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Public Health Collaborating Centre

Prevention of type 2 diabetes: Interventions to reduce risk factors for pre-diabetes among UK adults from a lower socioeconomic group.

Preventing type 2 diabetes in adults from a lower socioeconomic group.

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About the SchARR Public Health Collaborating Centre

The School of Health and Related Research (SchARR), in the Faculty of Medicine, Dentistry and Health, University of Sheffield, is a multidisciplinary research-led academic department with established strengths in health technology assessment, health services research, public health, medical statistics, information science, health economics, operational research and mathematical modelling, and qualitative research methods. It has close links with the NHS locally and nationally and an extensive programme of undergraduate and postgraduate teaching, with Masters courses in public health, health services research, health economics and decision modelling.

SchARR is one of the two Public Health Collaborating Centres for the Centre for Public Health Excellence (CPHE) in the National Institute for Health and Clinical Excellence (NICE) established in May 2008. The Public Health Collaborating Centres work closely with colleagues in the Centre for Public Health Excellence to produce evidence reviews, economic appraisals, systematic reviews and other evidence based products to support the development of guidance by the public health advisory committees of NICE (the Public Health Interventions Advisory Committee (PHIAC) and Programme Development Groups).

Contribution of Authors

Maxine Johnson was the systematic review lead. Emma Everson-Hock and Roy Jones were reviewers on the project. Louise Guillaume and Helen Buckley Woods developed and undertook literature searches. Nick Payne and Jim Chilcott were the senior leads. Elizabeth Goyder was the topic expert.

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1. LIST OF ABBREVIATIONS

BME	Black and Minority Ethnic groups
BMI	Body Mass Index
CHD	Coronary Heart Disease
CI	Confidence Interval
CNA	Community Nutrition Assistant
DH	Department of Health
EFNEP	Expanded Food and Nutrition Education Program
FACET	Five a Day Community Evaluation Tool
FHA	Food and Health Advisor
FWF	Friends with Foods
GP	General Practitioner
Hr	Hour
HLC	Healthy Living Centre
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerance
ITT	Intention to Treat
n-RCT	Non-Randomised Controlled Trial
NDC	New Deal for Communities
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NNT	Number Needed to Treat
OR	Odds Ratio
QUOROM	Quality Of Reporting Of Meta-analyses
RCT	Randomised Controlled Trial
RR	Relative Risk
SES	Socio-economic status

2. EXECUTIVE SUMMARY

2.1 Background

Type 2 diabetes is associated with significant clinical and social consequences. The National Institute for Health and Clinical Excellence has been asked by the Department of Health to develop public health guidance on the prevention of type 2 diabetes among high-risk groups. The referral is divided into 2 separate pieces of guidance. The first will address the prevention of pre-diabetes (raised and impaired glucose levels) in populations and communities of high risk adults aged 18-74 using determinants of health such as creating an environment supportive of behaviour change. The second piece of guidance will address how to prevent the progression of pre-diabetes to type 2 diabetes at the individual level. This document is the scope for the first piece of guidance.

It is recognised that the term 'pre-diabetes' is not ideal, as not everyone with raised or impaired blood glucose levels will go on to develop type 2 diabetes. However, the term 'pre-diabetes' has been chosen because of its widespread use and recognition by a broad range of stakeholder groups and because of the lack of consensus on a suitable alternative.

Within this first piece of guidance, three reviews will be carried out that each focus on a particular population within the UK. This review focuses on prevention of pre-diabetes in adults from a lower socioeconomic group. The second review will focus on black and minority ethnic (BME) groups, and the third will assess interventions that impact upon health professionals and services.

2.2 Aims and Objectives

The aim of this, the first of three reviews, was to undertake an assessment of the effectiveness and, where available information allowed, cost-effectiveness of UK-based population level interventions that aim to raise awareness, and / or manage the incidence of pre-diabetes. The review focuses on the promotion of healthy lifestyle behaviours among adults aged 18-74 from a lower socioeconomic group. In addition, an assessment of barriers and facilitators to the implementation of interventions was made.

Review Question:

What interventions encourage dietary and physical activity behaviour changes needed to prevent pre-diabetes in low socio-economic status communities within the UK? Are identified interventions cost-effective? What factors influence their uptake and effectiveness?

2.3 Methods

A systematic review of effectiveness of evidence to address the above review question has been undertaken. In addition, studies that provide evidence of barriers and facilitators to the implementation of effective interventions were reviewed. Grey literature was searched systematically to supplement the database searches. Cost-effectiveness was reviewed and reported where available data was found. As the evidence for a causal link between dietary and physical activity behaviour changes and potential reductions in diabetes risk is relatively well established, the review focuses on evidence around these behaviour changes.

2.4 Results

This report includes the findings of the first systematic review, which relates to interventions and barriers and facilitators to implementation of interventions targeted at adults from a lower socioeconomic group.

A total of 40 papers (39 studies) of varying study type and quality have been included in the review of the effectiveness of population-level interventions, and barriers and facilitators to implementation, for the prevention of pre-diabetes. Seventeen papers assessed interventions, with seven of these also exploring views or barriers and facilitators to implementation. A further three papers used qualitative evaluation methods to assess two community initiatives, and seventeen papers were qualitative studies that addressed barriers and facilitators to behavioural change. A further three surveys assessed nutritional knowledge.

The quality of papers was generally of a moderate standard in terms of study design characteristics and clarity of reporting. Due to the population-level nature of the interventions, studies were mainly evaluations of interventions. Randomised Controlled Trials (RCTs) tend by design, to focus on individual level interventions. The small number of RCTs that were included all had a limited duration of follow-up (of up to 12 months), therefore caution is required in interpreting results. Caution is also required due to the tendency for behavioural outcomes to be self-reported rather than objectively measured, as opposed to weight, which was objectively measured.

Measuring behavioural outcomes such as diet or physical activity is problematic in population-level interventions, where self-reported measurement remains the most feasible option, however the reporting bias inherent in self-reported health behaviours may have implications for interpreting the findings of such studies. In recent years more objective methods for assessing behaviours such as physical activity, for example pedometers, accelerometers and Actiheart monitors, are preferred by research funding bodies.

Study aims varied, and included the prevention and management of other conditions such as Coronary Heart Disease (CHD), or improving lifestyle behaviours. Prevention of diabetes rather than pre-diabetes was the ultimate aim of some studies; this review only considered studies in which the population had not received a diagnosis of Impaired Glucose Tolerance (IGT) or Impaired Fasting Glucose (IFG). Evidence has been identified for the positive impact of some dietary interventions on the consumption of fruit and vegetables among UK low socio-economic status populations. However, some of these findings require caution where consumption of fruit and vegetables is reported separately; results from such findings may lead to over-interpretation. The present review findings suggest that, combined with physical activity interventions, dietary interventions may possibly have a positive impact upon weight management among UK low socio-economic status populations, although the evidence is inconclusive. Cost-effectiveness was addressed in one paper (Baxter *et al.*, 1997), but the results are not reported in this review since they are mainly related to smoking cessation. Findings are summarised in the Evidence Statements that follow in sections 2 and 6 of this report.

Interventions were carried out in a variety of settings ranging from a whole population media campaign to local educational interventions throughout the UK, with most conducted in communities in Scotland and the north of England. Whilst the review question focuses on low income populations, there were cultural variations across settings. There is therefore a particular focus on how tailoring for cultural differences might impact on intervention design. The review includes an assessment of nutritional knowledge as well as barriers and facilitators to the implementation of interventions, and barriers and facilitators to behaviour change.

Findings within the 18 effectiveness papers were assessed for data that that addressed acceptability of interventions. Of these, qualitative data from seven papers of moderate quality were extracted for the review to address barriers and facilitators to implementation. A further nineteen qualitative and views studies of varying quality were included to address barriers and facilitators to intervention implementation and

behaviour change. Three cross-sectional studies provide an overview of nutritional knowledge in low-income groups.

Qualitative data were thematically synthesized. Three key areas were therefore addressed:

Barriers and facilitators to the effective implementation of dietary and physical activity interventions, where such studies had included a qualitative assessment (7 effectiveness studies and 3 qualitative evaluations of 2 interventions).

Barriers and facilitators to carrying out optimum lifestyle behaviours that might prevent pre-diabetes in the long term. These were stand-alone qualitative studies (i.e. not part of an intervention evaluation) that aimed to obtain the views and beliefs of low-income populations (17 studies).

The nutritional knowledge of low-income populations. These provide an insight into which aspects of lifestyle behaviours are least understood (3 studies).

Findings show that there are differences in knowledge and dietary attitudes between men and women in low-income groups. Certain aspects of dietary information, such as that referring to different types of fat, were less well understood than others.

Nutritional educational interventions and physical activity interventions can be useful in terms of increasing skills and knowledge, but also for increasing social cohesion.

Evidence from one interview study with health professionals shows a reticence to measure outcomes such as BMI and waist circumference in evaluations of community interventions due to a fear of putting off potential participants.

The importance of acceptability and access was a key factor in the success of interventions generally. Acceptability was enhanced by tailoring intervention content to the needs and preferences of participants, and by employing accessible, empathetic individuals who were aware of local issues to deliver interventions. Health professionals were also concerned that interventions increased social inclusion as part of their aim, and that the cost of carrying out physical activity should not be prohibitive to low income groups.

Motivation to participate in nutritional and physical activities was enhanced by a higher perception of participant's own abilities, and by shared values with peers and family. Conversely, perceived lack of ability was a barrier, as was lack of support and shared values among significant others. A negative image associated with particular aims of interventions and the activities that they encourage also discouraged participation.

Affordability in terms of carrying out healthy lifestyle behaviours was a factor for some low-income families, though overcoming this barrier through creative thinking was a feature in some educational programmes, and affordability was more of an issue in some geographical areas than others. Cost could be an issue if significant travel was required to access healthy food, and also if additional food was being consumed, for example to cater for the differing preferences of family members, rather than simply replacing 'unhealthy' food with 'healthy' food.

Personal choice was mediated by the choices of other family members, as well as, in some cases, the idea that 'bad' food' could be balanced with 'good' food to provide a healthy diet. Whilst family member preferences were often a barrier to healthy eating, living alone was also a risk factor in terms of apathy regarding cooking 'proper' meals.

2.5 Evidence statements

The following evidence statements result from a synthesis of available evidence and are presented by intervention type, barriers to implementation, and finally barriers to lifestyle change. The evidence statements will be repeated in section 6 alongside the relevant narrative synthesis of included studies.

2.5.1 Nutrition interventions

Evidence statement 1.1: Effectiveness of nutrition interventions on fruit and vegetable intake

There is mixed evidence from five studies on the effectiveness of nutrition interventions on fruit and vegetable intake:

1.1a. Overall fruit and vegetable consumption

One good quality RCT found a significantly greater increase in average overall fruit and vegetable consumption over 12 months following a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control (Stephoe *et al.* 2003 RCT ++). Similarly, one reasonable quality non-RCT found a significantly greater increase in average overall fruit and vegetable consumption over the two-year duration of the intervention following a 5-a-day community fruit and vegetable consumption promotion intervention relative to a comparison community where there was no intervention (Bremner *et al.* 2006 non-RCT +). Another reasonable quality n-RCT found that those who received a 12-week Mediterranean-type diet intervention significantly increased their average consumption of fruits, vegetables and legumes / pulses over three months, whereas those in the information-only control group did not (McKellar *et al.* 2007 non-RCT +). However, one reasonable quality n-RCT found no significant differences in fruit and vegetable consumption between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time from baseline to both 2-month and 6-month follow-up (Wrieden *et al.* 2006 non-RCT +). A reasonable quality n-RCT found no before / after changes in consumption over the duration of the intervention in those receiving a one-year community intervention designed to improve awareness, attitudes and access to fruit and vegetables and those in a comparison community receiving no intervention, but a significant decrease in average overall fruit and vegetable intake (Ashfield-Watt *et al.* 2007 non-RCT +).

1.1b. Fruit consumption

One reasonable quality n-RCT found a significantly greater increase in average fruit consumption in those receiving a 12-week informal food skills intervention relative to a 12-week informal education session control at 2-month follow up, but found no significant differences between the groups across time at 6-month follow-up (Wrieden *et al.* 2006 n-RCT +). One reasonable quality non-RCT found no pre-post changes in average fruit consumption over the duration of the intervention in those receiving a one-year community intervention designed to improve awareness, attitudes and access to fruit and vegetables and those in a comparison community receiving no

intervention (Ashfield-Watt *et al.* 2007 n-RCT +).

