations, specifically for counseling interventions and smoking prevention or reduction curricula, and more generally for health promotion interventions.

4. Religious adaptation

Both the interventions which targeted the Muslim communities used different measures to exploit participants' identification of Islam to encourage them to quit smoking. The intervention in this study as well as that evaluated by Taket et al (2002) were both delivered in the Muslim month of Ramadan, when Muslims fast from dawn to dusk, and involved mosque leaders. Ramadan was perceived to present a timely opportunity for raising awareness of the health benefits of smoking cessation, and although the reasons for this were not made entirely explicit, possible factors contributing to this are likely to include perceived increased receptivity to

messages related to spiritual and physical well-being within a holistic approach to health. Pragmatic factors such as increased attendance among mosque-goers during this time and a feasible means of reaching groups that are perceived to be 'hard to reach' might also have play a role in influencing the design of this intervention. These studies suggest that there is scope for further exploration of the potential for delivering smoking cessation programmes and other health promotion activities within the context of religious festivals, settings and practices.

5. Impact of the interventions

Both Ma et al (2004a) and Fang et al (2006) provide evidence that culturally adapted counselling interventions can alter smoking-related cognitions such as perceived risk, self-efficacy, and pros and cons of smoking. They also demonstrate that such interventions can enable some smokers to quit, with the former study illustrating positive changes among continuing smokers, including number and type of cigarettes smoked (to lower tar or nicotine). Some evidence is also provided for the maintenance of attitudinal and behavioural changes achieved. Ma et al (2004a) also measured attention style using a Monitor-Blunter style Scale and found that participants were more likely to be 'monitors' who were receptive to health promotion messages than 'blunters' who were not. The same study also found that quitters and reducers were more likely to be married than single or separated, perhaps indicating that participants in the latter groups might be need of longer support than the former, and the need to consider other demographic variables in addition to ethnicity in smoking cessation interventions. Measurement of Stages of change showed an increase of participants in the active stage from 0% at baseline to 68% at 1 month follow-up to a slight fall to 61.5% at 3 months follow-up, illustrating the impact of the intervention had been largely sustained. Fang et al (2006) observed that self-efficacy was a predictor of smoking status as improved self efficacy remained associated with 3 months quit status.

The two studies which examined the impact of smoking prevention curricula showed some evidence of effectiveness. As Table 5.2 reveals, Ma et al (2004b) noted a significant positive increase in knowledge regarding smoking and its deleterious effects on health as well as a shift in attitudes, with behaviour intention being more closely associated with attitude rather than with knowledge change.

Comparing a standard smoking cessation programme against a culturally modified one, Ma et al (2004c) found a 22.2% quit rate in the former while none in the culturally modified programme stopped smoking. However, at the 3-month follow-up, there was 23.1% quit rate in the former and an 18.2% quit rate in the latter. The authors suggest that the mixed results might be due, at least to some extent, to the nature of the youth ('high risk') targeted in the culturally adapted programme. This again illustrates the importance of considering and controlling for other variables in the targeting of such interventions. The small size of the group also suggests that further work needs to be done with larger samples in order for meaningful comparisons to be made between culturally adapted curricula against standard curricula.

It is noteworthy that of the three US based studies which targeted Asian Americans and explicitly stated inclusion of those of Chinese origin, Fang et al (2006) was the only study to produce ethnically disaggregated results. This revealed that there were no differences in cessation rates by ethnic group at any time point. Two possible explanations might be offered for this: (i) the cultural similarities in terms of smoking related cognitions and behaviour between the Koreans and Chinese outweighed the differences (ii) the adaptation of the intervention programme drew (equally) on the

cultures of both ethnic groups. These issues are not explored in the study but illustrate the value of disaggregating results by ethnicity and point to the importance of increasing understanding of the extent to which culturally related patterns of health behaviour, including smoking and its cessation, are shared across certain ethnic groups, particularly those whose origins are in areas which are in geographical proximity to each other, for instance, China and Korea. More generally, it also indicates that conceptual understanding of the relationship between culture and ethnicity, and the relationship of this with health-related behaviour, including smoking, needs to be increased.

Both the large-scale interventions which targeted the Muslim community showed evidence of some success in raising awareness of smoking cessation issues, with Paton et al (2003) evidencing mainly process data and Taket et al (2003) some outcome data. In the latter study, the quit rate three months after the intervention was perceived to compare favourably with national statistics on quit rate. Success in giving up smoking was linked to access to help, with recollection of messages about smoking cessation during this period and the sources of such messages varying significantly by areas and language groups. Although Ramadan was generally perceived to be a good time to give up smoking in Taket et al (2003) study, Paton's (2003) study cautions that initiatives during this period can be difficult due to competing pressures on mosques. This indicates the need to involve both mosque leaders and goers in preparatory work to inform the planning of future similar interventions. Knowledge about sources of help for smoking cessation increased from 27% at pre Ramadan to 58% at post Ramadan.

6. Conclusions of the review

Overall, the evidence base for effective smoking cessation interventions for the target groups which are the focus of the review is meagre, and research in this field in its infancy. As a review of the efficacy of US-based smoking cessation interventions among 'special populations' (including minority ethnic groups) (Doolan and Froelicher, 2006) has revealed, further research is needed to increase understanding of the interaction between smoking related cognitive processes, pharmacological interventions and cultural components in smoking cessation interventions. The diversity in terms of ethnic groups targeted, the type, duration, length, frequency and theoretical foundations of the interventions carried out, the baseline and outcome measures taken and the results achieved make it difficult to identify precise variables for effective interventions. However, a recurrent pattern in the planning and delivery of the interventions was the involvement of the target communities. Yet the role of community involvement was not always made explicit. For instance, it was not clear whether their involvement was intended to increase the legitimacy of the initiatives, enhance its appropriateness, facilitate the recruitment of participants, publicise the initiative to the target communities, or all of the above.

The review also revealed that cultural and religious beliefs and values of the target groups were elicited and used to raise awareness among participants of norms and practices which might accept, tolerate and encourage smoking and to enable them to develop culturally acceptable refusal strategies. Other strategies included raising awareness of the tobacco's industry's targeting of certain ethnic groups and the use of role models from the target group to encourage smoking cessation. Yet other strategies took into account the migrant status of the participants and associated factors, such as the stressors of finding employment and long, unsociable working patterns. However, the relative merit of these diverse cultural and religious strategies is not currently clear. For instance, are appeals to ethnic pride to increase self-efficacy to quit smoking as effective, more effective or less effective than the

incorporation of respect for authority in supporting attempts to quit smoking? Are smoking cessation messages which point out that tobacco contains substances, the intake of which are prohibited in Islam less effective, more effective or equally effective as encouraging mosque-goers to improve the health of their faith community by quitting smoking?

Both the cultural and religious adaptations appear to be underpinned by assumptions of the affiliation of the target group with particular sets of values and beliefs. However, it is likely that there is considerable variation in the extent to which such beliefs and values are adhered to by the target groups, which might be related to levels of acculturation and the dynamic, fluid nature of cultural and religious values and practices. More broadly, such differences raise questions related to the salience of cultural and religious identity relative to other variables such as levels of education and economic status in influencing smoking-related cognitive processes. The extent to which factors such as levels of education and economic status might impact on such processes across ethnic groups and require initiatives which address lack of education and economic deprivation is also currently unclear.

7. Recommendations of the review

The recommendations emerging from the studies reviewed are listed in Table 5.2 Based on these recommendations, we recommend the following:

- a) Develop and plan targeted smoking cessation interventions for the minority ethnic communities that are the concern of the review, taking into account
 - the need to address different sections of minority ethnic communities, including variations in educational levels, socioeconomic status and working patterns
 - the efficacy of school-based projects for young people and community-based projects (including places of worship) for adults, including women
 - the desirability of social support among participants, including parental support for young people, and spouses and others for adults
 - the potential for large-scale interventions within a religious setting, by involving religious leaders and followers
 - for counselling-based interventions, the benefits of individualised training for counsellors on the aims and intended outcomes of the intervention
- b) Develop and commission qualitative research which explores the extent to which smoking patterns are culturally influenced, as well factors which are likely to be helpful in supporting or encouraging attempts to quit, and the extent to which these are common across ethnic groups.
- c) Develop and commission more rigorous quantitative methods of evaluating smoking cessation initiatives, involving
 - RCTs and quasi-experimental designs with control and intervention groups
 - Follow-up time of between 6 and 12 months
 - Larger sample sizes, which include comparisons between smokers and non-smokers and between ethnic subgroups.
 - Refined measurements of nicotine dependence, including reduction in the

number and type of cigarettes smoked as well as complete recovery from the addiction

- d) Include minority ethnic communities in wider interventions and assess differential impact by collecting and analysing ethnically disaggregated data in qualitative and quantitative research

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CHAPTER 6: REVIEW OF STUDIES ON DIET

1. Introduction

Only three dietary intervention studies were identified. These results were consistent with White et al's (1998) wider review of dietary interventions, attesting to the rigour of the search methods employed. Two UK-based interventions focused on the Asian community (originating from the Indian sub-continent) while a US-based study targeted the Chinese community. All three interventions were community-based, but employed different methods: cookery clubs, a healthy eating and exercise group and a nutrition education programme. Details of the study, the intervention employed and the cultural adaptations made are provided in Table 6.1 while the measures used, the impact of the intervention and the conclusions of the studies are summarised in Table 6.2. For the sake of completeness, the same tables also include details of wider CVD which relate to diet.

2. Characteristics of study participants

The selection of sub-groups within identified ethnic groups – young people and women - as a target for dietary interventions is worth noting. This was justified on the basis of arguments that are likely to hold for the majority population, for instance, that it was important to change health behaviour at an early stage (Sun et al, 1999). In other studies women were targeted, most probably since they were most likely to be heavily involved in food preparation (Snowdon et al; Williams and Sultan, 1999).

3. Assessment of study quality

The criteria used to assess study quality were study design, the extent to which the interventions were theoretically driven and the extent to which they were culturally adapted. One study employed qualitative methods (Snowdon et al, 1999), another employed both qualitative and quantitative methods (Williams and Sultan, 1999), while the third employed a randomised control trial (Sun et al, 1999). Snowdon et al (1999) drew on two data sources – information in evaluation forms and discussion groups – to support the effectiveness of the intervention and undertook a longer term evaluation which provided evidence that among some of the participants, the changes made had been sustained. Williams and Sultan (1999) also drew on two data sources - a qualitative questionnaire and measurements of weight to assess the impact of the intervention - and provide details of how the qualitative analysis was undertaken. Only one study (Sun et al, 1999) used a theoretical model, the PRECEDE model, which combines predisposing, enabling and reinforcing factors as a means of affecting health behavioural changes. This college-based study used research instruments whose validity and reliability had been established and also assessed internal consistency. Measures were also taken to ensure the accuracy and relevance of the translated material.

