

National Institute for Health and Clinical Excellence
(NICE)

Review of review-level evidence to inform the
development of NICE public health guidance for the
prevention of pre-diabetes among adults in high-risk
groups

31 August 2010

Disclaimer

In keeping with our values of integrity and excellence, Matrix has taken reasonable professional care in the preparation of this report. Although Matrix has made reasonable efforts to obtain information from a broad spectrum of sources, we cannot guarantee absolute accuracy or completeness of information/data submitted, nor do we accept responsibility for recommendations that may have been omitted due to particular or exceptional conditions and circumstances.

Confidentiality

This report has been prepared for the client within the terms of our contract, and contains information which is proprietary to Matrix and confidential to our relationship. This may not be disclosed to third parties without prior agreement.

Except where permitted under the provisions of confidentiality above, this document may not be reproduced, retained or stored beyond the period of validity, or transmitted in whole, or in part, without Matrix Knowledge Group's prior, written permission.

© Matrix Knowledge Group, 2010

Any enquiries about this report should be directed to enquiries@matrixknowledge.com

Authors

Alison O'Mara, Isaac Marrero-Guillamón, Will Parry, Chris Cooper, and Theo Lorenc

Acknowledgements

The review team would like to thank the team at NICE for their support, which consisted of Clare Wohlgemuth, Ruaraidh Hill, Catherine Swann, Daniel Tuvey, Adrienne Cullum, and Karen Peplow. Denise Rea, Alison Martin, and Myriam Lugon at Matrix Evidence assisted in the preparation of the final report.

Declaration of authors' competing interests

No authors have competing interests.

Contents

1.0	Executive summary	6
1.1	Introduction	6
1.2	Methods	6
1.3	Findings	7
1.4	Discussion	10
2.0	Aims and background	13
2.1	Objectives and rationale	13
2.2	Research questions	14
3.0	Methods	15
3.1	Searching	15
3.2	Screening	15
3.3	Quality assessment	16
3.4	Data extraction	17
3.5	Case studies	17
3.6	Data synthesis and presentation	18
4.0	Summary of included reviews	19
4.1	Flow of literature through the review	19
4.2	Summary of included reviews	20
4.3	Quality of the included reviews	20
4.4	Applicability	23
5.0	Findings	24
5.1	Findings: Effectiveness	24
5.2	Findings: Tailoring Interventions for BME and low income samples	35
5.3	Findings: Barriers and facilitators	40
6.0	Discussion and summary	43
6.1	Strengths and weaknesses of the review of reviews	43
6.2	Gaps in the evidence	43
6.3	Implications of findings	44
6.4	Findings in context	45
6.5	Conclusions	46

7.0	References	47
7.1	Included reviews	47
7.2	Studies excluded on full text	48
8.0	Appendix A. Search Strategy	52
9.0	Appendix B. Screening checklists	68
9.1	Screening checklist – abstracts	68
9.2	Screening checklist – full text articles	69
10.0	Appendix C. Evidence tables	70
11.0	Appendix D. Studies excluded on full text	96
12.0	Appendix E. Example quality assessment form	100
13.0	Appendix F. Primary studies included in the reviews	101
14.0	Appendix G. Abbreviations used in the report	106

1.0 Executive summary

1.1 Introduction

This report presents the findings of a systematic review of review-level evidence concerning the prevention of pre-diabetes (raised and impaired glucose levels) in populations/groups at higher risk (black and minority ethnic [BME] or low socioeconomic status [SES]) using community- and population-level interventions.

The primary research question for the review was:

- What is known from review-level evidence about the effectiveness and cost-effectiveness of population- and community-level interventions to improve modifiable risk factors associated with pre-diabetes and type 2 diabetes among BME and low-income / low-SES groups?

The secondary research questions were:

- What is known about promising ways to tailor interventions for diabetes risk factors to BME or low-income groups, for outcomes including improved BMI, physical activity levels, and blood pressure?
- What are the barriers/facilitators to the effectiveness of interventions?

1.2 Methods

To locate evidence, a range of databases and websites indexing relevant literature were searched. Review reports were included if they:

1. were related to diabetes or pre-diabetes, obesity, healthy eating or dietary behaviour relevant to diabetes, or physical activity. Studies containing populations that already had diabetes were excluded;
2. were reviews of literature;
3. were published in 1999 or later;
4. were published in English;
5. included studies of adults (18-74 years);
6. included evaluations of interventions using any design (e.g. RCT, comparative trial, one-group);
7. had a focus on population- or community-level interventions; and
8. had a focus on either (i) low-SES or disadvantaged groups or (ii) any BME group relevant to the UK.

The quality of included reviews was assessed and data were extracted using adaptations of the standard tools for NICE public health evidence reviews of reviews.

1.3 Findings

Ten reviews were included in the evidence synthesis. None were authored by researchers in the UK, or were written from a UK perspective. The findings of the reviews are summarised in the evidence statements below, with the overall quality rating for each review: (++) , high quality; (+) , medium quality; or (-) , low quality.

Evidence statement 1: Effectiveness of physical activity interventions

Weak evidence (Banks-Wallace and Conn 2002 [+]; Whitt-Glover and Kumanyika 2009 [-]) suggests that some physical activity interventions are effective at reducing weight in adult African American populations (ages ranged from 18 to 79 years across primary studies and reviews). Interventions involved structured group exercises (e.g., walking, aerobics), behavioural counselling, education, and motivation sessions. Settings included churches, clinics/hospitals, community recreation centres, and fitness centres. Those delivering the interventions were African American professionals and trained staff from the target community (Banks-Wallace & Conn 2002 [+]); or members of the community, professional instructors, or church leaders (Whitt-Glover and Kumanyika 2009 [-]). Physical activity and weight loss often improved when looking at within-group differences, but significant between-group differences were rarely reported. However, poor primary study designs and inconclusive review-level findings mean that this question requires further research.

Applicability

No high quality reviews were identified. Importantly, both reviews on physical activity interventions were focused on African American samples. The transferability of evidence from this group to BME populations in the UK is uncertain.

Evidence statement 2: Effectiveness of dietary interventions

Weak evidence suggests that dietary interventions (primarily nutrition and diet education) might be effective in reducing fat intake for low income or disadvantaged populations (Ammerman et al. 2001 [++]; Oldroyd et al. 2008 [++]; Sánchez-Johnsen 2005 [-]). Evidence of effectiveness was generally limited to within-group changes in outcomes, though there were some instances where between-group differences were measured and significant at the 5% level.

Ammerman et al. (2001 [++]) found that the dietary fat intake of low-income African American and Hispanic mothers (mean age 33 to 35 years) significantly improved after 12 weekly dietary education sessions. Oldroyd et al. (2008 [++]) found that two dietary education programmes were successful in reducing fat intake, while a third intervention combining physical activity and dietary education was not successful in reducing fat consumption. A low quality review (Sánchez-Johnsen 2005 [-]) indicated that dietary interventions, often using media such as culturally-relevant television programmes or set in community locations, might help reduce blood pressure in African American women.

In summary, although there were some higher quality reviews that examined dietary interventions (Ammerman et al. 2001 [++]; Oldroyd et al. 2008 [++]), the effects on dietary fat intake appeared to be small and inconsistent across studies. Also, few relevant primary studies were included in the reviews from which these conclusions were drawn. Although two of the reviews discussed the potential value of culturally tailoring the interventions (Oldroyd et al. 2008 [++]; Sánchez-Johnsen 2005 [-]), particularly in terms of recruitment and retention, none of the reviews were able to determine from the primary evidence whether tailoring the interventions was effective.

Applicability

The relevant studies included in these reviews are all from the US, and so applicability of their findings to the UK is uncertain. However, there is no particular reason to think that the findings are not applicable. The relevant primary studies of two of the reviews only focused on females (Ammerman et al. 2001 [++]; Sánchez-Johnsen 2005 [-]), making it difficult to generalise the conclusions to males.

Evidence statement 3: Effectiveness of multi-component interventions

Inconsistent evidence from five reviews (Bronner and Boyington 2002 [+]; Eastridge 2009 [+]; Gao et al. 2008 [+]; Thompson et al. 2009 [+]; Yancey et al. 2004 [-]) suggests that multi-component interventions have only a small effect on managing weight loss in BME groups.

Eastridge (2009 [+]) reported that multi-component interventions for African American participants aged 35 to 62 years had significant between-group reductions in body mass index (BMI), improvements in food selection habits, and improved quality of life. Thompson et al. (2009 [+]) found that church-based weight management interventions for African American participants (aged 22 to 56 years) led to significant, positive within-group changes in weight/BMI, although the magnitude of improvement was not reported. Gao et al. (2008 [+]) reported that multi-component interventions (including education, counselling, diet, and environmental changes) for Chinese participants in mainland China (typically over 35 years of age) showed some significant decreases in BMI in the intervention groups.

Bronner and Boyington (2002 [+]) did not find consistent reductions in weight in their review of evaluations of interventions for overweight African American women (age range 25 to 62 years). However, Bronner and Boyington (2002 [+]) reported that those interventions that involved a follow-up maintenance programme and some kind of open participant commitment were more likely to lead to persistent weight loss at follow-up compared with the end of the initial study, while longer durations of intervention were also associated with greater weight loss. Yancey et al. (2004 [-]) also reported inconsistent findings across their review of studies set in the US on interventions involving a wide range of diet and physical activity components.

Given the inconsistencies, more rigorous research is required, although some promising interventions were identified. Education/enhanced care studies that promote

behaviour change by giving participants additional monitoring and education to improve their understanding of diabetes can be effective (Eastridge 2009 [+]). Also, those that use formal adult learning principles (guided self-discovery of participants' needs and development of skills to manage them); group sessions; a coordinated team of professionals; and behavioural modification techniques, can also be effective (Bronner and Boyington 2002 [+]).

Applicability

None of the reviews in this section include studies from the UK. Three of the five reviews were focused on African Americans and one focused on Chinese people in China. There are no specific reasons why these might not transfer to the UK setting.

Evidence statement 4: Tailoring interventions for BME and low income populations

No evidence was available on the effectiveness of tailoring interventions for different cultural groups. Five reviews (Banks-Wallace and Conn 2002 [+]; Bronner and Boyington 2002 [+]; Whitt-Glover and Kumanyika 2009 [-]; Thompson et al. 2009 [+]; Yancey et al. 2004 [-]) reported different types of tailoring for African American samples without evaluation of their effectiveness in recruiting or retaining participants. Tailoring included the use of trained staff from the target community (Banks-Wallace and Conn 2002 [+]), the use of culturally-relevant TV shows (Whitt-Glover and Kumanyika 2009 [-]), or involving the community in developing interventions through focus groups (Thompson et al. 2009 [+]).

As such, it is unclear from the African American-focused reviews included here whether culturally tailored interventions have better outcomes for participants than interventions that are not adapted. However, promising approaches were identified. Specifically, Bronner and Boyington 2002 [+] noted that the retention of African American female participants in weight loss programmes was influenced by the amount of support the participants had from family and friends, and their commitment to and expectations of the programme.

Applicability

None of the reviews include studies from the UK. Four of the five reviews were focused on African Americans and the fifth was on various BME populations in the US. There are no particular reasons to believe that the general premise of cultural adaptations is not transferable, as long as the adaptations are appropriate for the context.

Evidence statement 5: Barriers to effectiveness: intervention administrators

Inconsistent evidence from three medium quality reviews (Banks-Wallace and Conn 2009 [+]; Bronner and Boyington 2002 [+]; Eastridge 2009 [+]) suggests that the intervention administrator does not necessarily impact upon the effectiveness of weight loss and physical activity interventions for African American groups (mostly female). However, primary studies within the reviews rarely directly compared the efficacy of different intervention administrators, so it is almost impossible to say whether one administrator might be better than another.

Applicability

There is some uncertainty as to whether the findings would be applicable in UK settings. This is because not all types of people delivering interventions in the UK were covered in the review literature.

Evidence statement 6: Barriers and facilitators to retention of participants in primary studies in the reviews

There is **inconsistent evidence** available to determine the critical barriers and facilitators to participant retention in a programme. Only two studies briefly addressed this issue: one study was on weight loss interventions for African American women (Bronner and Boyington 2002 [+]) and the other was on physical activity programmes for African American adults (Whitt-Glover and Kumanyika 2009 [-]).

There was mixed evidence relating to the use of individualised elements such as goal-setting and self-monitoring for African American groups: Bronner and Boyington (2002 [+]) reported that these approaches led to better retention of participants but Whitt-Glover and Kumanyika (2009 [-]) were unable to find clear evidence of benefit from these approaches. More data are required, particularly in relation to low SES groups that might not have the resources to participate in such interventions.

Applicability

Barriers to persistent engagement in an intervention (e.g., geographical access to interventions in rural areas; the cost of healthcare in different systems) might be of different importance in the UK and the US. However, the themes extracted from these reviews (i.e., varied and individualised elements) are likely to be transferable to the UK.

Evidence statement 7: Effects of evaluation design

Weak evidence on evaluation design means that we cannot draw any firm conclusions. Whitt-Glover and Kumanyika (2009 [-]), in a review of physical activity programmes for African American adults, suggested that objective measures of intervention outcomes are more likely to show a positive effect than are self-reported outcomes. However, this was a low quality review and requires further exploration.

Applicability

There is no reason to believe that this finding would not be transferable to the UK, despite being based on a review of studies on African American participants.

1.4 Discussion

1.4.1 Evidence gaps

A number of gaps were found in the available evidence, including:

- No reviews were identified that were based on UK data. The overwhelming majority of primary-level evidence was from the US.
- Evidence on BME and low SES populations other than African Americans was scarce.
- Reviews did not report sub-group analyses (e.g., by gender or BME group). The only breakdown was usually by age, in which sub-groups were “children” and “adults”, which was not substantively useful for this review.
- There is a lack of rigorous, well-designed evaluations of preventative interventions for pre-diabetes. Many of the primary studies seemed to have inadequate randomised controlled trial designs and insufficient follow-up periods.
- We did not identify any reviews reporting cost-effectiveness data.

1.4.2 Conclusions

Overall, we found insufficient evidence to draw strong conclusions to the three review questions:

- From the evidence base identified, we can determine little from review-level evidence about the effectiveness and cost-effectiveness of population- and community-level interventions to improve modifiable risk factors associated with pre-diabetes among BME and low-income / low-SES groups. This is partly due to the generally low-quality evidence reviews in this field and to the lack of evidence on BME/low SES groups other than African American populations. However, some promising directions for practice are highlighted below.
- There is some evidence that tailoring interventions for diabetes risk factors to BME or low-SES groups can improve outcomes including BMI, physical activity levels, and blood pressure. However, this is inconsistent both within and across reviews, and predominantly focused on cultural adaptations for African American samples.
- There are likely to be numerous barriers and facilitators to the effectiveness of interventions. Unfortunately, there is insufficient review-level evidence on the effects of intervention administrators, barriers to retention of participants in primary studies in the reviews, and the effects of evaluation design, to draw any definitive conclusions.

Some promising messages emerged from the evidence for practice. These are:

- Multi-component interventions (e.g., those that target both physical activity and dietary habits) are likely to generate better outcomes than single-component interventions.
- Interventions often attempt to be culturally sensitive, such as using members of the target community to deliver the intervention. For some individuals, this will be a respected member of the community (e.g., a religious leader), but this is not necessarily the case. However, the reviews rarely reported whether such techniques were effective at recruiting and retaining participants, and so it is unclear whether tailoring is effective. Nonetheless, in the absence of evidence

to the contrary, it would seem sensible to consider cultural adaptations as a way to recruit and retain participants.

- A range of methods needs to be used to increase accessibility to the intervention, which might include innovative approaches such as television and workplace programmes.
- Strategies to promote individual motivation to change and family/ friend support for the programme are likely to be important factors promoting success for many people.

2.0 Aims and background

2.1 Objectives and rationale

An estimated seven million people in the UK have pre-diabetes, and this number is rising.¹ Pre-diabetes is indicated by the presence of moderately raised blood glucose and impaired glucose tolerance (IGT) and/or impaired fasting glucose (IFG). While not everyone with pre-diabetes develops diabetes, studies have shown that most people with pre-diabetes will develop diabetes within 10 years, unless they undergo lifestyle changes such as reducing body weight.² Furthermore, people with pre-diabetes are at increased risk of developing cardiovascular disease.³

The risk of developing pre-diabetes, and of progressing to type 2 diabetes, is distributed unequally across the population.⁴ For example, the risk of progression from pre-diabetes to type 2 diabetes may be up to two to three times greater in people of South Asian ethnicity compared with white people.⁵ Around half of diagnosed cases of diabetes are in people from disadvantaged communities, who are less likely than the more affluent to access appropriate care.⁶ The most deprived socio-economic (SES) groups in the UK are 2.5 times more likely to develop diabetes than the least disadvantaged groups, and people from black and minority ethnic (BME) groups up to six times more likely.⁷ Further, complications of diabetes such as heart disease, stroke and kidney damage are three and a half times higher in lower SES groups than in higher SES groups.⁸ Ethnic inequalities in the precursors of type 2 diabetes can be observed from an early age.⁹

As well as socio-demographic factors, risk factors for pre-diabetes include obesity (body mass index > 30 kg/m²), central adiposity (abdominal fatness; a particular risk factor), poor diet, a sedentary lifestyle, and genetic factors.¹⁰ There is thus considerable potential for interventions to improve dietary and physical activity behaviour, or to prevent and reduce overweight and obesity, to impact positively on the development of

¹ Davies, M. et al., 2008. *The handbook for vascular risk assessment, risk reduction and risk management. Report for the National Screening Committee*. Leicester: University of Leicester. Department of Health, 2008. *Five years on: Delivering the diabetes national service framework*. London: Department of Health.

² National Institute of Diabetes and Digestive and Kidney Diseases (2010). Insulin resistance and pre-diabetes. [Online] Available from: <http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/#prediabetes> (accessed 19th May 2010).

³ Ford, E.S., et al., 2010. Pre-diabetes and the risk for cardiovascular disease: a systematic review of the evidence. *Journal of the American College of Cardiology*, 55(13), 1310-1317.

⁴ Department of Health, 2008. *Five years on: Delivering the diabetes national service framework*. London: Department of Health.

⁵ Diabetes UK (2009). Seven million in UK have pre-diabetes. [Online] Available from: http://www.diabetes.org.uk/About_us/News_Landing_Page/7m-in-UK-have-prediabetes/ (accessed 19th May 2010).

⁶ Diabetes UK (2006) *Diabetes and the disadvantaged: reducing health inequalities in the UK. A report by the All Party Parliamentary Group for Diabetes and Diabetes UK*. London: Diabetes UK.

⁷ Ibid.

⁸ Ibid.

⁹ Whincup, P. H., et al, 2010. Early emergence of ethnic differences in Type 2 diabetes precursors in the UK: The Child Heart and Health Study in England (CHASE Study). *PLoS Medicine* 7(4), e1000263.

¹⁰ Heikes, K.E. et al., 2008. Diabetes risk calculator. *Diabetes Care*, 31(5), 1040-1045.

pre-diabetes. Among these interventions, population- and community-level interventions that target the social determinants of behaviour are particularly promising, since they have the potential to reduce health inequalities and reach individuals and communities who may be less likely to use more individually-focused services.

The National Institute for Health and Clinical Excellence (NICE) has been asked by the Department of Health (DH) to develop guidance on the prevention of type 2 diabetes mellitus among high-risk groups. This referral was divided into two pieces of guidance, the first on preventing 'pre-diabetes' (raised and impaired glucose levels), and the second on preventing the progression from pre-diabetes to type 2 diabetes. This review relates to the first piece of guidance. It focuses on population- and community-level ('upstream') interventions for the prevention of pre-diabetes among high-risk groups, particularly BME and low-income or low-SES groups. Given the likely extent and complexity of the evidence, a review of reviews (tertiary research) is an effective way to provide a robust overview of the evidence base as a whole. This report systematically synthesises reviews of the relevant research to inform this topic.

2.2 Research questions

The primary research question for the review was:

- What is known from review-level evidence about the effectiveness and cost-effectiveness of population- and community-level interventions to improve modifiable risk factors associated with pre-diabetes and type 2 diabetes among minority ethnic and low-income / low-SES groups?

The following secondary research questions were also developed to interrogate the data further, to the extent that relevant data were available:

- What is known about promising ways to tailor interventions for diabetes risk factors to BME or low-income groups, for outcomes including improved BMI, physical activity levels, and blood pressure?
- What are the barriers/facilitators to the effectiveness of interventions?

3.0 Methods

The review was conducted in accordance with the second edition of *Methods for the development of NICE public health guidance* (NICE 2009).

3.1 Searching

Searches were conducted for English language reviews published between January 1999 and July 2010. The following database sources were searched for this review:

- ASSIA via CSA
- CINAHL via EBSCO Host
- Cochrane Database of Systematic Reviews (Cochrane Reviews) via Wiley Interscience
- DARE (Database of Abstracts of Reviews of Effectiveness) and HTA via CRD (website)
- DoPHER (Database of Public Health Effectiveness Reviews) via EPPI-Centre (website; limited search)
- Embase via OVID
- ERIC via CSA
- HMIC via OVID
- Medline via OVID
- Medline in Process (date-limited search) via OVID
- PsycINFO via OVID
- Social Policy and Practice via OVID

The full search strategies for each database source can be found in Appendix A. Members of the Programme Development Group were also consulted to locate relevant literature (see Table A2 in Appendix A). Web searching, journal hand-searching, and citation chasing were not carried out for this review.

3.2 Screening

All records from the searches were uploaded into a database and duplicate records were removed. Initially, the records were screened on title and abstract. Where no abstract was available, a web search was first undertaken to locate one; if no abstract could be found ($n = 17$, 1% of the abstracts), records were screened on title alone¹¹. A round of pilot screening was conducted on a random sample of ten studies to test and refine the inclusion criteria. Once the inclusion criteria were agreed upon, all records were screened by four reviewers independently using the abstract inclusion checklist in Appendix B, and any differences were resolved by discussion and reference to a third

¹¹ The 17 studies for which we did not have abstracts were clearly not relevant from the title. Most of them were based on infants or children; several dealt with surgery or other treatments such as calcium supplementation; and several were focused on pregnancy or childbirth (e.g., pre term infants, vitamin supplements).

reviewer if necessary, with 10% double screening. Agreement before reconciliation for the abstract screening was 97.6%. Cohen's kappa¹² could not be computed reliably because the numbers in each cell of the 2x2 matrix were unevenly distributed.

The full text of records whose abstracts met the inclusion criteria, or for which it was unclear whether they met the criteria, were retrieved. The full text papers were then re-screened by two reviewers independently using the full text inclusion checklist in Appendix B, and any differences resolved by discussion and reference to a third reviewer if necessary. All full-text items were double-screened.

The summarised inclusion criteria are presented below. Screening was hierarchical, such that answering 'yes' to a question indicates that the researcher should proceed down the list to the next question.

1. Does the review relate to diabetes or pre-diabetes, obesity, healthy eating or dietary behaviour relevant to diabetes, or physical activity? (Studies exclusively focusing on people who already have diagnosed type 2 diabetes should be excluded)
2. Is the review a review of literature?
3. Was the review published in 1999 or later?
4. Is the review report published in English?
5. Does the review include studies of adults (18-74 years)?
6. Does the review include evaluations of interventions using any design (e.g. RCT, comparative trial, one-group)?
7. Does the review have an explicit focus on population- or community-level interventions?
8. Does the review have an explicit focus on either (i) low-SES or disadvantaged groups or (ii) any BME group relevant to the UK?

At the full text screening stage, an additional criterion was introduced. We excluded reviews in which fewer than 50% of the primary studies included within each subsection of the review met our aforementioned inclusion criteria. In other words, half or more of the primary studies discussed in a review (or in at least one of its subsections) had to be relevant for our review for the review to be included in our study. This was adopted to help ensure that conclusions drawn from each review were based on sufficiently relevant primary studies.