1.1c. Vegetable consumption

One reasonable quality n-RCT found no significant differences in vegetable consumption between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time at 6-month follow-up (Wrieden *et al.* 2006 n-RCT +). However, another reasonable quality n-RCT found significant decreases in average vegetable consumption over the duration of the intervention in both those receiving a one-year community intervention designed to improve awareness, attitudes and access to fruit and vegetables and those in a comparison community receiving no intervention (Ashfield-Watt *et al.* 2007 n-RCT +).

Evidence statement 1.2: Effectiveness of nutrition interventions on weight control

No evidence was found for the effectiveness of interventions in relation to weight control outcomes. One good quality RCT found no significant differences in body mass index or on body weight over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). Similarly, one reasonable quality n-RCT found no significant difference in weight or body mass index over three months in either those who received a 12-week Mediterranean-type diet intervention or those in the information-only control group (McKellar *et al.* 2007 n-RCT +).

Evidence statement 1.3: Effectiveness of nutrition interventions on consumption of high fat foods

Mixed evidence was found for the effectiveness of interventions in relation to consumption of high fat foods. One good quality RCT found no significant differences in consumption of high-fat foods over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). However, one reasonable quality n-RCT found that those who received a 12-week Mediterranean-type diet intervention significantly increased their consumption of monounsaturated fats relative to saturated fats over three months, whereas those in the information-only control group did not (McKellar *et al.* 2007 n-RCT +).

Evidence statement 1.4: Effectiveness of nutrition interventions on physiological measurements

Little evidence was found for the effectiveness of interventions in relation to physiological measurements. One good quality RCT found no significant differences in systolic blood pressure, diastolic blood pressure or cholesterol over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). Similarly, one reasonable quality non-RCT found no significant difference in diastolic blood pressure, total cholesterol, high-density lipoprotein (HDL) or total cholesterol to HDL ratio from baseline to 3-month and 6-month follow-up in either those who received a 12-week Mediterranean-type diet intervention or those in the information-only control group, however those who received the Mediterranean-type diet intervention had significantly lower systolic blood pressure at 6-month follow-up compared with baseline, whereas those in the information-only control group did not (McKellar *et al.* 2007 n-RCT +).

Evidence statement 1.5: Effectiveness of nutrition interventions on nutrition knowledge

Evidence of mixed effectiveness was found in relation to nutrition knowledge. One poor quality case series found that a 10-week programme focused on translating dietary recommendations into practice, including guided hands-on food preparation led to an increase in nutrition knowledge in two of the four intervention groups studied, but no significant increase in nutrition knowledge in the other two groups (Kennedy *et al.* 1998 case series -).

Evidence statement 1.6: Effectiveness of nutrition interventions on other eating habits

No evidence was found for the effectiveness of interventions in relation to other eating habits. One good quality RCT found no significant differences in fibre intake over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). One reasonable quality non-RCT found no significant differences in mean consumption of tuna, total fish, total bread, pasta and rice and all starchy foods between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time at 2-month and 6-month follow-up (Wrieden *et al.* 2006 non-RCT +).

2.5.2 Food retail interventions

Evidence statement 1.7: Effectiveness of food retail interventions on fruit and vegetable intake

Evidence of mixed effectiveness was found in relation to fruit and vegetable intake. One reasonable quality prospective cohort study found an overall increase in overall average fruit and vegetable consumption in both the community where a new food hypermarket had opened and the comparison community with no new hypermarket over 12 months. There was however no significant change in either groups in average fruit consumption, and an increase in only the comparison community in vegetable consumption (Cummins *et al.* 2005 prospective cohort study +). One poor quality case series examining the impact of the introduction of a new large-scale food retail outlet over a one-year period found an increase in fruit and vegetable consumption among those who switched to the new store, but not among those who did not. Among both switchers and non-switchers, those with low pre-intervention levels significantly increased their fruit and vegetable consumption (Wrigley *et al.* 2003 case series -).

Evidence statement 1.8: Effectiveness of food retail interventions on health (self-reported)

No evidence was found for the effectiveness of interventions in relation to self-reported health status. One reasonable quality prospective cohort study found no significant change over 12 months in prevalence of fair to poor self-reported health in either the community where a new food hypermarket had opened or the comparison community with no new hypermarket (Cummins *et al.* 2005 prospective cohort study +).

Evidence statement 1.9: Effectiveness of food retail interventions on psychosocial variables

One reasonable quality prospective cohort study found a significant decrease in the prevalence of poor psychological health in the community where a new food hypermarket had opened but not in the comparison community with no new hypermarket over 12 months (Cummins *et al.* 2005 prospective cohort study +).

2.5.3 Physical activity interventions

Evidence statement 1.10: Effectiveness of physical activity interventions on physical activity

Evidence of mixed effectiveness was found in relation to changes in physical activity. One reasonable quality n-RCT found that a one-year community awareness of physical activity campaign increased physical activity over the duration of the study, whereas a comparison community with no community awareness of physical activity interventions did not (Cochrane & Davey 2008 n-RCT +). Similarly, one of the RCTs (exercise consultation RCT) reported in a good quality study found that a single 30-minute exercise consultation increased physical activity from baseline to one year, whereas an information leaflet and body measurement control did not (Lowther *et al.* 2002 RCT ++). However, no differences between intervention and control groups at each follow-up point were reported, and the other RCT (fitness assessment RCT) reported in the same good quality study found no increases in physical activity and no differences between those who had a single-session fitness assessment and those who received an information leaflet and body measurement control at each follow-up point (Lowther *et al.* 2002 RCT ++).

Evidence statement 1.11: Effectiveness of physical activity interventions on health (self-reported)

Some evidence of effectiveness was found in relation to self-reported health status. One reasonable quality non-RCT found that those who received a one-year community awareness of physical activity campaign reported having better health in general and better health compared with a year previously than did a comparison community with no community awareness of physical activity (Cochrane & Davey 2008 non-RCT ++).

2.5.4 Multi-component interventions

Evidence statement 1.12: Effectiveness of multicomponent interventions on physical activity

No evidence of effectiveness was found in multi-component interventions in relation to changes in physical activity. One reasonable quality RCT found no significant change in exercise frequency in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Similarly, one reasonable quality non-RCT found no significant changes in exercise across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.13: Effectiveness of multicomponent interventions on consumption of high fat foods

Evidence of mixed effectiveness was found in multi-component interventions in relation to consumption of high-fat foods. One reasonable quality RCT found no significant change in the frequency of 'bad' foods eaten in those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention, but a significant increase in the frequency of 'bad' foods eaten in control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Likewise, one reasonable quality non-RCT found no significant changes in low-fat spread consumption across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community), but identified a significant increase in low-fat milk consumption in the intervention group relative to the control group (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.14: Effectiveness of multicomponent interventions on physiological measurements

No evidence of effectiveness was found in multi-component interventions in relation to changes in physiological measurements. One reasonable quality non-RCT found no significant changes in blood pressure or cholesterol across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.15: Effectiveness of multicomponent interventions on psychosocial variables

Mixed evidence for effectiveness was found in terms of psychosocial variables in multi-component interventions. One reasonable quality RCT found no significant change in the frequency of those who believed they were in control of their health or total health sources of information over the six-month duration of the study in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). The same reasonable quality RCT found no significant change in social support score and mental health score in those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention, but a significant increase in the social support score and mental health score in the control group over the six-month duration of the study (Lindsay *et al.* 2008 RCT+).

Evidence statement 1.16: Effectiveness of multicomponent interventions on other eating habits

No evidence of effectiveness was found in multi-component interventions in relation to other eating habits. One reasonable quality RCT found no significant change in the number of new healthy foods eaten in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Similarly, one reasonable quality non-RCT identified a significant decrease in smoking prevalence in the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components relative to the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.17: Effectiveness of multicomponent interventions on other health behaviours

No evidence for effectiveness was found in terms of other health behaviours in multi-component interventions. One reasonable quality RCT found no significant change in alcohol consumption on the heaviest day of drinking, smoking behaviour or second-hand smoke exposure over the six-month duration of the study in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription. The same RCT found no significant change in weekly alcohol consumption in the 'Heart of Salford' portal intervention group, but a significant decrease in weekly alcohol consumption in the control group over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). However, one reasonable quality non-RCT found no significant changes in wholemeal bread consumption across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

2.5.5 Nutritional knowledge and attitudes in low-income groups

Evidence statement 1.18: Nutritional knowledge in low-income groups

There was evidence that nutritional knowledge in low-income groups is mixed in terms of content, and by demography.

Two cross-sectional studies (McPherson *et al.* 2004 +; Parmenter *et al.* 2000 ++) found that nutritional knowledge in low-income groups is particularly poor in the realm of fat type and the importance of complex carbohydrate consumption as part of a balanced diet. Knowledge levels were found to be higher in women, in higher educational and SES groups, and in middle aged groups. Another survey study (Dibsdall *et al.* 2003 ++) found that attitudes to healthy eating differed by gender, age, employment, and marital status. Those living alone were particularly vulnerable to lack of motivation toward healthy eating.

2.5.6 Barriers and facilitators relating to intervention implementation

Evidence statement 1.19: Available Resources

There is evidence that interventions require sufficient organising and follow up time, utilising available collaborating resources and funding.

One evaluation of a number of local food projects (Bremner *et al.* 2006 +) found that barriers included insufficient funding, as well as time for organising the interventions effectively. Collaboration with related organisations was found to be an important facilitating factor. Another qualitative evaluation (Kennedy *et al.* 1998 +) found that organising nutritional educational interventions was labour intensive. Follow up time was regarded as insufficient for participants to engage in one evaluation of an intervention aimed at enhancing nutritional and physical activity behaviours (Peerhboy *et al.* 2008 +) and an evaluation of an internet portal intervention (Lindsay *et al.* 2008 +)

There was evidence from one evaluation of a food and health project that long-term funding can assist in providing flexibility and autonomy. In addition, adequate facilities are required, for example, sizeable kitchens with adequate storage facilities, as well as transportation facilities for obtaining food. (Dobson *et al.* 2000 +).

Evidence statement 1.20: Awareness of interventions

There was evidence from one multi-method evaluation (Dobson *et al.* 2000 +) that despite the distribution of leaflets and posters to public venues, word of mouth was anecdotally the best method of raising awareness about a food and health intervention. Another study of health professional and parents views (Withall *et al.* 2009 +) also provided evidence that word of mouth is perceived to be the main way that people learn about interventions.

Evidence statement 1.21: Acceptability of interventions

1.21 a) Attributes of health workers

There is evidence that information is more accessible and interventions more acceptable where key workers possess the appropriate knowledge, skills and personal attributes, such as empathy and trustworthiness.

One evaluation (Wormald *et al.* 2006 +) found that trained lay workers were able to access and raise awareness in hard to reach groups through their knowledge of the community in which they were working, and their personal communication skills. Attributes of workers were found to be influential on the success of interventions (Kennedy *et al.* 1998+; Kennedy *et al.* 1999 +; Gray *et al.* 2009 +). Other evaluations found that the skills of an intervention advisor facilitated the feeling of empowerment among participants (Wormald *et al.* 2006 +; Peerhboy *et al.* 2008 +), and that skills were learned through engaging the interest of the participants (Spence *et al.* 2005 +) as well as disseminating information in a meaningful way (Dobson *et al.* 2000 +).

1.21 b) Delivery and content

Three evaluations (Wormald *et al.* 2006 +; Spence *et al.* 2005 +; Kennedy *et al.* 1998 +) of the included intervention studies found evidence that acceptability is increased when practical demonstrations make abstract concepts and scientific language more meaningful, and when progressive small steps are taken in terms of behaviour change.

Two evaluations reported suggestions made by participants that might increase acceptability. These were the development of women only classes and more activities at weekends to fit in with other commitments (Peerhboy *et al.* 2008 +); free sessions, free child-care, especially in school holidays, free food, individual and group tailored recipes and useful enjoyable activities (Dobson *et al.* 2000 +).

In one evaluation (Gray *et al.* 2009 +) there was evidence that male-only classes using creative ways to conceptualise weight management increased acceptability and motivation.