4. Cultural adaptations of interventions

Overcoming language barriers

Link workers, facilitators and dieticians from the same community were used in all three studies to communicate health promotion messages and overcome language barriers.

Promoting community/family involvement

Awareness of the importance of family values and identification with the community in influencing dietary patterns was reflected through inviting neighbourhood leaders as well as family members to attend workshops and activities (Sun et al, 1999). A link worker was also used to give general support and encouragement to participants in Williams and Sultan's (1999) study.

Table 6.1: Summary of Diet Studies

Study, year, country, setting	Sample size, ethnicity, gender, age	Design, exposure, and follow-up	Intervention type, duration, length and frequency and Theory	Adaptations to target group (including ethnicity, gender, age and other characteristics)
1. Snowdon, 1999 Country: UK Setting: Bedfordshire community centre,	Sample size: 20 Ethnicity: Urdu, Gujerati, Punjabi and Bengali speaking communities Gender: Female Age range: Not stated.	Qualitative design; evaluation form and informal discussion at end of intervention and interviews 12 to 18 months later	Type of intervention: Cookery clubs Duration: Ongoing at the time Length: Cookery clubs run over three sessions; each session lasts for two hours Frequency: Not stated Theory: Not stated.	Facilitator(s): Trained community members acted as facilitators. Leaders of cookery clubs spoke same first language as participants Cultural adaptations: Healthier versions of traditional Asian dishes were used in cookery clubs. Active local community members acted as club leaders and recruited participants from the same community.
2. Williams and Sultan, 1999, Country: UK Setting: Trafford community centre	Sample size: 13 Ethnicity: Asian Gender: Female Age range: 26-55	Qualitative design, pre- and post-test, and follow-up after 17 months.	Type of intervention: Healthy eating and exercise group Duration: Not stated. Length: Sessions lasted for 2 hours Frequency: Weekly. Theory: Not stated.	Facilitator(s): Community dietitian, fitness instructor and Link worker Cultural adaptations: Group was formed from an existing local group attended by Asian women and supported by multilingual link worker
3. Sun et al., 1999, Country: USA Setting: student health centre, New York	Sample size: 228 Int = 112; Con = 106 Ethnicity: Chinese-American Gender: Both Age range: 18-30+	RCT design; post survey after 7 months.	Type of intervention: Nutrition education program Duration: 6 months (13 sections with 2 weeks for each section). Length: Not stated. Frequency: Not stated. Theory: PRECEDE	Facilitator(s): Lectures by Chinese dieticians, health educators in the study colleges and researchers Cultural adaptations: Inclusion of traditional foods in activities centred on planning, choosing and buying food; involvement of neighbourhood leaders and family members. Other adaptations: highly interactive and varied programme designed to engage with young people.

<p>4a) Mathews et al., 2007 Country: UK Setting: community, Edinburgh</p> <p>b) Netto et al., 2007 Country: UK Setting: community, Edinburgh</p>	<p>a) Sample size: 304 at initial screening, 140 at follow-up. Ethnicity: Bangladeshi, Indian, Pakistani and other South Asian Gender: Both Age: 13 – 81 Other information: Not stated</p> <p>2b) Sample size: 55 in first focus group and 36 in the second round. No control group. Ethnicity: Bangladeshi, Indian, Pakistani Gender: Both Age range: Not stated. Other information: Not stated</p>	<p>a) Study design: Longitudinal study, no randomisation; follow-ups averaging between 6-12 months</p> <p>b) Qualitative research; focus groups were organised at the beginning of the intervention and six months later</p>	<p>Intervention type: Screening, advice, exercise and diet sessions Duration: 2.5 years Length: 30-minute initial screening appointment, 30-minute consultation 1-2 weeks later to discuss results and set goals. Other sessions not specified. Frequency and theory: Not stated</p>	<p>a) Facilitator(s): Community nurse, doctor and project team. b) Project tailored to needs identified by local people c) Flexible delivery of activities. d) Research questionnaires included culturally familiar items. e) Language support available in intervention and study f) Taxis arranged to facilitate access to group discussions. g) Separate sessions held for men and women.</p>
<p>5. Ali et al., 2006 Country: UK Setting: Community locations, London</p>	<p>Sample size: 249 Ethnicity: Indian, Pakistani, Bangladeshi (63%), Black African (16%) Gender: Both Age range: 16-65+ Other information: 28% of mosque goers had no educational background, 45% were not working</p>	<p>Study design: Cross-sectional; pre- and post quantitative survey of mosque goers 5 months after campaign; qualitative survey of Imams 3 months after campaign; review of campaign.</p>	<p>Type of intervention: Media campaign Duration: 8 weeks; Length: 1 day training of Imams and volunteers; 5 week media campaign Frequency: 8 advertisements and 4 programmes daily Theory: Not stated</p>	<p>a) Facilitator(s): Researchers, community leaders and sessional workers. b) Use of ethnic foods as basis to promote healthier cooking. c) Use of ethnic media to deliver media campaign. d) Mosques used to disseminate health messages during Muslim fasting period (Ramadan).</p>
<p>6. Khunti et al., 2007 Country: UK Setting: Secondary schools in Leicester</p>	<p>Sample size: 5 schools with 4,763 pupils; 309 staff No control group Ethnicity: 77% % South Asians, mainly Indians Gender: both Age range: 11-15 Other information: Schools were in deprived areas</p>	<p>Quasi-experimental design, pre- and post measurements, qualitative action research</p>	<p>Type of intervention: varied approaches in individual schools, including diet and PA interventions Duration: Two years Length, frequency and theory: not stated</p>	<p>a) Facilitator(s): Research team in partnership with school staff members b) Food intake questionnaire had previously been modified for use in the local ethnically diverse population.</p>

<p>7. Akhtar et al., 2001 Country: UK Setting: General practice and health centre, Bradford</p>	<p>Sample size: 196 No control group Ethnicity: South Asians Gender: Male Age range: 40+ Other information: Local area is deprived.</p>	<p>Quasi-experimental design; pre-and post measurement; time interval between measurements not stated</p>	<p>Type of intervention: Health screening and informal education sessions Duration: 26 weeks; Length: 20-minute screening session; 90-minute health promotion and education sessions; Frequency: One-off screening session and weekly health promotion sessions. Theory: Not stated.</p>	<p>a) Facilitator(s): Health promotion facilitator, community-based nurses a) Staff used focus groups to identify target groups' needs in developing intervention b) Urdu-speaking health promotion facilitator dealt with cultural or religious issues at screening sessions.</p>
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(Abbreviations: Int = Intervention, Con = Control, RT = Randomised Control Trial)

Table 6.2: Summary of Measures, Impact and Conclusions

Study and measures	Impact of the intervention	Conclusions and recommendations
<p>1. Snowdon, 1999 Baseline measures: Not taken Outcome measures: Ideas concerning the cookery clubs; changes to family's diet; dietary knowledge</p>	<p>(a) Knowledge: Most women increased awareness of healthier food preparation. At follow-up, all women recalled main health messages. (b) Behaviour: Most women (7 out of 10) adopted some ideas of healthier cooking to family's diet and sustained changes to diet. (c) Attitudes: N/A (d) Health status: N/A</p>	<p>Conclusions: Cookery clubs had an immediate and sustained effect on participants' cooking practices. Recommendations: Use practical and informal cookery clubs run locally by community members to effect dietary change.</p>
<p>2. Williams and Sultan, 1999 Baseline and outcome measures: Weight, qualitative data</p>	<p>Knowledge, behaviour and attitudes: N/A (d) Health status: Slight reduction of overall body weight and BMI. At follow-up, 11 out of 13 women had lost weight (median loss = 3.2 kg).</p>	<p>Conclusions: The healthy eating and exercise group fulfilled social and weight loss functions. Recommendations: (a) Involve the local community and link workers in developing interventions (b) Consider issues that influence willingness to engage in PA, such as personal safety (c) Provide crèche facilities to increase attendance.</p>
<p>3. Sun et al., 1999 Baseline and outcome measures: nutritional knowledge, dietary instruction, media influence and social support</p>	<p>(a) Knowledge: No significant differences in scores on nutritional knowledge and media influence between both groups. (b) Behaviour: Significantly improved dietary behaviour in intervention group from a mean score of 159.9 to 172.3 ($F=21.98$, $p<.001$). (c) Attitudes: Significant changes in intervention group in perception of diet and health from a mean score of 12.0 to 14.2 ($F=6.17$, $p<.02$), dietary instruction from a mean score of 12.7 to 13.7 ($F=7.05$, $p<.016$) and social support from a mean score of 12.8 to 16.5 ($F=25.62$, $p<.001$). (d) Health status: N/A</p>	<p>Conclusions: Interventions which draw on PRECEDE components can change dietary behaviour. Recommendations: (a) Use multiple measurements of dietary behaviour (b) Measure long-term effects of intervention. (b) Focus intervention on adolescents rather than adults (c) Consider culture, environment and social-economic factors. (d) Use multiple media to disseminate information on food selection, preparation, storage and food label reading (e) Control fast food advertising (e) Educate owners/managers of restaurants/food services (f) Provide comprehensive college nutrition education programmes (g) Involve community leaders and family members</p>