3.3 Quality assessment

All included reviews were quality-assessed using an adaptation of the tool in Appendix J of the *Methods for the development of NICE public health guidance* (NICE 2009). On the basis of the answers to these questions, each review was given an overall quality

¹²It has been argued that Cohen's kappa or similar measures may under-rate reliability where scores are highly asymmetrical, i.e. numbers for one code (e.g. exclude) are much higher than for the other(s) (e.g. include) (Feinstein and Cicchetti 1990).

rating: (++) , high quality; (+) , medium quality; or (-) , low quality. The tool was completed independently by two reviewers for a randomly selected sample of three records and then compared. For the other records, the tool was completed by one reviewer and checked by another, with any disagreements resolved by discussion. The results of quality assessment are presented in Section 4.3; an example of a completed quality assessment form is presented in Appendix E.

3.4 Data extraction

Data were extracted from included reviews using the tool for review-level studies in Appendix K of the *Methods for the development of NICE public health guidance* (NICE 2009). The tool was completed independently by two reviewers for three randomly selected records, and then compared. For the other records, the tool was completed by one reviewer and checked by another, with any disagreements resolved by discussion. Data for each included review were extracted and are presented in the evidence tables (Appendix C).

It is important to note that we did not extract the information for each primary study included in the reviews. We summarised details of the included primary studies (e.g., by describing the age range of participants reported by the reviewer across the studies) using the details provided by the reviewers. Several reviews provided very little detail about the included studies and therefore the information about specific populations and interventions reported here is less detailed for some reviews than others.

3.5 Case studies

We identified eight primary studies within the ten included reviews that illustrate key points made in the review-level evidence, which we refer to as case studies. These primary studies were handpicked rather than identified through systematic searching. Case studies were selected if they:

- illustrated a key point or were examples of a trend identified in the review-level evidence;
- had an important implication, in terms of either what to do or what not to do in offering preventative interventions to at-risk groups; and
- appeared to be methodologically sound.

We retrieved full text versions of the eight primary studies. The case studies did not undergo the rigorous data extraction process that the reviews did (i.e., there are no evidence tables for case studies), but we conducted an informal quality assessment of the primary studies. To avoid placing undue weight on the findings of the primary research, the case studies were *not* used to draw conclusions—they were used to provide examples or possible explanations of trends observed across the reviews. This might mean that the findings of some case studies appear to be slightly inconsistent with the review-level evidence.

3.6 Data synthesis and presentation

The synthesis is organised by research question. Within the research questions, summaries of the reviews are presented. Primary research case studies are used to illustrate key points drawn from the review-level evidence. The case studies are presented in boxes at the end of each subsection so that they are clearly differentiated from the main review-level evidence text.

The reviews were used to derive 'evidence statements' about interventions. The evidence statements reflect the strength of the conclusions made by the reviews, the quality of the review, and any inconsistencies across reviews. Evidence statements were categorised in terms of the overall strength (quality, quantity, and consistency) of the evidence. The categories were those advocated in the *Methods for the development of NICE public health guidance (second edition)* (NICE 2009):

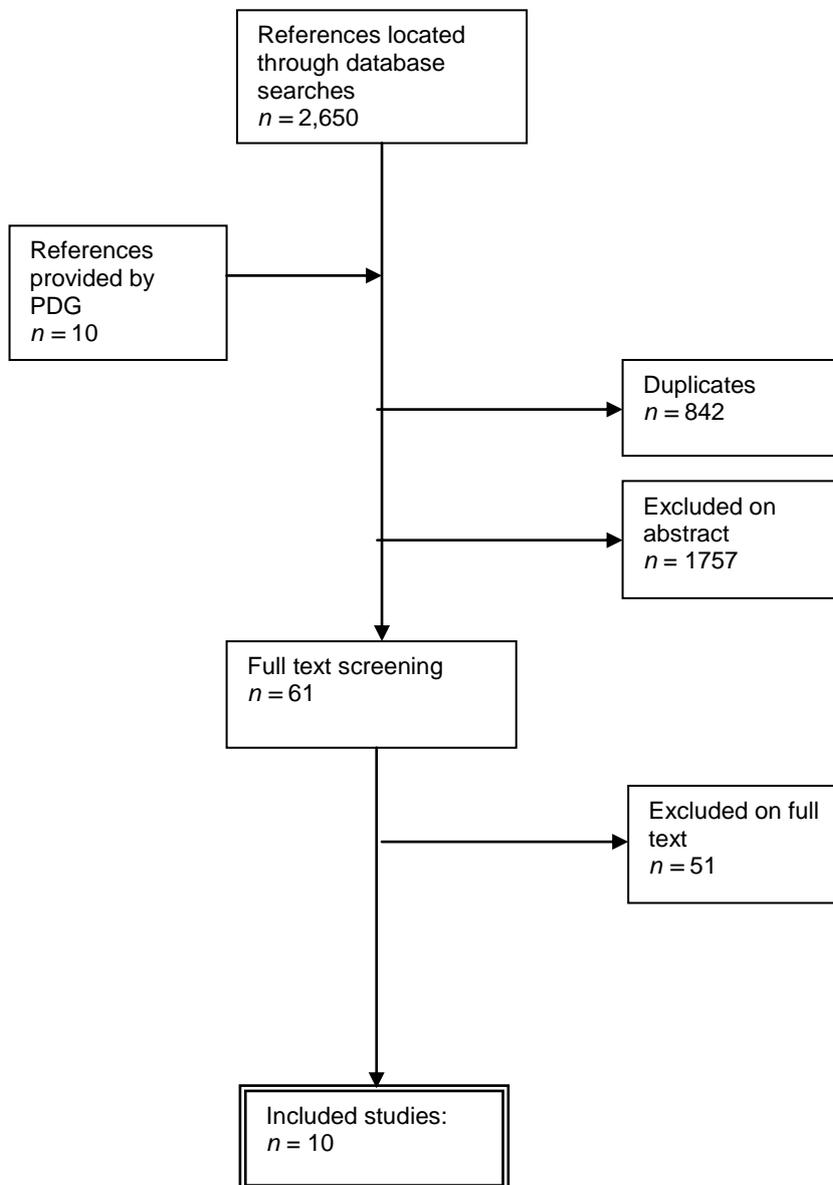
- **No evidence:** used where no evidence was found on a particular issue of interest.
- **Weak evidence:** used where only low quality [-] reviews were located or the findings of moderate [+] and high quality [++] reviews were weak (i.e., small effects).
- **Moderate evidence:** used where evidence was of moderate quality [+] or where the findings of moderate [+] and high quality [++] reviews suggested moderate effects.
- **Strong evidence:** used where evidence was of high quality [++] or where the findings of high quality [++] reviews suggested strong effects.
- **Inconsistent evidence:** used where the findings of reviews were inconsistent in their conclusions—within and/or between reviews.

4.0 Summary of included reviews

4.1 Flow of literature through the review

We located 2,650 references through database searches and an additional 10 references were provided by the Programme Development Group (PDG). Of these, 842 were duplicates, meaning that 1,808 references were screened on title and abstract, and 1,757 were excluded. The remaining 61 references proceeded to full text screening. All of them were successfully retrieved; 51 were excluded and 10 included.

Figure 1. Flow of literature throughout the review



4.2 Summary of included reviews

This section provides a brief overview of the characteristics of the included reviews. Information on the review aims, methods, and contexts are presented in Table 1.

Ten reviews were included in the review of reviews. Of these:

- nine reported on studies that were **US-based** and one on studies based in **China** (Gao et al., 2008);
- six targeted **African-American** populations (Banks-Wallace & Conn, 2002; Bronner & Boyington, 2002; Eastridge, 2009; Sánchez-Johnsen, 2005; Thompson et al., 2009; Whitt-Glover & Kumanyika, 2009); two focused on **low-SES populations** (Ammerman et al., 2001; Oldroyd et al., 2008); one focused on **various BME communities** (Yancey et al., 2004); one focused on the **Chinese** population in China (Gao et al., 2008);
- two reviews discussed **dietary** interventions (Ammerman et al., 2001; Oldroyd et al., 2008); two focused on **physical activity** interventions (Banks-Wallace & Conn, 2002; Whitt-Glover & Kumanyika, 2009) and the rest ($n = 6$) on some combination of the two.

4.3 Quality of the included reviews

The results of quality assessment are presented in Table 2. The two areas in which many reviews received low scores were the quality of the included primary studies and the rigorousness of the literature searches.

Two reviews were judged to be of high quality [++], five of medium quality [+] and three of low quality [-], as follows:

- High quality [++]: Ammerman et al., 2001; Oldroyd et al., 2008.
- Medium quality [+]: Banks-Wallace & Conn, 2002; Bronner & Boyington, 2002; Eastridge, 2009; Gao et al., 2008; Thompson et al., 2009.
- Low quality [-]: Sánchez-Johnsen, 2005; Whitt-Glover & Kumanyika, 2009; Yancey et al., 2004.

Table 1. Summary of included reviews (n = 10)

Review reference	Aim	Population targeted	Country	Overall review quality
Ammerman et al. 2001	To review and synthesise the existing knowledge base on interventions to alter dietary behaviour related to cancer risk. Specifically, the review aimed to address the effectiveness of the different interventions; their efficacy by population subgroup, and their cost-effectiveness.	Low-income mothers (mean ages 33-35) and their children	US	++
Banks-Wallace & Conn 2002	To review trials of interventions aimed at increasing levels of physical activity among African American women.	African American women (ages reported across primary studies ranged from 18 to 79)	US	+
Bronner & Boyington 2002	To examine studies of weight-loss interventions aimed at overweight African American women in order to: (a) identify elements that are associated with weight loss, (b) describe the behaviour modification elements and (c) produce a list of lessons that can be learned for future planning of interventions for this population.	African American women (mean ages 25-62)	US	+
Eastridge 2009	To describe and assess randomised controlled trials of interventions to reduce peripheral arterial disease risk factors among African Americans.	African American, mostly female (mean ages 35-62)	US	+
Gao et al. 2008	To identify effective community-based interventions to reduce obesity and overweight in Mainland China.	Chinese (most primary studies had samples age >35 years)	China	+
Oldroyd et al. 2008	To determine whether nutrition interventions widen inequalities by affecting dietary outcomes differentially with respect to SES.	Low SES adults defined as BME, low income or low education (age range 4-79)	US	++
Sánchez-Johnsen 2005	To describe the literature on smoking, obesity/ weight control and weight concerns in smokers, with a particular attention to black women smokers.	African American, mostly female (adults; age range unclear)	US	-
Thompson et al. 2009	To examine the use of church-based interventions designed for African Americans in the community for the management of overweight and obesity and prevention of type 2 diabetes and cardiovascular disease.	African American, mostly female (mean ages 44-56)	US	+
Whitt-Glover & Kumanyika 2009	To identify characteristics of effective interventions designed to increase physical activity or fitness among African Americans.	Men, women, children or communities identified as Black or African American (ages ranged from 18 to 91 years)	US	-
Yancey et al. 2004a	To review studies of population-based interventions targeting obesity among BME in the US	BME communities: African American, Asian, Latino, American Indian or Alaskan Native (unclear age range)	US	-

Note. [++] denotes high quality, [+] denotes medium quality, [-] denotes low quality

Table 2. Quality appraisal of the included reviews

	1. Does the review address a clearly stated and focused research question/s?	2. Is there enough information to be able to determine whether the included studies meet the review of review's aims?	3. Are the inclusion criteria specific enough to create a coherent sample of studies?	4. Is the quality of included studies appropriately addressed and reported?	5. Does the review use an appropriate analytical methodology?	6. Are the primary studies included in the review relevant to the aims of the review of reviews?	7. Is the literature search sufficiently rigorous to identify all the relevant studies?	Overall review quality score
Ammerman et al. 2001	++	++	++	++	++	+	+	++
Banks-Wallace & Conn 2002	++	++	++	-	+	++	-	+
Bronner & Boyington 2002	++	++	++	-	+	+	-	+
Eastridge 2009	++	++	++	-	+	+	+	+
Gao et al. 2008	++	+	++	-	+	+	+	+
Oldroyd et al. 2008	++	++	+	+	++	+	-	++
Sánchez-Johnsen 2005	+	-	+	-	-	+	NR	-
Thompson et al. 2009	++	+	++	-	+	++	-	+
Whitt-Glover & Kumanyika 2009	++	++	++	-	-	-	-	-
Yancey et al. (2004a)	++	-	+	-	-	++	+	-

Note. NR = not relevant

++ All or most of the checklist criteria have been fulfilled; where they have not been the conclusions are very unlikely to alter

+ Some of the checklist criteria have been fulfilled, where they have not, or are not adequately described, the conclusions are unlikely to alter

- Few or no checklist criteria have been fulfilled and the conclusions are likely to alter

4.4 Applicability

Most of the reviews reported on studies that were conducted in the US, and none of them synthesised UK evidence or were written from a UK perspective. There may be some challenges in generalising findings from non-UK studies in terms of both ethnicity and SES.

SES can pose a concern for transferability of findings where the different countries have different models of healthcare provision, costs of education, and other public services. For instance, the relatively high costs of healthcare in the US could preclude some low income people from seeking or obtaining adequate health care and advice, whereas this might be less of an issue in the UK. Different levels of formal education or literacy between the countries might mean that the certain aspects of some interventions might be more or less successful in the different countries.

Race and ethnicity can also undermine the transferability of findings from US to UK contexts. According to the 2001 UK Census¹³, there were 4.6 million minority ethnic people in the UK (roughly 7.9 per cent of the total population of the UK). The largest minority ethnic group were Indians (1.8% of UK population), followed by Pakistanis, those of mixed ethnic backgrounds, Black Caribbeans, Black Africans and Bangladeshis. The remaining minority ethnic groups (e.g., Chinese) each accounted for less than 0.5 per cent of the total UK population. In contrast, according to the 2000 US Census¹⁴, roughly 22.9% of the total population of the US were from BME groups. African Americans, which include any of the Black race groups of Africa¹⁵, constituted 12.9% of the US population. These figures have two potential implications for this review:

1. The ethnic minorities in the UK are quite different from those in the US. It is unclear whether cultural or biological differences between the ethnic groups that are most prominent in the UK (e.g., Indians, Pakistanis) and those in the US (e.g., African Americans) would lead to different levels of engagement or impact on the effectiveness of different intervention types.
2. African Americans are a much larger proportion of the population in the US than are BME groups in the UK. This might influence the degree to which the ethnic minorities in the two countries are included in society and can access the available services.

¹³ Office of National Statistics (2001). *Ethnicity*. Accessed at <http://www.statistics.gov.uk/cci/nugget.asp?id=273> on 2 August 2010.

¹⁴ US Census Bureau (2000). *Census 2000 Summary File 1*. Accessed at http://factfinder.census.gov/servlet/QTTTable?_bm=y&-geo_id=01000US&-qr_name=DEC_2000_SF1_U_QTP5&-ds_name=DEC_2000_SF1_U on 2 August 2010.

¹⁵ McKinnon, Jesse. *The Black Population: 2000 United States Census Bureau*. United States Census Bureau. Accessed at <http://www.census.gov/prod/2001pubs/c2kbr01-5.pdf> on 2 August 2010.

5.0 Findings

5.1 Findings: Effectiveness

The reviews generally focused on either physical activity interventions, dietary interventions, or a combination of both. In general, there was little robust and no conclusive evidence of intervention effectiveness in the included reviews. This was partly because much of the evidence was based on findings from non-experimental study designs with little in the way of follow-up measurements. None of the included reviews report cost-effectiveness data, despite one aiming to include such economic analysis (Ammerman et al., 2001 [++]).

We use the following notation to describe the reviews: $n=x/y$, where x is the number of included studies that met our inclusion criteria for this review of reviews, and y is the total number of studies included in the review.

5.1.1 Physical activity interventions

Two reviews focused on physical activity interventions for African American populations:

[+] Banks-Wallace and Conn (2002; $n = 14/18$); and

[-] Whitt-Glover and Kumanyika (2009; $n = 23/43$).

Banks-Wallace and Conn (2002 [+]) conducted a systematic review of interventions aimed at increasing levels of physical activity among African Americans, with a specific focus on women (ages ranged from 18 to 79 years). Fourteen out of eighteen studies were relevant to our research questions; non-relevant studies were focused on individual-level interventions. Most interventions included weekly education, motivation, or supervised exercise sessions. The majority of the included studies also included dietary elements as part of the intervention designs. Interventions lasted from 6 weeks to 9 months. Three interventions were delivered in church settings and three were delivered in clinical or hospital settings; the remainder were delivered in community recreational centres.

In the Banks-Wallace and Conn (2002 [+]) review, evidence of impact was mixed with some studies reporting significant pre-/post-test improvements in physical activity, weight and other health related measures, but others reporting only non-significant improvements. Most interventions were designed to be culturally relevant to the participants, with intervention, recruitment, and retention strategies being tailored. In particular, the reviewers noted that African American professionals and trained staff from the target community were frequently used to tailor the interventions to the participants, although it was not reported whether these efforts were successful or not

at increasing recruitment and retention. A key strategy employed was to gain support from African American health care professionals and religious leaders. The review did not discuss whether the setting had an impact on the effectiveness of the intervention. The review noted concerns about the appropriateness of the primary study designs, particularly the lack of the use of control groups, which undermined evaluations of treatment effectiveness in this sample of studies.

Whitt-Glover and Kumanyika (2009 [-]) systematically reviewed interventions designed to increase the level of physical activity among African Americans. Twenty-three of the forty-three studies were relevant to our research questions (most of the non-relevant studies were for children/youth or were individual-level interventions). The ages of the participants in the primary studies ranged from 18 to 91 years. The interventions were typically: structured group exercises (walking, aerobics, dance, games and sports, weight lifting); behavioural counselling group sessions; or faith-based group meetings or workshops. Members of the community, professional instructors, or church leaders delivered the interventions. Settings included hospitals, churches, and fitness centres. Interventions ranged from 2 weeks to 18 months in duration.

Whitt-Glover and Kumanyika (2009 [-]) found that almost all of the studies involving adult participants resulted in within-group improvements in physical activity, weight loss, and other outcomes measured pre- and post-test, but in studies comparing an intervention with a control group, differences in improvement were less common (effect sizes were not reported). They reported that the use of structured physical activity classes was associated with positive outcomes in physical activity, but their review did not find clear evidence to suggest that interventions also focusing on other aspects of health behaviour (e.g., those involving dietary education or counselling) improved outcomes. No evidence was available on the sustainability of the interventions, as most interventions did not involve long-term follow up, and the review did not assess whether different types of intervention administrators were more or less effective.

Evidence statement 1: Effectiveness of physical activity interventions

Weak evidence (Banks-Wallace and Conn 2002 [+]; Whitt-Glover and Kumanyika 2009 [-]) suggests that some physical activity interventions are effective at reducing weight in adult African American populations (ages ranged from 18 to 79 years across primary studies and reviews). Interventions involved structured group exercises (e.g., walking, aerobics), behavioural counselling, education, and motivation sessions. Settings included churches, clinics/hospitals, community recreation centres, and fitness centres. Those delivering the interventions were African American professionals and trained staff from the target community (Banks-Wallace & Conn 2002 [+]); or members of the community, professional instructors, or church leaders (Whitt-Glover and Kumanyika 2009 [-]). Physical activity and weight loss often improved when looking at within-group differences, but significant between-group differences were rarely reported. However, poor primary study designs and inconclusive review-level findings mean that this question requires further research.

Applicability

No high-quality reviews were identified. Importantly, both reviews on physical activity interventions were focused on African American samples. The transferability of evidence from this group to BME populations in the UK is uncertain.

5.1.2 Dietary interventions

Three reviews focused on dietary interventions:

[++] Ammerman et al. (2001; $n = 2/92$ ¹⁶);

[++] Oldroyd et al. (2008; $n = 3/6$); and

[-] Sánchez-Johnsen (2005; $n = 9$ /unclear¹⁷).

Of the reviews focusing on dietary interventions, evidence of effectiveness was generally limited to within-group changes in outcomes, though there were some instances where between-group differences were measured and significant at the 5% level. Ammerman et al. (2001 [++]) reviewed two relevant studies of interventions designed to change the dietary fat intake of low-income African American and Hispanic mothers as part of a larger meta-analysis consisting of 92 studies. Non-relevant studies were focused on children or non-high-risk groups. The mean age of the participants in the studies was 33 and 35 years.

The interventions reviewed by Ammerman et al. (2001 [++]) involved dietary education and planning classes of between 60 and 90 minutes' duration, once per week for 12 weeks. It was not stated who delivered the interventions or where they were set. The classes were culturally and ethnically adapted to the mothers (although the reviewer did not specify how). The control groups received standard general health advice. At 12 weeks, the pooled difference in dietary fat intake was significant at the 5% level, with a mean of 6.4% difference between the intervention and control groups.

Oldroyd et al. (2008 [++]) systematically reviewed six studies of dietary interventions to determine whether SES was associated with differential impacts of interventions. Three of these interventions involved adults; two comprised nutritional education programmes and one also included a physical activity component.

- An education intervention that focused on providing guidance about the amounts of different types of foods people should eat for a healthy diet (Stanford Nutrition Action Program, SNAP) found reductions in dietary fat intake

¹⁶ This met the 50% inclusion criterion (see Section 8.2) because the relevant studies were contained in a subsection of the report.

¹⁷ This was a non-systematic review that was poorly reported making it difficult to determine precisely how many studies were evaluations (compared to evidence that was simply background information).

compared with general nutrition intervention, with 60% of participants in SNAP meeting the intervention goals compared with 34% in the general nutrition control group. Sessions lasted 60 minutes and occurred weekly for 6 weeks in a vocational training setting.

- A second intervention combining physical activity and dietary interventions found that there was no significant difference in fat consumption between experimental and control groups after the intervention. The intervention involved mailing out information and telephone contact, although it was not reported in the review who the mail or phone contact involved or what was discussed. Those participants who set dietary goals reduced their dietary intake of fat significantly more than those who did not ($p < .002$).
- A third programme based in healthcare centres found significant ($p < .05$) reductions in fat consumption in groups given a nutrition education intervention that was delivered by registered dietitians, with larger reductions relative to the control group for white (12.0g/day) than black (8.9g/day) participants. According to the reviewer, the primary study did not state how the control group was managed. The duration of the programme was not stated in the review.

Oldroyd et al.'s (2008 [++]) systematic review was primarily designed to answer the research question: do nutrition interventions widen dietary inequalities across social groups? Of the three primary studies that met our inclusion criteria, two reported better intervention effectiveness for disadvantaged groups, and the third only found greater attrition among BME participants compared with Caucasian participants. They concluded that there was little evidence that nutrition interventions widen dietary inequalities. See Case Study 1 for a consideration of how baseline differences—namely baseline dietary fat intake—might be important in determining the effectiveness of an intervention.

Overall, Oldroyd et al. (2008 [++]) concluded that “nutrition interventions can be effective in disadvantaged groups” (p. 578). However, when focusing on the primary studies relevant to our review, this conclusion is less strong. It was not stated whether the interventions were tailored for disadvantaged groups.

A non-systematic review by Sánchez-Johnsen (2005 [-]) identified one study that found that the adoption of low fat, high fibre diets by African American women was associated with significant reductions in blood pressure. Other studies included in the review suggested that long-term changes in diet can be sustained in this population, with fewer calories coming from fat intake and more fruit and vegetables being eaten. The studies discussed were all culturally-tailored behaviour-change interventions; some used media such as television, others were based in community settings. This review provided very little detail about the included studies.

Evidence statement 2: Effectiveness of dietary interventions
--

Weak evidence suggests that dietary interventions (primarily nutrition and diet education) can be effective in reducing fat intake for low income or disadvantaged

populations (Ammerman et al. 2001 [++]; Oldroyd et al. 2008 [++]; Sánchez-Johnsen 2005 [-]). Evidence of effectiveness was generally limited to within-group changes in outcomes, though there were some instances where between-group differences were measured and significant at the 5% level.

Ammerman et al. (2001 [++]) found that the dietary fat intake of low-income African American and Hispanic mothers (mean age 33 to 35 years) significantly improved after 12 weekly dietary education sessions. Oldroyd et al. (2008 [++]) found that two dietary education programmes were successful in reducing fat intake, while a third intervention combining physical activity and dietary education was not successful in reducing fat consumption. A low quality review (Sánchez-Johnsen 2005 [-]) indicated that dietary interventions, often using media such as culturally-relevant television programmes or set in community locations, might help reduce blood pressure in African American women.