One exploratory study (Stead *et al.* 2004 +) and one evaluation (Dobson *et al.* 2000 +) found that acceptability of a food educational intervention was increased by first exploring participants' needs in terms of topic content. Three evaluations (Kennedy *et al.* 1998 +; Rankin *et al.* 2006 ++; Dobson *et al.* 2000 +) found that incentives such as access to free food increased motivation to participate in nutrition educational interventions. The experimental use of familiar and affordable food increased the

acceptability of a food and health project (Dobson *et al.* 2000 +).

There was evidence that interventions delivered by community members rather than health professionals tended to encourage community participation and meet local needs with an open and holistic agenda (Dobson *et al.* 2000 +).

1.21 c) Social Inclusion

There is evidence that acceptability of interventions that aim to change behaviour is enhanced by the added value of social inclusion. Social interaction has a positive subjective effect on well-being as well as providing a shared forum for discussion of concerns.

Evaluation of a Healthy Living Centre (Rankin *et al.* 2006; 2009 ++) found that social inclusion was stated as one aim of the intervention, whilst another RCT qualitative evaluation (Lindsay *et al.* 2008 +) found that interactive internet portals increased social capital for people with shared health issues. Social interaction was a positive and facilitating factor for participation in four interventions (Thomson *et al.* 2003 +; Peerhboy *et al.* 2008 +; Gray *et al.* 2009 +) aimed at increasing physical activity, and one aimed at improving eating behaviours (Dobson *et al.* 2000 +). Positive social aspects of the interventions included an informal atmosphere, the opportunity to chat and discuss with other participants, as well as humour.

1.21 d) Associated Image

There is evidence that interventions aimed at raising awareness of healthy behaviours are more acceptable when they are made appropriate to the target audience and have a positive image.

One qualitative study (Coleman *et al.* 2007 ++) found that young women will be less motivated to participate in sporting activities if the image associated with those activities, for example the required clothing, is perceived as negative. Two process evaluations found that participants held negative associations with the term 'healthy eating'. The group in one study (Rankin *et al.* 2006 ++) associated the term with government policy and the other study group (Stead *et al.* 2004 +) regarded healthy eating as boring and not filling.

Evidence statement 1.22: Outcomes and satisfaction with interventions

There was qualitative evidence from two multi-method evaluations (Dobson *et al.* 2000 +; Kennedy *et al.* 1998 +) of changes in participants' and their family's eating behaviour, and also of a developing interest in cooking as well as increased feelings of well-being. In one of these evaluations (Kennedy *et al.* 1998 +), the use of fat in cooking had reduced.

2.5.7 Views and experiences of health professionals and health workers

Evidence statement 1.23: Views and experiences of health professionals and health workers

a) Aims and characteristics of interventions

There was evidence from one evaluation (Rankin *et al.* 2009 ++) that health workers held extended aims in relation to interventions. Social cohesion and improved well being were discussed as being at least as important as any positive changes in behaviour.

In addition, access was a factor that practitioners expressed as important in reaching disadvantaged groups. In order to increase access, local activities needed to be affordable, appropriate, and avoiding stigmatisation (Rankin *et al.* 2009 ++). Some professionals reported that in order to attract disadvantaged people to carrying out physical activity, a wider variety of activities were necessary with some of these being free or low cost (Withall *et al.* 2009 +).

Interventions were marketed and delivered with the aim of 'empowerment' rather than 'health improvement' to avoid the perceptions of a judgemental stance.

b) Knowledge

There was evidence from one evaluation that uneven learning about target groups was a factor in responses to tackling health inequalities over the previous five years (Rankin *et al.* 2009 ++).

Barriers and facilitators relating to health behaviour change

Evidence statement 1.24: Information

a) Available information

There was evidence that adopting healthy lifestyle behaviours can be influenced by the extent and nature of available information, as well as the level of understanding attached to health promotion messages.

Three qualitative studies (Dibsdall *et al.* 2002++; Daborn *et al.* 2005+; Gough & Conner 2006++) found evidence of information bombardment, and of confused messages. Distrust of information sources was a barrier to implementation.

Evidence from two qualitative studies (Dibsdall *et al.* 2002++; Wood *et al.* 2010+) showed that TV was the main source of information; used positively this source was stated to improve knowledge of food and nutrition.

b) Understanding messages

Clarity of information was found to be important in three evaluations (Wardle *et al.* 2001+; Gray *et al.* 2009+; Stead *et al.* 2004+). Scientific language can be a barrier to understanding messages.

Two interview studies with mothers (Lawrence *et al.* 2009+; Wood *et al.* 2010+) provided evidence for misunderstandings regarding some food messages; healthy eating messages were seen as complex compared to smoking cessation messages (Wood *et al.* 2010+). The main confusion was around sugar content and the classification of fats. A balanced diet was interpreted as achieving a balance of 'good' food and 'bad' food consumption. The '5-a-day' message was slightly misunderstood as a recommendation to eat five portions of fruit (rather than fruit and vegetables) a day (Lawrence *et al.* 2009+).

Evidence statement 1.25: Attitudes to health

There is evidence that adopting healthy lifestyle behaviours can be influenced by existing attitudes toward health.

One qualitative study (Dibsdall *et al.* 2002 ++) found evidence of a range of attitudes from actively seeking to improve health prospects to a disinterest in health issues.

Another interview and focus group study (Withall *et al.* 2009 +) found a perceived lack of control over weight status. Two rationales for excess weight included a flawed metabolism and genetics, neither of which were perceived as subject to change.

There was evidence from one interview study (Wood *et al.* 2010 +) that for the mothers in the study, the 5-a-day message was perceived as impractical and a joke.

One focus group study (Nic Gabhain *et al.* 1999+) found that lack of exercise was generally not emphasised as a health risk factor by male and female blue collar workers.

In another focus group study (Lawrence *et al.* 2006+), women of lower educational attainment were not clear about the links between food and health, often equating weight with health, and believed it was not good to be 'too healthy', although the long-term health of their children was considered important and related to food.

Another focus group study (Whelan *et al.* 2002+) found that some mothers deliberately sought out cheap and healthy foods, however others were less concerned about the healthiness of their family meals.

Evidence statement 1.26: Perceived capabilities

There is evidence that participation in interventions varies to the extent that potential participants perceive that they are capable of carrying out the component activities.

One qualitative evaluation found that a poor level of fitness at baseline was inhibiting both physically and psychologically (Peerhboy *et al.* 2008+) and one cross-sectional survey found the absence of difficulty walking to be a predictor of active travel and physical activity (Ogilvie *et al.* 2008+). A qualitative study (Coleman *et al.* 2007++) found that young women who did not perceive that their sporting capabilities were sufficient lacked motivation for participation. Similar findings from another qualitative study (Stead *et al.* 2004+) found a perceived lack of cooking skills to be demotivating. Enhancing skills in a non-threatening way may therefore be motivating. Peer and family support have also been found to increase motivation.

One focus group study (Lawrence *et al.* 2009+) found that women of lower educational attainment generally lacked confidence in cooking meals from scratch, although some were more confident about their skills, and lacked confidence in being able to eat the recommended amount of fruit and vegetables.

Evidence statement 1.27: Lifestyle

There is evidence that adopting healthy lifestyle behaviours can be influenced by current lifestyle.

Two evaluations (Peerhboy *et al.* 2008+; Gray *et al.* 2009+) and one interview and focus group study (Withall *et al.* 2009++) found evidence that commitments and responsibilities were seen as a barrier to participation in physical activity. There was also evidence that for some, existing activity around the home is sufficient (Price 2004+). Withall *et al.* (2009+) also found that participants cited lack of time, particularly if employed in work or looking after children, as a barrier to physical activity. Lack of time was also commonly cited as a barrier to physical activity and healthy eating in four focus group studies (Gough & Conner 2006++; Lawrence *et al.* 2009+; Nic Gabhain *et al.* 1999+; Whelan *et al.* 2002+). In one such study, the unemployed women also cited boredom as a reason for unhealthy eating, and some were aware of the apparent contradiction of this with not having enough time to prepare healthy food; although the pressure to feed hungry children may have been responsible for a perceived lack of time (Lawrence *et al.* 2009+). There was evidence from one qualitative study (Withall *et al.* 2009+) that parents cited 'stress', 'comfort eating' 'being stuck in a rut' and 'embarrassment' as reasons for not carrying out sufficient physical activity. Health professionals interviewed in the same study discussed the prevalence of mental health issues such as depression in the area, and its impact on health behaviours.

Evidence statement 1.28: Affordability

There is mixed evidence that affordability has an impact on lifestyle behaviour change. One briefly reported qualitative study (Price 2004+) found that costs limited the extent to which deprived mothers could buy healthy food. Another qualitative study exploring the beliefs of those living in NDC communities (Parry *et al.* 2007+) found a perceived lack of affordable goods in the local area, with public transport costs also regarded as prohibitive.

Affordability in two studies was only an issue where buying added amounts of food, or organic food might be considered; one evaluation and one qualitative study (Kennedy *et al.* 1998+; Dibsall *et al.* 2002++) found that cooking different meals to suit the preferences of family members was considered too expensive. In one evaluation (Kennedy *et al.* 1998+) there was evidence that low-income groups are resistant to change in dietary behaviour because of the fear of financial risk. In one interview study, both users and professionals stated that pricing strategies were not regarded as helpful in encouraging healthy eating. However professional views also held that shopping behaviour could include prioritisation of healthy food over convenience foods (Withall *et al.* 2009+).

One focus group study (Lawrence *et al.* 2009+) identified the cost of food as a barrier to healthy eating due to its cost in relation to other priorities, marketing strategies and special offers not being placed on healthier foods and the waste generated by buying food that did not get eaten. Similarly, another focus group study (Whelan *et al.* 2002+) found that mothers would choose less healthy but cheaper options when shopping and wasting money on food that their families would not eat was a consideration. Expense was also reported by men as a barrier to healthy eating in another focus group study (Gough & Conner 2006++), although the authors did not explore this in detail.

There is evidence that affordability may be addressed using budgeting as a topic in nutrition educational programmes (Peerhboy *et al.* 2008+)

Evidence from one interview study (Withall *et al.* 2009+) showed cost as a perceived barrier to physical activity in disadvantaged groups for both users and professionals. Transport and use of facilities were both costly. Physical activity referral schemes were suggested as one way to overcome this barrier.

Evidence statement 1.29: Environmental factors

Evidence was found that environmental factors can be a barrier to behaviour change in terms of nutritional behaviour.

One qualitative study (Parry *et al.* 2007+) found that a perceived lack of local amenities was a prohibiting factor in shopping for healthy foods.

Access to food shopping was regarded as a barrier to healthy eating among women with lower educational attainment in one focus group study, in particular navigating round shops with pushchairs, coping with demanding children and bringing the shopping home on public transport and into high rise flats (Lawrence *et al.* 2009+).

Evidence was also found that environmental factors can be a barrier to behaviour change in terms of physical activity.

One qualitative evaluation (Cavill *et al.* 2006++) found that fear of crime and intimidation inhibited the motivation to participate in a new cycling initiative. One qualitative study (Parry *et al.* 2007+) found that fear of attack prevented walking in certain areas. Another evaluation (Peerhboy *et al.* 2008+) showed that dark evenings and poor weather are barriers to physical exercise outdoors.

One large-scale cross-sectional survey (Ogilvie *et al.* 2008+) found that active travel was associated with being younger, living in owner-occupied accommodation, travelling less than four miles to work, having access to a bicycle and not having access to a car, whereas overall physical activity was associated with living in social-rented accommodation and not being overweight.

Evidence statement 1.30: Social norms, preferences, habitual behaviours and lifestyle

There is evidence that behaviour change is influenced by preferences, social norms and habitual behaviours, as well as the needs and preferences of family members.

One interview study shows evidence that mothers often prioritise personal choice of food over healthy food; 'bad' food was seen as a treat whilst 'good' food was boring and bland (Wood *et al.* 2010+). Similarly, one focus group study found that blue collar working men also viewed healthy foods as 'boring' and not satisfying, and upheld the right to personal choice and to eat unhealthy foods, although some expressed a desire to eat healthily (Gough & Conner 2006++).

Two evaluations (Kennedy *et al.* 1998+; Peerhoy *et al.* 2008+) and one exploratory study (Stead *et al.* 2004+) found evidence that the traditional food tastes and preferences of family members were often prioritised over healthy nutritional choices. Foreign fruits were sometimes regarded with suspicion (Nic Gabhain *et al.* 1999+).