<p>4a) Matthews et al., 2007 (1) Blood tests, individual CHD risk factors and goal setting (2) self-reported medical history, health behaviours and motivational stage (3) height, weight, BMI and waist circumference; (4) systolic and diastolic blood pressures.</p> <p>b) Netto et al., 2007 Focus groups explored: (1) Knowledge and understanding of CHD, (2) Steps taken to reduce CHD and barriers to taking these steps; (3) Views of the intervention</p>	<p>Knowledge: Increased knowledge of CVD, risk factors and the importance of a healthy diet and physical activity among many participants. Attitude: 50.4% of returnees reported increased motivational status to changing lifestyles; Some participants increased positive attitudes towards diet and exercise Persistent barriers to change were also identified Behaviour: Positive changes in:</p> <ul style="list-style-type: none"> • Salt intake women eg women = 29.2% (95% CI 19.9, 38.5) • Alcohol consumption = 2.7% (95% CI -9.0, 14.0) <p>Health status: Reduction in:</p> <ul style="list-style-type: none"> • Cholesterol = 0.19mmol/l (95% CI 0.1, 0.37) • Systolic blood pressure = 3.7mm Hg (95% CI 0.98, 6.7) • Triglycerides = 0.29mmol/l (95% CI 0.14, 0.47) • BMI = 0.30 (95% CI 0.12, 0.49). 	<p>Conclusions: The project increased knowledge about CVD and reduced CVD risk factors, although some persistent barriers to lifestyle change were identified. Recommendations:</p> <ol style="list-style-type: none"> a) Adopt targeted community approaches b) Ensure adequate resources, c) Address barriers to change d) Offer ongoing support e) Involve community organisations f) Offer a holistic model of health g) Include South Asians in wider alcohol and smoking interventions h) Monitor outcomes through longer follow-up period. i) Evaluate through RCTs j) Collect cost-effectiveness data
<p>5. Ali et al, 2006 Baseline and outcome measures: Information on salt consumption behaviour, knowledge of health risks associated with salt consumption,</p>	<p>(a) Knowledge: Knowledge of risks of high blood pressure associated with salt consumption rose from 84.2% to 87.2% (b) Attitudes: N/A (c) Behaviour: % of respondents reporting 'very low' salt intake increased from 9% to 20.1%. % of respondents that said that they 'smoke now' dropped from 38.1% to 29.8%</p>	<p>Conclusions: The campaign was effective in improving health knowledge and behaviour Recommendations: N/A</p>

<p>6. Khunti et al., 2007 Country: UK Setting: Secondary schools Study design: Quasi-experimental design, pre- and post measurements (taken after approx. 1 yr) and qualitative design</p>	<p>(a) Knowledge: Increased awareness of lifestyle issues. (b) Attitudes: N/A (c) Behaviour: Improved dietary behaviour eg. decreased proportion of pupils consuming chocolate Positive change $p<.644$ (95% CI .522, .795) Improvement in PA for 5 of the 8 PA indicators eg. increased light exercise on ≥ 6 days in past 2 weeks $p<.0013$ (95% CI 1.140, 1.723) (d) Health status: N/A</p>	<p>Conclusions: The action research project involving secondary schools was a useful, but challenging collaboration. Although pupils' lifestyle habits remained poor overall, some limited changes were indicated. Recommendations: Include provision of implementation resources including dedicated staff time</p>
<p>7. Akhtar et al., 2001 (i) Risk assessment of patients with no history of CHD; (ii) blood pressure; urine analysis; weight and BMI; smoking status; (iii) baseline physical activity and dietary intake (iv) health knowledge and motivation for change</p>	<p>(a) Knowledge: Increased among all participants; felt able to pass on knowledge to family and friends. (b) Attitudes: Increased motivation for change among most participants (c) Behaviour: N/A (d) Health status: N/A</p>	<p>Conclusions: The intervention was successful in influencing attitudes and promoting lifestyle changes Recommendations: Community-based nurses should initiate public health interventions and move from an illness- to a public health-based service</p>

(Abbreviations: N/A = Not Applicable, P = Positive change, PA = Physical activity, CHD = Coronary Heart Disease, CVD = Cardiovascular Disease, BMI = Body Mass Index, CI = Confidence Interval, NHS = National Health Service)

Including traditional foods

- Traditional foods (for example, noodles for Chinese participants) were included in activities centred on planning, choosing and buying food (Sun et al, 1999) and in demonstrations on healthier cooking methods (Snowdon, 1999).
- ***Building on existing community links***
Recruitment of participants was facilitated by either using existing groups in the targeted (Asian) community as a focus for the intervention (Williams and Sultan, 1999) or through the recruitment of active members of the Asian community who in turn selected members from the same community (Snowdon, 1999).
- ***Incorporating cultural factors within the PRECEDE model for health behaviour change***
The intervention in Sun et al (1999)'s study was designed to incorporate specific cultural factors within measures taken to predispose and enable the target group to make dietary behavioural changes and to reinforce those changes. For instance, health behavioural changes were reinforced by enlisting the support of parents and family members, given the significance of family values among Chinese Americans.

Other adaptations

Sun et al (1999) described a highly interactive and varied programme (including party food) designed to engage Chinese American youth. The same study noted that the target group of Chinese college students were recent immigrants who had adopted some American lifestyles, including dietary behaviour, but 'still adhered to traditional Chinese culture and customs' (Sun et al, 1999: 246), suggesting a relationship between length of time since immigration and dietary behaviour. In Snowdon's (1999) study, informal cookery clubs were initiated for Asian women, as a subgroup within the Asian community. This indicates the need for interventions for minority ethnic groups to take into account other dimensions of identity, including age, gender and length of time since immigration to enhance their effectiveness.

Williams and Sultan's (1999) study illustrated specific barriers that some Asian women face in participating in dietary (and physical activity) interventions, such as conflicting family commitments, including child-care and a reluctance or inability to walk, combined with a lack of transport. This indicates the need for specific measures to be put into place to overcome these barriers in order to ensure fuller participation. Interestingly, the same study demonstrated that an intervention designed to encourage healthy eating and exercise can also serve a social function, and that social factors (e.g. being able/unable to go out of the house) are important influences on weight. This suggests that there is scope for the deliberate incorporation of a social component as a means of encouraging the uptake and efficacy of dietary (and PA) interventions.

6. Impact of the interventions

Two studies (Snowdon, 1999 and Sun et al, 1999) noted some increased knowledge of healthy diets, though in the latter study, this did not amount to a significant change. Improved dietary behaviour was also noted in two studies (Snowdon, 1999 and Sun et al, 1999). Only one study reported a change in attitudes towards diet (Sun et al, 1999) while another reported a change in health status in terms of a reduction in weight (Williams and Sultan et al, 1999).

7. Conclusions of the review

The evidence base related to the efficacy of dietary initiatives which either specifically target minority ethnic groups or include them in wider initiatives is scarce. However, the studies reviewed suggest that targeted dietary interventions which are adapted for communities can be effective. Given the importance of diet as a risk factor for CVD and cancer, there is an urgent need for dietary interventions to be developed, implemented and evaluated to explore the relative importance of factors such as culture, economic status, environment and the media.

8. Recommendations of the review

The studies illustrate a complex range of factors which are worthy of consideration in the design, planning and evaluation of such interventions, including:

- the potential for targeting interventions within sub-groups of ethnic groups, and for involving others within the same ethnic group to reinforce health messages
- the need to overcome culturally specific or other barriers for participation in the intervention
- the potential for combining dietary and physical activity interventions with a social element to motivate participants
- the use of a variety of activities to initiate and maintain changes in health knowledge, behaviour, attitudes and status, including cookery clubs, health education curricula and peer support from healthy eating groups
- the use of a number of measures for evaluating the impact of dietary interventions, including weight, food frequency and recall

As in other areas covered by the review, the effectiveness of such initiatives for various ethnic groups needs to be evaluated through more qualitative and quantitative research. Where more than group is targeted, for example, in school-based or workplace interventions, this should involve the collection and analysis of ethnically disaggregated data.

Summary

The review of dietary interventions revealed few studies which targeted the ethnic groups that are the focus of the review, indicating an urgent need for more attention to be paid to this area. Existing research suggests that targeted interventions which are adapted for the communities concerned can be effective. More dietary interventions need to be developed involving the groups that are the concern of this review, and qualitative and quantitative research undertaken to evaluate the effectiveness of these interventions.

CHAPTER 7: REVIEW OF MULTI-ETHNIC PREVENTION STUDIES WITHOUT ETHNICALLY DISAGGREGATED DATA

This chapter reviews multi-ethnic studies based in the US which include either Asians ‘Asians’ or ‘Asian Americans’, either exclusively or along with other ethnic groups, such as Latin Americans, Hispanics and Africans. In US-based studies, the term ‘Asians’ or ‘Asians Americans’ is commonly used to refer to people currently living in the United States who have their origins in China, Vietnam, Korea and other countries in the Asia Pacific region. The studies identified do not explicitly state that people of Chinese origin, one of the target groups which are the concern of this study, are included in the interventions, but are included in the review, for the following reasons:

- the scarcity of studies that have been reviewed in earlier chapters, including those that explicitly refer to people of Chinese origin in the UK
- the likelihood that people of Chinese origin, the concern of the review, are likely to be included in the intervention
- the likelihood that the health-related behaviour and attitudes of people of Chinese origin is culturally similar to that of other people classed as ‘Asian Americans’ in at least some respects
- the large-scale of many of the multi-ethnic interventions
- the potential for drawing lessons relevant to the planning, design, implementation and evaluation of large-scale multi-ethnic interventions, including those delivered in school-based settings

Section 1 discusses CVD studies while Sections 2, 3 and 4 consider studies related to cancer, PA and smoking cessation, respectively.

1. Studies with multi-ethnic samples related to CVD

This section discusses multi-ethnic health promotion interventions related to the prevention or reduction of CVD. Four US-based interventions related to the prevention of CVD and developed for multi-ethnic school populations were identified. Table 7.1 provides details of the studies and interventions while Table 7.2 summarises the measures employed, the impact of the intervention and the conclusions of the studies. All four interventions aimed to facilitate health changes at an early stage and consisted of the delivery of health education curricula combined with a physical activity programme. As Table 7.1 illustrates, the proportion of ‘Asians’ or ‘Asian-Americans’ in the multi-ethnic samples vary considerably, from 1.97% to 23.5%. One of these studies (Edmundson et al, 1996) stood out by virtue of the large scale of the intervention, covering nearly 7000 students in 96 schools in four cities. Additionally, Edmundson et al (1996) supplemented this with a food service programme to reduce fat and sodium content in meals in all 96 schools, and a parent education programme in half of the schools. The remaining studies evaluated the impact of a health promotion programme, using different samples: females only (Bayne-Smith et al, 2001) and both males and females (Fardy et al, 1996; Fardy, 1995 et al).