In summary, although there were some higher quality reviews that examined dietary interventions (Ammerman et al. 2001 [++]; Oldroyd et al. 2008 [++]), the effects on dietary fat intake appeared to be small and inconsistent across studies. Also, few relevant primary studies were included in the reviews from which these conclusions were drawn. Although two of the reviews discussed the potential value of culturally tailoring the interventions (Oldroyd et al. 2008 [++]; Sánchez-Johnsen 2005 [-]), particularly in terms of recruitment and retention, none of the reviews were able to determine from the primary evidence whether tailoring the interventions was effective.

Applicability

The relevant studies included in these reviews are all from the US, and so applicability of their findings to the UK is uncertain. However, there is no particular reason to think that the findings are not applicable. The relevant primary studies of two of the reviews only focused on females (Ammerman et al. 2001 [++]; Sánchez-Johnsen 2005 [-]), making it difficult to generalise the conclusions to males.

Case study 1: Participant baseline differences

Winkleby et al. (1997) evaluated the results of the Stanford Nutrition Action Program (SNAP), a randomised controlled trial (RCT) comparing the effectiveness of two nutrition curricula interventions for adults with low literacy skills. The RCT was conducted in San Jose, California, in 1993-94. It employed a cluster design (based on classes of low-income adults in vocational and basic skills training) to compare the SNAP curriculum (which focused primarily on lowering dietary fat intake) with an already existing general nutrition curriculum (GN). Both programmes were tailored to low-income groups, but SNAP was specifically designed for low-literacy groups and incorporated principles of adult learning (guided self-learning and skill development) and social learning theory. The GN curriculum relied on various teaching strategies (such as flip charts, slides, videotapes, handouts, simple exercises) and low-cost ethnic recipes. The SNAP programme used a variety of learning modalities including

demonstration, experiential and participatory learning, didactic presentation, and printed and audio/visual materials. The curriculum emphasised decreasing the intake of foods that are high in fat as well as increasing low-fat foods. Both curricula were delivered by health educators who were familiar with the participants' life context and cultural background.

295 participants met the inclusion criteria, of which 242 completed both the baseline and the 3-month post-intervention measurements. Most participants had low income, literacy, and educational achievement levels; 85% were women; and 60% were of Hispanic descent. The average age of participants was 32. The SNAP curriculum was significantly more successful than the GN condition in promoting reductions in dietary fat, as measured by the National Cancer Institute Food Frequency Questionnaire. The focus of the article is on the socio-demographic and nutrition-related variables associated with achievement of a low-fat diet.

Analysis of the data involved a method that uses baseline characteristics to identify distinct groups of respondents that were mutually exclusive. The most distinguishing characteristics were the level of baseline dietary fat (high or moderate) and the intervention condition (SNAP or GN); three groups were identified using combinations of these characteristics:

- group 1 consisted of participants with high baseline dietary fat (>60 g) who received either the GN or the SNAP curriculum (23.3% met the intervention goal);
- group 2 consisted of participants with moderate baseline dietary fat (<60 g) who received the GN curriculum (33.9% met the goal);
- group 3 consisted of participants with moderate baseline dietary fat who received the SNAP curriculum (59.7% met goal).

There were some baseline differences between groups 2 and 3. Group 3 had a slightly higher proportion of BME and lower educated participants than group 2, although it is not clear whether these were statistically significant differences. Results indicate that high-risk individuals (group 1) were indeed a distinguishable group that might require a different, possibly more intensive or longer-term intervention in order to achieve better results. The authors argued that "audience segmentation is particularly needed for groups who are at high-risk of cardiovascular disease [and] live in environments that are unsupportive of healthy lifestyle choices" (Winkleby et al. 1997: 875). Within group 1, those who received the SNAP curriculum achieved significant reductions in fat intake compared with no reduction in the GN sub-group, suggesting that SNAP is more effective than GN for both high and moderate dietary fat intake levels.

This study suggests that differences between participants at baseline could lead to differential impact of alternative interventions.

5.1.3 Multi-component interventions

Five reviews included studies where the interventions were multi-component or focused on general lifestyle change. An intervention was considered to have multiple components if it included more than one targeted behaviour or construct, such as combining both diet education and physical exercise classes.

[+] Bronner and Boyington (2002; $n = 9/11$);

[+] Eastridge (2009; $n = 12/21$);

[+] Gao et al. (2008; $n = 6/20^{18}$);

[+] Thompson et al. (2009; $n = 6/6$); and

[-] Yancey et al. (2004; $n = 23/23$).

Bronner and Boyington (2002 [+]) conducted a narrative review of studies on weight loss interventions. Nine out of eleven included primary studies were relevant to our review; the non-relevant studies were on participants who already had diabetes. All interventions were aimed at overweight African American women. The mean age of women in the studies ranged from 25 to 62 years. The interventions involved a broad mix of elements, including dietary, physical activity, behaviour modification, education, counselling, assertiveness and self-image improvement, behaviour contracts and home visits by health professionals. Some of the interventions were delivered by professionals and others were delivered by trained laymen, and interventions were delivered in community or clinical settings. The interventions lasted between 7 and 18 weeks and involved weekly or biweekly sessions of 1 or 2 hours' duration (where this information is recorded for studies). More than half of the studies were pre-/post-test studies, with the remainder being case/control cohort studies.

Overall, the effectiveness of the interventions at reducing weight was unclear (Bronner and Boyington 2002 [+]). Immediately post-intervention, weight loss ranged from 0.4 to 10.9 lbs, but for those studies reporting follow-up measurements, weight had not changed or showed only slight increases or decreases. For studies in which the follow-up period was reported, the period ranged from 1 month to 1 year. Those interventions where follow-up weight loss was greater or equal to that at post-intervention involved a follow-up maintenance programme and some kind of open participant commitment. The authors reported that the use of formal adult learning principles (guided self-discovery of their needs and development of skills to manage them), group sessions, a coordinated team of professionals and behavioural modification techniques, were common aspects of more successful interventions. In studies involving low-income participants, where illiteracy may be an issue, they suggested that use of an

¹⁸ This met the 50% inclusion criterion (see Section 8.2) because the relevant studies were contained in a subsection of the report.

appropriate learning environment and teaching style may be particularly important. Longer durations of intervention were also associated with greater weight loss.

Eastridge (2009 [+]) conducted a systematic review of RCTs of educational, dietary, and stress reduction interventions to reduce risk factors related to peripheral arterial disease in African Americans. Twelve out of the twenty-one primary studies were relevant to our review; the non-relevant studies were primarily not community-based interventions. The mean ages of participants across studies ranged from 35 to 62 years.

The interventions reported in Eastridge (2009 [+]) consisted of education and enhanced care (looking at multiple lifestyle factors); dietary and physical activity interventions of various kinds; and meditation or stress reduction. Interventions were set in the community and intervention durations ranged from 10 weeks to 40 months. The primary outcomes of interest included levels of haemoglobin A1c, triglycerides, cholesterol and blood pressure. The review found no significant differences in haemoglobin A1c levels between comparison and intervention groups but did identify some studies reporting significant improvements in blood pressure measures. Additionally, some of the intervention and comparison groups did record significant within-group improvements in some of the outcomes. There were also significant between-group differences in secondary outcomes. These included reductions in body mass index (BMI), improved food selection habits, and improved quality of life. Eastridge (2009 [+]) concluded that interventions with education/enhanced care were most successful, and that non-physician healthcare providers, nurse case managers, certified diabetes educators, nurse practitioners, and dietitians have been involved in effective interventions.

Gao et al. (2008 [+]) authored the only included review that was not US-focused. Six community-based adult interventions in China were included in the systematic review, involving a range of elements such as education, counselling, diet, and environmental changes (e.g., changing cafeteria menus or the food supply), of which four were not individualised. Participants across the studies were typically over the age of 35. Interventions lasted from 10 to 96 months and were delivered by members of the community, professional instructors, or church leaders. The community settings were both urban and rural.

Two interventions focused on reducing levels of obesity: one, involving participants with an initial BMI of 24 or more, reported a significant decrease in BMI (-1.16kg/m²); the other study involved interventions in the general population and did not report any change in BMI. Two long-term community-level interventions focused on reducing cardiovascular disease risk. Of these interventions, one involved a series of health promotion and education programmes in three cities and resulted in a reduction of 4.8% in obesity prevalence after 8 years. The other intervention examined the effect of interventions on urban, suburban and rural populations after 5 years, finding a significant decrease in BMI of -1.03kg/m² only in the urban population. Although the

findings of the Gao et al. (2008 [+]) review are encouraging in some respects, the authors cautioned that there was too little evidence to draw conclusions about the efficacy of the interventions due to issues about the quality of studies and the risk of a strong publication bias.

Thompson et al. (2009 [+]) conducted a systematic review of church-based weight management interventions for African Americans. The samples were predominantly female, and participant ages ranged from 44 to 56 years. The interventions comprised dietary, physical activity, and educational elements, and were located in church-centred community settings. All had some form of group educational component. Most involved an explicitly religious component (prayer or Bible study) at the start and conclusion of each session. Some involved components including organised physical activity, cooking education, and written materials. Regarding physical activity, one of the programmes was reported as using an exercise tape to conduct the physical activity, while another involved recreational walking. Interventions ranged from 7 weeks to 6 months in duration. Of the 6 studies, three used trained lay health educators (church members) to lead the sessions, two were conducted by trained medical volunteers (although prayer sessions were led by a deacon, minister, or church participant); and one apparently did not report information on who led the classes.

According to Thompson et al. (2009 [+]), most of the studies reported significant, positive within-group changes in weight/BMI, although the magnitude of improvement was not reported. Many of the studies did not include a control or comparison group and had very small sample sizes; those with a control group did not report significant differences between groups. There were mixed within-group results for other reported outcomes such as blood pressure and fasting blood glucose.

Yancey et al. (2004 [-]) systematically reviewed 23 population-based interventions implemented between the years of 1972 and 2000 that were designed to encourage healthy eating and active lifestyles in BME populations. All of the interventions reviewed were relevant to our review and were based in the US. The age range of the participants was not reported by the reviewers. The majority of interventions were set in urban locations. The interventions involved a wide range of diet and physical activity interventions. Interventions included: walking clubs, exercise classes, cooking/nutrition classes, home visits, education, mass media campaigns, worksite programmes, sport, community leaders training, gardening, signposting, fitness programmes, park maintenance, church cooking, distribution and promotion of healthier foods, and gym discounts. The duration of the interventions ranged from less than a year to more than five; most interventions lasted between 2 and 3 years. It was not consistently reported in the review who delivered the interventions, although community leaders and members were mentioned.

The Yancey et al. (2004 [-]) review found that fewer than half the included studies reported outcome data, and in those that did, there were few significant effects and moderate effect sizes. Outcomes examined were described vaguely, such as “dietary

change” and “physical activity change”. In the opinion of the authors, none of the reviewed studies stood out as offering an effective solution to weight management problems. However, strategies to integrate physical activity and healthy food choices in routine workplace activities might offer ‘feasible’ ways to engage people in moderate physical activity. Case Study 2 demonstrates how multi-component physical activity and dietary interventions can be integrated into the workplace.

Evidence statement 3: Effectiveness of multi-component interventions

Inconsistent evidence from five reviews (Bronner and Boyington 2002 [+]; Eastridge 2009 [+]; Gao et al. 2008 [+]; Thompson et al. 2009 [+]; Yancey et al. 2004 [-]) suggests that multi-component interventions only have a small effect on managing weight loss in BME groups.

Eastridge (2009 [+]) reported that multi-component interventions for African American participants aged 35 to 62 years had significant between-group reductions in body mass index (BMI), improvements in food selection habits, and improved quality of life. Thompson et al. (2009 [+]) found that church-based weight management interventions for African American participants (aged 22 to 56 years) led to significant, positive within-group changes in weight/BMI, although the magnitude of improvement was not reported. Gao et al. (2008 [+]) reported that multi-component interventions (including education, counselling, diet, and environmental changes) for Chinese participants in mainland China (typically over 35 years of age) showed some significant decreases in BMI in the intervention groups.

Bronner and Boyington (2002 [+]) did not find consistent reductions in weight in their review of evaluations of interventions for overweight African-American women (age range 25 to 62 years). However, Bronner and Boyington (2002 [+]) reported that those interventions that involved a follow-up maintenance programme and some kind of open participant commitment were more likely to lead to persistent weight loss at follow-up compared with the end of the initial study, while longer durations of intervention were also associated with greater weight loss. Yancey et al. (2004 [-]) also reported inconsistent findings across their review of studies set in the US on interventions involving a wide range of diet and physical activity components.

Given the inconsistencies, more rigorous research is required, although some promising interventions were identified. Education/enhanced care studies that promote behaviour change by giving participants additional monitoring and education to improve their understanding of diabetes can be effective (Eastridge 2009 [+]). Also, those that use formal adult learning principles (guided self-discovery of their needs and development of skills to manage them); group sessions; a coordinated team of professionals; and behavioural modification techniques, can also be effective (Bronner and Boyington 2002 [+]).

Applicability

None of the reviews in this section include studies from the UK. Three of the five reviews were focused on African Americans and one focused on Chinese samples in China. There are no specific reasons why these might not transfer to the UK setting.

Case Study 2: Workplace interventions

Yancey et al. (2004c) tested the feasibility of a sociocultural environmental change intervention strategy designed to integrate physical activity into the workplace, part of a multi-component initiative to shift some of the responsibility for healthy lifestyles from the individual to organisations. They employed an RCT methodology to assess the level of participation in and immediate effects of a 10-minute exercise break integrated into long meetings and events during work time at various Los Angeles County Department of Health Service (DHS) worksites. These breaks were “intentionally designed to be appropriate for unfit, sedentary, overweight adults in ordinary street attire [and] targeted to largely unmotivated ‘captive’ audiences (rather than willing volunteers) within environments with resource and space constraints” (2004c: 856). The audiovisual materials for the breaks were available in English and Spanish, culturally adapted to African American and Latino audiences, and delivered by designated facilitators trained by the DHS. 449 employees, predominantly overweight, relatively sedentary, middle-aged women of colour, participated across 26 meetings. More than 90% engaged in the activities. No adverse effects on their mood or well-being were observed.

Besides the exercise breaks, other components part of the initiative (African Americans Building a Legacy of Health) included (Yancey et al. 2004a):

- 1) provision of a personal training experience for organisation leaders: a personal lifestyle improvement programme;
- 2) provision of community-based organisation wellness training: following an evaluation, suitable strategies and support for improvement wellness at the organisation/worksites were provided, including healthy food alternatives, walking, meetings, or allocation of time for fitness activities; and
- 3) developing a small grants programme to inventory and seed new physical activity programmes, addressing the lack of safe physical activity options.

The focus on organisations followed a shift from the individual to social and ecological levels, based on the idea that mobilising the organisations in which people work, study, worship, live, play etc. may be a critical vehicle for creating social norm change. Within organisations, role modelling, social support based on group dynamics, and leadership commitment were used to increase self-efficacy and sustain change. After two years of implementation, 217 organisations had participated in at least one component of the programme. Process evaluation data show success in involving a wide range of organisation types, including academic, religious, governmental, or private sector. More than half the organisations had committed to the basic level of passive support, while more than 25% were committed at the highest level of support for physical activity

(especially community-service and religious organisations). The authors conclude that organisation-level interventions are a promising strategy in obesity control, particularly for BME, given their lesser resources and the lesser resonance of mainstream campaigns promoting lifestyle changes in these groups.

In an earlier project, Fitness Funatics, Yancey et al. (1999) also explored the feasibility of taking a physical activity programme to a range of community-based organisations. They found seven internal organisation characteristics related to successful provision and institutionalisation of the programme:

- 1) site leadership commitment to the project: space allocation, willingness to cooperate, flexibility in accommodating changing needs, etc.;
- 2) “aggressive and committed” insider capable of promoting the intervention and recruiting participants;
- 3) a large captive audience of members, workers, clientele or users;
- 4) existing mechanisms for regular communication within the site (e.g., newsletters, bulletins, announcements);
- 5) pre-existing group cohesiveness and camaraderie providing motivation and support;
- 6) alignment of the organisational mission/ethos with the programmes’ goals; and
- 7) pre-existing productive relationship between the site and the implementing agency.

The organisations having all seven characteristics succeeded in institutionalising the programme, as did 78% of those with six of the characteristics. In terms of organisation types, sites where people spent a lot of time (housing projects, treatment centres, neighbourhood sites) produced better results than sites where people “stop-by” (shopping centres, non-profit organisations).

5.2 Findings: Tailoring Interventions for BME and low income samples

Tailoring of interventions across the reviews focused on cultural adaptations of interventions, primarily for use with African American samples. Five reviews discussed cultural adaptations to interventions:

[+] Banks-Wallace and Conn (2002; *n* = 14/18);

[+] Bronner and Boyington (2002; *n* = 9/11);

[+] Thompson et al. (2009; *n* = 6/6);

[-] Whitt-Glover and Kumanyika (2009; *n* = 23/43); and

[-] Yancey et al. (2004; *n* = 23/23).

Cultural adaptation, such as use of existing community networks, facilitators who were of the same ethnic group as the participants, and cultural tailoring of recruitment and retention strategies, was identified as a characteristic of successful weight loss intervention for overweight African American participants by Bronner and Boyington (2002 [+]). Bronner and Boyington (2002 [+]) concluded that ease of recruitment was related to the motivation of potential participants. Retention was influenced by the amount of support the participants had from family and friends, and their commitment to and expectations of the programme.

Banks-Wallace and Conn (2002 [+]) reported that African American professionals and trained staff from the target community were frequently used to tailor the interventions to the participants, although it was not reported whether these efforts were successful or not. Most interventions in that review were designed to be culturally relevant to the participants—intervention, recruitment and retention strategies were tailored. A key strategy was to gain support from African American health care professionals and religious leaders. Retention strategies focused on the timing of interventions (such as around meal times, church, or popular TV shows) and developing ownership of the programme (e.g., participants chose the name of the group), but the success of such strategies was not reported.

Thompson et al. (2009 [+]) reported that focus groups on the concerns of the community were conducted to help develop the interventions in three of the primary studies included in their review of interventions for African Americans. Although they did not report whether this improved engagement or retention of participants in the programme, this could be a useful strategy.

The format of the intervention was considered in Whitt-Glover and Kumanyika (2009 [-]) in their review of interventions to increase physical activity in African Americans. They reported on two studies that used non-conventional formats to engage African American participants: the use of a demonstration format (e.g., the exercise instructor walked with participants to demonstrate the appropriate pace) and a television-based weight management programme called SisterTalk. Whitt-Glover and Kumanyika (2009 [-]) did not indicate whether different formats were preferred by different cultural groups nor whether they improved retention. This could be because, in two of the three studies that compared adapted with unadapted interventions, “the unadapted group automatically added components of the culturally adapted intervention to their condition” (2009: S50). This suggests that cultural adaptation might be an inevitable development in interventions for BME participants. Case Study 5 is an example of a study in which this occurred. See Case Studies 3 and 4 for examples of how interventions can be culturally tailored.

Yancey et al.’s (2004 [-]) review on engaging various BME communities in healthy diet and physical activity inferred that cultural adaptations may have an effect on retention and recruitment. However, there was no strong evidence of the effect of these adaptations on participant outcomes.

In summary, there is insufficient evidence available on tailoring of interventions for at-risk groups. However, a number of possible strategies were reported in the literature.

Evidence statement 4: Tailoring interventions for BME and low income samples

No evidence was available on the effectiveness of tailoring interventions for different cultural groups. Five reviews (Banks-Wallace and Conn 2002 [+]; Bronner and Boyington 2002 [+]; Whitt-Glover and Kumanyika 2009 [-]; Thompson et al. 2009 [+]; Yancey et al. 2004 [-]) reported different types of tailoring for African American samples without evaluation of their effectiveness in recruiting or retaining participants. Tailoring included the use of trained staff from the target community (Banks-Wallace and Conn 2002 [+]), the use of culturally-relevant TV shows (Whitt-Glover and Kumanyika 2009 [-]), or involving the community in developing interventions through focus groups (Thompson et al. 2009 [+]).

As such, it is unclear from the African American-focused reviews included here whether culturally tailored interventions have better outcomes for participants than interventions that are not adapted. However, promising approaches were identified. Specifically, Bronner and Boyington 2002 [+] noted that the retention of African American female participants in weight loss programmes was influenced by the amount of support the participants had from family and friends, and their commitment to and expectations of the programme.

Applicability

None of the reviews include studies from the UK. Four of the five reviews were focused on African Americans and the fifth was on various BME populations in the US. There are no particular reasons to believe that the general premise of cultural adaptations is not transferable, as long as the adaptations are appropriate for the context.

Case Study 3: Cultural adaptations (i)

Karanja et al. (2002) evaluated a pilot programme for weight loss (Steps for Soulful Living, or STEPS) specifically targeting African American women. The intervention consisted of 26 weekly group meetings with 15-25 participants and optional weekly supervised exercise classes at a local community centre. In order to make STEPS culturally relevant, focus groups were held with the participants. Five key elements of adaptation were identified and corresponding strategies developed:

- 1) increasing identification between counsellors and participants: the intervention team only included African Americans;
- 2) building social support and decreasing isolation: group sessions included socialising time and shared meals;
- 3) providing information in a demonstration format: food preparation and exercise techniques were learnt by practice;

- 4) involving families and the community: families were invited to the picnics and participants were encouraged to bring their children to the meetings; and
- 5) increasing programme ownership: group sessions were highly interactive, and participants contributed to the design of the intervention materials and the planning of all social events.

Sixty-six women were recruited, of whom 56% attended at least 75% of the sessions. Average hours of exercise per week almost doubled during the intervention, while mean weight loss at 26 weeks was 3.7 kg. For those who attended at least 75% of the sessions, mean weight loss was 6.2 kg. Attendance at group meetings and the amount of weight loss after the first 4 weeks were the most important predictors of weight loss at 6 months. These results seem to indicate that shared decision-making, cultural adaptations and community-oriented processes are a promising way to structure interventions.

Case Study 4: Cultural adaptations (ii)

Gans et al. (2003) reported on the development of SisterTalk, a weight control programme for Black women delivered via cable TV. The article focuses on the use of theory, community partnerships and extensive formative research to develop a culturally sensitive intervention for Black women in Boston, MA. The core of the intervention consisted of 12 one-hour weekly TV programmes with interactive features and accompanying printed materials. After those 12 weeks, participants received support videotapes and related written materials for another four months. The behavioural change approach was based on Social Action Theory (SAT), in which behavioural change is achieved through the development of problem-solving skills, which in turn require knowledge of the elements to be changed and motivation for change. The contextual influences are also tackled, by removing constraints to new behaviours and increasing support for them.

SisterTalk was developed over more than two years and involved a wide range of pre-implementation tasks:

- 1) establishing partnerships with local academic, professional and community members;
- 2) hiring community outreach educators as guides and advisors;
- 3) conducting 28 focus groups with community members (total $n = 193$), in order to explore diet and exercise patterns, identify barriers for change, and examine contextual influences; and
- 4) conducting a telephone survey ($n = 309$) with a wider population, in order to assess the prevalence of specific attitudes and behaviours identified in the focus groups.

The findings from these activities were then synthesised, contrasted with the existing literature, and used for the development and adaptation of the intervention materials – its content, imagery and format. For example, in relation to body image, research identified specific issues such as “not preoccupied with becoming thin”, which was

addressed by emphasising health benefits of eating and exercise patterns compared with losing weight as the primary goal. Regarding food preferences, the programme addressed the prevalence of highly valued high-calorie ethnic foods by suggesting lower-fat alternatives and recommending eating smaller portions or less often rather than total avoidance. With regard to physical activity, dislike for exercise and practical barriers were addressed by focusing on “moving more” rather than “exercise” and promoting moderate activities such as walking.

Case Study 5: Unintended adaptations

Yanek et al. (2001) compared three church-based nutrition and physical activity interventions aimed at African American women in Baltimore, Maryland. The first was a behavioural model based on standard group methods with weekly sessions (SI); the second was the same model supplemented with a spiritual and church cultural component (SP); the third, which served as a control group, was a non-spiritual self-help intervention (SH).