Childhood experiences of cooking were found to be important in adult healthy cooking habits among women in one focus group study (Lawrence *et al.* 2009+); likewise was support from other family members for eating more healthily, where lack of support and lack of control over the family's food and a feeling of not being important led to eating an unhealthy diet. Similarly, women in another focus group study (Whelan *et al.* 2002+) were heavily influenced by what the family would eat at mealtimes.

Men were found to be generally more conservative in terms of food choices. There is evidence from one evaluation that men hold particular views about body size, preferring to be overweight than 'thin' (Gray *et al.* 2009+), and that men are more likely to take risks with their health (Daborn *et al.* 2005++). In a focus group study, male blue collar workers viewed their unhealthy diets as healthy in light of their lack of health problems, although those with health problems had changed to healthier eating habits (Gough & Conner 2006++). These men also believed that engaging in more 'masculine' health behaviours such as physical activity could compensate for an unhealthy diet.

Two qualitative studies (Dibsdall *et al.* 2002++; Withall *et al.* 2009+) found evidence that participants were influenced by their parents in terms of cooking and eating.

There was evidence from one qualitative study (Dibsdall *et al.* 2002++) that participants continued shopping and consumption behaviours that were often

unhealthy and that these behaviours had become habitual.

However, one evaluation provided evidence that a discussion forum could encourage reflection on habitual behaviour and that frequent reinforcement was needed in order to change habits (Lindsay *et al.* 2008+). One qualitative study (Spence *et al.* 2005+) that focussed on deprived mothers and one evaluation (Peerhboy *et al.* 2008+) provided evidence that women were motivated to cook healthy foods in order to enhance the health of their children. In contrast, living alone was found to reduce the motivation for cooking healthy meals in two qualitative studies (Dibsdall *et al.* 2002++; Daborn *et al.* 2005++). In addition, there was evidence from one evaluation (Wormald *et al.* 2006+) that participants in interventions can have a positive effect on the health behaviours of family and friends.

2.5.8 Applicability

All the above studies were carried out within the UK, therefore applicability is relatively high. It must be recognised however that cultural differences and resource variations exist within low-income groups in the UK.

2.6 Discussion

Evidence on the effectiveness of dietary and nutritional interventions for encouraging increased fruit and vegetable consumption among UK low socio-economic status populations was mixed (with no studies suggesting a negative impact on fruit and vegetable intake) and of reasonable and good quality. Findings from some studies require caution in interpretation due to the reporting of consumption of fruit and vegetables separately.

There was less available evidence on the effectiveness of physical activity for encouraging increased physical activity levels among UK low socio-economic status populations. Available evidence was mixed (again, with no studies suggesting a negative impact on physical activity levels) and of good quality.

There was a dearth of objective or measured outcome measures within the effectiveness outcome data. There was some evidence of a reticence to measure outcomes such as BMI as part of community intervention evaluations due to the possibility of putting off potential participants. Behavioural outcomes were mainly self-reported; therefore caution is required in interpreting the findings reported here.

There is evidence from cross-sectional studies of poor understanding of certain dietary messages, in particular regard to types of fat and the role of complex

carbohydrate in a balanced diet. Such understanding and accompanying attitudes differ by gender, marital and age groups.

Barriers to intervention implementation include inadequate funding and time taken to organise and plan interventions. Factors that facilitate the acceptability of interventions include the procurement of adequate resources, and the employment of lay workers with appropriate skills, knowledge and personal attributes. In particular, as well as knowledge and skills in the topic being delivered, participants can be better accessed and facilitated in their learning when workers have knowledge of local activities and issues as well as skills in sensitive communication. Intervention content that is meaningful to potential participants is more acceptable than content which is associated with negative images and connotations, or content that is difficult to understand. For people in low-income groups, acceptability was enhanced by incorporating the element of social inclusion; in particular the ability to engage with other individuals with shared issues is valued. Some health professionals held the view that access to physical activity for low income groups should not be prohibited by cost.

Motivation to engage with interventions was increased with incentives such as free food. Barriers to behaviour change included a perceived lack of ability in terms of cooking or physical activities. There was mixed evidence for affordability as an influence on lifestyle behaviours; perceived lack of available shops from which to purchase reasonably priced food, and adding items to the shopping list in order to cater for family preferences were regarded as more prohibitive than replacing 'unhealthy' foods with 'healthy' foods.

Barriers to effective behaviour change include a lack of useful and relevant information, or conversely, 'information overload'. Attitudes to healthy lifestyle behaviours range from active interest to lack of interest; this may be influenced by perceived capabilities and current lifestyle.

Environmental factors such as darkness, poor weather and fear of intimidation were barriers to outdoor physical activity. Social norms, family preferences and habitual behaviours influenced dietary behaviours, creating in some cases a barrier to introducing new ways of shopping, cooking and eating.

Assessment of survey data on nutritional knowledge and barriers and facilitators to implementation of interventions and to behaviour change generally give an insight into the complexity of intervening to prevent pre-diabetes and related conditions in lower socioeconomic groups. There is evidence that interventions require creativity of

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design in order to enhance attendance; in particular, knowledge of local issues and preferences increase acceptability.

No relevant data for cost-effectiveness were found for the assessed interventions. Health economic issues will therefore be considered within the Modelling Report. Further well-reported primary research is required that evaluates, with adequate follow-up, the outcomes of population level preventive interventions.

3. INTRODUCTION

3.1 Aims and objectives

The National Institute for Health and Clinical Excellence has been asked by the Department of Health to develop public health guidance on the prevention of type 2 diabetes among high-risk groups. The referral is divided into 2 separate pieces of guidance. The first will address the prevention of pre-diabetes (raised and impaired glucose levels) in populations and communities of high risk adults aged 18-74 using determinants of health such as creating an environment supportive of behaviour change. The second piece of guidance will address how to prevent the progression of pre-diabetes to type 2 diabetes at the individual level.

Rationale for review focus

The focus of this review is to synthesise evidence for the effectiveness of interventions to change diet and increase physical activity, specifically from studies conducted in socio-economically deprived populations in the UK. The rationale for this focus can be found in the NICE Public Health Guidance issued in 2007 on *“Behaviour change at population, community and individual level”* which emphasises the need to tailor interventions to individual and community characteristics rather than assuming that behaviour change interventions which have been effective in one population, can be replicated in other populations without adaptation or consideration of local barriers to (or facilitators of) intervention implementation and effectiveness.

Whilst the wider evidence-base in relation to behaviour change and obesity prevention, summarised within previous public health and clinical guidance from NICE, will also be directly relevant to diabetes prevention, this review addresses a specific area of uncertainty around the effectiveness, acceptability and feasibility of interventions implemented in relatively deprived communities with the objective of changing diet or increasing physical activity.

This implies an underlying assumption that, even though these interventions have not been explicitly designed to reduce risk of diabetes, any intervention which has effectively changed diets or increased activity levels in socio-economically deprived UK populations will be relevant to diabetes prevention in similar populations at high risk of diabetes. A subsequent review will consider interventions with the objective of changing diet or increasing physical activity in UK black and minority ethnic (BME)

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communities with a similar rationale, that such interventions will be relevant to diabetes prevention in UK BME communities.

The evidence for a causal link between these behaviour changes and potential reductions in diabetes risk is relatively well established and comes from international trials of behaviour change interventions in individuals at high risk of diabetes. Evidence from diabetes prevention RCTs in populations with pre-diabetes has confirmed that behaviour change is causally associated with a reduction in diabetes incidence (Li *et al.* 2008; Lindstrom *et al.* 2006). Additional evidence from major cohort studies such as the EPIC study confirms consistent associations between diet and physical activity and diabetes risk in the general population (Simmons *et al.* 2006). There is still a lack of direct evidence for interventions that can effectively prevent pre-diabetes in high risk populations, hence the need to extrapolate from evidence on intermediate outcomes including behaviour change and BMI (Alberti *et al.* 2007).

It is recognised that the term 'pre-diabetes' is not ideal, as not everyone with raised or impaired blood glucose levels will go on to develop type 2 diabetes. However, the term 'pre-diabetes' has been chosen because of its widespread use and recognition by a broad range of stakeholder groups, and because of the lack of consensus on a suitable alternative.

Within this first piece of guidance, three reviews will be carried out that each focus on a particular high risk population within the UK. This review focuses on prevention of pre-diabetes in adults from a lower socioeconomic group, defined broadly within the scope as measured by education and occupation. In practice there are a broad range of definitions in relation to socioeconomic circumstances, and these will be described as they are stated within the study descriptions. The second review will focus on adults from BME groups, and the third will assess interventions that impact upon health professionals and services.

Research questions:

**What interventions encourage dietary and physical activity behaviour changes needed to prevent pre-diabetes in low socio-economic status communities?
Are identified interventions cost-effective? What factors influence their uptake and effectiveness?**

The following will be identified according to available evidence:

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Population and community level interventions to change and sustain knowledge levels, attitudes and behaviour relating to diet, weight management and physical activity among adults from a lower socioeconomic group.

Cultural and social barriers and facilitators to awareness raising and behaviour change among the population under question.

Interventions

The following section describes the types of intervention that were assessed within the review, and the context in which the interventions were considered. Specific types of intervention were not pre-defined prior to searching or sifting; rather, interventions with aims that addressed the research question and met the inclusion criteria were considered.

Raising awareness of risk factors for developing pre-diabetes

Methods of increasing levels of knowledge of the risk of developing pre-diabetes and how to prevent this happening, e.g. health promotion campaigns (mass media, localised advertising, social marketing), community outreach work (e.g. group teaching in places of worship; leaflet dropping etc).

Interventions to promote healthy eating/weight management

How to reach, engage and promote healthy eating/weight management among low socioeconomic status and low income groups, e.g. tailored/targeted dietary advice, education and support to review/self assess their weight/Body Mass Index (BMI); changes to legislation/policy e.g. food labelling; environmental changes; use of technologies; improving access to resources.

Interventions to promote physical activity

How to reach, engage and promote physical activity among adults from low socioeconomic and low income groups, e.g. tailored/targeted physical activity advice and education; changes to legislation/policy; environmental changes; use of technologies; improving access to resources.

Interventions are to be considered in the context of:

Interventions that have been universally delivered to the whole population, and the evidence about what impact those interventions have had on low income groups.

Interventions that have been tailored or designed specifically for implementation with adults from low socioeconomic groups, and whether they could be delivered on a wider scale.

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How does the effectiveness and cost-effectiveness of interventions vary according to the following:

- a) Whether the intervention is based on an underlying theory or conceptual model.
- b) Diversity of the population (e.g. in terms of the user's age, gender or ethnicity) for whom the intervention is designed.
- c) Status of the person (or organization) delivering the intervention and the way it is delivered.
- d) Frequency, length and duration, media format, where the intervention takes place, whether it is individual or group based and whether it is transferable to other settings.

4. BACKGROUND

4.1 Description of the health problem

The NICE scope (2009b), which sets out what the guidance will and will not cover, highlights that every year, 100,000 people in the UK are diagnosed with type 2 diabetes and many more may have the condition (Diabetes UK 2006). It can lead to long-term complications including micro- and macro-vascular diseases such as eye problems, kidney disease, foot ulcers and cardiovascular disease. Between 33% and 66% of people with pre-diabetes – raised or impaired blood glucose levels – will go on to develop type 2 diabetes over a period of 3–6 years (Diabetes Prevention Programme Research Group 2002; Lindstrom *et al.* 2003; Pan *et al.* 1997; Ramachandran *et al.* 2006). During that time they may also be at increased risk of coronary heart disease (Waugh 2007).

An individual's risk factors for pre-diabetes include: obesity (a body mass index [BMI] of more than 30 kg/m²); a high waist circumference measurement (more than 80 cm in women and 94 cm in men); a sedentary lifestyle; a close family history of type 2 diabetes; a history of gestational diabetes in women; and being older than 40 (or older than 25 for some black and minority ethnic groups). In addition, certain groups of people are at greater overall risk of developing pre-diabetes, for example people of south Asian, African–Caribbean and black African descent. The same is true for those from lower socioeconomic groups, for example, people in social class five are three and a half times more likely than those in social class one to experience morbidity as a result of diabetic complications (DH 2002). With rates of obesity on the increase and the population becoming more sedentary (The Health and Social Care Information Centre 2009) type 2 diabetes (and pre-diabetes) is becoming more prevalent.