1.1 Focus of interventions and study design

All four studies examined changes in knowledge on topics related to CVD prevention such as participants understanding of CVD and modifiable risk factors, as well as the extent to which participants were motivated to change health

Table 7.1: Summary of CVD studies targeted at Multi-Ethnic Samples

Study	Sample details	Study design	Intervention details	Adaptations to target group
Edmundson et al., 1996 Country: USA Setting: Schools; Austin, San Diego, Minneapolis and New Orleans	Sample size: 96 schools (6,956 students). Int = 14 (7 school-based and 7 school-based plus family) x 4 schools; Con = 10 x 4 schools Ethnicity: White, African-American, Hispanic, Native American, Asian (1.97%) and others Gender: Both Mean age: 8.8 years	Quasi-experimental design; measurements taken at beginning and end of 3 rd grade year	Intervention type: Primary school-based health promotion programme Int group 1: Health and physical education, no-smoking policy and food service intervention; Int group 2: As above plus family-based programme; Con group: Usual health curriculum Duration: first year of 3 year programme; Length: 5 weeks; Frequency: 3 times a week Theory: Social cognitive theory	Facilitator(s): Teachers and health promotion staff Cultural adaptation: Translation of research questionnaire in Spanish and presence of bilingual teacher when questionnaire was filled in
Bayne-Smith et al, 2004 Country: USA Setting: High school, New York city	Sample size: 442 (Int = 310, Con = 132) Ethnicity: African-Americans, Hispanics, White and Asian-American (17%) Gender: Female Age range: 14-19	RCT design, measurements taken 2 weeks before and after the intervention	Type of intervention: Health promotion and physical activity programme Int group: Experimental physical exercise and education classes; Con group: Traditional physical education classes. Duration: 12-weeks; Length: 30-minute classes; Frequency: 5 times a week Theory: Not stated.	Facilitator(s): Physical education teacher No cultural adaptation measures stated.
Fardy et al., 1995 Country: USA Setting: High school, New York	Sample size: 54 Int = 42, Con = 12 Ethnicity: Asian (23.5%), Blacks, Hispanic, White, Other Gender: Both Age: Mean 16.6	Quasi experimental design, follow-up after three months	Intervention type: Health promotion curriculum and exercise programme Duration: 10 weeks Length: 40 minute classroom session; 20 to 25 minutes exercise programme Frequency: 25 classroom sessions Theory: Not stated	Facilitator(s): Director of Health Education and classroom teacher Cultural adaptations: Revisions of content and delivery strategy of the Stanford Adolescent Heart Health curriculum to the needs of ethnic minority students

Fardy et al., 1996, Country: USA Setting: High school, New York	Sample size: 346 Int = 181, Con = 165. Ethnicity: African-American, Asian-American (9%), Hispanic, white and other Gender: Both Average age = 16 54	Quasi experimental design, RCT design, measurements taken 3 weeks before and after intervention	Intervention type: Health education and exercise programme Int group: experimental education and exercise classes; Con: Traditional sport, volleyball classes Duration: 11 weeks; Length: 30-minute classes; Frequency: 5 times a week Theory: Not stated.	Facilitator(s): Physical health education teacher, assisted by undergraduate and graduate physical education majors. No cultural adaptation measures stated.
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(Abbreviations: Int = Intervention, Con = Control, RCT = Randomised Control Trial)

Table 7.2: Measures, impact and conclusions of CVD intervention studies targeted at Multi-ethnic samples

Study and measures	Impact of intervention	Conclusions and recommendations
Edmundson et al, 1996 Self-administered questionnaire tested: dietary knowledge, intentions, self efficacy, usual food behaviour; perceived social support for healthy food choices, reinforcement of PA and self-efficacy for PA and diet	<p>(a) Knowledge: Significant increased dietary knowledge in school-only int group and in plus family int groups by a mean score of 4.22 and 4.95, respectively, con group = 1.62 at p<.0001.</p> <p>(b) Attitude: Increased PA self-efficacy in int groups by a mean score of 0.74 and 0.79, respectively, con group = 0.46 at p < .0001.</p> <p>Improved dietary self-efficacy in intervention groups by 1.76 and 1.99, respectively, con group = 0.57 p< .0001).</p> <p>(c) Behaviour: Increased heart-healthy food consumption in int groups by 2.98 and 3.79, respectively, con group = -0.06 (p<.0001), significantly greater change in plus family group compared to school only fep</p> <p>Increased negative reinforcement for PA in school-only intervention by a mean score of 2.92, but less for plus family and con group (0.76 and 0.81, respectively) (p<.01).</p> <p>Increased social support for healthy food choices in both int groups by 6.89 and 7.82, respectively, con group = 1.92 (p<.0001).</p> <p>(d) Health status: N/A</p> <p>No interaction between intervention effect and race.</p>	<p>Conclusions: School-based programmes and home-based programmes with school-based programmes can produce significant improvements in intentions, knowledge, choices, social reinforcement and self-efficacy related to food but only modest improvements in relation to exercise.</p> <p>Recommendations: Increase ethnic diversity to further understand how school-based CHD prevention programmes affect students with different backgrounds</p>
Bayne-Smith et al, 2004 (i): Height, weight, BMI, percentage body fat, blood pressure, total serum cholesterol, estimated maximum oxygen uptake; (ii)questionnaire data: knowledge, self-perception of health, non-school related PA, dietary habits, breakfast eating habits and family history of CVD.	<p>(a) Knowledge: Significant increase in heart health knowledge in int group and decrease in con group (mean difference of 7.7, p<.001).</p> <p>(b) Attitudes: No significant change for self-perception of health between groups (0.1).</p> <p>(c) Behaviour: No significant changes in PA, but significant increase in eating breakfast in int group = 8.7, con group = 2.7</p> <p>(d) Health status: Significant reduction in int compared to con group, in: Body fat, mean difference = - 0.8 (p<.001), Systolic blood pressure, mean difference = - 2.3 (p< .05)</p> <p>Mean differences in BMI, total serum cholesterol and estimated maximum oxygen uptake not significant.</p>	<p>Conclusions: Intervention had a beneficial effect on health knowledge, health behaviour and risk factors.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> a) Focus intervention on adolescents b) Use school-based physical education to promote PA among girls c) Use adaptable and inexpensive curricula d) Consider non-traditional approaches to wellness. e) Enable individualised student training and progress.

<p>Fardy et al, 1996</p> <p>(i) physical measurements: height, weight, total cholesterol, percent body fat, and resting systolic and diastolic blood pressure; (ii) questionnaire data: family history of CVD, cigarette smoking history, PA and diet habits, stress, health attitude and self-perception of health; (iii) test of cardiovascular health knowledge.</p>	<p>(a) Knowledge: Significantly increased heart health knowledge for girls and boys in int group (mean score change of 5 and 6, respectively) ($p<.006$), decreased in both sexes in con group.</p> <p>(b) Attitudes: No significant differences in scores between int and con group.</p> <p>(c) Behaviour: Significant reduction in intake of food high in cholesterol, saturated fat, salt or sugar in girls in int group, but no change in con group (5 and 0, respectively) ($p<.04$).</p> <p>No significant changes in self-reported PA</p> <p>(d) Health status: Significant reduction in cholesterol in girls in int group, smaller reduction in girls in con group (16 and 4, respectively) ($p<.004$). No significant changes in SDP, BMI or percentage BF between and within groups.</p> <p>Significant improved cardiovascular fitness in girls in intervention group, but no change to girls in control group (5 and 1, respectively) ($p<.0001$).</p>	<p>Conclusions: CHD health knowledge was the only variable in which both boys and girls showed significant improvements. Significant changes in eating habits in girls, but no change in eating habits in boys.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> a) Important to be gender sensitive in dietary education b) Important to consider single-gender physical exercise classes to ensure girls are as active as boys and different forms of exercise for both
<p>Fardy et al, 1995</p> <p>Baseline measures: Height, weight, total cholesterol, percent body fat, and resting systolic and diastolic blood pressures; family health history, PA and diet habits, stress, health attitude, self-perception of health; cardiovascular health knowledge.</p> <p>Outcome measures: As above</p>	<p>(a) Knowledge: Increased heart health knowledge in int group by 9% ($p<.003$). There was an association between health knowledge and parental smoking habits ($p<.05$).</p> <p>(b) Attitude: N/A</p> <p>(c) Behaviour: Decrease in consumption of foods high in cholesterol, saturated fats, salt and sugar from an average of 39 times per week to 33 (20% decrease, $p<.006$) in int group</p> <p>(d) Health status: No overall significant differences between groups, except cholesterol, which decreased in int group by a mean score of 13, con group = 5 ($p<.007$).</p> <p>Small reduction in percent body fat in int group by a mean score of 0.8 ($p<.04$)</p>	<p>Conclusions: Results indicate study feasibility, improved health behaviour, reduced cholesterol and body fat and increased cardiovascular health knowledge.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> (a)Important to take into account parental influences on health knowledge and behaviour.

(Abbreviations: BMI = Body Mass Index, BF = body fat, con = Control group, int = int group, N/A = Not Applicable, SDP = Systolic Blood Pressure, DBP = Diastolic Blood Pressure, PA = Physical Activity)

behaviour and adopt healthier lifestyles by taking regular exercise, consuming less fat or salt and cutting down on smoking. Changes in self-efficacy in relation to PA, dietary intention and self-perception of health was assessed and the extent to which health behaviour was actually modified were also the focus of research attention in three of the studies (Edmundson et al, 1996; Bayne Smith et al, 2004; Fardy et al, 1996 and 1995). Three of these studies (Bayne Smith et al, 2004; Fardy et al, 1996 and 1995) also examined changes in health status. All of these studies employed quantitative methods; of these two were RCTs, with one of the RCTs including two intervention conditions, school only and school plus family (Edmundson et al, 1996). This was also the only study which reported that the design of the intervention had been underpinned by theory.

None of the studies alluded to the differing cultural frameworks of its multi-ethnic student sample and the potential influence of such frameworks in determining attitudes and behaviour. Neither did any of these studies produce ethnically disaggregated data of baseline and outcome measures. As a result, it was not possible to examine the extent to which the school-based interventions had a differential impact on the ethnic groups concerned. Community involvement in these interventions was limited, with only one study (Edmundson et al, 1996) involving the family in half of the schools involved in the intervention.

1.2 Study quality

Methods employed for taking baseline and outcome measures were validated through minimisation of inter-tester variation through assigning the same research staff to testing stations and the determination of test-retest reliability for certain physiological measures and questionnaire items (Bayne-Smith et al, 2004; Fardy et al, 1996) and psychometric properties of questionnaire scales (Edmundson et al, 1996). Other means of validation included the use of measurement methods and scales that had been employed in previous studies and found to be reliable, and the comparison of results to studies of similar interventions (Bayne-Smith et al, 2004). Edmundson et al (1996) evaluated internal consistency, content validity and age appropriateness (though not cultural appropriateness) of the questionnaire items with the student sample. The same study also ensured the validity of student responses by taking measures to ensure confidentiality in the administration of questionnaires and carrying out the same intervention in many schools in different areas.