The interventions and the assessment questionnaires were developed in collaboration with the community, through focus groups and in-depth interviews with churchgoing women. The interventions were piloted over a 20-week period and reviewed by a community expert panel. Eighteen churches and 529 women were recruited. Goal behaviours included exercise of 30 minutes or more, 5 to 7 days per week; consumption of at least 5 servings of fruit and vegetables every day; fibre consumption of at least 25 g/day; fat consumption of 40g/day or less; consumption of 1200 to 1800 dietary calories per day; and dietary sodium intake of 2400 mg/day or less. Fifty-six per cent of participants completed one-year follow-up measures, from which the effectiveness analyses are based.

Both SI and SP interventions significantly improved weight and BMI measures compared with the control group. Within the intervention groups there was a statistically significant positive change in 10 out of 13 cardiovascular risk factor outcome measures, compared with only 1 out of 13 in the control group. Besides the effectiveness of the intervention, a number of implementation issues are relevant. First, the researchers found that churches were excellent venues for community-based health promotion activities. Churchgoing women showed great interest in the programme, particularly in the spiritual intervention group. It was found that spirituality permeated both the SP and SI strands to a large degree, to the point of making them almost identical. This could be a good indication of the high level of ownership of the programme that churches developed. In contrast, the self-help programme suffered from a lack of interest. It proved difficult to recruit participants for this strand (even at the randomisation stage), and they were significantly more likely to drop out. Moreover, follow-up data suggested that participants did not have confidence in the capabilities of peer leaders, who they believed did not have the same expertise as professional health educators. Pastors were also more interested in expert-led programmes for their churches, which indicate the difficulty of building the necessary trust and commitment around peer-led interventions.

5.3 Findings: Barriers and facilitators

Four reviews discussed potential barriers and facilitators to the effectiveness of interventions:

[+] Banks-Wallace and Conn (2009; $n = 14/18$);

[+] Bronner and Boyington (2002; $n = 9/11$);

[+] Eastridge (2009; $n = 12/21$); and

[-] Whitt-Glover and Kumanyika (2009; $n = 23/43$)

There is insufficient evidence available to conclude whether the **intervention administrator** has an impact on intervention effectiveness. Both Bronner and Boyington (2002 [+]) and Banks-Wallace and Conn (2009 [+]) found that differences in outcomes (weight loss and physical activity, respectively) were not, in general, attributable to the use of professional or lay programme leaders for African American women. Eastridge (2009 [+]), in a review of studies on reducing peripheral arterial disease risk factors among African Americans, found that whether the intervention was delivered by a physician or some other healthcare professional (such as a nurse or community health worker) did not affect outcomes. However, primary studies within the reviews rarely directly compared the efficacy of different intervention administrators, so it is almost impossible to say whether one administrator might be better than another.

Evidence statement 5: Barriers to effectiveness: Intervention administrators

Inconsistent evidence from three medium quality reviews (Banks-Wallace and Conn 2009 [+]; Bronner and Boyington 2002 [+]; Eastridge 2009 [+]) suggests that the intervention administrator does not necessarily impact upon the effectiveness of weight loss and physical activity interventions for African American groups (mostly female). However, primary studies within the reviews rarely directly compared the efficacy of different intervention administrators, so it is almost impossible to say whether one administrator might be better than another.

Applicability

There is some uncertainty as to whether the findings would be applicable in UK settings. This is because not all types of people delivering interventions in the UK were covered in the review literature.

Barriers and facilitators to retention of participants in primary studies in the reviews, other than cultural adaptations, were discussed in two reviews. Bronner and Boyington (2002 [+]) found that attrition of African American females was highest in weight loss interventions with 'unusual' elements (such as self-hypnosis) and lowest where significant and varied incentivisation approaches were used.

There was mixed evidence relating to the use of individualised elements such as goal-setting and self-monitoring. Bronner and Boyington (2002 [+]) reported that these approaches led to better retention of participants in the programmes and more sustained weight loss on intervention completion. In contrast, Whitt-Glover and Kumanyika (2009 [-]) were unable to find clear evidence that these approaches affected outcomes in physical activity or fitness interventions for African American adults.

Evidence statement 6: Barriers and facilitators to attrition of participants in primary studies in the reviews

There is **inconsistent evidence** available to determine the critical barriers and facilitators to participant retention in a programme. Only two studies briefly addressed this issue: one study was on weight loss interventions for African American women (Bronner and Boyington 2002 [+]) and the other was on physical activity programmes for African American adults (Whitt-Glover and Kumanyika 2009 [-]).

There was mixed evidence relating to the use of individualised elements such as goal-setting and self-monitoring for African American groups: Bronner and Boyington (2002 [+]) reported that these approaches led to better retention of participants but Whitt-Glover and Kumanyika (2009 [-]) were unable to find clear evidence for these approaches. More data are required, particularly in relation to low socioeconomic (SES) groups that might not have the resources to attend interventions.

Applicability

Barriers to engaging in an intervention (e.g., geographical access to interventions in rural areas; the cost of healthcare in different systems) might be of different importance in the UK and the US. However, the themes extracted from these reviews (i.e. varied and individualised elements) are likely to be transferable to the UK.

One review assessed whether the **design of the evaluation** of the primary studies was associated with apparent intervention success. Whitt-Glover and Kumanyika (2009 [-]) reported that the use of objective measures to assess outcomes was more likely to be associated with positive outcomes than self-reported measures. This could mean that self-reported measures are too unreliable to detect changes in outcomes. Alternatively, it could suggest that people are more inclined to adhere to an intervention if they feel that they are being objectively monitored (e.g. embarrassment at being weighed by an intervention administrator could drive people to work harder). More research is required to determine whether there is a method effect of using different types of outcome measures, and if so, why this might be the case.

Evidence statement 7: Effects of evaluation design

Weak evidence on evaluation design means that we cannot draw any firm conclusions. Whitt-Glover and Kumanyika (2009 [-]), in a review of physical activity programmes for African American adults, suggested that objective measures of

intervention outcomes are more likely to show a positive effect than are self-reported outcomes. However, this was a low quality review and requires further exploration.

Applicability

There is no reason to believe that this finding would not be transferable to the UK, despite being based on a review of studies on African American participants.

Case Study 6: Involving families

Stolley and Fitzgibbon (1997) evaluated a diet and exercise intervention designed for low-income, inner-city African American girls and their mothers. The programme consisted of 12 weekly group meetings in which low-fat, low-calorie diet and exercise were discussed and related activities performed. 65 dyads participated, of which approximately 80% completed the programme. Significant changes in fat consumption were achieved for mothers, whereas daughters reported only minor changes. The authors suggest, however, that longer follow-up periods may be needed to evaluate the results accurately.

The dyadic approach was based on four assumptions:

- 1) mothers are the primary people who shop and cook for the family;
- 2) girls would be more likely to attend the programme regularly if their mothers were also involved;
- 3) girls would be more likely to change behaviours and maintain those changes if they received support and role modelling from their mothers; and
- 4) mothers may be more likely to support their daughters' behaviours if they were involved in the process.

The programme followed a culture-specific curriculum addressing the particular needs of the population. Examples include being held at a local tutoring programme; using foods identified by the participants; addressing the local availability of products; and using culturally relevant music and dance for the activities.

6.0 Discussion and summary

6.1 Strengths and weaknesses of the review of reviews

This review was systematic in nature, based on the guidance set out in the second edition of *Methods for the development of NICE public health guidance* (NICE 2009). Our search strategies were highly sensitive and included a wide range of potentially relevant sources.

However, any review is dependent on the quality of the material that it is reviewing. Insufficient high-quality effectiveness evidence was located, with only two reviews classified as high quality [++]. Both of these reviews yielded inconclusive findings with respect to the research questions addressed in this review. As such, we were unable to make any evidence statements on **strong** review-level evidence. Most of the evidence statements were based on **weak** or **inconsistent** review-level evidence. More primary research needs to be undertaken in order to adequately answer the review questions.

A further concern in conducting a review of reviews is that we are only able to adequately assess the quality of the reviews themselves, and rely to an extent on the reporting of the reviews about the quality of the included primary studies. Indications from the reviews about the quality of the included primary studies are that many of the primary studies did not use robust evaluation designs, and that this could undermine the statistical analyses used to assess the significance of intervention outcomes.

There was some degree of duplication of primary studies included across the reviews. This might mean that some evidence has been 'double counted'. To counteract this concern, we have tried to emphasise the strength of conclusions drawn in the reviews rather than simply counting how many studies supported a particular conclusion. See Appendix F for a cross-tabulation of primary studies across the reviews.

Finally, the case studies were not identified in a systematic way. It is important to note that the case studies were not considered when constructing the evidence statements, so as not to add undue weight to any particular primary evidence.

6.2 Gaps in the evidence

There is a clear dearth of non-US literature, and no reviews or primary studies from the UK were identified. More specifically, there is clearly a predominance of reviews in the literature on the prevention of modifiable risk factors associated with pre-diabetes in African Americans. Of the ten reviews included in this review, six were exclusively focused on African Americans. Three of the remaining four reviews included a large proportion of African Americans in their studies, despite their stated focus on disadvantaged, low SES, or low income populations. More research is needed on non-

African American groups—particularly other low SES groups that are likely to have unique barriers to uptake, retention, and effectiveness.

Moreover, the reviews included in this review did not report sub-group analyses (e.g., by gender or BME group). Several of the reviews provided a breakdown of the studies by age using the sub-groups “children” and “adults”. As such, we were unable to draw any useful distinctions between different age groups (e.g., young adult, older adult) within the rather coarse category of “adults”. It is likely that different interventions might be more suitable for different ages, genders, etcetera, and so this information would be very useful to those designing and delivering interventions.

There is a lack of rigorous, well-designed evaluations of community- or population-level preventative interventions for pre-diabetes. Many of the primary studies seemed to have inadequate RCT designs. Concerns were raised both in relation to the randomisation process and in relation to the control group comparison (e.g., inactive control, waitlist). It seems that many of the primary studies, perhaps because of ethical reasons, offered an alternative treatment to the comparison group. It was quite common for a review to report that the control group in a primary study received “usual care”, although the reviews rarely went into detail about what this entailed. Although non-randomised controlled designs are a useful research method, the lack of clarity about what happened to the different groups makes it difficult to interpret the results of between-groups analyses. Equally important, many of the reviews noted that the primary studies often had insufficient follow-up periods. These two factors combine to make it difficult to determine (a) whether the intervention was actually effective and (b) whether these effects were maintained long after the intervention ceased.

We did not identify any reviews of cost-effectiveness data, despite one review setting out to evaluate such data (Ammerman et al. 2001 [++]). For large-scale, community- or population-level interventions, it is particularly important to estimate likely cost-effectiveness before large-scale roll-out of any public health programme is undertaken.

These considerations will be critical in making recommendations about lasting, effective interventions and for evaluating the cost-effectiveness of alternative programmes.

6.3 Implications of findings

The key implications from the evidence for practice are:

- Multi-component interventions (e.g., those that target both physical activity and dietary habits) are likely to generate better outcomes than single-component interventions.
- Interventions often attempt to be culturally sensitive, such as using members of the target community to deliver the intervention. For some individuals, this will be a respected member of the community (e.g., a religious leader), but this is

not necessarily the case. However, the reviews rarely reported whether such techniques were effective at recruiting and retaining participants, and so it is unclear whether tailoring is effective. Nonetheless, in the absence of evidence to the contrary, it would seem sensible to consider cultural adaptations as a way to recruit and retain participants.

- A range of methods needs to be used to increase accessibility to the intervention, which might include innovative approaches such as television and workplace programmes.
- Strategies to promote individual motivation to change and family/ friend support for the programme are likely to be important factors promoting success for many people.

There are a number of implications for future research:

- The reviews are US-centric and most of the primary research is targeted at African Americans. Programmes for BME and low-SES groups in the UK should be set up and evaluated, and the results published.
- Many interventions seem to be effective in terms of within-group gains, but it is less clear whether there are between-group differences. This could be due to the way in which the evaluations were conducted (e.g., an inadequately differentiated control group does not allow us to distinguish benefits attributable to the intervention under evaluation), or because any type of ‘attention placebo’ can be effective in improving outcomes such as weight loss or dietary fat intake reduction. Well-designed RCTs are required to disentangle this issue.
- There is a lack of clarity about the maintenance of the benefits for the various groups. Future research should conduct longer-term follow-ups and consider the reasons for attrition.
- Accessibility to the intervention does not feature prominently in the research literature; there could be differences in outcomes depending on where the individual lives (e.g., rural versus urban) and how accessible the programmes are (e.g., costs to participate, transportation).
- Future studies examining the effectiveness of these programmes should also evaluate their cost-effectiveness. The sustainability of the programmes is dependent on whether the costs are justified by the gains in quality-adjusted life years and long-term savings to the healthcare system.

6.4 Findings in context

We found no evidence that would directly and confidently support strategies to reduce the risk of pre-diabetes in most high-risk populations in the UK. It is uncertain how far the results of studies in African American groups in the US are transferable to Black populations in the UK, and even less certain how far they might relate to other BME or low-SES groups.

We found evidence that interventions delivered within a close community such as a church were more likely to be successful than self-help interventions. Certain Black church communities in the UK might respond as effectively to similar types of intervention, and other close religious or cultural groups might also be receptive to such a strategy. It seems important to involve representatives from the BME group to design tailored interventions that are culturally appropriate.

In contrast, we found no evidence on the effectiveness of population-level interventions targeted at more isolated or excluded populations, which include low-SES groups. These groups may well have very low motivation to address their risk factors for pre-diabetes, be relatively lacking in social support for such change, and have both limited resources and limited inclination to use them to access interventions. Pilot studies should be encouraged, for example, for school-based interventions for parents or health centre-based programmes for adults in low-SES areas, to identify promising strategies in these groups.

6.5 Conclusions

From the evidence base identified, we can determine little from review-level evidence about the effectiveness and cost-effectiveness of population- and community-level interventions to improve modifiable risk factors associated with pre-diabetes among BME and low-income / low-SES groups. This is partly due to the generally low-quality evidence reviews in this field and to the lack of evidence on BME/low-SES groups other than African American samples. Physical activity and dietary interventions often have positive outcomes, but this is based on weak evidence (low quality reviews, and generally small effect sizes). Multi-component interventions (e.g., those that target both physical activity and dietary habits) are likely to generate better outcomes than single-component interventions, although findings were inconsistent both within and across reviews.

There is some evidence that tailoring interventions for diabetes risk factors to BME or low-income groups can improve outcomes including BMI, physical activity levels, and blood pressure. However, this is inconsistent both within and across reviews, and predominantly focused on cultural adaptations for African American samples. Also, although research suggests that cultural tailoring is common, reviews rarely report on whether such adaptations are effective.

There are likely to be numerous barriers and facilitators to the effectiveness of interventions. Unfortunately, there is insufficient review-level evidence on intervention administrators, barriers to retention of participants in primary studies in the reviews, and the impact of evaluation design on effect sizes, to draw any definitive conclusions. One review indicated that individual motivation and family/ friend support are likely to be important for many people.

7.0 References

7.1 Included reviews

Included reviews (n = 10)

- Ammerman, A., Lindquist, C., Hersey, J., Jackman, A., Gavin, N., Garces, C., Lohr, K., et al. (2001). *The efficacy of interventions to modify dietary behavior related to cancer risk. Vol 1: Evidence report and appendices; Vol 2: Evidence tables*. Rockville, MD: Agency for Healthcare Research and Quality (AHRQ).
- Banks-Wallace, J., & Conn, V. (2002). Interventions to promote physical activity among African American women. *Public Health Nursing (Boston, Mass.)*, 19(5), 321-335.
- Bronner, Y., & Boyington, J. E. (2002). Developing weight loss interventions for African-American women: elements of successful models. *Journal of the National Medical Association*, 94(4), 224-235.
- Eastridge, D. K. (2009). An integrative review of interventions to reduce peripheral arterial disease risk factors in African Americans. *Journal of Vascular Nursing*, 27(2), 31–45.
- Gao, Y., Griffiths, S., & Chan, E. Y. (2008). Community-based interventions to reduce overweight and obesity in China: a systematic review of the Chinese and English literature. *Journal of public health*, 30(4), 436-448.
- Oldroyd, J., Burns, C., Lucas, P., Haikerwal, A., & Waters, E. (2008). The effectiveness of nutrition interventions on dietary outcomes by relative social disadvantage: a systematic review. *Journal of Epidemiology and Community Health*, 62., 573 -579.
- Sánchez-Johnsen, L. A. P. (2005). Smoking cessation, obesity and weight concerns in black women: a call to action for culturally competent interventions. *Journal of the National Medical Association*, 97(12), 1630-1638.
- Thompson, E., Berry, D., & Nasir, L. (2009). Weight management in African-Americans using church-based community interventions to prevent type 2 diabetes and cardiovascular disease. *Journal of National Black Nurses' Association*, 20(1), 59-65.
- Whitt-Glover, M. C., & Kumanyika, S. K. (2009). Systematic review of interventions to increase physical activity and physical fitness in African-Americans. *Journal Information*, 23(6), S33-S56.
- Yancey, A. K., Kumanyika, S. K., Ponce, N. A., McCarthy, W. J., Fielding, J. E., Leslie, J. P., & Akbar, J. (2004a). Population-based interventions engaging communities of color in healthy eating and active living: a review. *Preventing Chronic Disease*, 1(1), 1-18.

Case studies (n = 8)

- Gans, K. M., Kumanyika, S. K., Lovell, H. J., Risica, P. M., Goldman, R., Odoms-Young, A., Strolla, L. O., et al. (2003). The development of SisterTalk: a cable TV-delivered weight control program for black women. *Preventive Medicine*, 37(6 Pt 1), 654-667.
- Karanja, N., Stevens, V. J., Hollis, J. F., & Kumanyika, S. K. (2002). Steps to soulful living (steps): a weight loss program for African-American women. *Ethnicity and Disease*, 12(3), 363–371.

- Stolley, M. R., & Fitzgibbon, M. L. (1997). Effects of an obesity prevention program on the eating behavior of African American mothers and daughters. *Health Education & Behavior: The Official Publication of the Society for Public Health Education*, 24(2), 152-164.
- Winkleby, M. A., Howard-Pitney, B., Albright, C. A., Bruce, B., Kraemer, H. C., & Fortmann, S. P. (1997). Predicting achievement of a low-fat diet: a nutrition intervention for adults with low literacy skills. *Preventive Medicine*, 26(6), 874-882.
- Yancey, A. K., Lewis, L. B., Sloane, D. C., Guinyard, J. J., Diamant, A. L., Nascimento, L. M., & McCarthy, W. J. (2004b). Leading by example: a local health department-community collaboration to incorporate physical activity into organizational practice. *Journal of Public Health Management and Practice*, 10(2), 116-123.
- Yancey, A. K., McCarthy, W. J., Taylor, W. C., Merlo, A., Gewa, C., Weber, M. D., & Fielding, J. E. (2004c). The Los Angeles Lift Off: a sociocultural environmental change intervention to integrate physical activity into the workplace. *Preventive medicine*, 38(6), 848-856.
- Yancey, A. K., Miles, O., & Jordan, A. D. (1999). Organizational characteristics facilitating initiation and institutionalization of physical activity programs in a multiethnic urban community. *Journal of Health Education*, 30(2), S44-S51.
- Yanek, L. R., Becker, D. M., Moy, T. F., Gittelsohn, J., & Koffman, D. M. (2001). Project Joy: faith based cardiovascular health promotion for African American women. *Public Health Reports*, 116(Suppl 1), 68-81.

7.2 Studies excluded on full text

- Baird, J., Cooper, C., Margetts, B. M., Barker, M., & Inskip, H. M. (2009). Changing health behaviour of young women from disadvantaged backgrounds: evidence from systematic reviews. *Proceedings of the Nutrition Society*, 68(02), 195-204.
- Biggs, M. L., Mukamal, K. J., Luchsinger, J. A., Ix, J. H., Carnethon, M. R., Newman, A. B., de Boer, I. H., et al. (2010). Association Between Adiposity in Midlife and Older Age and Risk of Diabetes in Older Adults. *JAMA*, 303(24), 2504.
- Caperchione, C. M., Kolt, G. S., & Mummery, W. K. (2009). Physical activity in culturally and linguistically diverse migrant groups to Western society: a review of barriers, enablers and experiences. *Sports Medicine*, 39(3), 167-177.
- Chaudhary, N., & Kreiger, N. (2007). Nutrition and physical activity interventions for low-income populations. *Canadian Journal of Dietetic Practice and Research*, 68(4), 201-206.
- Ciliska, D., Miles, E., O'Brien, M. A., Turl, C., Hale Tomasik, H., Donovan, U., & Beyers, J. (2000). Effectiveness of community-based interventions to increase fruit and vegetable consumption. *Journal of Nutrition Education*, 32(6), 341-352.
- Clifford, A., Jackson Pulver, L., Richmond, R., Shakeshaft, A., & Ivers, R. (2009). Disseminating best-evidence health-care to Indigenous health-care settings and programs in Australia: identifying the gaps. *Health Promotion International*, 24(4), 404.
- Crook, E. D., Bryan, N. B., Hanks, R., Slagle, M. L., Morris, C. G., Ross, M. C., Torres, H. M., et al. (2009). A review of interventions to reduce health disparities in cardiovascular disease in African Americans. *Ethnicity & disease*, 19(2), 204.

- Davies, M. J., Tringham, J. R., Troughton, J., & Khunti, K. K. (2004). Prevention of Type 2 diabetes mellitus. A review of the evidence and its application in a UK setting. *Diabetic Medicine*, 21(5), 403–414.
- Dishman, R. O., & Buckworth, J. (1996). Increasing physical activity: a quantitative synthesis. *Medicine & Science in Sports & Exercise*, 28(6), 706.
- Drewnowski, A., Monsen, E., Birkett, D., Gunther, S., Vendeland, S., Su, J., & Marshall, G. (2003). Health screening and health promotion programs for the elderly. *Disease Management & Health Outcomes*, 11(5), 299–309.
- Engbers, L. H., van Poppel, M. N., Chin, A. P., Marijke, J. M., & van Mechelen, W. (2005). Worksite Health Promotion Programs with Environmental Changes: A Systematic Review. *American Journal of Preventive Medicine*, 29(1), 61–70.
- Evans, P. H., Greaves, C., Winder, R., Fearn-Smith, J., & Campbell, J. L. (2007). Development of an educational 'toolkit' for health professionals and their patients with prediabetes: The WAKEUP study (Ways of Addressing Knowledge Education and Understanding in Pre-diabetes). *Diabetic Medicine*, 24(7), 770–777.
- Feig, D. S., Palda, V. A., Lipscombe, L., & others. (2005). Screening for type 2 diabetes mellitus to prevent vascular complications: updated recommendations from the Canadian Task Force on Preventive Health Care. *Canadian Medical Association Journal*, 172(2), 177.
- Fleury, J., Keller, C., Perez, A., & Lee, S. M. (2009). The role of lay health advisors in cardiovascular risk reduction: a review. *American journal of community psychology*, 44(1), 28–42.
- Hagberg, L. A., & Lindholm, L. (2006). Review Article: Cost-effectiveness of healthcare-based interventions aimed at improving physical activity. *Scandinavian journal of public health*, 34(6), 641.
- Hardeman, W., Griffin, S., Johnston, M., Kinmonth, A. L., & Wareham, N. J. (2000). Interventions to prevent weight gain: a systematic review of psychological models and behaviour change methods. *International Journal of Obesity*, 24(2), 131–143.
- Hider, P. (2001). Environmental interventions to reduce energy intake or density: a critical appraisal of the literature. *New Zealand Health Tech Assess*, 4(2).
- Hussain, A., Claussen, B., Ramachandran, A., & Williams, R. (2007). Prevention of type 2 diabetes: a review. *Diabetes research and clinical practice*, 76(3), 317–326.
- Hyman, I., Guruge, S., Makarchuk, M. J., Cameron, J., & Micevski, V. (2002). Promotion of Healthy Eating: Among New Immigrant Women in Ontario. *Canadian Journal of Dietetic Practice and Research*, 63(3), 125–129.
- Jain, S., & Brown, D. R. (2001). Cultural Dance: An Opportunity To Encourage Physical Activity and Health in Communities. *American Journal of Health Education*, 32(4), 216–22.
- Karp, R. J., Cheng, C., & Meyers, A. F. (2005). The appearance of discretionary income: Influence on the prevalence of under- and over-nutrition. *International Journal for Equity in Health*, 4(1), 10.
- Lee, J. S., Fischer, J. G., & Johnson, M. A. (2010). Food Insecurity, Food and Nutrition Programs, and Aging: Experiences from Georgia. *Journal of Nutrition For the Elderly*, 29(2), 116.
- Lee, S. M. (2005). Physical Activity Among Minority Populations: What Health Promotion Practitioners Should Know—A Commentary. *Health Promotion Practice*, 6(4), 447.