For most people, both pre-diabetes and type 2 diabetes can be prevented by maintaining a healthy weight, improving dietary intake and being physically active. However, many people are unaware that they are at risk – and of the extent to which changes to their lifestyles can help prevent the onset of type 2 diabetes (Model Group 2007).

People at high risk of developing pre-diabetes may be less likely to use health services and therefore less likely to receive early diagnosis and treatment. For example, a significant proportion of people from areas of deprivation / low-SES areas who are at risk of diabetes are not recorded on GP registers (Model Group 2007).

In addition to the personal cost to individuals, families and communities, diabetes is estimated to account for at least 5% of UK healthcare expenditure. Up to 10% of hospital budgets are used for the care of people with the condition – drug costs alone for people with type 2 diabetes have been estimated to account for about 7% of the total NHS drugs budget (Waugh *et al.* 2007). Preventing pre-diabetes among groups at high risk of developing type 2 diabetes could help save some of these NHS resources.

In 2007, 60% of primary care trusts (PCTs) had programmes in place to raise public awareness of the risk factors for diabetes and 37% were raising awareness of its signs and symptoms. Only 42% had assessed the needs of their population in relation to diabetes and less than 40% had developed a diabetes strategy (Innove 2008).

4.2 Remit of the assessment

A mapping review was carried out in order to assess the breadth of literature relevant to the overall research question. Searches showed that the quantity of literature from international studies was copious, therefore inclusion of such a large body of work would not be feasible within the resources available. In addition, much of the work carried out outside the UK is not transferable to UK minority populations and services. Only UK based literature was therefore included in the searches. The next sections detail the inclusion and exclusion criteria as described within the scope document.

4.2.1 Groups that will be covered

Adults (aged 18–74) with one or more of the following individual risk factors:

Family history of type 2 diabetes

History of gestational diabetes

BMI of 25 kg/m² or above

High waist circumference above 80 cm (for women) or 94 cm (for men).

Groups of adults at greater risk of pre-diabetes including:

People of south Asian, African–Caribbean or black African descent (to be assessed in a subsequent review)

People from a lower socioeconomic group (to be assessed in this review).

4.2.2 Groups that will not be covered

People who have already been diagnosed with IFG or IGT (The second piece of NICE guidance on preventing type 2 diabetes will consider this group.)

People with diabetes.

Children and young people aged under 18.

Adults older than 74.

Pregnant women.

Adults with other medical conditions who have been prescribed medication that may increase the risk of type 2 diabetes (for example, steroids).

The guidance will apply to all high-risk groups within the general population.

4.2.3 Activities/interventions that will be covered

Ways of helping high-risk groups improve their diet, increase their physical activity levels and reach or maintain a healthy weight, to include:

a) Awareness-raising among high-risk groups of the factors that can lead to pre-diabetes. This may include mass-media campaigns, advertising and social marketing. In addition, it may include community outreach work (for example, in places of worship), use of community leaders to disseminate health promotion messages and the use of culturally appropriate educational materials. It may also include integrated health promotion programmes which could contain several or all of these activities.

b) Methods used to ensure interventions are culturally sensitive and appropriate for groups at high risk of pre-diabetes. These would include getting these groups involved in both the planning and delivery of the intervention, as well as participating in health-promoting activities.

4.2.4 Activities/interventions that will not be covered

Population-level screening to identify pre-diabetes.

Diagnostic testing to identify pre-diabetes.

BMI and waist circumference cut-off points used to assess risk in minority ethnic groups. (This is covered in the NICE guideline on the prevention and management of obesity).

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Interventions to prevent the progression from diagnosed pre-diabetes to type 2 diabetes. (This will be addressed by the second piece of guidance).

Treatment and management of diagnosed type 1 and type 2 diabetes. (This is the subject of previously published NICE guidance).

5. METHODS

5.1 Methods for identification of evidence

A systematic review of the effectiveness of interventions, and barriers/facilitators to implementation of interventions for prevention of pre-diabetes was undertaken according to the general principles recommended in the methods guide for development of NICE public health guidance (2009a). Methods followed the development of a review protocol and search protocol and are detailed below.

5.1.1 Search Strategy

The standard NICE Methods, as outlined in the Methods for the Development of NICE Public Health Guidance (2009) were used to guide the development of the search methods. The aim of the search strategy was to retrieve a manageable number of relevant records to inform the development of a mapping review, views review, effectiveness and cost effectiveness reviews and the economic model.

An initial search strategy, limited to UK literature, was developed for a mapping review. This search was supplemented by additional searches for the views and effectiveness reviews as well as the economic model, in order to ensure that the review topic was fully explored as the reviews progressed. The search strategies were developed in conjunction with NICE Information Specialists.

A targeted approach to the identification of further UK-based evidence was taken. Instead of aiming to identify the relevant literature for a specific question using one search, we adopted an emergent approach which attempts to identify key literature. This literature was then explored in order to inform further retrieval by the identification of useful keywords/index terms.

The search strategy and key literature identified for the mapping review formed the basis of the search strategies for the review questions. An initial strategy was generated by identifying free text and MeSH terms from studies identified through the mapping review as being relevant to the review questions. Iterations were then repeated as new concepts were identified, within the time frame of the study.

The questions to be addressed in the reviews have differing existing evidence bases. Therefore, decisions on the type of evidence (e.g. RCTs, observational) to be used in the reviews were made through an iterative searching process that allows decisions to be made based on the available evidence. Details of search terms and types of evidence used were made available to members of the NICE Programme

Development Group (PDG) for comment and to provide an opportunity to alert the assessment team to any additional key pieces or sources of evidence.

The searches were limited to English Language, 1990-current and human studies. A UK filter was applied to all the searches in order to limit the evidence to that which is directly applicable and therefore relevant; in particular to NHS services, the circumstances of low socioeconomic groups and, for the subsequent second review, UK BME groups. High risk groups resident in the UK differ in their cultural experiences from those in, for example, the US and Australia. As this guidance is concerned with accessing specific populations and the influences of their contextual backgrounds, UK based research was deemed more applicable.

A thorough audit trail of the search process was maintained; this includes all searches, number of results and number of relevant references identified. This process ensures that the search process is transparent, systematic and replicable.

In addition to the database searching, additional searches were undertaken in specialist websites and grey literature sources in order to identify evidence not indexed in the bibliographic databases. Key authors were also identified and searched for in Medline (via OVID SP), Cumulative index to nursing and allied health literature, (Cinahl, via EBSCO) and Scopus (via Elsevier), in order to interrogate medical, nursing and interdisciplinary data sources. The SchARR team also conducted reference and citation searching for those studies identified for inclusion in the reviews using Web of Science (via Thomson ISI), Scopus (via Elsevier) and Google Scholar.

The mapping review search strategy was used to search specific economic databases: NHS Economic Evaluation Database (via Wiley) and EconLit (via OVID SP). The Public Health Interventions Cost Effectiveness Database (PHICED) which is part of the National Library for Public Health was also searched using the limits of public health area: obesity or physical activity.

Two additional searches were undertaken in response to a request from the PDG. The searches were: a search for population level interventions on financial incentives or disincentives for healthy eating or exercise and a search for intake of specific dietary elements, for example soluble fibre, by people from low socioeconomic groups. These additional searches were undertaken in Cinahl, (via EBSCO), Medline (via OvidSP) and PsycINFO (via OvidSP).

The mapping review was made available to members of the PDG and they will have access to this review. Additional papers were suggested by PDG members (of which none met the inclusion criteria).

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An overview of evidence sources are below, with detailed information including location of websites and sample search strategies presented in Appendix 3.

List of Databases Searched for Review One and Two

Medline via OVID SP

Embase via OVID SP

CINAHL via EBSCO

British Nursing Index via OVID SP

The Cochrane Library via Wiley

Science Citation Index via Thomson ISI

Social Science Citation Index via Thomson ISI

PsycINFO via OVID SP

Selected EPPI Centre Databases

Additional Sources Searched for Review One and Two

Grey Literature: British Library Integrated Catalogue, Conference Papers Index, Medical Research Council and Economic and Social Research Council.

Websites: Association of Public Health Observatories, NHS Evidence: National Library for Public Health, Joseph Rowntree Foundation, Diabetes UK

Other sources: Scopus (via Elsevier), Web of Science (via Thomson ISI), NHS Economic Evaluation Database (NHS EED via Wiley), EconLit (via Ovid SP),

The Public Health Interventions Cost Effectiveness Database (PHICED), Google Scholar

5.2 Study selection

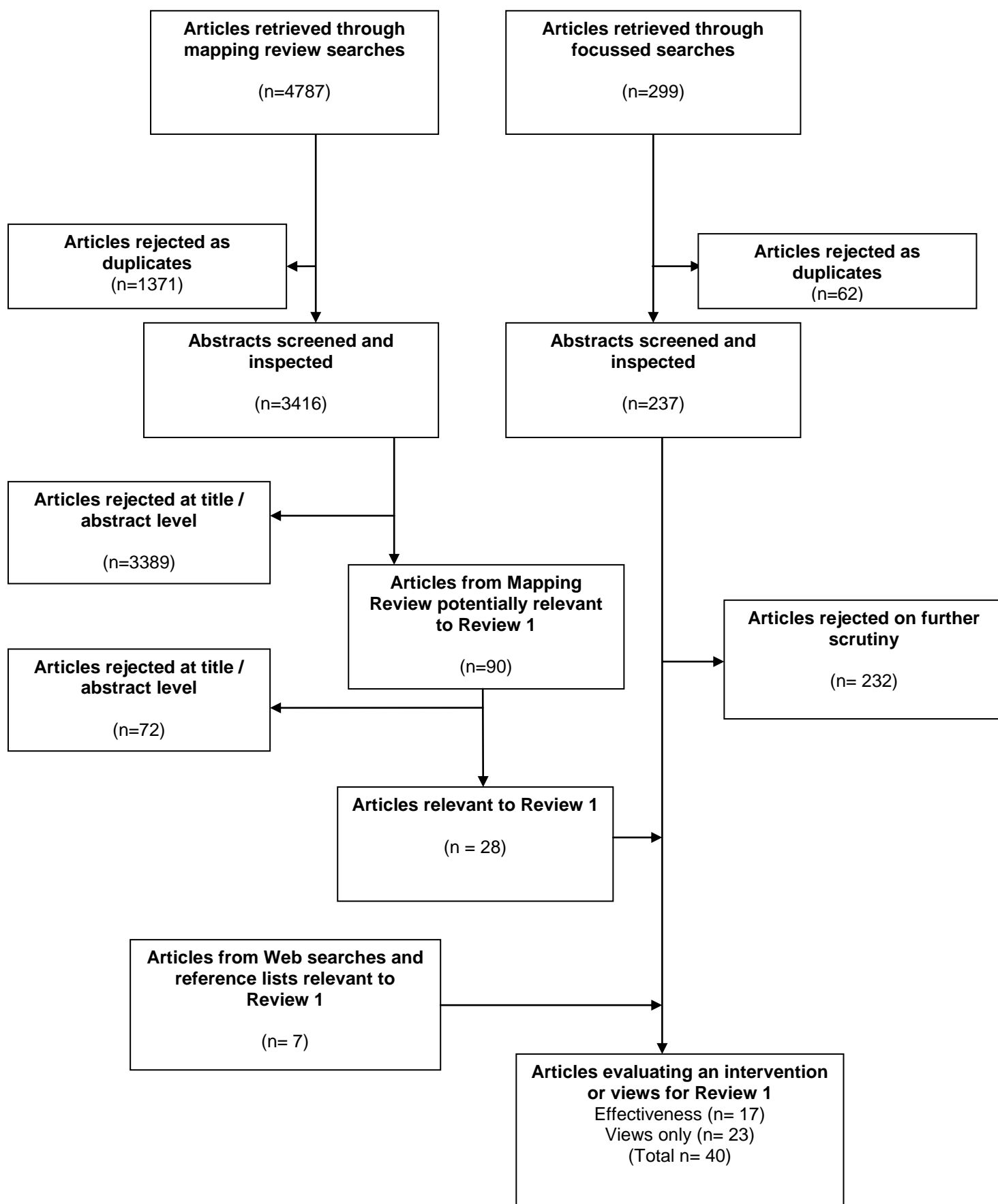
All of the retrieved UK based literature was screened by one of three reviewers (MJ, EEH, and RJ) and double-checked by one other reviewer at title and abstract level for relevance, and those relevant were taken through to full paper appraisal (see section 5.4 for full process details). The process was repeated until no further useful information was retrieved. This is an emergent, iterative process, involving the information specialist, systematic reviewer, modeller and topic specialist. Searching for evidence to inform both the qualitative and quantitative elements of the systematic review and the models was carried out concurrently.