1.3 Impact of the intervention

Both Edmundson et al's (1996) school-based intervention groups reported significant improvements in usual food choices, choosing more heart-healthy food after the intervention and receiving more social support in choosing such food as well as increased PA. The other three school-based studies which used a similar research design and a common health promotion curriculum that was delivered over a similar duration and frequency reported increased cardiovascular knowledge. conflicting results related to health behaviour were obtained. Bayne-Smith et al's (2001) study of teenaged female subjects revealed significant improvements in breakfast eating habits but no significant differences in other dietary habits. In contrast, Fardy et al (1996) reported significant changes in dietary behaviour in girls in the intervention group but no significant differences in male subjects. However, both studies concur in finding no significant differences in self-reported physical activity, and in highlighting the lower levels of PA among teenaged girls compared to boys of the same age. All three studies reported positive physiological changes. Overall, these results underline the need for repeated demonstrations of the effectiveness of the same

intervention with different groups of participants, as well as the need for gender-specific interventions to be considered, particularly in the area of PA. Edmundson et al (1996) was the only one of the school-based studies to report positive changes in attitude, providing evidence of significant improvements in dietary and physical self-efficacy and dietary intention. The same study also demonstrated significant differences between the two intervention conditions for dietary intentions choices providing some support for additional family interventions in this area.

1.4 Conclusions and recommendations of the studies

All four studies revealed that large-scale multi-ethnic heart health interventions in schools can produce positive changes, notably in increasing cardiovascular knowledge, with some evidence in support of their effectiveness in changing behaviour, attitudes and health status. The studies also highlight the need for gender sensitivity, particularly in terms of changing attitudes and behaviour related to physical activity and dietary education. There is some evidence to suggest that it might be useful to consider parental involvement in enabling young people to make positive changes in attitudes and lifestyles. However, the lack of ethnically disaggregated data in these studies rules out the possibility of examining the (differential) impact of the interventions by ethnicity.

2. Cancer

Emmons et al (2005) evaluates the impact of a cancer prevention intervention on a multi-ethnic sample, including a small minority of Asian Americans among whom Chinese Americans might be included. In Chapter 3, which reviews studies related to CVD and cancer, details of the study and the intervention are summarised in Table 3.3. Table 3.4 summarises details of the measures used, the impact of the intervention and the conclusions. The study examined the influence of multiple factors which influence health-related behaviour, including low literacy skills and shared as well as unique features of culture across ethnic groups. The intervention was found to be successful in significantly increasing fruit and vegetable consumption and decreasing meat consumption but not levels of PA. The authors highlight the significance of the effectiveness of the intervention across subgroups defined by ethnicity and income, in the face of evidence in the literature that health behaviour interventions are often less efficacious for 'underserved' populations. Exceptionally among the studies reviewed, this was the only study to provide cost-effectiveness data, revealing that the intervention cost US\$168 per patient.

3. Physical activity

The impact of a pre-intervention preparatory course on PA which targeted a small multi-ethnic, primarily Latina sample of eighty two women, which also includes Asian people, is discussed in Collins et al (2004). In Chapter 4 which reviews studies on PA, Tables 4.1 summarises details of the study and the intervention while Table 4.2 summarises details of the measures used, the impact of the intervention and the conclusions. Designed to be culturally sensitive for the primarily Latina population, both 'surface structure' and 'deep structure' dimensions of the intervention, as defined by Resnicow et al (1992), were adapted for the target group. Examples of surface structure included reference to places, community activities and local resources that the target group were familiar with, and the use of bilingual staff to assist participants. Addressing 'deep structure' dimensions involved incorporating beliefs and values related to Latinas' ability to increase time spent on PA, such as family duties and self-esteem. The study reported significant increases in knowledge, perceived social support for PA, minutes of walking per week and total cognitive and

behavioural processes. However, perceived barriers and self-efficacy for exercise did not change. The authors conclude that class-based, theoretically grounded interventions can have a powerful effect on promoting regular PA and that pre-intervention preparatory courses may be an effective means of increasing social and cognitive constructs associated with PA behaviour.

4. Smoking cessation

Johnson et al (2004) is a school-based study in the US which examined the impact of a multicultural smoking prevention curriculum against that of a standard curriculum with no multicultural references and the usual school curriculum. In Chapter 5 which reviews studies relating to smoking cessation, Table 5.1 summarises details of the study and the intervention while Table 5.2 summarises the measures used, the impact of the intervention and the conclusions. The study found that students who had received the multicultural curriculum had significantly lower risk of being a past month smoker in eighth grade. Program effects varied according to the ethnic composition of the schools. More generally, the findings of the study suggest that the effectiveness of educational curricula which are tailored to a particular ethnic group might be influenced by the size of that ethnic group within the multi-ethnic sample and the degree of homogeneity in the social context.

5 Conclusions

The studies of interventions targeted at multi-ethnic samples in school-settings provide some support for the effectiveness of such interventions in reducing or preventing CVD and cancer, promoting physical activity and encouraging smoking cessation. The studies are worth noting in providing an illustration of the nature of interventions carried out with a multi-ethnic pupil/student population and the issues likely to arise from the design, implementation and evaluation of interventions in such settings. Such studies also illustrate the importance of clearly defining ethnic groups and collecting and analysing ethnically disaggregated data in order to assess the (differential) impact of the intervention on the groups covered.

Issues related to the planning, design and evaluation of school-based interventions are worthy of consideration for the following reasons:

- The importance of focusing preventative action on adolescents in order to reduce the prevalence of risk factors and change health behaviour at an early stage
- The potential afforded for cost-effective health promotion interventions to be planned and delivered for multi-ethnic school populations, in which young people from minority ethnic communities are likely to be represented in varying proportions

6 Recommendations

The recommendations of the studies reviewed highlight many issues which are worthy of consideration in planning school-based health promotion initiatives, including:

- The potential for considering parental involvement to improve the effectiveness of health promotion interventions for children (Edmundson et al, 1996)
- The importance of consider gender needs in dietary and physical education, particularly for girls and for collecting data related to gender as well as ethnicity (Bayne-Smith et al, 2004)

- Providing scope for individualised training and instruction so that individuals can progress at own rates in terms of physical activity (Bayne-Smith et al, 2004)
- The potential influence of social context in schools with multi-racial populations on the effectiveness of the intervention, including the extent to which certain ethnic groups are represented in the school (Johnson et al's (2004)

In addition, Collins et al (2004) highlight the possible use of adult education sites as a means of reaching low income women from minority ethnic groups and the use of pre-intervention preparatory courses which can increase the effectiveness of interventions which follow on from this.

CHAPTER 8: MAIN FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

In this concluding chapter, we draw together the findings from earlier chapters, highlight patterns of existing research and the main cross-cutting themes. We also make some recommendations for future health promotion policy and practice and for evaluating future health promotion interventions in this area.

1. Scarcity of health promotion initiatives

The most noteworthy finding of the review is the scarcity of health promotion initiatives related to CVD and cancer, and modifiable risk factors for Pakistanis, Chinese and Indians. All the CVD initiatives identified were based in the UK. Only two cancer prevention initiatives, both based in the US, were identified. In the UK context, this highlights the scarcity of health promotion initiatives related to these major causes of mortality. Among the small number of relevant studies identified, the Scottish contribution to the review in the form of two evaluative studies providing both qualitative and quantitative evidence attesting to the effectiveness of a targeted CVD intervention for the South Asian community should be noted.

The targeting of the South Asian communities in UK-based interventions and the absence of targeted initiatives for the Chinese population should also be noted. Further targeted and sustained interventions for these communities are essential, given evidence of excess mortality and morbidity due to CVD. However, the major contribution of these diseases to mortality among the Chinese population indicates that future initiatives should also target this community.

2. Approaches to including minority ethnic communities in health promotion initiatives

Despite the small number of studies reviewed, and the diversity in the size and ethnic composition of the sample, the type, duration, length and frequency of interventions, study design and measures employed and the possibility of publication bias in favour of positive results, the reviews in earlier chapters strongly suggest that there is considerable value in developing targeted interventions for minority ethnic communities. However, given the time and resources needed to design, develop and evaluate targeted interventions, it is imperative that in parallel with this process, interventions which target the general population take measures to include minority ethnic groups, and wherever possible, collect and analyse ethnically disaggregated data to assess the differential impact of the intervention. There is also scope for comparative work to be undertaken in assessing the outcomes of a targeted approach against a 'mainstreaming' approach.

3. Theoretical foundation of interventions

The number of interventions that were underpinned by theory was low, and even in the studies reported to be theoretically driven, the link between the theoretical constructs and the specific attributes of the intervention was not clear. More explicit reporting of how the choice of intervention variables and activities have been informed by theoretical constructs is also needed in place of assumptions that such links will be clear to academics and health promotion practitioners. Studies in which interventions have been targeted at minority ethnic groups provide some evidence of the relevance of theories which predict attitudinal and behaviour change in the general population to minority ethnic communities, for instance, in the area of physical activity. However, further testing of the applicability of established theories, such as the stages of change model, is required.

4. Relationship between cultural/ethnic identity and health-related attitudes and behaviour

Few studies used theories related to culture or ethnic identity as a basis for increasing the appropriateness of interventions for the targeted communities or predicting the outcome of the interventions. There is clearly scope here for a more nuanced understanding of the relationship between ethnic or cultural identity and health-related attitudes and behaviour. This should include the extent to which such identity is influenced by the norms and values of individuals' or families' countries of origin, and the extent to which such identity can be used as a resource to bring about positive attitudinal and behavioural changes. This is likely to involve greater appreciation of differences within minority ethnic groups such as varying levels of acculturation and associated factors such as length of stay in the country of migration, permeability to external influences and degrees of integration with the general population. There is also scope for examining the extent to which health-related knowledge, attitudes and behaviour might be shared across ethnic groups, and the relative importance of other demographic variables such as age, gender and religious orientation. As has been indicated by some of the studies reviewed, future work in this area might need to address more than one of these variables in order for interventions to be effective.

5. Cultural adaptation

Community involvement played an important role in attempts to adapt targeted interventions for selected ethnic groups in many of the studies reviewed. Such involvement was often apparent in the design and delivery of the intervention and in the recruitment of participants.