- Levy, L. Z., & Petty, K. (2008). Childhood obesity prevention: compelling challenge of the twenty-first century. *Early Child Development and Care*, 178(6), 609–615.
- MacDonald, J. M., Stokes, R. J., Cohen, D. A., Kofner, A., & Ridgeway, G. K. (2010). The Effect of Light Rail Transit on Body Mass Index and Physical Activity. *American Journal of Preventive Medicine*, 39(2), 105–112.
- McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the Nutritional Implications of Farmers' Markets and Community Gardens: A Call for Evaluation and Research Efforts. *Journal of the American Dietetic Association*, 110(3), 399–408.
- Michie, S., Jochelson, K., Markham, W. A., & Bridle, C. (2008). *Low-income Groups and Behaviour Change Interventions*. London: King's Fund.
- Michie, S., Jochelson, K., Markham, W. A., & Bridle, C. (2009). Low-income groups and behaviour change interventions: a review of intervention content, effectiveness and theoretical frameworks. *British Medical Journal*, 63(8), 610.
- Netto, G., Bhopal, R., Lederle, N., Khatoon, J., & Jackson, A. (2010). How can health promotion interventions be adapted for minority ethnic communities? Five principles for guiding the development of behavioural interventions. *Health Promotion International*.
- Norris, S. L., Zhang, X., Avenell, A., Gregg, E., Bowman, B., Schmid, C. H., & Lau, J. (2005). Long-term effectiveness of weight-loss interventions in adults with pre-diabetes: A review. *American journal of preventive medicine*, 28(1), 126–139.
- Ogilvie, D., Egan, M., Hamilton, V., & Petticrew, M. (2004). Promoting walking and cycling as an alternative to using cars: systematic review. *British Medical Journal*, 329(7469), 763.
- Olvera, A. E. (2008). Cultural Dance and Health: A Review of the Literature. *American Journal of Health Education*, 39(6), 353–359.
- Popkin, B. M., Duffey, K., & Gordon-Larsen, P. (2005). Environmental influences on food choice, physical activity and energy balance. *Physiology & behavior*, 86(5), 603–613.
- Riccardi, G., Rivellese, A. A., & Giacco, R. (2008). Role of glycemic index and glycemic load in the healthy state, in prediabetes, and in diabetes. *American Journal of Clinical Nutrition*, 87(1), 269S.
- Rosenberg, M., & Lawrence, A. (2000). *Review of Primary Prevention of Type 2 Diabetes in Western Australia*. Health Department of Western Australia; The University of Western Australia.
- Satia-Abouta, J., Patterson, R. E., Neuhouser, M. L., & Elder, J. (2002). Dietary acculturation: Applications to nutrition research and dietetics. *Journal of the American Dietetic Association*, 102(8), 1105–1118.
- Satterfield, D. W., Volansky, M., Caspersen, C. J., Engelgau, M. M., Bowman, B. A., Gregg, E. W., Geiss, L. S., et al. (2003). Community-based lifestyle interventions to prevent type 2 diabetes. *Diabetes Care*, 26(9), 2643.
- Schulze, M. B., & Hu, F. B. (2004). Primary prevention of diabetes: what can be done and how much can be prevented?
- Seo, D. C., & Sa, J. (2008). A meta-analysis of psycho-behavioral obesity interventions among US multiethnic and minority adults. *Preventive medicine*, 47(6), 573–582.
- Sheehy, A. M., Flood, G. E., Tuan, W. J., Liou, J., Coursin, D. B., & Smith, M. A. (2010). Analysis of Guidelines for Screening Diabetes Mellitus in an Ambulatory Population. In *Mayo Clinic Proceedings* (Vol. 85, p. 27).

- Sohal, P. S. (2008). Prevention and management of diabetes in South Asians. *Can J Diabetes*, 32, 206–10.
- Steyn, N. P., Lambert, E. V., & Tabana, H. (2008). Nutrition interventions for the prevention of type 2 diabetes. *Proceedings of the Nutrition Society*, 68(01), 55–70.
- Timmerman, G. M. (2007). Addressing barriers to health promotion in underserved women. *Family & Community Health*, 30, S34.
- Tuomilehto, J., & Lindström, J. (2003). The major diabetes prevention trials. *Current Diabetes Reports*, 3(2), 115–122.
- Victorian Government Department of Human Services. (2006). *ACE-Obesity. Assessing Cost-effectiveness of obesity interventions in children and adolescents*. Melbourne, Victoria: Victorian Government Department of Human Services.
- Vidourek, R. A., & King, K. A. (2008). Effectiveness of Nutrition Programs in Increasing Healthy Eating Behaviors among Low Income Women.
- Whitlock, E. P., & Williams, S. B. (2003). The primary prevention of heart disease in women through health behavior change promotion in primary care. *Women's Health Issues*, 13(4), 122–141.
- Wilcox, S., Parra-Medina, D., Thompson-Robinson, M., & Will, J. (2001). Nutrition and physical activity interventions to reduce cardiovascular disease risk in health care settings: a quantitative review with a focus on women. *Nutrition reviews*, 59(7), 197–214.
- Will, J. C., Farris, R. P., Sanders, C. G., Stockmyer, C. K., & Finkelstein, E. A. (2004). Health promotion interventions for disadvantaged women: overview of the WISEWOMAN projects. *Journal of Women's Health*, 13(5), 484–502.
- Wolfe, W. A. (2004). A review: maximizing social support--a neglected strategy for improving weight management with African-American women. *Ethnicity & Disease*, 14(2), 212-218.
- Yancey, A. K., Ory, M. G., & Davis, S. M. (2006). Dissemination of physical activity promotion interventions in underserved populations. *American journal of preventive medicine*, 31(4), 82–91.
- Yancey, A. K., & Tomiyama, A. J. (2007). Physical activity as primary prevention to address cancer disparities. In *Seminars in oncology nursing* (Vol. 23, pp. 253–263).

8.0 Appendix A. Search Strategy

The electronic database search strategy was written by the Centre for Evidence and Policy (King’s College, London) in partnership with Matrix Evidence Ltd and the NICE Review team. It was drafted and extensively tested to find review level literature targeting the prevention of pre-diabetes in high-risk groups to inform Public Health Guidance within a project time-line of six weeks. The review cluster was conceived to capture a broad spectrum of mixed review methodologies without restricting to systematic reviews. We had concerns about the indexing within some of the databases and the high-levels of false positive returns seen in testing, specifically the use of ‘review’ in publication type and the knock-on effect in regard to volume and specificity. There was some concern about the sensitivity of published review clusters focusing on ‘publication type¹⁹’ and so we designed and tested our own bespoke cluster which performed well but inevitably did not completely block out the wealth of false negative returns.

All electronic database searching was conducted on Wednesday, July 7th 2010; a summary of the results of electronic searching is presented in Table A1. The results (except DoPHER) were uploaded into a bibliographic management tool. Members of the Programme Development Group (PDG) were also consulted to locate relevant literature; their suggestions are presented in Table A2 at the end of this Appendix. Web searching, journal hand-searching, and citation chasing were not carried out for this review.

Table A1
Summary of the results of the electronic database searches

Database	Hits
Assia	84
Cinahl	568
Cochrane Reviews	200
DARE & HTA (CRD)	440
DoPHER	11
EMBASE	511
ERIC	37
HMIC	28
Medline	612
Medline in Process	33
PsycINFO	114
SPP	12
Total	2650

¹⁹ Montori, V. M., Wilczynski, N. L., Morgan, D., Haynes, R. B., & for the Hedges Team. (2005). Optimal search strategies for retrieving systematic reviews from Medline: analytical survey. *BMJ*, 330(7482), 68.

ASSIA via CSA

Searched Wednesday, July 7th 2010

84 Hits

1. (pre-diabetes or pre diabetes or prediabetes)
2. (pre diabetic state*)
3. (history and (gestational diabetes))
4. ((Metabolic or Reaven* or Dysmetabolic and (syndrome)) or insulin resistance syndrome)
5. (weight and (gain or increase* or excess*))
6. (obes* or overweight or over weight)
7. (healthy eating or unhealthy eating or diet or food habit*)
8. (physical* and (activ* or inactiv*))
9. ((sedentary or active) and (lifestyle or life-style or (life and style*)))
10. /or 1-9
11. (ethnic* or multi-ethnic* or multi ethnic* or multi-rac* or multi rac* or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur* or cultural* diversit* or minority or colo?r and (ethnic* or social group* or group or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
12. (Arab* or Asian or Asian American*1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican* or Pakistani or Bangladeshi or Chinese or traveller or Gypsi* or romany or romani or roma or traveller* or Black* or (Black* and (African or Caribbean)) or BME and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
13. (black and (minority ethnic))
14. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege* or underprivilege* or vulnerable and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
15. (poverty or deprivation or financial hardship*)
16. (health and (inequalit* or disparities))
17. or/11-16
18. (promot* or prevent* or reduc* or educat* or improv* or upstream* or (population or communit* and (intervention*1)))
19. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies)
20. (health technology assessment*)
21. (review and (literature or reviews))
22. (Review)
23. or/19-22

24. 10 and 17 and 18 and 23
25. Limit 24 to English Language
26. Limit to 25 yr="1999 -Current"

CINAHL via EBSCO Host

Searched Wednesday, July 7th 2010

568 Hits

1. (pre-diabetes or pre diabetes or prediabetes)
2. (pre diabetic state*)
3. (history and (gestational diabetes))
4. ((Metabolic or Reaven* or Dysmetabolic and (syndrome)) or insulin resistance syndrome)
5. (weight and (gain or increase* or excess*))
6. (obes* or overweight or over weight)
7. (healthy eating or unhealthy eating or diet or food habit*)
8. (physical* and (activ* or inactiv*))
9. ((sedentary or active) and (lifestyle or life-style or (life and style*)))
10. /or 1-9
11. (ethnic* or multi-ethnic* or multi ethnic* or multi-rac* or multi rac* or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur* or cultural* diversit* or minority or colo?r and (ethnic* or social group* or group or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
12. (Arab* or Asian or Asian American*1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican* or Pakistani or Bangladeshi or Chinese or traveller or Gypsi* or romany or romani or roma or traveller*or Black* or (Black* and (African or Caribbean)) or BME and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
13. (black and (minority ethnic))
14. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege* or underprivilege* or vulnerable and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
15. (poverty or deprivation or financial hardship*)
16. (health and (inequalit* or disparities))
17. or/11-16
18. (promot* or prevent* or reduc* or educat* or improv* or upstream* or (population or communit* and (intervention*1)))
19. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-

- analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies)
20. (health technology assessment*)
 21. (review and (literature or reviews))
 22. (Review)
 23. or/19-22
 24. 10 and 17 and 18 and 23
 25. Limit 24 to English Language
 26. Limit to 25 yr="1999 -Current"

Cochrane Database of Systematic Reviews (Cochrane Reviews) via Wiley Interscience

(http://www.mrw.interscience.wiley.com/cochrane/cochrane_search_fs.html)

Searched Wednesday, July 7th 2010

200 Hits

1. (pre-diabetes or pre diabetes or prediabetes)
2. (pre diabetic state*)
3. (history and (gestational diabetes))
4. ((Metabolic or Reaven* or Dysmetabolic and (syndrome)) or insulin resistance syndrome)
5. (weight and (gain or increase* or excess*))
6. (obes* or overweight or over weight)
7. (healthy eating or unhealthy eating or diet or food habit*)
8. (physical* and (activ* or inactiv*))
9. ((sedentary or active) and (lifestyle or life-style or (life and style*)))
10. /or 1-9
11. (ethnic* or multi-ethnic* or multi ethnic* or multi-rac* or multi rac* or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur* or cultural* diversit* or minority or colo?r and (ethnic* or social group* or group or population* or neighbourhoood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
12. (Arab* or Asian or Asian American*1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican* or Pakistani or Bangladeshi or Chinese or traveller or Gypsi* or romany or romani or roma or traveller*or Black* or (Black* and (African or Caribbean)) or BME and (ethnic* or social group* or population* or neighbourhoood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
13. (black and (minority ethnic))
14. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege* or underprivilege* or vulnerable and (ethnic* or social group* or population* or neighbourhoood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))

15. (poverty or deprivation or financial hardship*)
16. (health and (inequalit* or disparities))
17. or/11-16
18. (promot* or prevent* or reduc* or educat* or improv* or upstream* or (population or communit* and (intervention*1)))
19. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies)
20. (health technology assessment*)
21. (review and (literature or reviews))
22. (Review)
23. or/19-22
24. 10 and 17 and 18 and 23
25. Limit 24 to English Language
26. Limit to 25 yr="1999 -Current"

DARE (Database of Abstracts of Reviews of Effectiveness) and HTA via CRD

(<http://www.york.ac.uk/inst/crd/>)

Searched Wednesday, July 7th 2010

682 Hits²⁰

1. (pre-diabetes or pre diabetes or prediabetes)
2. (pre diabetic state*)
3. (history and (gestational diabetes))
4. ((Metabolic or Reaven* or Dysmetabolic and (syndrome)) or insulin resistance syndrome)
5. (weight and (gain or increase* or excess*))
6. (obes* or overweight or over weight)
7. (healthy eating or unhealthy eating or diet or food habit*)
8. (physical* and (activ* or inactiv*))
9. ((sedentary or active) and (lifestyle or life-style or (life and style*)))
10. /or 1-9
11. (ethnic* or multi-ethnic* or multi ethnic* or multi-rac* or multi rac* or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur* or cultural* diversit* or minority or colo?r and (ethnic* or social group* or group or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
12. (Arab* or Asian or Asian American*1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican* or Pakistani or Bangladeshi or Chinese or traveller or Gypsi* or

²⁰ A slight change was made to the structure of the population cluster for this search. Line 13, previously incorporated within line 12, was moved out to get it through the CRD filter and maintain transparency. It otherwise exists in exactly the same way, the change textually is merely aesthetic.

- romany or romani or roma or traveller* or Black* or BME and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
13. ((Black* and (African or Caribbean)) and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
 14. (black and (minority ethnic))
 15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege* or underprivilege* or vulnerable and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
 16. (poverty or deprivation or financial hardship*)
 17. (health and (inequalit* or disparities))
 18. or/11-16
 19. (promot* or prevent* or reduc* or educat* or improv* or upstream* or (population or communit* and (intervention*1)))
 20. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies)
 21. (health technology assessment*)
 22. (review and (literature or reviews))
 23. (Review)
 24. or/19-22
 25. 10 and 17 and 18 and 23
 26. Limit 24 to English Language
 27. Limit to 25 yr="1999 -Current"

DoPHER (Database of Public Health Effectiveness Reviews) via EPPI-Centre

(<http://eppi.ioe.ac.uk/webdatabases/Search.aspx>)

Searched Wednesday, July 7th 2010

11 Hits

1. KEYWORDS: Focus of the report: diabetes OR healthy eating OR inequalities OR obesity OR physical activity
2. FREETEXT: "promot*" OR "prevent"
3. FREETEXT: "Asian" OR "black" OR "ethnic" OR "minority" OR "poverty" OR "depriv*" OR "income"

1 AND 2 AND 3

Embase via OVID

Searched Wednesday, July 7th 2010

511 hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$).ti,ab.
3. (history adj3 (gestational adj diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$ or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
13. (black adj1 minority ethnic).ti,ab.
14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/
15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
16. (poverty or deprivation or financial hardship\$).ti,ab. or poverty/ or poverty areas/
17. (health adj2 inequalit\$).ti,ab. or *Health Status Disparities/
18. /or 11-17
19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.
20. health promotion/ or intervention studies/
21. or/19-20
22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
23. (health technology adj6 assessment\$).ti,ab,pt.
24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.

25. (Review).ti,ab.
26. or/22-25
27. 10 and 18 and 21 and 26
28. animals/ not (animals/ and humans/)
29. 27 not 28
30. Limit 29 to English Language
31. Limit to 30 yr="1999 -Current"

ERIC via CSA

Searched Wednesday, July 7th 2010

37 Hits

1. (pre-diabetes or pre diabetes or prediabetes)
2. (pre diabetic state*)
3. (history and (gestational diabetes))
4. ((Metabolic or Reaven* or Dysmetabolic and (syndrome)) or insulin resistance syndrome)
5. (weight and (gain or increase* or excess*))
6. (obes* or overweight or over weight)
7. (healthy eating or unhealthy eating or diet or food habit*)
8. (physical* and (activ* or inactiv*))
9. ((sedentary or active) and (lifestyle or life-style or (life and style*)))
10. /or 1-9
11. (ethnic* or multi-ethnic* or multi ethnic* or multi-rac* or multi rac* or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur* or cultural* diversit* or minority or colo?r and (ethnic* or social group* or group or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
12. (Arab* or Asian or Asian American*1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican* or Pakistani or Bangladeshi or Chinese or traveller or Gypsi* or romany or romani or roma or traveller*or Black* or (Black* and (African or Caribbean)) or BME and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
13. (black and (minority ethnic))
14. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege* or underprivilege* or vulnerable and (ethnic* or social group* or population* or neighbourhood*1 or neighborhood*1 or communit* or rac* or religious* or people or population* or families))
15. (poverty or deprivation or financial hardship*)
16. (health and (inequalit* or disparities))
17. or/11-16

18. (promot* or prevent* or reduc* or educat* or improv* or upstream* or (population or communit* and (intervention*1)))
19. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies)
20. (health technology assessment*)
21. (review and (literature or reviews))
22. (Review)
23. or/19-22
24. 10 and 17 and 18 and 23
25. Limit 24 to English Language
26. Limit to 25 yr="1999 -Current"

HMIC via Ovid

Searched Wednesday, July 7th 2010

28 Hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$).ti,ab.
3. (history adj3 (gestational adj diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$ or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
13. (black adj1 minority ethnic).ti,ab.
14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/

15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
16. (poverty or deprivation or financial hardship\$).ti,ab. or poverty/ or poverty areas/
17. (health adj2 inequalit\$).ti,ab. or *Health Status Disparities/
18. /or 11-17
19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.
20. health promotion/ or intervention studies/
21. or/19-20
22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
23. (health technology adj6 assessment\$).ti,ab,pt.
24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.
25. (Review).ti,ab.
26. or/22-25
27. 10 and 18 and 21 and 26
28. animals/ not (animals/ and humans/)
29. 27 not 28
30. Limit 29 to English Language
31. Limit to 30 yr="1999 -Current"

Medline via Ovid

Searched Wednesday, July 7th 2010

612 Hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$).ti,ab.
3. (history adj3 (gestational adj diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or

- population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$ or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
 13. (black adj1 minority ethnic).ti,ab.
 14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/
 15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
 16. (poverty or deprivation or financial hardship\$.ti,ab. or poverty/ or poverty areas/
 17. (health adj2 inequalit\$.ti,ab. or *Health Status Disparities/
 18. /or 11-17
 19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.
 20. health promotion/ or intervention studies/
 21. or/19-20
 22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
 23. (health technology adj6 assessment\$.ti,ab,pt.
 24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.
 25. (Review).ti,ab.
 26. or/22-25
 27. 10 and 18 and 21 and 26
 28. animals/ not (animals/ and humans/)
 29. 27 not 28
 30. Limit 29 to English Language
 31. Limit to 30 yr="1999 -Current"

Medline in Process via OVID

Searched Wednesday, July 7th 2010

33 Hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$.ti,ab.

3. (history adj3 (gestational adj diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
13. (black adj1 minority ethnic).ti,ab.
14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/
15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
16. (poverty or deprivation or financial hardship\$).ti,ab. or poverty/ or poverty areas/
17. (health adj2 inequalit\$).ti,ab. or *Health Status Disparities/
18. /or 11-17
19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.
20. health promotion/ or intervention studies/
21. or/19-20
22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
23. (health technology adj6 assessment\$).ti,ab,pt.
24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.
25. (Review).ti,ab.
26. or/22-25
27. 10 and 18 and 21 and 26

28. animals/ not (animals/ and humans/)
29. 27 not 28
30. Limit 29 to English Language
31. Limit to 30 yr="1999 -Current"

PsycINFO via Ovid

Searched Wednesday, July 7th 2010

114 Hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$).ti,ab.
3. (history adj3 (gestational adj1 diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$ or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
13. (black adj1 minority ethnic).ti,ab.
14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/
15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
16. (poverty or deprivation or financial hardship\$).ti,ab. or poverty/ or poverty areas/
17. (health adj2 inequalit\$).ti,ab. or *Health Status Disparities/
18. /or 11-17
19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.

20. health promotion/ or intervention studies/
21. or/19-20
22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
23. (health technology adj6 assessment\$).ti,ab,pt.
24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.
25. (Review).ti,ab.
26. or/22-25
27. 10 and 18 and 21 and 26
28. animals/ not (animals/ and humans/)
29. 27 not 28
30. Limit 29 to English Language
31. Limit to 30 yr="1999 -Current"

Social Policy and Practice (SPP) via OVID

Searched Wednesday, July 7th 2010

12 Hits

1. (pre-diabetes or pre diabetes or prediabetes).ti,ab. or Prediabetic State/ pc
2. (pre adj1 diabetic adj1 state\$).ti,ab.
3. (history adj3 (gestational adj diabetes)).ti,ab. or Diabetes, gestational/
4. ((Metabolic or Reaven\$1 or Dysmetabolic and (syndrome)) or insulin resistance syndrome).ti,ab. or Metabolic Syndrome X/ pc
5. (weight adj2 gain or weight adj2 increase\$ or weight adj2 excess\$).ti,ab.
6. (obes\$ or overweight or over weight).ti,ab. or *Obesity/pc or *Overweight/pc
7. (healthy eating or unhealthy eating or diet).ti,ab. or food habits/eh or diet/
8. (physical\$ adj1 (activ\$ or inactiv\$)).ti,ab.
9. ((sedentary or active) adj (lifestyle or life-style or (life adj1 style\$))).ti,ab.
10. /or 1-9
11. (ethnic\$ or multi-ethnic\$ or multi ethnic\$ or multi-rac\$ or multi rac\$ or multi-cultural or multi cultural or mixed-race or mixed race or cross adj1 cultur\$ or cultural\$ diversit\$ or minority or colo?r and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
12. (Arab\$ or Asian or Asian American\$1 or African or African American or Caribbean or Afro Caribbean or Caucasian or Hispanic or Latino or Indian or Mexican\$ or Pakistani or Bangladeshi or Chinese or traveller or Gypsi\$ or romany or romani or roma or traveller\$ or Black\$ or (Black\$ and (African or Caribbean)) or BME and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
13. (black adj1 minority ethnic).ti,ab.