In the case of identifying barriers and facilitators to programme success, priority was given to evidence which can be linked to programmes for which there is effectiveness data. This allowed identified barriers and facilitators to be linked to actual success, rather than being speculative, thereby improving both the link between quantitative and qualitative research in the reviews, and providing greater validity for the findings.

However, such evidence also addressed more general cultural influences on lifestyle behaviour (i.e. not in the context of an intervention). In this case, given the potentially large body of related but independent views studies, UK based studies that utilise qualitative methods, for example interviews or focus groups, were scrutinised to elicit relevant views relating to barriers and facilitators. Themes were identified and synthesised from this literature. Quantitative data from, for example, survey studies that address barriers and facilitators were utilised in the absence of qualitative information for particular populations/activities.

Figure 1 shows that from a large initial body of literature generated from the searches, a limited amount of UK papers fulfilled the inclusion criteria for review one. Twenty eight papers were identified in the mapping review searches that were relevant for this review. A further 7 papers were identified through more focussed database searches as well as web searches. Grey literature searches did not produce any evaluations of the projects and programmes described.

Figure 1: Flow chart of paper selection



5.3 Data Extraction

Data were extracted with no blinding to authors or journal. Data were extracted by one of three reviewers (MJ, EEH, RJ) using a standardised form. As highlighted in the Cochrane Collaboration guidelines for systematic reviews of health promotion and public health interventions, extraction forms should be developed for each review in order to make them relevant to the information that is required. The forms for extracting quantitative and qualitative data were based on the example forms presented within the methods guide for development of NICE public health guidance (2009a). The forms were piloted on two randomly selected systematic effectiveness articles and two randomly selected views studies in order to confirm appropriateness for use. Information relating to the review question, study design, outcomes and conclusions were collated. The data extracted for effectiveness evidence included information relating to the intervention under study, namely objectives, content, intervener, duration, adherence, mode of delivery and population. Data extracted for evidence of barriers and facilitators to effectiveness, or views of included activities included information relating to the activity under study, population, views on acceptability, accessibility, information given and retained, as well as any influences on these factors. Data extracted by each reviewer was checked by a second reviewer to ensure reliability. Any studies giving rise to uncertainty were reviewed independently by a third reviewer, and discrepancies, for example where studies were not clearly reported, were resolved by discussion. It should be noted that preliminary findings are presented here, with related evidence tables in Appendix 3.

5.4 Quality assessment

The quality of included studies was assessed by one of four reviewers (MJ, EEH, RJ; SB); all quality assessments were double checked by a reviewer not involved in the initial assessment. Quality criteria were based on those developed for the methods guide for development of NICE public health guidance (2009a). The purpose of such quality assessment is to provide a narrative account of study quality for the reader, in order to inform judgements on the strength of the evidence presented. Within the methods guide (2009a), it is recommended that studies are categorised according to study type and methodological rigour and quality (categories ++, + or -) in order to provide a clear representation of type of evidence (See Table 1).

While it is noted that criteria may not be judged as having equal value in quality assessment, in the interests of consistency, a subjective cut-off score of 9 criteria

fulfilled has been applied for studies rated as ++. Preliminary quality assessment ratings are presented. Quality assessment is confirmed by a second reviewer in order to minimise any potential bias.

Table 1: Study quality

Grade	Criteria
++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or adequately described are thought unlikely to alter the conclusions.
–	Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

The checklist for quantitative studies contained the following items:

1. Is the source population or source area well described?
2. Is the eligible population or area representative of the source population or area?
3. Do the selected participants or areas represent the eligible population or area?
4. How was selection bias minimised?
5. Were interventions (and comparisons) well described and appropriate?
6. Was the allocation concealed?
7. Were participants and/or investigators blind to exposure and comparison?
8. Was the exposure to intervention and comparison adequate?
9. Was contamination acceptably low?
10. Were the other interventions similar in both groups?
11. Were all participants accounted for at study conclusion?
12. Did the setting reflect usual UK practice?
13. Did the intervention or control comparison reflect usual practice?
14. Were outcomes measures reliable?
15. Were all outcome measurements complete?
16. Were all the important outcomes assessed?
17. Were all outcomes relevant?
18. Were there similar follow up times in exposure and comparison groups?
19. Was follow-up time meaningful?
20. Were exposure and comparison groups similar at baseline?
21. Was intention to treat (ITT) analysis conducted?

22. Was the study sufficiently powered to detect an intervention effect (if one exists)?
23. Were the estimates of effect size given or calculable?
24. Were the analytical methods appropriate?
25. Was the precision of intervention effects given or calculable? Were they meaningful?
26. Are the study results internally valid (i.e. unbiased)?
27. Are the findings generalisable to the source population (i.e. externally valid)?

The checklist for qualitative studies contained the following items:

1. Is a qualitative approach appropriate?
2. Is the study clear in what it seeks to do?
3. How defensible/rigorous is the research methodology?
4. How well was the data collection carried out?
5. Is the role of the researcher clearly described?
6. Is the context clearly described?
7. Were the methods reliable?
8. Is the data analysis sufficiently rigorous?
9. Is the data 'rich'?
10. Is the analysis reliable?
11. Are the findings convincing?
12. Are the findings relevant to the aims of the study?
13. Conclusions:
 - a) How clear are the links between data, interpretation and conclusions?
 - b) Is there adequate discussion of any limitations encountered?
14. How clear and coherent is the reporting of ethics?

Each of these aspects was then considered and a rating of ++, + or – was assigned to each, with a summary rating for internal and external validity using the scale below.

Currently there is no recommended checklist for cross-sectional studies; therefore quality indicators for survey papers included in this review were sample size, return rates, whether the questionnaire was piloted, appropriateness of study conclusions and relevance.

5.5 Data analysis and synthesis

A synthesis of available evidence is presented in Section 6. Data synthesis was informed by the methods advocated by NICE public health guidance (2009a). Pre-specified outcomes are tabulated in evidence tables and presented within a preliminary narrative synthesis. For the effectiveness literature data synthesis, papers were classified according to the type of intervention and then the outcomes measured. Because of the considerable variation in variables, methods and measures used it was not possible to conduct a meta-analytical review. Therefore, a narrative approach to synthesis was adopted, where key outcomes and findings are reported in the text of the report, summarised in the tables and this information is used to consider and address the review questions in the discussion section.

6. RESULTS

The following section presents findings from available evidence that addresses the questions:

What interventions encourage dietary and physical activity behaviour changes needed to prevent pre-diabetes in low socio-economic status communities; what are the barriers and facilitators to their uptake?

6.1 Effectiveness study characteristics

Within this section, the characteristics of studies that examine the effectiveness of interventions aimed at low socio-economic status groups are summarised, and the findings of the effectiveness of such interventions on outcomes of relevance are examined. Seventeen studies were included in the effectiveness section of this review; three randomised controlled trials (Lindsay *et al.* 2008; Lowther *et al.* 2002; Steptoe *et al.* 2003), six non-randomised controlled trials (Ashfield-Watt *et al.* 2007; Baxter *et al.* 1997; Bremner *et al.* 2006; Cochrane & Davey 2008; McKellar *et al.* 2007; Wrieden *et al.* 2009), one prospective cohort study (Cummins *et al.* 2005) and seven case series (Dobson *et al.* 2000; Gray *et al.* 2009; Kennedy *et al.* 1998; Kennedy *et al.* 1999; Peerbhoy *et al.* 2008; Wimbush *et al.* 1998; Wrigley *et al.* 2003).

Table 2 displays a summary of the characteristics of studies that examine the effectiveness of interventions aimed at low socio-economic status groups, and Table 3 displays the intervention delivery personnel. These studies vary widely in terms of interventions used, outcomes measured, populations studied and study design.

Interventions were wide-ranging and broadly consisted of dietary interventions, food retailing interventions, physical activity interventions and multi-component interventions (see Table 2). In terms of dietary interventions, two studies employed multi-component community level interventions aimed at increasing fruit and vegetable intake in deprived communities (Ashfield-Watt *et al.* 2007; Bremner *et al.* 2006) and three interventions that involved enabling local people to make healthy food choices and cook healthy food in general (Kennedy *et al.* 1998; Kennedy *et al.* 1999; McKellar *et al.* 2007), one of which was specifically focused on promoting a Mediterranean-type diet (McKellar *et al.* 2007). Both food retail interventions involved the introduction of a large-scale food retailing outlet in the intervention area, which can be considered a natural public health intervention (Cummins *et al.* 2005; Wrigley

et al. 2003). The three studies examining physical activity interventions adopted very different approaches: an environment-focused community awareness campaign promoting physical activity in the local community (Cochrane & Davey 2008); a national mass media campaign to promote walking (Wimbush *et al.* 1998); and two individual level interventions tested in the one study – a fitness assessment used to tailor an exercise plan and an exercise consultation focused on behaviour change principles, both with vouchers for local facilities (Lowther *et al.* 2002). Finally, the five multi-component interventions were also vastly different. One was a comprehensive weight management programme tailored to men, which incorporated advice on physical activity, diet and alcohol consumption (Gray *et al.* 2009), another provided a similar approach in terms of advice on physical activity and diet tailored to families, incorporating pedometers (Peerbhoy *et al.* 2008), one incorporated a combination of behaviour change, educational, empowerment and medical approaches to lifestyle change (Baxter *et al.* 1997), another involved a community-driven approach to lifestyle change focusing on healthy eating and physical activity (Dobson *et al.* 2000) and the final intervention involved providing access to an Internet portal ‘Hearts of Salford’ incorporating discussion forums and voluntary drop-in sessions aimed at helping people with heart disease to lead a more healthy lifestyle (Lindsay *et al.* 2008). The most common duration for an intervention was one year (Ashfield-Watt *et al.* 2007; Bremner *et al.* 2006; Cochrane & Davey 2008; Cummins *et al.* 2005). Other interventions lasted between two weeks (Steptoe *et al.* 2003) and six months (Lindsay *et al.* 2008). Two interventions lasted three (Dobson *et al.* 2000) and four years (Baxter *et al.* 1997). Intervention duration appeared to vary among type of intervention, with no apparent trends in types of long or short interventions.

Delivery personnel also varied considerably among interventions (see Table 3). Interventions were delivered by trained/skilled project workers in the form of community nutrition assistants (Kennedy *et al.* 1999), ‘Family fit’ officers (Peerbhoy *et al.* 2008), CookWell project worker and facilitator (Wrieden *et al.* 2006), project workers with a background in food and nutrition (Kennedy *et al.* 1998) and family nutrition workers and exercise tutors (Dobson *et al.* 2000), researchers (Lowther *et al.* 2002, exercise consultation intervention) and a combination of nutritionists, local teaching staff and occupational therapy staff (McKellar *et al.* 2007). One intervention used mass media as the delivery media (Wimbush *et al.* 1998). Eight interventions did not report their delivery personnel (Ashfield-Watt *et al.* 2007; Baxter *et al.* 1997; Bremner *et al.* 2006; Cochrane & Davey 2008; Gray *et al.* 2009; Lindsay *et al.* 2008; Lowther *et al.* 2002, fitness assessment intervention; Steptoe *et al.* 2003) and

delivery personnel were not applicable for food retail interventions (Cummins *et al.* 2005; Wrigley *et al.* 2003). Consistent with a population approach, most interventions were conducted in a community setting, with the exception of one that was conducted in men's health clinics (Gray *et al.* 2009) and one that took place in primary care (Stephoe *et al.* 2003) (see Table 2). Interventions were carried out throughout the UK, with most conducted in communities in Scotland and the north of England.