Community involvement in planning stages

Although the rationale for such involvement was not always made explicit in the planning stages, involving individuals from the target communities appeared to play a useful role in publicising the intervention, recruiting participants, obtaining 'buy-in' from the community and in highlighting any cultural or ethnic-specific issues which needed to be addressed to ensure successful outcomes. This included consultation with (representatives of) the target community on the types of intervention activities that were likely to be appropriate. Given the multi-disciplinary nature of the work involved, in some studies, efforts were made to form coalitions of participating organisations, drawing on different forms of expertise and experience, such as community organisations with experience of working with the target group and organisations with specialist experience in dealing with cancer or CVD, and health service providers.

Community involvement in the delivery of interventions

At the delivery stage, the involvement of community members as facilitators played a useful role in overcoming language barriers and in addressing issues relating to the cultural framework of the participants. In the studies reviewed, measures to ensure effective communication included the employment of bilingual health professionals or researchers, the availability of interpreters or the translation of key information. However, generally, few details were given of the translation procedures adopted or the measures taken to ensure functional and cultural equivalence, a serious weakness in considering areas where there are likely to be considerable cultural differences in interpreting questions relating to major lifestyle issues, such as diet and PA.

In areas other than the overcoming of language differences, the contribution of community members was not always clear, and appeared to rely on the assumption

of shared cultural values and norms. Given the considerable diversity within ethnic groups in terms of cultural retention and levels of acculturation with the majority population, this assumption might be problematic. This is not intended to discount the possibility that involvement of members from the same ethnic group was useful even where language differences did not pose a challenge, but to highlight that the rationale for such involvement in future studies needs to be made much more explicit than has generally been the case.

Other forms of cultural adaptation

Other forms of cultural adaptation revealed by the review involved highlighting connections between cultural or religious values and the health-related attitudes and behaviour being promoted or encouraged. Another cross-cutting form of adaptation was identifying and addressing barriers to participation, including those which might be culturally specific as well as gender specific. An example of this might be culturally derived assumptions of the role of women in family life, which might, for instance, limit the time available to them to engage in physical activity outside the home, or the scope to initiate dietary changes. Conversely, the design of other interventions sought to identify and incorporate culturally-related factors which might facilitate participation. An example of this was involving leaders of the community in the intervention to incorporate the value of respect for authority in the intervention.

Yet other forms of cultural adaptation involved using ethnic pride to boost self-efficacy in adopting healthier lifestyles or exploiting ethnic identification, for instance, by using role models from the same community to promote healthier lifestyles. A further form of cultural modification involved counteracting negative media influences by raising awareness of the targeting of certain ethnic groups in advertising, or more positively, using ethnic specific media to disseminate health-related messages. Work in this area suggests that future employment of media strategies could build on earlier work by eliciting and analysing sources of information of health-related messages from participants, and identifying more closely the format, content and means of communicating messages that are likely to increase knowledge or facilitate attitudinal or behaviour change. Yet other modifications appeared to be designed to appeal to cultural tastes, for example, the incorporation of traditional foods or forms of exercise in related interventions.

Analysis of the various ways in which interventions were culturally modified for the ethnic groups concerned indicates that more work needs to be undertaken to improve understanding of terms such as 'cultural modification,' 'enhancement' or 'tailoring' which appear to be used interchangeably to cover the disparate activities covered. Currently, it would appear that some of the activities which are referred to as cultural adaptations, for example, enlisting social support from spouses or parents, have wider relevance. This suggests that at least in some cases, increasing the appropriateness of existing interventions to the target group might be a matter of modifying one or more dimensions by degree rather than introducing new dimensions, increasing the generalisability of existing interventions for minority ethnic communities. One of the major challenges for further research in this area is to identify more precisely the extent to which existing health promotion interventions for mainstream populations need to be adapted for minority ethnic communities and the development of a comprehensive framework of such adaptations.

6. Impact of interventions

All of the studies reported that the interventions had been effective, in either increasing knowledge of CVD, cancer and associated risk factors or in bringing about attitudinal or behavioural change and improving health status. However, the extent to

which this was supported by evidence varied considerably. Several quantitative studies reported a number of measures taken to ensure internal validity by reducing selection, attrition, performance and measurement bias, and others none at all. Similarly, some qualitative studies drew on various sources of evidence, provided details of how the data was analysed and contextualised their findings in the light of previous work, thus increasing the credibility of the findings, while others relied solely on interviews with participants as the main source of information.

7. Study design and evaluation

In order to advance our understanding of the effectiveness of health promotion interventions for minority ethnic communities, there is a need to develop more robust qualitative and quantitative research. High quality qualitative research should seek to illuminate the complex factors which influence health-related knowledge, behaviour and attitudes, and the factors which either support or inhibit changes which are consistent with the promotion of healthier lifestyles. This should also contribute to the development of a firm theoretical foundation of the role of culture and ethnic identification in terms of predicting attitudinal or behavioural modification, as well as greater understanding of the extent to which established theories of change are applicable to minority ethnic communities. Such understanding would also contribute towards the development and design of more informed quantitative evaluations of health promotion interventions in the key areas of CVD, cancer, physical activity, diet, smoking cessation and alcohol abuse.

In terms of quantitative evaluations, there is clearly scope for more randomized controlled trials, quasi-experimental studies and other pre- and post-intervention studies. Studies which involve large sample sizes and allow for follow-up measures to be taken over a longer period of time would contribute to more robust analysis of the effectiveness of interventions and the extent to which the impact of such interventions can be sustained over time. More robust means of measuring behavioural change in addition to self-reports in areas such as nicotine dependence, levels of physical activity undertaken and dietary patterns are also needed. There is also a need for more cost-effectiveness studies of interventions to assist in the allocation of resources for such interventions. Finally, in order to assess the differential impact of interventions across ethnic groups, there is an urgent need for clearer definition of ethnic groups and ethnically disaggregated data, as well as data relating to other potentially crucial variables such as gender and socio-economic class.

8. Conclusions and implications of the review

The review indicates that there is an urgent need for the development and implementation of targeted interventions to reduce or prevent CVD and cancer in the minority ethnic communities concerned. The findings of this study, discussed above, and the recommendations which follow, provide an informed basis for doing so, and action in this area should not be delayed. It is also clear that there is considerable scope for high quality qualitative and quantitative research in this area. The review provides the basis for the development of a major programme of quantitative and qualitative research in order to arrive at a greater understanding of effective health promotion interventions for reducing and preventing CVD and cancer in minority ethnic communities.

The findings of the review have particular relevance for Scotland, given the focus on the largest minority ethnic communities in the country. However, the lessons that have been learnt from the review have relevance for both smaller minority ethnic communities in Scotland as well as larger communities in other parts of the UK.

Many of the UK-based interventions in the review, including that based in Edinburgh, have been community-based and provide useful lessons for the design of similar interventions. There is some evidence that interventions targeting religious groups and settings have been effective in England, and the potential for developing these interventions in Scotland in mosques and other places of worship should certainly be considered.

Additionally, many of the studies of school-based interventions, particularly in the US, indicate that these can also be effective in bringing about changes in multi-ethnic student populations through appropriately designed curricula. These studies provide useful insights into issues which need to be considered in designing future interventions in schools in Scotland and other parts of the UK, where minority ethnic students are significantly represented. Existing interventions in schools should also, wherever possible and appropriate, collect and analyse ethnically disaggregated data.

Given the high representation of the Pakistani and Chinese communities in the retail and catering industry and the long anti-social working hours involved, there is also scope for considering the design of workplace interventions in Scotland. Finally, although minority ethnic communities in Scotland are mainly concentrated in urban areas, they are present in small numbers across the country, including in the Highlands and Islands. Their inclusion in relevant health promotion initiatives which target rural communities is also important.

Limitations of the review

The review was limited in its focus on studies relating to the three largest minority ethnic communities in Scotland, namely, Pakistanis, Chinese and Indians. Although our systematic search of the literature included the UK, other parts of Europe, North America and the US, where these groups are also present as minority groups, the number of studies relating to these groups was, as has already been discussed, small. However, much can also be learnt from intervention studies which have targeted other minority ethnic groups which are not included in the review.

By virtue of its nature, the information gathered from the review was restricted to printed material. It is likely that more information relating to the design, implementation of the review would have been available through contacting the researchers, health professionals or community organisations involved. However, the resources and time-scale available for the review did not permit this.

9. Recommendations for future interventions

In section 9.1 we make recommendations for the planning and delivery of future health promotion interventions in this area. This is structured into three main areas:

- a) Cross-cutting recommendations emerging from the review
- b) General recommendations from the studies reviewed relating to CVD and cancer prevention or reduction
- c) Specific recommendations relating to physical activity, smoking cessation and diet

9.1 Cross-cutting recommendations for future interventions

- Develop targeted, adequately resourced interventions for minority ethnic communities which are underpinned by community involvement at all stages of the process, including design, implementation and evaluation
- Take account of the diversity within ethnic groups including along the dimensions of age, gender and religious orientation, levels of acculturation, educational levels and socio-economic class
- Be aware of the potential for shared values and attitudes across ethnic groups, and the need to consider variables, other than ethnicity, in planning targeted interventions
- Adopt an equitable, open and transparent approach to community involvement, taking into account the need for community organisations to be adequately resourced for such involvement and for adequate time to be allowed for this
- Develop effective means of engaging with communities in order to ensure successful interventions in a wide range of settings, including schools, places of worship, workplaces and adult education settings
- Develop school-based interventions which include children from minority ethnic backgrounds to reduce the prevalence of risk factors and change health behaviour at an early age, considering parental involvement and gender needs
- Ensure that adequate measures are in place to overcome language differences and to ensure functional and cultural equivalence in the information communicated

9.2 General recommendations relating to CVD and cancer prevention interventions from the studies reviewed

- Develop adequately resourced, targeted CVD interventions for minority ethnic communities (Matthews et al, 2007; Netto et al, 2007)
- Include minority ethnic communities in wider CVD and cancer prevention interventions and collect and analyse ethnically disaggregated data, wherever possible (Netto et al, 2007)
- Mainstream ethnic-specific CVD projects within the NHS (Farooqi and Bhavsar, 2001)]
- Focus CVD interventions on adolescents (Edmundson et al, 1996)
- Carry out sustained and targeted campaigns to increase cancer awareness in vulnerable groups (Ma et al, 2004)
- Plan theory-driven interventions to understand the processes underlying behavioural changes, especially intrapersonal, social and physical environmental factors (Jenum et al, 2006)