14. Minority Groups/ or Vulnerable Populations/ or exp Ethnic Groups/ or exp Continental Population Groups/ or cultural diversity/
15. (low-income or low income or low pay or low-socioeconomic status or low paid or poor or deprived or disadvantaged or underserved or under represented or under-represented or under-privilege\$ or underprivilege\$ and (ethnic\$ or social group\$ or population\$ or neighbourhood\$1 or neighborhood\$1 or communit\$ or rac\$ or religious\$ or people or population\$ or families)).ti,ab.
16. (poverty or deprivation or financial hardship\$.ti,ab. or poverty/ or poverty areas/
17. (health adj2 inequalit\$.ti,ab. or *Health Status Disparities/
18. /or 11-17
19. (promot\$ or prevent\$ or reduc\$ or educat\$ or improv\$ or upstream\$ or (population or communit\$ and (intervention\$1))).ti,ab.
20. health promotion/ or intervention studies/
21. or/19-20
22. (Literature review or narrative review or qualitative review or quantitative review or systematic review or systematic narrative or evidence review or meta-analysis or meta-analyses or meta analysis or evidence synthesis or evidence review or evaluation studies).ti,ab,pt.
23. (health technology adj6 assessment\$.ti,ab,pt.
24. ((review adj2 literature) or (review adj2 reviews)).ti,ab,pt.
25. (Review).ti,ab.
26. or/22-25
27. 10 and 18 and 21 and 26
28. animals/ not (animals/ and humans/)
29. 27 not 28
30. Limit 29 to English Language
31. Limit to 30 yr="1999 -Current"

Table A2

Literature suggestions by the PDG members

Australian ACE Obesity work http://www.health.vic.gov.au/healthpromotion/downloads/ace_obesity.pdf
Biggs et al (2010) Association Between Adiposity in Midlife and Older Age and Risk of Diabetes in Older Adults. <i>JAMA</i> , 303(24):2504-2512
Evans PH, Greaves C, Winder R, Fearn-Smith J, Campbell JL. (2007) Development of an educational 'toolkit' for health professionals and their patients with prediabetes: the WAKEUP study (Ways of Addressing Knowledge Education and Understanding in Pre-diabetes). <i>Diabetic Med</i> , 24(7):770-7.
Feig, DS, Palda VA, Lipscombe L. (2005) Screening for type 2 diabetes mellitus to prevent vascular complications: updated recommendations from the Canadian task Force on Preventive health Care. <i>CMAJ</i> , 172: 177.
Review of primary prevention of type 2 diabetes in Western Australia http://www.health.wa.gov.au/publications/documents/9754Type2DiabetesSUMMARY.pdf
MacDonald, JM, Stokes, RJ, Cohen, DA, Kofner, A, Ridgeway, GK. (2010) The effect of light rail transit on body mass index and physical activity. <i>Am J Prev Med</i> , 39 (2)
Schulze, MJ, & Hu: FB (2005) Primary prevention of diabetes: What can be done and how much can be prevented? <i>Annual Review of Public Health</i> , 26: 445-467.
Norris, SL, Zhang, X, Avenell, A, Gregg, E, Bowman, B, Schmid, CH, et al. (2005) Long-term effectiveness of weight-loss interventions in adults with pre-diabetes: a review. <i>Am J Prev Med</i> , 28(1):126-39.
Riccardi, G, Rivallesse, AA, Giazcco, R. (2008) Role of glycaemic index and glycaemic load in the health state, in prediabetes and in diabetes. <i>Am J Clin Nutr</i> , 87; 269s-74s
Sheehy, AM, Flood, GE, Tuan, WJ et al. (2010) Analysis of guidelines for screening diabetes mellitus in an ambulatory population. <i>Mayo Clin Proc</i> , 85: 27

9.0 Appendix B. Screening checklists

9.1 Screening checklist – abstracts

Table B1. Screening checklist

1.	Does the review relate to diabetes or pre-diabetes, obesity, healthy eating or dietary behaviour relevant to diabetes ²¹ , or physical activity? (Studies relating to any relevant behaviours or risk factors should be included here, even if they do not explicitly mention diabetes or pre-diabetes. Studies exclusively focusing on people who already have diagnosed type 2 diabetes should be excluded.)	YES/UNCLEAR – go to Q2	NO – exclude 1_EX Topic
2.	Is the study a review of literature? (A review is any study whose primary aim is to provide an overview or synthesis of primary research; studies containing a review as a subsidiary component only should be excluded.)	YES/UNCLEAR – go to Q3	NO – exclude 2_EX Review
3.	Was the review published in 1999 or later?	YES/UNCLEAR – go to Q4	NO – exclude 3_EX Date
4.	Is the review report published in English?	YES/UNCLEAR – go to Q5	NO – exclude 4_EX Language
5.	Does the review include studies of adults (18-74 years)? (Reviews where age is not specified or unclear should be included.)	YES/UNCLEAR – go to Q6	NO – exclude 5_EX Age
6.	Does the review include evaluations of interventions using any design (e.g. RCT, trial, one-group)? (Reviews which include only observational data, such as epidemiological studies of risk factors, should be excluded.)	YES/UNCLEAR – go to Q7	NO – exclude 6_EX Study design
7.	Does the review have an explicit focus on population- or community-level interventions?	YES/UNCLEAR – go to Q8	NO – exclude

²¹ Dietary interventions. Include interventions aiming/resulting in:

- reduced calorie, saturated fat and sugar intake (to include food and drink)
- increased fibre intake
- improved dietary behaviours (such as eating frequency, meal patterns e.g. not skipping breakfast; eating at irregular times),
- improved appetite control
- improved portion control

These interventions might not have specific weight related outcomes but would still be of importance in relation to the prevention of pre-diabetes. Interventions aiming solely to improve diet in ways which do not necessarily reduce calorie intake (e.g. salt reduction; fruit and vegetable promotion) should be excluded. However, this criterion should be interpreted inclusively at abstract stage.

	(This includes any intervention which is not primarily directed at individuals, such as one-to-one advice or education. Reviews of multi-component interventions with both individual- and community-level components should be included. Reviews of pharmacological or surgical interventions should be excluded.)		7_EX Intervention type
8.	Does the review have an explicit focus on <i>either</i> (i) low-SES or disadvantaged groups <i>or</i> (ii) any ethnic group relevant to the UK ²² ?	YES/UNCLEAR – 9_INCLUDE	NO – exclude 8_EX Population

For cases where inclusion is unclear, code as **10_QUERY** and save to discuss with screening team.

9.2 Screening checklist – full text articles

Full texts were screened using the same tool as above. However, ten reviews that met the inclusion criteria were excluded since less than 50% of the primary studies included within every of the available subsections were relevant. In other words, half or more of the studies discussed in the review (or in at least one of its subsections) had to be relevant for our review.

²² Ethnic groups relevant to the UK include the following: Black / African / Afro-Caribbean, Asian (Indian / Pakistani / Bangladeshi), Chinese, mixed. Reviews focusing on American Indian or other indigenous / First Nation groups, or on Latinos / Hispanics, should be excluded. However, reviews focusing on African-Americans should be included. Reviews with a focus on several ethnic groups, of which some meet this criterion and some do not, should be included. Any study of these ethnic groups should be included, wherever conducted (e.g. this may include studies from Africa, the Indian subcontinent, the Caribbean or China).

10.0 Appendix C. Evidence tables

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Ammerman et al.</p> <p>Year: 2001</p> <p>Citation: Ammerman, A., Lindquist, C., Hersey, J., Jackman, A., Gavin, N., Garces, C., Lohr, K., et al. (2001). <i>The efficacy of interventions to modify dietary behavior related to cancer risk. Vol 1: Evidence report and appendices; Vol 2: Evidence tables.</i> Rockville, MD: Agency for Healthcare</p>	<p>Databases and websites searched: Medline; Embase; PsycINFO; Cinahl; Ageline; Agricola.</p> <p>Other search methods undertaken (e.g., reference checking): Citation chasing; consultation with experts</p> <p>Years searched: 1975-1999</p> <p>Study type inclusion criteria: 1) Published 1975 to present [1999]; 2) Study conducted in North America, Europe, or</p>	<p>Included population/s: Low-income mothers (African American and Hispanics) and their children (findings not reported for the latter). Mean age of mothers: 33-35.</p> <p>Excluded population/s: Not reported.</p> <p>Setting of included studies: Community (participants recruited from tutoring programme for</p>	<p>Intervention/s description: [For the two relevant studies]: 60- to 90-minute nutrition education and group meetings once a week for 12 weeks. Classes included activity-based curriculum, meal and calories planning, group discussions. It was not stated who delivered the interventions or where they were set. They were culturally and ethnically tailored to the targeted groups and were family-based, although the review did not specify how they were tailored.</p> <p>Control/comparison/s description: Received standard general health advice.</p>	<p>Primary Outcomes: The difference in the percentage fat intake immediately after the conclusion of the 12-week intervention</p> <p>Secondary outcomes: Fruit and vegetables intake [findings not extracted]</p> <p>Follow-up periods: 1 week to 15 months.</p> <p>Methods of analysis: Three-tier approach:</p>	<p>Primary outcomes: The pooled (across the two studies) difference in fat intake between the two groups at 12 weeks was statistically significant, with a mean of 6.4 percentage points (95 percent CI, 3.5 to 9.3 percentage points). That is, the intervention group had significantly lower fat intake than the control group across both studies at 12 weeks. No findings relating to cost-effectiveness</p>	<p>Limitations identified by author: Not reported.</p> <p>Limitations identified by review team: Greater inclusion led to increased heterogeneity and difficulties in comparing studies. Limited data appropriate for meta-analysis.</p> <p>Evidence gaps and/or recommendations for future research: According to the review authors, there is a need for evidence comparing the effectiveness of different interventions or combination of them. Assessment of dietary change at the individual level would facilitate comparisons across widely different</p>

<p>Research and Quality (AHRQ).</p> <p>Aim of review: To review and synthesise the existing knowledge base on interventions to alter dietary behaviour related to cancer risk.</p> <p>Review design: Systematic Review</p> <p>Quality Score: ++</p>	<p>Australia; 3) English language; 4) Population: human adults, adolescents, and children; 5) Healthy or high-risk populations; 6) Non-institutionalized populations; 7) Randomized controlled trials (RCTs) or non-RCTs (non-equivalent control or comparison group designs); 8) Sample size >40 subjects at follow-up; 9) Diet freely chosen (not controlled by the study); 10) Outcomes include fruit and vegetable consumption or dietary fat intake ; 11) Includes follow-up data.</p> <p>Study type exclusion criteria: NR</p>	<p>children in poverty and literacy training programme)</p> <p>External validity score: Unclear</p>		<p>Meta-analysis; standardized quantitative analysis of the change between intervention and control groups from baseline to follow-up; and semi-quantitative analysis summarizing the significance of the intervention effect.</p>	<p>were reported for the 2 relevant studies.</p> <p>Secondary outcomes: Not reported in relevant studies.</p> <p>Attrition details: NR</p>	<p>intervention approaches. There is also very little cost-effectiveness data available, or findings for different population sub-groups.</p> <p>Source of funding: Agency for Healthcare Research and Quality, US Department of Health and Human Services</p>
--	--	--	--	--	--	---

	<p>Total number of included studies and number relevant to this review: Total $n = 92$; only 2 relevant to our review (within a subsection focusing on dietary fat consumption and low-income adults). Non-relevant studies were on children or non-high-risk groups.</p> <p>Method of synthesis: Meta-analysis</p>					
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Banks-Wallace & Conn</p> <p>Year: 2002</p> <p>Citation: Banks-Wallace, J. and Conn, V. (2002) Interventions to Promote Physical Activity Among African American Women. <i>Public Health Nursing</i>, 19(5), 321-335.</p> <p>Aim of review: To review trials of interventions aimed at</p>	<p>Databases and websites searched: Medline and CINHALL</p> <p>Other search methods undertaken (e.g., reference checking): Citation chasing of included studies; hand searches</p> <p>Years searched: 1984 to 2000</p> <p>Study type inclusion criteria: English language; focus on interventions aimed at increasing physical</p>	<p>Included population/s: 7 studies were exclusively of African American women, this group comprising 41% to 98% of the samples in the remaining studies. Some studies involved aging adults, but most were of young and middle-aged women (ages reported across the primary studies ranged from 18 to 79). 2 studies involved women with children. 12 of the studies specifically recruited women who were overweight or obese. 3 studies involved adults already</p>	<p>Intervention/s description:</p> <ul style="list-style-type: none"> • 14 studies were aimed at changing both diet and physical activity behaviour, 4 were solely aimed at physical activity • Most interventions included weekly education, motivation or supervised exercise sessions. 9 included supervised exercise groups at least once per week • Interventions lasted from 6 weeks to 6 months. • 3 interventions were delivered in church settings and 3 were delivered in clinical or hospital settings, the remainder being delivered in community recreational centres • African American professionals and trained staff from the target community were frequently used to tailor and deliver the interventions to the participants, although it was not reported whether 	<p>Primary Outcomes:</p> <ul style="list-style-type: none"> • Direct measures of physical activity: questionnaires (self-reported) or ergometers (objective). • Indirect measures of physical activity: heart rate, weight, BMI, waist measurement (all objective) <p>Secondary outcomes: NR</p> <p>Follow-up periods: Ranging from 2 weeks to 27 months (mostly 2-3 months). Only 3 studies incorporated a</p>	<p>Primary outcomes:</p> <ul style="list-style-type: none"> • Significant increases in direct measures of physical activity were reported in 6 studies. 5 studies reported non-significant increases. 5 studies involving supervised exercise sessions reported significant increases in physical activity (primarily through self-report measures), whilst 5 did not. Differences in physical activity were not attributable to the use of professional or lay programme leaders • 1 study reported a significant increase in heart rate, whilst 1 did not. 10 studies reported within-group reductions in waist, BMI, weight measurements and health related indices such as 	<p>Limitations identified by author: Small sample sizes; most studies were of pilot interventions; high levels of attrition; single-group and non-randomised designs used in many studies; no “attention” control groups; some studies were not based on a theoretical framework; some interventions were not clearly separated from outcome measures; measurement instruments were used that did not have documented validity and reliability; often only episodic physical activity was measured, not all activity; some studies only measured health outcomes and not physical activity; follow-up periods were often too short</p> <p>Limitations identified</p>

<p>increasing levels of physical activity among African American women</p> <p>Review design: Systematic review</p> <p>Quality Score: +</p>	<p>activity; direct and indirect measures of physical activity; sample included at least 35% of African American women</p> <p>Study type exclusion criteria: NR</p> <p>Total number of included studies and number relevant to this review: 18 studies were included, of which 14 were relevant to our review. Non-relevant studies were individually-focused.</p> <p>Method of synthesis: Narrative</p>	<p>diagnosed with diabetes, and 1 study exclusively comprised participants with hypertension. 4 of the interventions were targeted at low-income participants</p> <p>Excluded population/s: NR</p> <p>Setting of included studies: Community recreation centres and churches were the most common settings. 1 intervention was located in a hospital</p> <p>External validity score: +</p>	<p>these efforts were successful or not.</p> <ul style="list-style-type: none"> • Most interventions were designed to be culturally relevant to the participants – intervention, recruitment and retention strategies were tailored. A key strategy employed was to gain support from African American health care professionals and religious leaders. Retention strategies focused on timing of interventions (such as around meal times, church, or popular TV shows) and developing ownership of the programme (e.g., participants chose the name of the group). <p>Control/comparison/s description: Only 7 of the studies involved randomisation to treatment or comparison groups, 8 studies used pre/post test designs with single groups. Control/comparison groups were either assigned to the usual care, a variety of interventions or no treatment</p>	<p>follow-up period of more than 6 months</p> <p>Methods of analysis: Narrative synthesis</p>	<p>glycated haemoglobin (not reported whether these were statistically significant).</p> <ul style="list-style-type: none"> • 4 of the 7 studies that had a follow-up period of 1 month or less reported significant increases in physical activity, whereas only 1 of the 3 with follow-up periods of at least 6 months reported a significant increase in physical activity <p>Secondary outcomes: NR</p> <p>Attrition details: Attrition ranged from 3% to 41%. 5 studies reported attrition of greater than 20%. Studies with large attrition problems used a variety of strategies to reduce it, including: enhancing group identity, offering prizes, using</p>	<p>by review team: No additional limitations identified</p> <p>Evidence gaps and/or recommendations for future research: Study intervention before women become obese; include a more diverse range of women in the studies; consider economic, educational and community characteristics as attributes of the participants; examine the socio-political-cultural differences within groups; examine the effect of church based delivery as compared to other settings; compare diet/activity interventions to those with only activity components; examine the importance of African American programme leaders</p> <p>Source of funding: Not stated</p>
--	---	---	---	--	--	--

					monetary incentives, gaining recommendations from the community and making the exercise centres accessible. The review authors indicated that, in one study, home visits by health professionals that built the support of participants' partners and children was successful in minimising attrition; beyond that, it is not reported whether the other strategies were effective or not.	
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Bronner & Boyington</p> <p>Year: 2002</p> <p>Citation: J Natl Med Assoc. 2002;94:224-235</p> <p>Aim of review: Examines studies of weight-loss interventions aimed at overweight African-American women in order to identify: (a) elements that are associated with weight loss, (b) describe the behaviour</p>	<p>Databases and websites searched: National Library of Medicine's Medline Database and Grateful Med Database</p> <p>Other search methods undertaken (e.g., reference checking): None.</p> <p>Years searched: 1970 to 1998</p> <p>Study type inclusion criteria: Studies in which there is: (a) a focus on weight management for African American women, (b) clearly stated strategies for weight management, (c)</p>	<p>Included population/s: African American women, mean age range from 25 to 62 years; 2 studies involved Christians; 4 studies recorded as involving low-income participants.</p> <p>Excluded population/s: (defined by above)</p> <p>Setting of included studies: 7 studies were based in community settings (including 2 in churches), 3</p>	<p>Intervention/s description: The interventions lasted between 7 and 18 weeks, involved weekly or biweekly sessions of 1 or 2 hours' duration (where this information is recorded for studies) and involved combinations of the following elements: recruitment strategies, physical activity, retention strategies, diet, behaviour modification, and others, such as self-monitoring, counselling, exercise groups, education, assertiveness and self-image improvement, behaviour contracts and home visits by health professionals. Some of the interventions were delivered by professionals and others were delivered by trained laymen, although no evaluation of the differential effectiveness was</p>	<p>Primary Outcomes: Weight/BMI – objective measure</p> <p>Secondary outcomes: Recruitment success, retention success – objective measures</p> <p>Reasons for intervention success – subjective assessment by study authors</p> <p>Follow-up periods: For those studies where follow-up period was</p>	<p>Primary outcomes: Mean post-intervention weight loss ranged from 0.4 to 10.9lbs. Those studies reporting follow-up weight loss showed no change in weight or slight increases/decreases. The follow-up period was not clear in all cases, but ranged from 1 month to 1 year. 2 studies that reported mean weight loss at follow-up greater than or equal to post-intervention weight loss contained a follow-up maintenance programme. Longer duration interventions were associated with greater weight loss.</p> <p>Secondary outcomes: Elements which contributed to successful recruitment, retention and</p>	<p>Limitations identified by author: Not stated</p> <p>Limitations identified by review team: Limited search. No quality assessment of included studies. The majority of the studies included were non-comparative in design and had little or no follow-up period. Substantial process data are presented, but not linked to findings on outcomes (e.g. through subgroup analysis).</p> <p>Evidence gaps and/or recommendations for future research: Not stated</p> <p>Source of funding: Not stated</p>

<p>modification elements and (c) produce a list of lessons that can be learned for future planning of interventions for this population</p> <p>Review design: Narrative review</p> <p>Quality Score: +</p>	<p>clearly stated weight management outcomes for African American women and (d) no pharmacological elements to the weight management strategies</p> <p>Study type exclusion criteria: NR</p> <p>Total number of included studies and number relevant to this review: 11 studies in total, 9 met the inclusion criteria of our review. Non-relevant studies were on participants that already had diabetes.</p> <p>Method of synthesis: Descriptive</p>	<p>were based in clinics and 1 was based in a hospital setting, 2 studies were stated to be set in the inner city</p> <p>External validity score: +</p>	<p>conducted. Interventions were delivered in community or clinical settings</p> <p>Control/comparison/s description: 4 studies were case/control cohort studies; the remainder used pretest/post test comparisons. Of the 4 studies with control groups, 1 involved individualised care plans from dietitians, 1 used an external control group, 1 used a control group of women with diabetes, and 1 used a control group that received the intervention after 14 weeks</p>	<p>reported, the period ranged from 1 month to 1 year</p> <p>Methods of analysis: Description of studies</p>	<p>intervention success included: cultural adaptation (use of existing community networks and ethnic/lay personnel), formal adult learning principles (guided self-discovery of their needs and development of skills to manage them), group sessions, a coordinated team of professionals and behavioural modification techniques. Individualised elements (such as goal-setting and self-monitoring) led to improved retention and better sustaining of weight loss on intervention completion. Lay intervention leaders were found to be as effective as professionals in 2 studies. Ease of recruitment was found to be related to the motivation of potential participants and retention was influenced by the amount of support the participants had from family and friends, their</p>	
--	---	--	--	---	---	--

					<p>commitment and expectations of the programme. In studies involving low-income participants, where illiteracy may be an issue, the authors suggested that use of an appropriate learning environment and teaching style may be particularly important.</p> <p>Attrition details: Varied between 0% and 79%. Attrition was unrelated to intervention duration. Attrition was highest in interventions with unusual elements (such as self-hypnosis) and lowest where substantial incentivisation was used.</p>	
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Eastridge, D K</p> <p>Year: 2009</p> <p>Citation: An integrative review of interventions to reduce peripheral arterial disease risk factors in African Americans</p> <p>Aim of review: To describe and assess randomized controlled trials of interventions to reduce peripheral arterial disease risk</p>	<p>Databases and websites searched: PubMed, CINAHL, Embase, Medline</p> <p>Other search methods undertaken (e.g., reference checking): Reference checking</p> <p>Years searched: 2002-2007</p> <p>Study type inclusion criteria: (1) RCTs or clinical trials; (2) published in English 2002-07; (3) interventions to</p>	<p>Included population/s: All African-American. Mean ages 35-62. Most studies predominantly female populations. Most recruited from clinical settings</p> <p>Excluded population/s:</p> <p>Setting of included studies: All USA, various locations (both urban and rural). Some clinical and some community settings.</p> <p>External</p>	<p>Intervention/s description: Education / enhanced care (which promote behaviour change by giving participants additional monitoring and education to improve their understanding of diabetes; focuses on multiple lifestyle factors); dietary and PA interventions of various kinds; meditation / stress reduction. Intervention administrators included: The review author summarised that non-physician healthcare providers, nurse case managers, certified diabetes educators, nurse practitioners, and dietitians. Durations ranged from 10 weeks to 40 months.</p> <p>Control/comparison/s description: Usual care for most studies</p>	<p>Primary Outcomes: Haemoglobin A1c levels; blood pressure; cholesterol, low-density lipoproteins, triglyceride and high-density lipoprotein levels.</p> <p>Secondary outcomes: BMI; quality of care; knowledge; dietary behaviours; quality of life</p> <p>Follow-up periods: Not consistently reported. Up to 5 years</p>	<p>Primary outcomes: For A1c levels, no sig diff between intvn and control in any study. For blood pressure, significant reduction in intvn group in 5/15 studies. Three of these were in the education/enhanced care group, 1 dietary, and 1 meditation. Successful intvns were found in both clinic and community settings. Significant within-group improvements in some outcomes in both intervention and comparison groups. Interventions with education/enhanced care most successful. No differences between interventions delivered by physicians or other healthcare professionals.</p> <p>Secondary outcomes: Mixed; some significant</p>	<p>Limitations identified by author: Search strategy limited to published literature in English & short time period; only one reviewer read all included studies.</p> <p>Limitations identified by review team: Search not very sensitive. No quality assessment of included studies. Narrative frequently reports within-group differences in controlled studies, which is potentially misleading. Little data on implementation (although there are a few comments in the narrative).</p> <p>Evidence gaps and/or recommendations</p>