Table 2: Intervention components by study

Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
Ashfield-Watt 2007 +	1554	Non-RCT	Retailers, educators, primary care teams, employers and local media	Residents in five UK deprived areas (not specified).	Initiatives that involved building community networks to increase fruit and vegetable intakes in five deprived communities by improving awareness, attitudes and access to fresh fruits and vegetables, not fully specified.	12 months	No attempts made to influence fruit and vegetable consumption.	None stated	Residents in five UK deprived areas that were on the electoral roll.
Baxter 1997 +	Not reported	Non-RCT	Various community settings (details not reported)	Residents in three UK low SES areas in Rotherham	Combination of several recognised health promotion approaches: behaviour change; educational; empowerment; and medical.	4 years	Similar community with no intervention	None stated	Questionnaires mailed to randomly sampled adults from the Rotherham Family Health Services Authority population age-sex register.
Bremner 2006 +	98640	Non-RCT	Community settings not specified.	Residents in 66 (former) UK health authorities with	'5-a-day' community intervention to increase fruit & vegetable intake,	Not fully specified, it may be assumed	No intervention, no further detail	None stated	PCTs' list of the Electoral Wards in which

Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
				the highest levels of deprivation and poorest health status.	including home delivery & transport links, voucher schemes, media campaigns, growing & cookery skills & encouraging networking in groups involved in promoting healthy eating	that the programme lasted for at least one year.	reported		activities were planned, or the Electoral Wards included within the programme area.
Cochrane 2008 +	1532	Non-RCT	Community settings not specified.	Residents in UK deprived areas on the basis of being in the lowest quintile on both the Jarman and Townsend indices of deprivation, the Burngreave and Manor areas of Sheffield.	Community awareness of physical activity campaign including meetings, presentations, events, competitions & dissemination of leaflets & posters. Physical activity introduced included walking, exercise referral, sports, water activities & active leisure pursuits	1 year	No community awareness of physical activity interventions.	That health-enhancing behaviour can be promoted by changing the environment in a deprived urban community	Randomly selected from the Postcode Address File.
Cummins 2005 +	603	Prospective cohort study	Not applicable.	Residents of households in two deprived areas of Glasgow (DEPCAT score of 7).	Provision of a new food hypermarket within the intervention area (natural public health intervention)	1 year	No new food hypermarket within area.	That deprived areas have poorer physical access to food than	Addresses were drawn from a postcode address file.

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Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
								their more affluent counterparts.	
Dobson 2000 -	51	Case series (part of action research study)	Community	Residents on a low-SES estate in Leicester	Variety of optional community food and health initiatives, including cook & eat sessions and an exercise and healthy eating class (both aimed at women)	3 years	Not applicable	None – was bottom-up rather than top-down	Participants who lived in the area were invited to participate in the initiatives – no further details reported
Gray 2009 +	110	Case series	Men's Health Clinics at Camelon & Grange-mouth in Scotland	Male residents of a deprived community in Scotland.	Camelon weight management group programme, tailored to men, incorporating advice on physical activity, diet and alcohol consumption, (see evidence table)	12 weeks	Not Applicable	No	Men classed as obese at men's health clinic who accepted enrolment onto waiting list and then enrolled in the weight management programme.
Kennedy 1998 -	26	Case series	Community	Low-income mothers with young children living in the low-income area of Deighton, UK.	Friends with food (FWF) programme – weekly 2-hour sessions focused on translating current dietary recommendations relating to "heart	10 weeks	Not Applicable	No	Posters inviting women or women's groups to discussions on diet and health.

Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
					health" into practice & practical activity (guided "hands-on" food preparation and cookery).				
Kennedy 1999 -	41	Case series	Community	Deprived urban community in Bolton	Community nutrition assistants (trained lay workers)	4 months?	N/A	None stated	Residents contacted by community nutrition assistants
Lindsay 2008 +	108	RCT	Community	Deprived urban community in Salford	Access to a health promotion Internet portal, Hearts of Salford, that contained discussion forums, plus voluntary drop-in sessions	6 months?	Internet access	None stated	Men and women living in Salford sampled from GP's CHD registries
Lowther 2002 ++	370	Two RCTs	Community	Socially & economically deprived urban community – two housing estates in Kilmarnock	<u>Intervention 1:</u> fitness assessment (FA), used to tailor an exercise plan, + vouchers for local facilities <u>Intervention 2:</u> exercise consultation (EC), + vouchers for local facilities	Study period overall: 2 months FA: Single session, duration not reported EC: Single session of 30 minutes' duration	Booklet on PA, vouchers for local facilities, option of receiving intervention at end of study period	Not reported	Application forms mailed to residents of the two housing estates targeted
McKellar 2007 +	130	Non-RCT	Community	Females with rheumatoid arthritis living in urban areas of deprivation	Mediterranean-type diet intervention involving a cookery course, weekly 2-hour sessions	6 weeks	Received readily available healthy eating	None stated	Residents within any of the Glasgow social inclusion

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Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
				in Glasgow			information only		partnership areas were recruited at 3 hospital sites; no further detail
Peerbhoy 2008 -	48	Case series	Community	Families living in a deprived area of Liverpool with ≥ 1 CHD risk factor	'Family fit' programme, a holistic approach involving community support, cookery classes and pedometers	Various events over 14 weeks	N/A	Not reported	Data reported on families who had completed the programme at the time of evaluation. Recruited into 'family fit' by primary health care professionals
Steptoe 2003 ++	271	RCT	Primary health centre	Adults aged 18-70 registered at a primary health centre in a deprived urban area	Behavioural dietary counselling	2 x 15min sessions, 2 weeks apart	Brief nutritional counselling (same duration)	Social learning theory and stage of change model	Random recruitment by letter
Wimbush 1998 -	~4836 (exact n not given)	Case series	Community (via mass media)	Adults in urban and rural communities in Scotland aged 30-55 in lower	Mass media campaign to promote walking using two bursts of TV advertising, features	7 months	N/A	Not reported	Data were collected in wide-scale surveys (the Communica-

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Study	n	Design	Delivery setting	Target population	Intervention	Duration of intervention	Control condition	Theoretical base	Recruitment
				SES groups who do not exercise very often were targeted.	on local radio and a free telephone direct response service ('Fitline').				tions Tracking survey; Scotland's monthly Omnibus survey) and with a random sample of 'Fitline' callers
Wrieden 2006 +	93	Non-RCT	Various community settings	Urban deprived communities in Scotland	Informal food skills and food education sessions, following a 'CookWell' manual	1 session weekly for 10 weeks	Informal food education sessions (same duration)	Not reported	Recruited by community worker at each site
Wrigley 2003 -	1009	Case series	Community	Those living in deprived urban areas of Leeds, Seacroft and Whinmoor	The opening of a large-scale food retail outlet (natural public health intervention)	N/A	N/A	Not reported	Households contacted in person

Table 3: Intervention delivery personnel by study

Delivery personnel	Community nutrition assistants	Resear- chers	'Family fit' officers	CookWell project worker/ facilitator	Project workers with background in food and nutrition	Nutritionists	Family nutrition worker	Exercise tutor	Local teaching staff	Occupational therapy staff	Mass media	No detail reported on delivery personnel	Not applicable
Ashfield-Watt 2007 +												✓	
Baxter 1997 +												✓	
Bremner 2006 +												✓	
Cochrane 2008 +												✓	
Cummins 2005 +													✓
Dobson 2000 -							✓	✓					
Gray 2009 +												✓	
Kennedy 1998 -					✓								
Kennedy 1999 -	✓												
Lindsay 2008 +												✓	
Lowther 2002 ++		✓ (EC)										✓ (FA)	
McKellar 2007 +						✓			✓	✓			
Peerbhoy 2008 -			✓										
Stephoe 2003 ++												✓	
Wrieden				✓									

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2006 +													
Wimbush 1998 -											✓		
Wrigley 2003 -													✓

6.2 Quality assessment

6.2.1 Quality assessment of intervention studies

The studies included in the effectiveness section of this review consisted of three randomised controlled trials, five non-randomised controlled trials, one prospective cohort study and five case series. Of the seventeen papers, five were rated as ++, six were rated as +, and six were rated as - for quality. Two randomised controlled trials (Lowther *et al.* 2002; Steptoe *et al.* 2003), one prospective cohort study (Cummins *et al.* 2005) and two non-randomised trials (Ashfield-Watt *et al.* 2007; Cochrane & Davey 2008) were rated ++. One randomised controlled trial (Lindsay *et al.* 2008), four non-randomised controlled trials (Baxter *et al.* 1997; Bremner *et al.* 2006; McKellar *et al.* 1997; Wrieden *et al.* 2009) and one case series (Gray *et al.* 2009) were rated +. Six case series (Dobson *et al.* 2000; Kennedy *et al.* 1998; Kennedy *et al.* 1999; Peerbhoy *et al.* 2008; Wimbush *et al.* 1998; Wrigley *et al.* 2003) were rated -. Ratings were made on the basis of the NICE CHPE checklists (National Institute for Health and Clinical Excellence 2009).

Study quality was assessed using the checklists and guidance provided in the NICE CPHE Methods Manual (National Institute for Health and Clinical Excellence 2009), which assesses studies according to various aspects of design, sampling, measurement, analysis and reporting. Studies were graded with ++, + or - as recommended by NICE (see Table 1). Greater consideration was given to the performance of the study on criteria fundamental to the robustness of the findings. Study quality did not determine inclusion into or exclusion from the review, and was carried out with reference to the review question, therefore the same paper may have received a different grading for the effectiveness review than for the views part of the question. Study quality was assessed by all reviewers and there was no disagreement on the grading of studies.

The methodology checklist outlines twenty-seven aspects to be evaluated when rating a randomised controlled trial or cohort study: relating to the population; the method of selection of exposure group; the outcomes; and the analyses.

6.2.2 Limitations on study quality of intervention studies

A key limitation found in most studies was the degree of reporting of population characteristics, with the details of the source population being poorly described. Often the study was not sufficiently powered or power calculations (if calculated)

were not reported, and estimates of effect size was often not reported. Follow-up timings appeared similar for both groups, however in one paper the follow-up time ranged from one month to 49 months post-programme (Gray *et al.* 2009).

6.2.3 Quality assessment of qualitative studies

The general quality of included qualitative studies and qualitative parts of effectiveness studies when assessed using criteria set out in the checklists and guidance provided in the NICE CPHE Methods Manual (National Institute for Health and Clinical Excellence 2006), was good, with 7 rated as very good (++) and one as poor (-). See Appendix 4 for table of quality assessments.

6.2.4 Limitations to quality of qualitative studies

Main limitations to quality were reporting of participant characteristics and researcher/participant interaction, as well as data collection and analysis methods. Stand alone qualitative papers were generally rated better quality than evaluations, possibly due to a higher synchronicity between purer qualitative research methods and the quality criteria used compared to evaluations.

6.3 Synthesis of effectiveness study findings

Table 2 displays a summary of study characteristics across studies examining the effectiveness of interventions aimed at low socio-economic status groups. In order for the results of this review to be meaningful, the findings have been synthesised by type of intervention (i.e. nutrition interventions, food retail interventions, physical activity interventions and multi-component interventions) and also by outcome. Tables 4 to 7 complement the narrative synthesis by displaying the findings of the effectiveness studies in terms of whether they found evidence of a positive effect, negative effect or mixed/no evidence of an effect.

6.3.1 Nutrition interventions

Six studies examined the effectiveness of nutrition interventions on relevant outcomes; one RCT (Stephoe *et al.* 2003), five n-RCTs (Ashfield-Watt *et al.* 2007; Bremner *et al.* 2006; McKellar *et al.* 2007; Wrieden *et al.* 2006) and one case series (Kennedy *et al.* 1998). These outcomes included fruit and vegetable intake, weight control, the consumption of high-fat / low-fat foods, physiological measurements, nutrition knowledge and other eating habits (see Table 4). Only effectiveness data for which statistical comparisons have been made have been synthesised in the tables and narrative, as it is difficult to assess the effectiveness of an intervention where no statistical analysis has been undertaken.

The evidence for the effectiveness of nutrition interventions for increasing fruit and vegetable intake is mixed. For ease of interpretation, this outcome has been examined in terms of overall fruit and vegetable consumption, fruit consumption and vegetable consumption.