- Address the mediators of behaviour change, including social and environmental factors (Jenum et al, 2006)
- Involve the community, link workers and community organisations in planning initiatives (Lew et al, 1999; Williams and Sultan, 1999; Matthews et al, 2007; Netto et al, 2007)
- Identify what type of media and messages are most effective in changing attitudes and behaviour (Ma et al, 2004)
- Use details of the sources of information recalled by different groups in multi-ethnic interventions to plan future interventions (Taket et al, 2003)
- Assess long-term impact on GP practices involved in initiatives designed to improve preventative care to minority ethnic communities (Farooqi and Bhavsar, 2001)
- Employ bilingual/bicultural staff and translators (Lew et al, 1999; Ma et al, 2004a; Taylor-Pillae, 2006)
- Use ethnic specific media channels and opportunities such as festivals (Lew et al, 1999)

To target young people from minority ethnic communities, design school-based interventions which

- Use adaptable and inexpensive school-based curricula (Bayne-Smith et al, 2004)
- Include provision of implementation resources in school-based interventions, including dedicated staff time (Khunti et al, 2007)
- Use health care settings for developing appropriate interventions for multi-ethnic, low-income individuals (Emmons et al, 2005)
- Consider the scope for facilitating more public health approaches among community-based health professionals as opposed to restricting their role to mainly focusing on individual patients and addressing specific concerns (Akhtar et al, 2001)
- Identify occupational, social, cultural, environmental, economic factors and contextual factors, and respond to deep-rooted influences and beliefs which are likely to influence health-related behaviour (Emmons et al, 2005, Netto et al, 2007; Sun et al, 1999)
- Offer ongoing support to participants who have initiated behavioural changes (Netto et al, 2007; Matthews et al, 2007)
- Offer a holistic model of health (Netto et al, 2007) and non-traditional approaches to wellness (Bayne-Smith et al, 2004)
- Provide crèche facilities to encourage attendance among women (Williams et al, 1999)

9.3 Modifiable risk factors

9.3.1 Physical activity

To increase attendance at physical activity programmes:

- Organise transport facilities to increase participation in physical activity interventions (Carroll et al, 2002)
- Arrange sessions at different times in local venues to increase accessibility (Carroll et al, 2002; Taylor-Piliae)
- Consider issues that influence willingness to engage in physical activity, such as personal safety (Wililams and Sultan, 1999)

To increase the appropriateness of physical activity programmes for minority ethnic communities:

- Plan consultation sessions between physical activity instructors and participants in order to provide a suitable range of activities (Carroll et al, 2002)
- Design specific physical activity programmes for each ethnic community (Lew et al, 1999)
- Use culturally appropriate exercise in physical activity interventions (Taylor-Piliae et al, 2006)
- Apply validated walking protocols developed for preventing CVD in one ethnic group to the same ethnic group with other chronic diseases (Chiang, 2005)
- Continue exercise training to maintain benefits in insulin sensitivity (Davey, 1998; Davey et al, 2000)
- Use school-based physical education to encourage girls to participate in physical activity (Bayne-Smith et al, 2004)
- Enable individualised student training and progress (Bayne-Smith et al, 2004)

9.3.2 Smoking cessation

- Consider planning initiatives in the month before the Muslim fasting month of Ramadan to encourage Muslim smokers to give up smoking (Paton, 2003)
- Communicate with participants on an individual basis (Ma et al, 2004a)
- Consider a global campaign on smoking cessation in Ramadan given the globalisation of international communication (Ali et al, 2006)

9.3.3 Diet

- Focus interventions on adolescents rather than adults (Sun et al, 1999)
- Use practical and informal cookery clubs run locally by community members to effect dietary change (Snowdon, 1999)
- Use multiple media to disseminate information on food selection, preparation, storage and food label reading (Sun et al, 1999)
- Control fast food advertising (Sun et al, 1999)
- Educate owners and managers of restaurants and food services (Sun et al, 1999)
- Provide comprehensive college nutrition education programmes (Sun et al, 1999)
- Involve community leaders and family members in dietary initiatives (Sun et al, 1999)

10. Recommendations for evaluations of health promotion interventions for minority ethnic communities

This section is divided into three sub-sections:

- a) Cross-cutting recommendations emerging from the review relating to the evaluation of health promotion interventions
- b) General recommendations from the studies reviewed relating to the evaluation of such interventions
- c) Specific recommendations relating to the evaluation of initiatives related to physical activity, smoking cessation and diet from the studies reviewed.

10.1 Cross-cutting recommendations for more effective evaluation of health promotion interventions

- Clearly define the ethnicity of the groups targeted by the intervention, taking in account the possible influence of other variables such as gender, age and socio-economic position
- Collect and analyse ethnically disaggregated data to assess the (differential) impact of the interventions on multi ethnic samples
- Develop more rigorous qualitative means of evaluating health promotion interventions, which:
 - a) Explore the complex relationship between culture and health-related attitudes and behaviour between and within ethnic groups and sub-groups within this, including young people
 - b) Identify barriers and motivators for health-related attitudinal and behavioural change

c) Contribute to building greater theoretical understanding of the influence of culture in bringing about health-related attitudinal and behavioural change

- Develop more rigorous quantitative means of evaluating health promotion interventions including:

a) Randomised controlled trials and quasi-experimental studies with large samples, employing clear criteria for groups and intervention programmes

b) Robust measures for measuring changes in health-related behaviour in addition to self-reports

c) Longer-term studies which enable the effectiveness of interventions to be evaluated at specific intervals of up to a year or more

10.1 General recommendations relating to the evaluation of CVD and cancer prevention initiatives from the studies reviewed

- Increase ethnic diversity to understand how school-based CVD prevention programmes affect students from different backgrounds (Edmundson et al, 1996)
- Monitor long-term effects of intervention (Ma et al, 2004d; Matthews et al, 2007; Netto et al, 2007; Sun et al, 1999), for example, between six and twelve months after the intervention (Fang et al, 2006)
- Use randomised controlled trials (Ma et al, 2004a; Ma et al, 2004d; Matthews et al, 2007)
- Use a quasi-experimental design with control and intervention groups, with measurements at three and six months after the intervention (Ma et al, 2007b)
- Collect cost effectiveness data (Matthews et al, 2007)

10.1 Specific recommendations relating to the evaluation of smoking cessation initiatives

- Further research is needed to determine:
 - a) Effective means of preventing smoking in predominantly Asian American and multicultural schools and minority ethnic students
 - b) Independent effects of socioeconomic and ethnic context on impact of prevention curricula
 - c) The extent to which students internalize the norms and values of families' countries of origin (Johnson et al, 2004)
 - d) Increase understanding of the factors that contribute to smoking cessation among Asian American women (Fang et al, 2006)
- Use ways of measuring smoking other than self reports (Fang et al, 2006)
- Design studies which focus on relapse at three months (Ma et al, 2004a)

- Design studies with larger sample sizes to compare smokers and non-smokers (Ma et al, 2004b)
- Design studies with a larger, representative Asian-American group (Ma et al, 2004c)
-

10.2 Specific recommendations relating to the evaluation of physical activity interventions

- Future research needs to examine components of Chinese culture to inform the design of walking protocols (Chiang, 2005)

10.3 Specific recommendations relating to the evaluation of dietary initiatives

- Use multiple measurements of dietary behaviour (Sun et al, 1999)

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APPENDIX A; ARTICLES IDENTIFIED THROUGH ELECTRONIC SEARCHING OF DATABASES

General (6)

- (1) Andrews JO, Felton G, Hewers ME, Heath J. Use of community health workers in research with ethnic minority women. *Journal of Nursing Scholarship* 2004; 36(4):358-365. **Excluded – no intervention**
- (2) Design of the Women's Health Initiative clinical trial and observational study. The Women's Health Initiative Study Group. *Controlled Clinical Trials* 1998;(1):61-109. **Excluded – no intervention**
- (3) Fardy PS, White RE, Clark LT, Amodio G, Hurster MH, McDermott KJ et al. A Healthy People 2000 pilot study. *Journal of Cardiopulmonary Rehabilitation* 15(1):65-72, 1995;-Feb. **Included**
- (4) Kumanyika S, Grier S. Targeting interventions for ethnic minority and low-income populations. *Future of Children* Vol 16(1), 2006;(1):187-207. **Excluded – no intervention**
- (5) Peters J, Jackson M. Accessibility and use of touchscreens by black and ethnic minority groups in the Three Cities Project. *Ethnicity and Health* 2005 Aug; 10(3):199-211. **Excluded – does not discuss impact on health behaviour/status etc**
- (6) Swider SM. Outcome effectiveness of community health workers: an integrative literature review. *Public Health Nursing* 2002; 19(1):11-20. **Excluded – no intervention**

Heart health (9)

- (7) Akhtar S, Feather C, Summerscales N. Interventions to improve heart health in the Asian community. *Community Nurse* 2001 May; 7(4):13-14 **Included**
- (8) Deedwania P, Singh V. Coronary artery disease in South Asians: evolving strategies for treatment and prevention. [Review] [86 refs]. *Indian Heart Journal* 57(6):617-31, 2005;-Dec. **Excluded – no intervention**
- (9) Edmundson E, Parcel GS, Perry CL, Feldman HA, Smyth M, Johnson CC et al. The effects of the child and adolescent trial for cardiovascular health intervention on psychosocial determinants of cardiovascular disease risk behavior among third-grade students. *American Journal of Health Promotion* Vol 10(3)();pp 217-225), 1996 1996;(3):217-225 **Included**
- (10).Fardy PS, White RE, Haltiwanger-Schmitz K, Magel JR, McDermott KJ, Clark LT et al. Coronary disease risk factor reduction and behavior modification in minority adolescents: the PATH program. *Journal of Adolescent Health* 18(4):247-53, 1996. **Included**
- (11)Farooqi A, Bhavsar M. Project Dil: a co-ordinated primary care and community health promotion programme for reducing risk factors of CHD amongst the South Asian community of Leicester - experiences and evaluation of the project. *Ethnicity and Health* 2001; 6(3-4):265-270. **Included**
- (12) Ivey SL, Patel S, Kalra P, Greenlund K, Srinivasan S, Grewal D. Cardiovascular health among Asian Indians (CHAI): a community research project. *Journal of Interprofessional Care* 18(4):391-402, 2004. **Excluded – no intervention**