<p>factors among African Americans</p> <p>Review design: Systematic review</p> <p>Quality Score: +</p>	<p>improve PAD risk factors in African-American adults (either disaggregated data on AA or population >75% AA).</p> <p>Study type exclusion criteria: Interventions based on medication use or intvns aimed at healthcare providers. Quasi-experimental study designs.</p> <p>Total number of included studies and number relevant to this review: Total $n = 21$, 12 of which were a relevant intervention type. The non-relevant studies were primarily</p>	<p>validity score: +</p>		<p>after start of intervention</p> <p>Methods of analysis: Narrative; vote-counting</p>	<p>between group differences in secondary outcomes in favour of intervention groups – reductions in BMI, improved food selection habits and improved quality of life. Effect sizes were not provided.</p> <p>Attrition details: >10% in 13/21 studies and >25% in 8/21 studies</p>	<p>for future research: Studies of younger African-Americans; studies should recruit from community settings.</p> <p>Source of funding: NR</p>
--	---	---------------------------------	--	--	---	--

	not community-based interventions. Method of synthesis: Narrative					
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Gao et al.</p> <p>Year: 2007</p> <p>Citation: Yang Gao, Sian Griffiths, Emily Y. Y. Chan, 2007. Community-based interventions to reduce overweight and obesity in China: a systematic review of the Chinese and English literature. <i>Journal of Public Health</i></p> <p>Aim of review: To identify effective community-</p>	<p>Databases and websites searched: Chinese Medical Current Contents; Chinese Biomedical Literature Database; Chinese Journal Full-text Database; Medline, Embase, Amed, Cinahl, PsycINFO, ACP Journal Club; Cochrane CCTR; Cochrane DSR; DARE.</p> <p>Other search methods undertaken (e.g., reference checking): Backwards citation chasing.</p> <p>Years searched: 1994-2006</p> <p>Study type inclusion criteria: 1) The study evaluates public health programmes</p>	<p>Included population/s: Any population in China. Most of the included primary studies had samples >35 years of age.</p> <p>Excluded population/s: None</p> <p>Setting of included studies: Community settings (both urban and rural)</p> <p>External validity score: –</p>	<p>Intervention/s description:</p> <ul style="list-style-type: none"> • Comprehensive approaches (physical activity, diet and education) ($n = 2$); health education and health promotion programmes; (2 individualised interventions) • Interventions were delivered by members of the community, professional instructors or church leaders. • They targeted the general population; overweight adults; hypertensive subjects; or subjects at risk of hypertension • The focus of the programmes was on obesity prevention and control; hypertension prevention and 	<p>Primary Outcomes:</p> <ul style="list-style-type: none"> • Weight measures included: mean weight, mean BMI, proportion of overweight (BMI > 25) and proportion of obese (BMI >30) <p>Secondary outcomes: NR</p> <p>Follow-up periods: NR. They seem to have included it in length of intervention. Unclear. Up to 8 years after start of intervention</p> <p>Methods of analysis: Narrative synthesis</p>	<p>Primary outcomes:</p> <ul style="list-style-type: none"> • 5/6 interventions were effective ($p < 0.05$) in reducing weight or BMI; • Net effect (difference in before-and-after measurements in intervention group minus difference in before-and-after measurements in control group) ranged from -21.5% to -0.16%; • 1 study with participants of BMI greater than or equal to 24 reported a significant decrease in BMI (-1.16kg/m^2); • 1 study in general population with no significant difference • 1 intervention in 	<p>Limitations identified by author: Suspected publication bias in favour of positive results; sub-optimal quality of primary research.</p> <p>Limitations identified by review team: Not enough information on control groups and follow-up; limited data on intervention content and implementation; not thorough quality assessment.</p> <p>Evidence gaps and/or recommendations for future research: Urgent need for</p>

<p>based interventions in reducing obesity and overweight in Mainland China.</p> <p>Review design: Systematic review</p> <p>Quality Score: +</p>	<p>aiming to prevent, control or reduce either obesity or obesity-related risk factors implemented in China; 2) the intervention duration was not shorter than 3 months; 3) a control group; 4) anthropometric measures were used as outcomes (e.g. weight, BMI); and 5) the full text was available.</p> <p>Study type exclusion criteria: Studies assessing clinic-based programmes.</p> <p>Total number of included studies and number relevant to this review: 20 (6 relevant - adult population)</p> <p>Method of synthesis: Narrative</p>		<p>control; prevention of cardio-cerebral-vascular diseases</p> <ul style="list-style-type: none"> • Interventions included one or more of the following: physical activity; diet (energy intake); education (healthy eating, active living); behaviour modification; incentives; counselling; environmental modifications (e.g., changing cafeteria menus or the food supply); • Sample size ranged from 58 to 3000. • The duration of the interventions ranged from 10 to 96 months. <p>Control/comparison/s description:</p> <ul style="list-style-type: none"> • No details on comparison groups provided. • Sample size ranged from 39 to 3000. 		<p>three cities resulted in a reduction of 4.8% in obesity prevalence after 8 years;</p> <ul style="list-style-type: none"> • 1 intervention on urban, suburban and rural populations found a significant decrease in BMI in the urban population of -1.03kg/m² after 5 years; • Authors report that the evidence reviewed is insufficient to draw a conclusion on the effectiveness of community-based interventions for adult obesity <p>Secondary outcomes: NR</p> <p>Attrition details: NR</p>	<p>more high quality evaluations of interventions to prevent obesity in China</p> <p>Source of funding: NR</p>
--	--	--	--	--	---	---

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Oldroyd et al.</p> <p>Year: 2008</p> <p>Citation: Oldroyd, J., Burns, C., Lucas, P., Haikerwal, A., Waters, E., 2008. The effectiveness of nutrition interventions on dietary outcomes by relative social disadvantage: a systematic review. <i>Journal of Epidemiology and Community Health</i>, 62, 573 -579.</p> <p>Aim of review: To determine whether nutrition interventions widen inequalities by affecting dietary outcomes differentially with respect to SES</p>	<p>Databases and websites searched: Cinahl and Medline</p> <p>Other search methods undertaken (e.g., reference checking): Hand searches of published conference and symposia proceedings and existing review articles; citation chasing of included studies; contacts with experts.</p> <p>Years searched: 1990-2007</p> <p>Study type inclusion criteria: 1) nutrition interventions</p>	<p>Included population/s: Low SES adults (defined as BME, low income or low education). Participants in the included studies ranged from 4 to 79 years of age</p> <p>Excluded population/s: NR</p> <p>Setting of included studies: Vocational training school, community education for adults; primary care centres; health care clinics. All in the US (San Diego, Miami).</p> <p>External</p>	<p>Intervention/s description:</p> <ul style="list-style-type: none"> • Education ($n = 1$): classes targeting low-fat eating (Int1: Stanford Nutrition Action Program (SNAP; focused on a food pyramid model); Int2: General Nutrition intervention). Six 60-minute classes once a week and telephone contact in the follow-up period (SNAP only). • Primary care providers ($n = 1$): multicomponent programme for nutrition and physical activity (Int1: mail follow-up; Int2: infrequent telephone and mail follow-up; Int3: frequent telephone and mail follow-up; Ctrl: no intervention). It was not reported in the review who the contact involved or what was discussed. Sessions occurred weekly for 6 weeks in a vocational 	<p>Primary Outcomes: Education intervention: reduction of dietary fat to <30% of daily calories. Primary care: fat consumption; fruit and vegetable consumption; overeating habits. Health care centres: reduction of dietary fat intake to 20% or less of total energy; increasing servings of fruit and vegetables; reduction of saturated fat intake.</p> <p>Secondary outcomes: NR</p>	<p>Primary outcomes: Education intervention: 60% of SNAP groups met the intervention goals, vs 34% of general nutrition programme. Primary care: no difference between groups, participants that set dietary goals reduced dietary intake of fat more than those who did not and ate more fruit and vegetables, significant ($p < 0.05$). Health care centres: significant ($p < 0.05$) reduction in fat consumption in intervention group (-8.9g/day for black</p>	<p>Limitations identified by author: Scarcity of effectiveness data disaggregated by SES; difficulty in defining SES; heterogeneity of study settings, populations and outcomes; unreliability of self-reported outcomes.</p> <p>Limitations identified by review team: Search strategy not very sensitive. Little data on implementation.</p> <p>Evidence gaps and/or recommendations for future research: Need for more research involving large number of low SES participants, and of longer duration. Reports should include more information on recruitment, intervention delivery, and theoretical models.</p>

<p>Review design: Systematic review</p> <p>Quality Score: ++</p>	<p>delivered to healthy population at a group level; 2) RCT or concurrent CT; 3) targeted at low-SES group, or possible to disaggregate data by SES</p> <p>Study type exclusion criteria: Animal studies; non-English language</p> <p>Total number of included studies and number relevant to this review: 6 (3 relevant)</p> <p>Method of synthesis: Narrative</p>	<p>validity score: +</p>	<p>training setting.</p> <ul style="list-style-type: none"> Health care clinics ($n = 1$): nutrition education intervention to reduce fat intake. Participants were post-menopausal women. No information on control group. The intervention was delivered by registered dietitians and the duration was not stated in the review. It was not stated whether the interventions were tailored for disadvantaged groups. 	<p>Follow-up periods: 4 to 7 months.</p> <p>Methods of analysis: Narrative synthesis</p>	<p>participants, - 12.0g/day for white)</p> <p>Secondary outcomes:</p> <p>Attrition details: 14%-18%. In one case, attrition of BME participants was greater.</p>	<p>Source of funding: None</p>
--	--	-------------------------------------	--	--	---	---

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Sánchez-Johnsen, L A P</p> <p>Year: 2005</p> <p>Citation: Smoking cessation, obesity and weight concerns in black women: A call to action for culturally competent interventions</p> <p>Aim of review: "This review describes the literature on smoking, obesity/ weight control and weight concerns in smokers, with a particular attention to black women</p>	<p>Databases and websites searched: Pubmed, Psychlit</p> <p>Other search methods undertaken (e.g., reference checking): NR</p> <p>Years searched: NR</p> <p>Study type inclusion criteria: NR</p> <p>Study type exclusion criteria: NR</p> <p>Total number of included</p>	<p>Included population/s: Black (African-American); most women; adults (age range unclear)</p> <p>Excluded population/s: NR</p> <p>Setting of included studies: NR (apparently all USA)</p> <p>External validity score: -</p>	<p>Intervention/s description: Culturally tailored behaviour change and dietary interventions (some media, some community settings)</p> <p>Control/comparison/s description: NR</p>	<p>Primary Outcomes: Weight loss, blood pressure, dietary fat intake</p> <p>Secondary outcomes: None</p> <p>Follow-up periods: NR</p> <p>Methods of analysis: NR</p>	<p>Primary outcomes: Adoption of low-fat, high fibre diets by African Americans associated with significant reductions in blood pressure. Long-term changes in diet possible to with fewer calories from dietary fat intake and more fruit and vegetables eaten. 1 study of Black American Lifestyle Intervention, which is a culturally adapted lifestyle education intervention, reported a reduction in weight of 3.5% by the end of the 10 week programme (no evidence on the impact of culturally tailoring the intervention was reported in the review).</p> <p>Secondary</p>	<p>Limitations identified by author: None reported</p> <p>Limitations identified by review team: Methodologically very weak. Aim is unclear. Study details not clearly reported. Outcome data are reported from only one relevant study.</p> <p>Evidence gaps and/or recommendations for future research: Studies comparing black and white women; studies integrating weight concerns, weight control and physical activity; evaluations of culturally competent and comprehensive interventions for black women smokers; evaluations utilising conceptual frameworks and available guidelines on cultural competence.</p>

<p>smokers."</p> <p>Review design: Non-systematic</p> <p>Quality Score: –</p>	<p>studies and number relevant to this review: One relevant to our review, but unclear total inclusion due to reporting style of review.</p> <p>Method of synthesis: Narrative</p>				<p>outcomes: N/A</p> <p>Attrition details: NR</p>	<p>Source of funding: "This manuscript was supported in part by an NIH-National Cancer Institute Career Development Award ... and an NIH-National Center on Minority Health and Health Disparities Research Scholar Award"</p>
---	--	--	--	--	---	---

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Thompson E, Berry D, Nasir L</p> <p>Year: 2009</p> <p>Citation: Weight management in African-Americans using church-based community interventions to prevent Type 2 diabetes and cardiovascular disease. <i>Journal of the National Black Nurses Association</i> 20(1), 59-65.</p> <p>Aim of review: "To examine the utilisation of church-based interventions designed for African-Americans in the community"</p>	<p>Databases and websites searched: PubMed, CINAHL, Google Scholar.</p> <p>Other search methods undertaken (e.g., reference checking): NR</p> <p>Years searched: 1997-2008</p> <p>Study type inclusion criteria: (1) RCTs, quasi-experimental and 'pilot studies' (sic); (2) interventions for weight loss, diabetes prevention or CV disease prevention</p>	<p>Included population/s: All African-American. Mean ages 44-56. Most participants female.</p> <p>Excluded population/s: NR</p> <p>Setting of included studies: All USA (all in southeastern states where location reported). All conducted in church settings.</p> <p>External validity score: +</p>	<p>Intervention/s description: All interventions included multiple components. All had some form of group educational component. Most involved an explicitly religious component (prayer or Bible study) at the start and conclusion of each session. Some involved components including: organised physical activity; cooking education; and written materials. Regarding physical activity, one of the programmes was reported as using an exercise tape to conduct the physical activity, while another involved recreational walking. Interventions ranged from 7 weeks to 6 months in duration and were typically held weekly. Of the 6 studies three used trained lay health educators (church members) to lead the sessions, two were conducted by trained medical volunteers (although prayer sessions were led by a deacon, minister, or church participant);</p>	<p>Primary Outcomes: Weight, BMI, blood pressure, fasting blood glucose</p> <p>Secondary outcomes:</p> <p>Follow-up periods: Not clearly reported; up to 12 months</p> <p>Methods of analysis: Narrative synthesis</p>	<p>Primary outcomes: Most studies showed (within-group) significant changes in weight and BMI, although the amount of improvement was not reported. Findings on blood pressure and blood glucose more mixed. Studies with a control group did not report significant differences between groups.</p> <p>Secondary outcomes: NR</p> <p>Attrition details: NR</p>	<p>Limitations identified by author: Primary studies are methodologically weak.</p> <p>Limitations identified by review team: No quality assessment of included studies. Little information on implementation. Some unclarity in reporting of study characteristics</p> <p>Evidence gaps and/or recommendations for future research: Large RCTs in high-risk populations with long follow-up and post-intvn support.</p> <p>Source of funding: NR</p>

<p>for the management of overweight and obesity and prevention of type 2 diabetes and cardiovascular disease."</p> <p>Review design: Systematic review</p> <p>Quality Score: +</p>	<p>among African-Americans; (3) conducted in USA; (4) published in English.</p> <p>Study type exclusion criteria: 'preliminary data'</p> <p>Total number of included studies and number relevant to this review: 6 (all relevant)</p> <p>Method of synthesis: Narrative</p>		<p>and one apparently did not report information on who led the classes.</p> <p>According to the reviewers, focus groups on the concerns of the community were conducted to help develop the interventions in three of the primary studies.</p> <p>Control/comparison/s description: NR</p>			
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Whitt-Glover and Kumanyika</p> <p>Year: 2009</p> <p>Citation: Whitt-Glover, M. C. and Kumanyika, S. K., 2009. Systematic Review of Interventions to Increase Physical Activity and Physical Fitness in African-Americans. <i>American Journal of Health Promotion</i>, 23(6), S33-S56.</p> <p>Aim of review: To identify characteristics of effective interventions designed to increase physical</p>	<p>Databases and websites searched: PubMed and Cochrane</p> <p>Other search methods undertaken (e.g., reference checking): Backward citation chasing of previous reviews, included studies and studies identified in 'preliminary' searches.</p> <p>Years searched: 1985-2006</p> <p>Study type inclusion criteria:</p>	<p>Included population/s: Men, women, children or communities identified as Black or African American. Ages of participants ranged from 18 to 91 years.</p> <p>Excluded population/s: Non African-American</p> <p>Setting of included studies: Churches, YMCAs, community centres, neighbourhood spaces, primary care centres, hospitals, elderly congregate meal site. All studies appear to have been conducted in</p>	<p>Intervention/s description:</p> <ul style="list-style-type: none"> • Structured group exercises (walking, aerobics, dance, games and sports, weight lifting); behavioural counselling group sessions; faith-based group meetings or workshops. • Interventions were delivered by members of the community, professional instructors or church leaders. • Sample size ranged from 10 to +1000. • Overall, interventions were short term, lasting less than 1 year. They ranged from 2 weeks to 18 months. • Settings included community, hospital, churches, and fitness centres. <p>Control/comparison/s description: Control groups ranged between usual care, medication-only</p>	<p>Primary Outcomes:</p> <ul style="list-style-type: none"> • Level of PA ($n = 5$), including objective (accelerometer, pedometer, and fitness tests) and/or subjective measures (self-reported through questionnaire) • PA as one of several targeted behaviours ($n = 3$); • Weight loss ($n = 7$) • Other ($n = 7$): glycaemic control, blood pressure, adherence, haemoglobin, cardiovascular risk profile, strength, balance) <p>Secondary outcomes: NR</p>	<p>Primary outcomes:</p> <ul style="list-style-type: none"> • Level of physical activity (number of studies = 4): 3 studies had positive within-group differences, one had no effect; 3 had null between-group differences and 1 did not report between-group differences. • PA as one of several targeted behaviours: four studies had positive within group differences, one did not report within-group differences; one study had positive between group differences, one had a null effect, and two did not report between-group findings. • Weight loss 	<p>Limitations identified by author: No attempt to include unpublished/grey literature; some studies did not disaggregate findings for African-Americans and were excluded, maybe distorting the effect sizes; focus on internal validity rather than external validity</p> <p>Limitations identified by review team: No attempt to synthesise the results, no discussion of the impact of interventions.</p> <p>Evidence gaps and/or recommendations for future research: Factors influencing results are unclear and may require further research; longer follow-up</p>

<p>activity or fitness among African-Americans</p> <p>Review design: Systematic review</p> <p>Quality Score: -</p>	<p>RCTs, nRCTs, uncontrolled trials</p> <p>Study type exclusion criteria: Non intervention studies.</p> <p>Total number of included studies and number relevant to this review: 43 (29 focused on adults, of which 23 are group-based)</p> <p>Method of synthesis: Narrative; studies were grouped by effect, design and primary focus.</p>	<p>the US, although this is not explicitly reported.</p> <p>External validity score: +</p>	<p>intervention, self-help intervention, no treatment, post participation, lag control, individual intervention.</p>	<p>Follow-up periods: Follow-up tended to be short (4 weeks to 12 months), although it ranged up to 5 years in one study.</p> <p>Methods of analysis: Tabular ranking of studies by quality and effectiveness</p>	<p>(number of studies = 7): seven studies reported positive within group differences; one reported positive between group differences, while 3 had null effects and 3 did not report between-group differences</p> <ul style="list-style-type: none"> • Other outcomes ($n = 7$): five studies reported positive within group differences, one study had null findings and one did not report within-group differences; five studies reported positive between group differences and two reported null between-group findings. <p>Aspects of interventions that may be associated with improvements include structured physical activity classes and</p>	<p>periods are needed.</p> <p>Source of funding: Robert Wood Johnson Foundation.</p>
--	--	---	--	---	--	---

					<p>objective measures to assess outcomes. No clear evidence to suggest interventions also focusing on other aspects of health behaviour (e.g. those involving diet education, counselling, etc.), adaptation to the cultural background of the participants, and setting of specific goals for improvement affected outcomes.</p> <p>Secondary outcomes: NR</p> <p>Attrition details: NR</p>	
--	--	--	--	--	--	--

Review Details	Review search parameters	Review population and setting	Intervention/s	Outcomes and method of analysis	Results	Notes
<p>Authors: Yancey et al.</p> <p>Year: 2004</p> <p>Citation: Yancey, A. K., Kumanyika, S.K., Ponce, N.A., McCarthy, W.J., Fielding, J.E., Leslie, J.P., Akbar, J., 2004. Population-based interventions engaging communities of color in healthy eating and active living: a review. <i>Preventing Chronic Disease</i> 1(1), A09.</p> <p>Aim of review: To review studies of</p>	<p>Databases and websites searched: PubMed, AgriCOLA, Current Contents, and PsychInfo.</p> <p>Other search methods undertaken (e.g., reference checking): 'Related articles' option in PubMed; reference checking; consultation with experts and authors of published articles.</p> <p>Years searched: 1970-2003</p> <p>Study type inclusion criteria: 1) US study; 2) target population is entire</p>	<p>Included population/s: All included studies targeted at least one of the following BME communities: African American ($n = 9$), Asian ($n = 4$), Latino ($n = 9$), American Indian or Alaskan Native ($n = 2$). Unclear age range.</p> <p>Excluded population/s:</p> <p>Setting of included studies: All conducted in the US. Most in urban settings ($n = 13$), although the sample includes</p>	<p>Intervention/s description: Implemented between 1972 and 2000 and designed to encourage healthy eating and active lifestyles in minority ethnic populations. Interventions included: walking clubs, exercise classes, cooking/nutrition classes, home visits, education, mass media campaigns, worksite programmes, sport, community leaders training, gardening, signposting, fitness programmes, park maintenance, church cooking, distribution and promotion of healthier foods, gym discounts. The theoretical background for these interventions included: social learning ($n = 17$), organisational development ($n = 17$), social ecological ($n = 16$), stages of change ($n = 2$), diffusion of innovation ($n = 4$), social marketing ($n = 5$) or other ($n = 2$). Recruitment strategies</p>	<p>Primary Outcomes: This review provides 'counts' of the number of studies that reported significant findings, but does not link the counts back to specific studies. Outcomes examined were described vaguely, such as "dietary change" and "physical activity change". Self-reported behaviour ($n = 13$); observed behaviour ($n = 8$); clinical measure ($n = 1$); organisational practice ($n = 10$); legislative policy ($n = 2$).</p> <p>Secondary outcomes:</p>	<p>Primary outcomes: Less than half the included studies reported relevant outcome data. Of these, statistically significant findings ($p < 0.05$) were achieved for individual-level dietary change such as reduced fat intake ($n = 7$); individual-level physical activity change ($n = 4$); individual-level weight change ($n = 1$). 10 studies found no significant effects. None of the reviewed studies stood out as offering an effective solution to weight management problems. Cultural adaptations may</p>	<p>Limitations identified by author: Lack of outcome data.</p> <p>Limitations identified by review team: Search strategy is basic. Narrative synthesis makes it difficult to draw out common themes.</p> <p>Evidence gaps and/or recommendations for future research: Further investigation is needed on the influence of the environmental context. Also on weight management. There is a critical need for investment in greater surveillance at local levels to drive service delivery. Evaluation methods capable of capturing upstream effects of interventions, or small and/or delayed individual effects, ought</p>

<p>population-based interventions targeting obesity among ethnic minorities in the US</p> <p>Review design: Systematic review</p> <p>Quality Score: -</p>	<p>population or representative sample of a defined community; 3) healthy, high-risk population; 4) data available for underserved ethnic groups; 5) the study targets obesity-related lifestyle changes; 6) intervention employs multiple health promotion approaches and communication channels.</p> <p>Study type exclusion criteria: NR</p> <p>Total number of included studies and number relevant to this review: 23, all of which are relevant</p> <p>Method of synthesis:</p>	<p>suburban ($n = 2$), semirural ($n = 3$), rural ($n = 4$) and reservation settings ($n = 2$).</p> <p>External validity score: +</p>	<p>included: in-person ($n = 19$), mass media ($n = 10$) and targeted media ($n = 11$). Interventions targeted consumption of fat ($n = 14$), fruits and vegetables ($n = 10$), fibre ($n = 1$) and sugar ($n = 1$); physical activity ($n = 19$); nutrition and physical activity ($n = 13$); and weight monitoring ($n = 2$). The duration of the interventions ranged from less than a year to more than 5. Most interventions lasted between 2 and 3 years ($n = 10$). It was not consistently reported in the review who delivered the interventions, although community leaders/members were mentioned.</p> <p>Control/comparison/s description: NR</p>	<p>Follow-up periods: NR</p> <p>Methods of analysis: Description of studies (basic narrative synthesis)</p>	<p>have an effect on retention and recruitment, but no strong evidence of the effect of these adaptations on outcomes.</p> <p>Secondary outcomes: NR</p> <p>Attrition details: NR</p>	<p>to be developed.</p> <p>Source of funding: National Institute for Child Health and Human Development; California Department of Health Services/USDA</p>
---	--	--	---	---	---	---

	Descriptive					
--	-------------	--	--	--	--	--

11.0 Appendix D. Studies excluded on full text

Details of the exclusion criteria can be found in Appendix B.