- (13) Bayne-Smith, M, Fardy, PS, Azzollini, A, Magel, J, Schmitz, KH and Agin, D Improvements in heart health behaviors and reduction in coronary artery disease risk factors in urban teenaged girls through a school-based intervention: The PATH Program - Commentary. American Journal of Health Promotion Vol 19(5)(pp 389-390), 2005 2005;(5):389-390. **Included**
- (14) Mathews G, Alexander J, Rahemtulla T and Bhopal R : Impact of a cardiovascular risk control project for South Asians (Khush Dil) on motivation, behaviour, obesity, blood pressure and lipids, Journal of Public Health 29(4): 388-397, 2007 **Included**
- (15) McKeigue P. Development of interventions to reduce the risk of CHD in South Asians. 116. 2000. Department of Health, Research Findings Register.
Ref Type: Report **Excluded – details of intervention not discussed in paper**
- (16) Netto G, McCoughan L and Bhatnagar, A Effective heart disease prevention: Lessons from a qualitative study of user perspective in Bangladeshi, Indian and Pakistani communities. Public Health 121: 177-186, 2007 **Included**
- (17) Schrott HG, Bittner V, Vittinghoff E, Herrington DM, Hulley S. Adherence to National Cholesterol Education Program Treatment goals in postmenopausal women with heart disease. The Heart and Estrogen/Progestin Replacement Study (HERS). The HERS Research Group.[see comment]. JAMA 277(16):1281-6, 1997;-30. **Excluded – no intervention**

Cancer (4)

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Smoking cessation (15)

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- (23) Doolan DM, Froelicher ES. Efficacy of smoking cessation intervention among special populations: review of the literature from 2000 to 2005. [Review] [82 refs]. Nursing Research 55(4 Suppl):S29-37, 2006;-Aug **Excluded – no intervention**
- (24) Crosier A. Rapid mapping study of smoking projects and services targeted at people living on low income and / or minority ethnic groups. 2001. Health

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Ref Type: Report **Excluded – description of projects**

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- (26) Ferketich AK, Wewers ME, Kwong K, Louie E, Moeschberger ML, Tso A et al. Smoking cessation interventions among Chinese Americans: The role of families, physicians, and the media. United Kingdom: Taylor and Francis, 2004. **Excluded – no intervention**
- (27) Gilpin EA, Pierce JP, Johnson M, Bal D. Physician advice to quit smoking: Results from the 1990 California Tobacco Survey. Journal of General Internal Medicine Vol 8(10)()(pp 549-553),1993. **Excluded – no intervention**
- (28) Hyland A, Garten S, Giovino GA, Cummings KM. Mentholated cigarettes and smoking cessation: findings from COMMIT. Community Intervention Trial for Smoking Cessation. Tobacco Control 11(2):135-9, 2002. **Excluded, review**
- (29) Johnson CA, Unger JB, Ritt-Olson A, Palmer PH, Cen SY, Gallaher P et al. Smoking prevention for ethnically diverse adolescents: 2-year outcomes of a multicultural, school-based smoking prevention curriculum in Southern California. Netherlands: Elsevier Science, 2005. **Included**
- (30) Ma GX, Fang C, Shive SE, Su X, Toubbeh JI, Miller S et al. A culturally enhanced smoking cessation study among Chinese and Korean smokers. International Electronic Journal of Health Education 2005 Jan 1; 8 1-10 (35 ref). **Included**
- (31) Ma GX, Toubbeh JI, Su X, Edwards RL. ATECAR: an Asian American community-based participatory research model on tobacco and cancer control. Health Promotion Practice 2004 Oct; 5(4):382-394. **Excluded - no intervention**
- (32) Ma GX, Shive SE, Tan Y, Thomas P, Man VL. Development of a culturally appropriate smoking cessation program for Chinese-American youth. Journal of Adolescent Health 35(3):206-16, 2004. **Included**
- (33) Ma GX, Lan Y, Edwards RL, Shive SE, Chau T. Evaluation of a Culturally Tailored Smoking Prevention Program for Asian American Youth. US: American Alcohol and Drug Information Foundation, 2004 **Included**
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- (38) Carroll R, Ali N, Azam N. Promoting physical activity in South Asian Muslim women through 'exercise on prescription'. Health Technology Assessment (Winchester, England) Vol 6(8), 2002 2002;(Winchester, England). **Included**
- (39) Conn VS, Minor MA, Burks KJ, Rantz MJ, Pomeroy SH. Integrative review of physical activity intervention research with aging adults. Journal of the American Geriatrics Society 2003; 51(8):1159-1168 **Excluded – no intervention**
- (40). Chiang C. The effects of a walking program on older Chinese American immigrants with hypertension. **Included**
- (41) Eves FF, Masters RSW. An uphill struggle: Effects of a point-of-choice stair climbing intervention in a non-English speaking population. International Journal of Epidemiology Vol 35(5) (pp 1286-1290), 2006 **Excluded – based in Hong Kong**
- (42) Jenum AK, Lorentzen C, Anderssen SA, Birkeland KI, Holme I, Lund-Larsen PG et al. Promoting physical activity in a multi-ethnic district - Methods and baseline results of a pseudo-experimental intervention study. European Journal of Cardiovascular Prevention & Rehabilitation Vol 10(5) (pp 387-396), 2003 **Excluded – no outcome results reported**
- (43). Lew R, Chau J, Woo JM, Nguyen KD, Okahara L, Min KJ et al. Annual walkathons as a community education strategy for the Asian American/Pacific Islander populations in Alameda County, California. Journal of Health Education 1999 Mar-Apr; 30(2): Suppl-30. **Included**
- (44) National Institute for Health and Clinical Excellence. Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling. London: National Institute for Health and Clinical Excellence (NICE) 2006;37 **Excluded – no intervention**
- (45) Taylor-Piliae RE, Haskell WL, Stotts NA, Froelicher ES. Improvement in balance, strength, and flexibility after 12 weeks of Tai Chi exercise in ethnic Chinese adults with cardiovascular disease risk factors. Alternative Therapies in Health and Medicine 2006 Mar-Apr; 12(2):50-58 **Included**
- (46). Taylor WC, Baranowski T, Young DR. Physical activity interventions in low-income, ethnic minority, and populations with disability. American Journal of Preventive Medicine 1998; 15(4):334-343 **Excluded – no intervention**

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- (47) Cassady D, Vogt R, Oto-Kent D, Mosley R, Lincoln R. The power of policy: a case study of healthy eating among children. American Journal of Public Health 96(9):1570-1, 2006. **Excluded – not looking at changes in individual health behaviour**
- (48) Fletcher A, Rake C. Effectiveness of interventions to promote healthy eating in elderly people living in the community: a review. London: Health Education Authority 1998;78 **Excluded – no intervention**
- (49) Flynn MA, McNeil DA, Maloff B, Mutasingwa D, Wu M, Ford C et al. Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with best practice recommendations. Obesity Reviews 2006; 7(Supplement 1):7-66 **Excluded – no intervention**

- (50)Snowdon WD. Asian cookery clubs: a community health promotion intervention. International Journal of Health Promotion and Education 1999; 37(4):135-136. **Included**
- (51)Sun WY, Sangweni B, Chen J, Cheung S. Effects of a community-based nutrition education program on the dietary behavior of Chinese-American college students. United Kingdom: Oxford Univ Press, 1999. **Included**
- (52)Thomas J. Nutrition intervention in ethnic minority groups. [Review] [75 refs]. Proceedings of the Nutrition Society 61(4):559-67, 2002 **Excluded – no intervention**
- (53).White M, Carlin L, Rankin J, Adamson A. Effectiveness of interventions to promote healthy eating in people from minority ethnic groups: a review. 1998. Health Education Authority / HDA. Ref Type: Report **Excluded – no intervention**
- (54)Williams J, Sultan M. Evaluation of an Asian women's healthy eating and exercise group. Journal of Human Nutrition & Dietetics Vol 12, 1999; (SUPPL. 1):91-98. **Included**
- (55)Whitlock EP, Williams SB, Gold R, Smith P, Shipman S. Screening and interventions for childhood overweight: evidence synthesis. Rockville, MD: Agency for Healthcare Research and Quality (AHRQ) 2005; 191. **Excluded – no intervention**

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- (56)Khunti K, Stone, MA, Bankart J, Sinfield P, Pancholi A, Walker S, Talbot D, Farooqi A, Davies MJ Primary prevention of type-2 diabetes and heart disease: action research in secondary schools serving an ethnically diverse UK population 2007 Details! **Included**
- (57) Ali, H, Viswanathan, PK and Rizvi, A BHF Healthy Ramadan 2005: Project evaluation, 2006. **Included**
- (58)Emmons KM, Stoddard, AM, Gutheil, C, Gonzalez Suarez E, Lobb R, Weeks, J and Bigby, JA Cancer prevention for working class, multi-ethnic adults: Results of the healthy directions health centers study. American Journal of Public Health, 95(7): 1200-1205, 2005 **Included**
- (59)Emmons KM, Stoddard, AM, Gutheil, C, Gonzalez Suarez E, Lobb R, Fletcher RH Cancer prevention for working class, multi-ethnic populations through health centers: the healthy directions study. Cancer Causes & Control 14(8): 727-737, 2003 **Excluded – does not discuss outcome measures**
- (60) Kaphingst KA, Lobb, R, Fay ME, Hunt MK, Gonzalez Suarez E, Fletcher RH, Emmons KM Impact of intervention dose on cancer-related health behaviors among working-class, multiethnic, community health centre patients. American Journal of Health Promotion 21(4): 262-266, 2007. **Included**
- (61)Croucher R, Islam S, Jarvis MJ, Garrett M, Rahman R, Shahjahan S, Howells G Oral tobacco cessation with UK resident Bangladeshi women: a community pilot investigation. Health Education Research. 18 (2):216-23, 2003. **Excluded - Bangladeshi women not a focus of the review**
- (62) Paton, A Ramadan initiative 2002, Manchester Smoking Cessation Service, 2003 **Included**

- (63) Taket, A, Kotecha, M and Belling, R Evaluation of London-wide Ramadan campaign, South Bank University London, 2003. **Included**
- (64) Chen AH, Sallis, JF, Castro, CM, Lee RE, Hickmann, SA, Williams C and Martin JE. A home-based behavioural intervention to promote walking in sedentary ethnic minority women: project WALK, 1998 **Excluded – does not identify ethnicity of participants beyond ‘ethnic minority’**
- (65) Collins R, Lee, RE, Albright, CL, King, AC Ready to be physically active? The effects of a course preparing low-income multiethnic women to be more physically active. *Health Education and Behavior*, 31(1): 47-64, 2004. **Included**
- (66) Davey GJG, Roberts JD, Patel S, Pierpoint t, Godsland IF, Davies B and McKeigue PM Effects of Exercise on Insulin Resistance in South Asians and Europeans. *Journal of Exercise Physiology* Vol 3 (2), 2000: online publication **Included**
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