Study	Reason for exclusion
Baird, J., Cooper, C., Margetts, B. M., Barker, M., & Inskip, H. M. (2009). Changing health behaviour of young women from disadvantaged backgrounds: evidence from systematic reviews. <i>Proceedings of the Nutrition Society</i> , 68(02), 195–204.	EX8 - not high-risk population
Biggs, M. L., Mukamal, K. J., Luchsinger, J. A., Ix, J. H., Carnethon, M. R., Newman, A. B., de Boer, I. H., et al. (2010). Association Between Adiposity in Midlife and Older Age and Risk of Diabetes in Older Adults. <i>JAMA</i> , 303(24), 2504.	EX2 - not literature review
Caperchione, C. M., Kolt, G. S., & Mummery, W. K. (2009). Physical activity in culturally and linguistically diverse migrant groups to Western society: a review of barriers, enablers and experiences. <i>Sports Medicine</i> , 39(3), 167–177.	EX6 - primary studies were not interventions
Chaudhary, N., & Kreiger, N. (2007). Nutrition and physical activity interventions for low-income populations. <i>Canadian Journal of Dietetic Practice and Research</i> , 68(4), 201–206.	EX9 - <50% of included studies relevant
Ciliska, D., Miles, E., O'Brien, M. A., Turl, C., Hale Tomasik, H., Donovan, U., & Beyers, J. (2000). Effectiveness of community-based interventions to increase fruit and vegetable consumption. <i>Journal of Nutrition Education</i> , 32(6), 341–352.	EX1 - not relevant topic
Clifford, A., Jackson Pulver, L., Richmond, R., Shakeshaft, A., & Ivers, R. (2009). Disseminating best-evidence health-care to Indigenous health-care settings and programs in Australia: identifying the gaps. <i>Health Promotion International</i> , 24(4), 404.	EX8 - not high-risk population
Crook, E. D., Bryan, N. B., Hanks, R., Slagle, M. L., Morris, C. G., Ross, M. C., Torres, H. M., et al. (2009). A review of interventions to reduce health disparities in cardiovascular disease in African Americans. <i>Ethnicity & disease</i> , 19(2), 204.	EX6 - primary studies were not interventions
Davies, M. J., Tringham, J. R., Troughton, J., & Khunti, K. K. (2004). Prevention of Type 2 diabetes mellitus. A review of the evidence and its application in a UK setting. <i>Diabetic Medicine</i> , 21(5), 403–414.	EX8 - not high-risk population
Dishman, R. O., & Buckworth, J. (1996). Increasing physical activity: a quantitative synthesis. <i>Medicine & Science in Sports & Exercise</i> , 28(6), 706.	EX8 - not high-risk population
Drewnowski, A., Monsen, E., Birkett, D., Gunther, S., Vendeland, S., Su, J., & Marshall, G. (2003). Health screening and health promotion programs for the elderly. <i>Disease Management & Health Outcomes</i> , 11(5), 299–309.	EX6 - primary studies were not interventions
Engbers, L. H., van Poppel, M. N., Chin, A. P., Marijke, J. M., & van Mechelen, W. (2005). Worksite Health Promotion Programs with Environmental Changes: A Systematic Review. <i>American Journal of Preventive Medicine</i> , 29(1), 61–70.	EX9 - <50% of included studies relevant
Evans, P. H., Greaves, C., Winder, R., Fearn-Smith, J., & Campbell, J. L. (2007). Development of an educational 'toolkit' for health	EX2 - not literature

Study	Reason for exclusion
professionals and their patients with prediabetes: The WAKEUP study (Ways of Addressing Knowledge Education and Understanding in Pre-diabetes). <i>Diabetic Medicine</i> , 24(7), 770–777.	review
Feig, D. S., Palda, V. A., Lipscombe, L., & others. (2005). Screening for type 2 diabetes mellitus to prevent vascular complications: updated recommendations from the Canadian Task Force on Preventive Health Care. <i>Canadian Medical Association Journal</i> , 172(2), 177.	EX7 - not community or population intervention
Fleury, J., Keller, C., Perez, A., & Lee, S. M. (2009). The role of lay health advisors in cardiovascular risk reduction: a review. <i>American journal of community psychology</i> , 44(1), 28–42.	EX9 - <50% of included studies relevant
Hagberg, L. A., & Lindholm, L. (2006). Review Article: Cost-effectiveness of healthcare-based interventions aimed at improving physical activity. <i>Scandinavian journal of public health</i> , 34(6), 641.	EX8 - not high-risk population
Hardeman, W., Griffin, S., Johnston, M., Kinmonth, A. L., & Wareham, N. J. (2000). Interventions to prevent weight gain: a systematic review of psychological models and behaviour change methods. <i>International Journal of Obesity</i> , 24(2), 131–143.	EX8 - not high-risk population
Hider, P. (2001). Environmental interventions to reduce energy intake or density: a critical appraisal of the literature. <i>New Zealand Health Tech Assess</i> , 4(2).	EX9 - <50% of included studies relevant
Hussain, A., Claussen, B., Ramachandran, A., & Williams, R. (2007). Prevention of type 2 diabetes: a review. <i>Diabetes research and clinical practice</i> , 76(3), 317–326.	EX8 - not high-risk population
Hyman, I., Guruge, S., Makarchuk, M. J., Cameron, J., & Micevski, V. (2002). Promotion of Healthy Eating: Among New Immigrant Women in Ontario. <i>Canadian Journal of Dietetic Practice and Research</i> , 63(3), 125–129.	EX6 - primary studies were not interventions
Jain, S., & Brown, D. R. (2001). Cultural Dance: An Opportunity To Encourage Physical Activity and Health in Communities. <i>American Journal of Health Education</i> , 32(4), 216–22.	EX8 - not high-risk population
Karp, R. J., Cheng, C., & Meyers, A. F. (2005). The appearance of discretionary income: Influence on the prevalence of under- and over-nutrition. <i>International Journal for Equity in Health</i> , 4(1), 10.	EX6 - primary studies were not interventions
Lee, J. S., Fischer, J. G., & Johnson, M. A. (2010). Food Insecurity, Food and Nutrition Programs, and Aging: Experiences from Georgia. <i>Journal of Nutrition For the Elderly</i> , 29(2), 116.	EX9 - <50% of included studies relevant
Lee, S. M. (2005). Physical Activity Among Minority Populations: What Health Promotion Practitioners Should Know—A Commentary. <i>Health Promotion Practice</i> , 6(4), 447.	EX6 - primary studies were not interventions
Levy, L. Z., & Petty, K. (2008). Childhood obesity prevention: compelling challenge of the twenty-first century. <i>Early Child Development and Care</i> , 178(6), 609–615.	EX5 - not adult age
MacDonald, J. M., Stokes, R. J., Cohen, D. A., Kofner, A., & Ridgeway, G. K. (2010). The Effect of Light Rail Transit on Body Mass Index and Physical Activity. <i>American Journal of Preventive Medicine</i> , 39(2), 105–112.	EX2 - not literature review

Study	Reason for exclusion
McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the Nutritional Implications of Farmers' Markets and Community Gardens: A Call for Evaluation and Research Efforts. <i>Journal of the American Dietetic Association</i> , 110(3), 399–408.	EX8 - not high-risk population
Michie, S., Jochelson, K., Markham, W. A., & Bridle, C. (2009). Low-income groups and behaviour change interventions: a review of intervention content, effectiveness and theoretical frameworks. <i>British Medical Journal</i> , 63(8), 610.	EX9 - <50% of included studies relevant
Netto, G., Bhopal, R., Lederle, N., Khatoon, J., & Jackson, A. (2010). How can health promotion interventions be adapted for minority ethnic communities? Five principles for guiding the development of behavioural interventions. <i>Health Promotion International</i> .	EX9 - <50% of included studies relevant
Norris, S. L., Zhang, X., Avenell, A., Gregg, E., Bowman, B., Schmid, C. H., & Lau, J. (2005). Long-term effectiveness of weight-loss interventions in adults with pre-diabetes:: A review. <i>American journal of preventive medicine</i> , 28(1), 126–139.	EX8 - not high-risk population
Ogilvie, D., Egan, M., Hamilton, V., & Petticrew, M. (2004). Promoting walking and cycling as an alternative to using cars: systematic review. <i>British Medical Journal</i> , 329(7469), 763.	EX8 - not high-risk population
Olvera, A. E. (2008). Cultural Dance and Health: A Review of the Literature. <i>American Journal of Health Education</i> , 39(6), 353–359.	EX8 - not high-risk population
Popkin, B. M., Duffey, K., & Gordon-Larsen, P. (2005). Environmental influences on food choice, physical activity and energy balance. <i>Physiology & behavior</i> , 86(5), 603–613.	EX6 - primary studies were not interventions
Riccardi, G., Rivellese, A. A., & Giacco, R. (2008). Role of glycemic index and glycemic load in the healthy state, in prediabetes, and in diabetes. <i>American Journal of Clinical Nutrition</i> , 87(1), 269S.	EX7 - not community or population intervention
Rosenberg, M., & Lawrence, A. (2000). <i>Review of Primary Prevention of Type 2 Diabetes in Western Australia</i> . Health Department of Western Australia; The University of Western Australia.	EX8 - not high-risk population
Satia-Abouta, J., Patterson, R. E., Neuhouser, M. L., & Elder, J. (2002). Dietary acculturation:: Applications to nutrition research and dietetics. <i>Journal of the American Dietetic Association</i> , 102(8), 1105–1118.	EX6 - primary studies were not interventions
Satterfield, D. W., Volansky, M., Caspersen, C. J., Engelgau, M. M., Bowman, B. A., Gregg, E. W., Geiss, L. S., et al. (2003). Community-based lifestyle interventions to prevent type 2 diabetes. <i>Diabetes Care</i> , 26(9), 2643.	EX8 - not high-risk population
Schulze, M. B., & Hu, F. B. (2004). Primary prevention of diabetes: what can be done and how much can be prevented?	EX8 - not high-risk population
Seo, D. C., & Sa, J. (2008). A meta-analysis of psycho-behavioral obesity interventions among US multiethnic and minority adults. <i>Preventive medicine</i> , 47(6), 573–582.	EX9 - <50% of included studies relevant
Sheehy, A. M., Flood, G. E., Tuan, W. J., Liou, J., Coursin, D. B., & Smith, M. A. (2010). Analysis of Guidelines for Screening Diabetes Mellitus in an Ambulatory Population. In <i>Mayo Clinic Proceedings</i> (Vol.	EX2 - not literature review

Study	Reason for exclusion
85, p. 27).	
Sohal, P. S. (2008). Prevention and management of diabetes in South Asians. <i>Can J Diabetes</i> , 32, 206–10.	EX6 - primary studies were not interventions
Steyn, N. P., Lambert, E. V., & Tabana, H. (2008). Nutrition interventions for the prevention of type 2 diabetes. <i>Proceedings of the Nutrition Society</i> , 68(01), 55–70.	EX9 - <50% of included studies relevant
Timmerman, G. M. (2007). Addressing barriers to health promotion in underserved women. <i>Family & Community Health</i> , 30, S34.	EX6 - primary studies were not interventions
Tuomilehto, J., & Lindström, J. (2003). The major diabetes prevention trials. <i>Current Diabetes Reports</i> , 3(2), 115–122.	EX7 - not community or population intervention
Victorian Government Department of Human Services. (2006). <i>ACE-Obesity. Assessing Cost-effectiveness of obesity interventions in children and adolescents</i> . Melbourne, Victoria: Victorian Government Department of Human Services.	EX5 - not adult age
Vidourek, R. A., & King, K. A. (2008). Effectiveness of Nutrition Programs in Increasing Healthy Eating Behaviors among Low Income Women.	EX9 - <50% of included studies relevant
Whitlock, E. P., & Williams, S. B. (2003). The primary prevention of heart disease in women through health behavior change promotion in primary care. <i>Women's Health Issues</i> , 13(4), 122–141.	EX7 - not community or population intervention
Wilcox, S., Parra-Medina, D., Thompson-Robinson, M., & Will, J. (2001). Nutrition and physical activity interventions to reduce cardiovascular disease risk in health care settings: a quantitative review with a focus on women. <i>Nutrition reviews</i> , 59(7), 197–214.	EX8 - not high-risk population
Will, J. C., Farris, R. P., Sanders, C. G., Stockmyer, C. K., & Finkelstein, E. A. (2004). Health promotion interventions for disadvantaged women: overview of the WISEWOMAN projects. <i>Journal of Women's Health</i> , 13(5), 484–502.	EX6 - primary studies were not interventions
Wolfe, W. A. (2004). A review: maximizing social support--a neglected strategy for improving weight management with African-American women. <i>Ethnicity & Disease</i> , 14(2), 212-218.	EX6 - primary studies were not interventions
Yancey, A. K., Ory, M. G., & Davis, S. M. (2006). Dissemination of physical activity promotion interventions in underserved populations. <i>American journal of preventive medicine</i> , 31(4), 82–91.	EX6 - primary studies were not interventions
Yancey, A. K., & Tomiyama, A. J. (2007). Physical activity as primary prevention to address cancer disparities. <i>Seminars in oncology nursing</i> , 23, 253–263.	EX6 - primary studies were not interventions

12.0 Appendix E. Example quality assessment form

Citation Thompson et al. (2009)		Overall score (++, +, -) +
In a well-conducted systematic review:	In this review this criterion is met: ++, +, -, unclear, not applicable	Comments
1. Does the review address a clearly stated and focused research question/s?	++	
2. Is there enough information to be able to determine whether the included studies meet the review of review's aims (e.g., clear description of the population considered, interventions included, comparators, and outcomes evaluated)?	+	Limited data on population and comparators
3. Are the inclusion criteria specific enough to create a coherent sample of studies?	++	
4. Is the study quality of included studies appropriately addressed and reported?	-	No QA
5. Does the review use an appropriate analytical methodology?	+	
6. Are the primary studies included in the review relevant to the aims of the review of reviews?	++	
7. Is the literature search sufficiently rigorous to identify all the relevant studies? (search terms, databases)	-	Basic resources used but, like their syntax, the approach is not comprehensive

13.0 Appendix F. Primary studies included in the reviews

Citation	Ammerman et al. 2001	Banks-Wallace & Conn 2002	Bronner & Boyington 2002	Eastridge 2009	Gao et al. 2007	Oldroyd et al. 2008	Sanchez-Johnsen 2005	Thompson et al. 2009	Whitt-Glover & Kumanyika 2009	Yancey et al. 2004	Count
Agurs-Collins et al. 1997	0	1	0	0	0	0	0	0	1	0	2
Alcalay et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Anderson et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Anderson-Loftin et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Ard et al. 2000	0	0	0	0	0	0	0	0	1	0	1
Artinian et al. 2007	0	0	0	1	0	0	0	0	0	0	1
Banks-Wallace & Conn 2005	0	0	0	0	0	0	0	0	1	0	1
Baranowski et al. 1990	0	1	0	0	0	0	0	0	0	0	1
Becker et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Boltri et al. 2008	0	0	0	0	0	0	0	1	0	0	1
Bowen et al. 1996	0	0	0	0	0	0	1	0	0	0	1
Brandon & Elliott-Lloyd 2006	0	0	0	1	0	0	0	0	0	0	1
Bray et al. 2004	0	0	0	1	0	0	0	0	0	0	1
Brownson et al. 1996	0	0	0	0	0	0	0	0	1	1	2
Campbell et al. 2004	0	0	0	0	0	0	0	0	1	0	1
Cassady et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Chen et al. 1998	0	1	0	0	0	0	0	0	0	0	1
Chen et al. 2006	0	0	0	0	1	0	0	0	0	0	1
Clancy et al. 2003	0	0	0	1	0	0	0	0	0	0	1
Conlin et al. 2003	0	0	0	1	0	0	0	0	0	0	1
Croft et al. 1994	0	0	0	0	0	0	0	0	0	1	1
Davis-Smith et al. 2007	0	0	0	0	0	0	0	1	0	0	1
Dennison et al. 2007	0	0	0	1	0	0	0	0	0	0	1

Citation	Ammerman et al. 2001	Banks-Wallace & Conn 2002	Bronner & Boyington 2002	Eastridge 2009	Gao et al. 2007	Oldroyd et al. 2008	Sanchez-Johnsen 2005	Thompson et al. 2009	Whitt-Glover & Kumanyika 2009	Yancey et al. 2004	Count
Domel et al. 1992	0	0	1	0	0	0	1	0	0	0	2
Doshi et al. 1994	0	1	0	0	0	0	0	0	0	0	1
Elder et al. 1998	0	0	0	0	0	0	0	0	0	1	1
Engelgau et al. 1998	0	0	0	0	0	0	0	0	0	1	1
Fardan & Tyson 1985	0	0	1	0	0	0	0	0	0	0	1
Feng et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Fitzgibbon et al. 1996	1	0	0	0	0	0	0	0	0	0	1
Fitzgibbon et al. 2005 a	0	0	0	0	0	0	0	0	1	0	1
Fitzgibbon et al. 2005 b	0	0	0	0	0	0	0	0	1	0	1
Foo et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Fortmann et al. 1982	0	0	0	0	0	0	0	0	0	1	1
Gans et al. 2003	0	0	0	0	0	0	1	0	0	0	1
Gary et al. 2003	0	0	0	1	0	0	0	0	0	0	1
Grassi et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Haber 1986	0	1	0	0	0	0	0	0	0	0	1
Han et al. 2003	0	0	0	0	1	0	0	0	0	0	1
He et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Holm et al. 1983	0	0	1	0	0	0	0	0	0	0	1
Jiang et al. 2002 a	0	0	0	0	1	0	0	0	0	0	1
Jiang et al. 2002 b	0	0	0	0	1	0	0	0	0	0	1
Jiang et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Jiang et al. 2005	0	0	0	0	1	0	0	0	0	0	1
Kanders et al. 1994	0	1	1	0	0	0	1	0	1	0	4
Karanja et al. 2002	0	0	0	0	0	0	0	0	1	0	1
Kaul & Nidiry 1999	0	1	0	0	0	0	0	0	0	0	1

Citation	Ammerman et al. 2001	Banks-Wallace & Conn 2002	Bronner & Boyington 2002	Eastridge 2009	Gao et al. 2007	Oldroyd et al. 2008	Sanchez-Johnsen 2005	Thompson et al. 2009	Whitt-Glover & Kumanyika 2009	Yancey et al. 2004	Count
Kaul et al. 1979	0	0	1	0	0	0	0	0	0	0	1
Kennedy et al. 2005	0	0	0	0	0	0	0	1	1	0	2
Keyserling et al. 2002	0	0	0	1	0	0	0	0	1	0	2
Kim et al. 2006	0	0	0	0	0	0	0	1	0	0	1
Kokkinos et al. 1995, 1997, 1998	0	0	0	0	0	0	0	0	1	0	1
Kumanyika & Charleston 1992	0	1	1	0	0	0	1	0	0	0	3
Kumanyika et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Lasco et al. 1989	0	1	1	0	0	0	0	0	0	0	2
Levine et al. 2003	0	0	0	1	0	0	0	0	0	0	1
Lew et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Lewis et al. 1993	0	1	0	0	0	0	0	0	1	1	3
Li et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Littleton et al. 2002	0	0	0	0	0	0	0	0	0	1	1
Liu et al. 2005	0	0	0	0	1	0	0	0	0	0	1
Ma et al. 2003	0	0	0	0	1	0	0	0	0	0	1
Matteson 1989	0	1	0	0	0	0	0	0	0	0	1
Mayer-Davis et al. 2004	0	0	0	1	0	0	0	0	0	0	1
McNabb et al. 1993	0	1	1	0	0	0	1	0	0	0	3
McNabb et al. 1997	0	1	1	0	0	0	0	1	1	0	4
Newton & Perri 2004	0	0	0	0	0	0	0	0	1	0	1
Nichols 1995	0	1	0	0	0	0	0	0	0	0	1
Nothwehr et al. 2001	0	0	0	0	0	0	0	0	1	0	1
Oexman et al. 2000	0	0	0	0	0	0	0	1	0	0	1
Pargée et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Pleas 1988	0	1	1	0	0	0	0	0	0	0	2

Citation	Ammerman et al. 2001	Banks-Wallace & Conn 2002	Bronner & Boyington 2002	Eastridge 2009	Gao et al. 2007	Oldroyd et al. 2008	Sanchez-Johnsen 2005	Thompson et al. 2009	Whitt-Glover & Kumanyika 2009	Yancey et al. 2004	Count
Racette et al. 2001	0	0	0	0	0	0	0	0	1	0	1
Raczynski et al. 2001	0	0	0	0	0	0	0	0	0	1	1
Ramirez et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Reames & Burnett 1991	0	1	0	0	0	0	0	0	1	0	2
Reger et al. 1998	0	0	0	0	0	0	0	0	0	1	1
Resnicow et al. 2001	0	0	0	0	0	0	1	0	0	0	1
Resnicow et al. 2005	0	0	0	0	0	0	0	0	1	0	1
Rimmer et al. 2000, 2002	0	0	0	0	0	0	0	0	1	0	1
Rudd et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Schneider et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Sharpe et al. 1997	0	0	0	0	0	0	0	0	1	0	1
Shi et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Skelly et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Smith et al. 1997	0	1	0	0	0	0	0	0	0	0	1
Sohn et al. 2007	0	0	0	1	0	0	0	0	0	0	1
Staffileno et al. 2007	0	0	0	1	0	0	0	0	0	0	1
Steeple et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Stolley et al. 1997	1	0	0	0	0	0	0	0	0	0	1
Sullivan & Carter 1985	0	1	1	0	0	0	0	0	1	0	3
Svetkey et al. 2005	0	0	0	1	0	0	0	0	0	0	1
Svetky et al. 1999	0	0	0	0	0	0	1	0	0	0	1
Tang et al. 2004	0	0	0	0	1	0	0	0	0	0	1
Tanjasiri 1999	0	0	0	0	0	0	0	0	0	1	1
Tao et al. 2004	0	0	0	0	1	0	0	0	0	0	1
US Dep of Health 1999	0	0	0	0	0	0	1	0	0	0	1

Citation	Ammerman et al. 2001	Banks-Wallace & Conn 2002	Bronner & Boyington 2002	Eastridge 2009	Gao et al. 2007	Oldroyd et al. 2008	Sanchez-Johnsen 2005	Thompson et al. 2009	Whitt-Glover & Kumanyika 2009	Yancey et al. 2004	Count
van Rooijen et al. 2004	0	0	0	0	0	0	0	0	1	0	1
Vollmer et al. 1998	0	0	0	0	0	0	1	0	0	0	1
Wagner et al. 2000	0	0	0	0	0	0	0	0	0	1	1
Walcott-McQuigg et al. 2002	0	0	0	0	0	0	0	0	1	0	1
Wang et al. 2005	0	0	0	0	1	0	0	0	0	0	1
Webb et al. 2006	0	0	0	1	0	0	0	0	0	0	1
Whitehorse et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Williams & Olano 1999	0	0	0	0	0	0	0	0	0	1	1
Williams et al. 2004	0	0	0	0	0	0	0	0	1	0	1
Wilson et al. 2005	0	0	0	0	0	0	0	0	1	0	1
Wing & Anglin 1996	0	0	0	0	0	0	0	0	1	0	1
Winkleby et al. 1997	0	0	0	0	0	1	0	0	0	0	1
Xiao et al. 2001	0	0	0	0	1	0	0	0	0	0	1
Yancey et al. 1999	0	0	0	0	0	0	0	0	0	1	1
Yancey et al. 2003a	0	0	0	0	0	0	0	0	0	1	1
Yancey et al. 2003b	0	0	0	0	0	0	0	0	0	1	1
Yancey et al. 2003c	0	0	0	0	0	0	0	0	0	1	1
Yanek et al. 2001	0	0	0	0	0	0	0	0	1	0	1
Yang et al. 2005	0	0	0	0	1	0	0	0	0	0	1
Yin 2005	0	0	0	0	1	0	0	0	0	0	1
Young & Stewart 2006	0	0	0	0	0	0	0	0	1	0	1
Yue et al. 2002	0	0	0	0	1	0	0	0	0	0	1
Zang et al. 2005	0	0	0	0	1	0	0	0	0	0	1
Ziemer et al. 2003	0	0	0	1	0	0	0	0	0	0	1

Note. Count = number of reviews in which the primary study appears. The counts of primary studies included in more than one review are highlighted in **bold** font for emphasis.

14.0 Appendix G. Abbreviations used in the report

BMI = body mass index

BME = black and minority ethnic

DH = Department of Health

IFG = impaired fasting glucose

IGT = impaired glucose tolerance

NICE = National Institute for Health and Clinical Excellence

PDG = Programme Development Group

RCT = randomised controlled trial

SES = socioeconomic status