Five studies, mostly involving community-based interventions, examined the effectiveness of nutrition interventions on fruit and vegetable intake. Three studies reporting very different interventions found a significantly greater increase in average overall fruit and vegetable consumption over the duration of the intervention in the intervention group relative to the control group; one good quality RCT examining the effectiveness of a behavioural dietary counselling intervention in comparison with brief nutritional counselling (Stephoe *et al.* 2003), one reasonable quality n-RCT examining the effectiveness of a 12-week Mediterranean-type diet intervention significantly increased their average in comparison with an information-only control group (McKellar *et al.*, 2007 n-RCT), and one reasonable quality n-RCT examining

the effectiveness of a 5 a day community health promotion intervention involving various community activities in comparison with no intervention (Bremner *et al.* 2006). However, no significant differences were found between groups across time at both 2-month and 6-month follow-up in one reasonable quality non-RCT examining the effectiveness of a 10-week community-based informal food skills intervention in comparison with an informal educational session with no food skills programme (Wrieden *et al.* 2006). Another reasonable quality n-RCT examined the effectiveness of a community intervention aimed at improving awareness, attitudes and access to fresh fruits and vegetables compared with a community within whom no attempts were made to influence fruit and vegetable consumption (Ashfield-Watt *et al.* 2007). The authors found no pre-post changes in the intervention group, but a significant decrease in average overall fruit and vegetable intake in the control group.

Two community-based n-RCTs examined the effectiveness of nutrition interventions on fruit intake. One reasonable quality n-RCT examining the effectiveness of a 10-week community-based informal food skills intervention in comparison with an informal educational session with no food skills programme (Wrieden *et al.* 2006) found a significantly greater increase in average fruit consumption over the duration of the intervention in the intervention group relative to the control group at 2-month follow up, but found no significant differences between the groups across time at 6-month follow-up. One reasonable quality n-RCT examining the effectiveness of a community intervention aimed at improving awareness, attitudes and access to fresh fruits and vegetables compared with a community within whom no attempts were made to influence fruit and vegetable consumption (Ashfield-Watt *et al.* 2007) found no pre-post changes in the intervention group or control group on average fruit consumption.

The same two community-based n-RCTs examined the effectiveness of nutrition interventions on vegetable intake. No significant differences in average vegetable consumption between the groups across time at 6-month follow-up were found by one reasonable quality n-RCT examining the effectiveness of a 10-week community-based informal food skills intervention in comparison with an informal educational session with no food skills programme (Wrieden *et al.* 2006). However, another n-RCT of reasonable quality examining the effectiveness of a community intervention aimed at improving awareness, attitudes and access to fresh fruits and vegetables compared with a no-intervention community (Ashfield-Watt *et al.* 2007) found significant decreases in average vegetable consumption in the intervention group and control group over the course of the study.

Evidence statement 1.1: Effectiveness of nutrition interventions on fruit and vegetable intake

There is mixed evidence from five studies on the effectiveness of nutrition interventions on fruit and vegetable intake:

1.1a. Overall fruit and vegetable consumption

One good quality RCT found a significantly greater increase in average overall fruit and vegetable consumption over 12 months following a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control (Step toe *et al.* 2003 RCT ++). Similarly, one reasonable quality n-RCT found a significantly greater increase in average overall fruit and vegetable consumption over the two-year duration of the intervention following a 5-a-day community fruit and vegetable consumption promotion intervention relative to a comparison community where there was no intervention (Bremner *et al.* 2006 n-RCT +). Another reasonable quality n-RCT found that those who received a 12-week Mediterranean-type diet intervention significantly increased their average consumption of fruits, vegetables and legumes / pulses over three months, whereas those in the information-only control group did not (McKellar *et al.* 2007 n-RCT +). However, one reasonable quality non-RCT found no significant differences in fruit and vegetable consumption between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time from baseline to both 2-month and 6-month follow-up (Wrieden *et al.* 2006 n-RCT +). A reasonable quality n-RCT found no before / after changes in consumption over the duration of the intervention in those receiving a one-year community intervention designed to improve awareness, attitudes and access to fruit and vegetables and those in a comparison community receiving no intervention, but a significant decrease in average overall fruit and vegetable intake (Ashfield-Watt *et al.* 2007 n-RCT +).

1.1b. Fruit consumption

One reasonable quality n-RCT found a significantly greater increase in average fruit consumption in those receiving a 12-week informal food skills intervention relative to a 12-week informal education session control at 2-month follow up, but found no significant differences between the groups across time at 6-month follow-up (Wrieden *et al.* 2006 n-RCT +). One reasonable quality non-RCT found no pre-post changes in average fruit consumption over the duration of the intervention in those receiving a one-year community intervention designed to improve awareness, attitudes and

access to fruit and vegetables and those in a comparison community receiving no intervention (Ashfield-Watt *et al.* 2007 n-RCT +).

1.1c. Vegetable consumption

One reasonable quality n-RCT found no significant differences in vegetable consumption between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time at 6-month follow-up (Wrieden *et al.* 2006 n-RCT +). However, another reasonable quality n-RCT found significant decreases in average vegetable consumption over the duration of the intervention in both those receiving a one-year community intervention designed to improve awareness, attitudes and access to fruit and vegetables and those in a comparison community receiving no intervention (Ashfield-Watt *et al.* 2007 n-RCT +).

There is no evidence for the effectiveness of nutrition interventions for weight control. No significant differences were found between the intervention and control groups across time on body mass index or on body weight in one good quality RCT examining the effectiveness of a behavioural dietary counselling intervention in comparison with brief nutritional counselling (Steptoe *et al.* 2003) and in one reasonable quality n-RCT examining the effectiveness of a Mediterranean-type diet intervention compared with healthy eating information (McKellar *et al.* 2007).

Evidence statement 1.2: Effectiveness of nutrition interventions on weight control

No evidence was found for the effectiveness of interventions in relation to weight control outcomes. One good quality RCT found no significant differences in body mass index or on body weight over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). Similarly, one reasonable quality non-RCT found no significant difference in weight or body mass index over three months in either those who received a 12-week Mediterranean-type diet intervention or those in the information-only control group (McKellar *et al.* 2007 n-RCT +).

There is mixed evidence for the effectiveness of nutrition interventions for consumption of high-fat foods. One reasonable quality n-RCT found a greater

increase in the ratio of monounsaturated fats to saturated fats consumed from pre- to post-intervention in the intervention group (Mediterranean-type diet intervention) but not in the control group (healthy eating information) (McKellar *et al.* 2007). However, no significant differences were found between the intervention (behavioural dietary counselling) and control (brief nutritional counselling) groups across time on consumption of high-fat foods in one good quality RCT (Steptoe *et al.* 2003).

Evidence statement 1.3: Effectiveness of nutrition interventions on consumption of high fat foods

Mixed evidence was found for the effectiveness of interventions in relation to consumption of high fat foods. One good quality RCT found no significant differences in consumption of high-fat foods over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). However, one reasonable quality n-RCT found that those who received a 12-week Mediterranean-type diet intervention significantly increased their consumption of monounsaturated fats relative to saturated fats over three months, whereas those in the information-only control group did not (McKellar *et al.* 2007 n-RCT +).

There is very little evidence for the effectiveness of nutrition interventions for physiological measurements. One good quality RCT examining the effectiveness of a behavioural dietary counselling intervention in comparison with brief nutritional counselling (Steptoe *et al.* 2003) found no significant differences between the intervention and control groups across time on systolic blood pressure, diastolic blood pressure or cholesterol. Similarly, one reasonable quality n-RCT found no significant difference across time for the intervention group (Mediterranean-type diet intervention) or control group (healthy eating information) on diastolic blood pressure (NS), total cholesterol (NS), high-density lipoprotein (HDL) cholesterol (NS), total cholesterol to HDL ratio (NS) or glutathione (NS), however there was a significant pre- to post-intervention reduction in the systolic blood pressure of the intervention group ($p=0.016$) with no change in the control group (McKellar *et al.* 2007).

Evidence statement 1.4: Effectiveness of nutrition interventions on physiological measurements

Little evidence was found for the effectiveness of interventions in relation to physiological measurements. One good quality RCT found no significant differences in systolic blood pressure, diastolic blood pressure or cholesterol over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Stephoe *et al.* 2003 RCT ++). Similarly, one reasonable quality n-RCT found no significant difference in diastolic blood pressure, total cholesterol, high-density lipoprotein (HDL) or total cholesterol to HDL ratio from baseline to 3-month and 6-month follow-up in either those who received a 12-week Mediterranean-type diet intervention or those in the information-only control group, however those who received the Mediterranean-type diet intervention had significantly lower systolic blood pressure at 6-month follow-up compared with baseline, whereas those in the information-only control group did not (McKellar *et al.* 2007 n-RCT +).

The evidence for the effectiveness of nutrition interventions for increasing nutrition knowledge is mixed. One poor quality case series examining a nutrition education programme (Kennedy *et al.* 1998) did not report pre- and post-intervention nutrition knowledge scores in the overall sample, but found an increase in nutrition knowledge in two of the four intervention groups studied. There was no increase in nutrition knowledge in the other two groups.

Evidence statement 1.5: Effectiveness of nutrition interventions on nutrition knowledge

Evidence of mixed effectiveness was found in relation to nutrition knowledge. One poor quality case series found that a 10-week programme focused on translating dietary recommendations into practice, including guided hands-on food preparation led to an increase in nutrition knowledge in two of the four intervention groups studied, but no significant increase in nutrition knowledge in the other two groups (Kennedy *et al.* 1998 case series -).

There is no evidence for the effectiveness of nutrition interventions for other eating habits. No significant differences were found between the intervention (behavioural dietary counselling) and control (brief nutritional counselling) groups across time on fibre intake in one good quality RCT (Steptoe *et al.* 2003). Similarly, no significant differences were found in mean consumption of tuna, total fish, total bread, pasta and rice and all starchy foods between the intervention (10-week community-based informal food skills intervention) and control (informal educational session with no food skills programme) groups across time at 2-month and 6-month follow-up in one reasonable quality non-RCT (Wrieden *et al.* 2006).

Evidence statement 1.6: Effectiveness of nutrition interventions on other eating habits

No evidence was found for the effectiveness of interventions in relation to other eating habits. One good quality RCT found no significant differences in fibre intake over 12 months between those who received a two-session behavioural dietary counselling intervention relative to a brief nutritional counselling control across time (Steptoe *et al.* 2003 RCT ++). One reasonable quality n-RCT found no significant differences in mean consumption of tuna, total fish, total bread, pasta and rice and all starchy foods between those receiving a 12-week informal food skills intervention and those receiving a 12-week informal education session across time at 2-month and 6-month follow-up (Wrieden *et al.* 2006 n-RCT +).

Table 4: Intervention Outcomes for dietary/nutritional interventions

Outcome	Evidence of a positive effect	No evidence of effect / mixed effect	Evidence of a negative effect
Fruit and vegetable intake	<ul style="list-style-type: none"> • There was a greater increase in average consumption of fruit and vegetables in the intervention group (5 a day community health promotion) relative to the control group (p=0.0354) (Bremner <i>et al.</i> 2006+) • There was a greater increase in average consumption of fruit and vegetables in the intervention group (behavioural counselling) relative to the control group (nutritional counselling) on number of portions of fruit and vegetables consumed a day (p=0.021) and on the percentage of intervention group participants attaining 5 portions a day, relative to the control group (p=0.019) (Steptoe <i>et al.</i> 2003++) • There was a greater increase in average consumption of fruit, vegetables and legumes in the intervention group (Mediterranean-type diet intervention) relative to the control group (healthy eating information) on number of portions of fruit and vegetables consumed a day (p=0.016) (McKellar <i>et al.</i> 2007+) 	<ul style="list-style-type: none"> • There was no significant change in total fruit and vegetable intake in the intervention group (improving awareness, attitudes and access to fresh fruit and vegetables), or in fruit intake in either group, and a significant decrease in total fruit and vegetable intake in the control group (p<0.01); there was a significant decrease in vegetable intake in the intervention group (p<0.05), but there was also a decrease in the control group (p<0.01) (Ashfield-Watt <i>et al.</i> 2007+) • There was a significantly greater increase over the duration of the study in mean fruit consumption in the intervention group (informal educational sessions) relative to the control group at time 2 (p=0.05), however there was no difference across time between the intervention group (informal educational sessions) and control group on mean fruit juice, fruit and fruit juice, vegetable and salad and fruit & vegetables consumption at time 2, or on mean fruit, fruit juice, fruit and fruit juice, vegetable and salad and fruit & vegetables consumption at time 3 (NS) (Wrieden <i>et al.</i> 2006+) 	<ul style="list-style-type: none"> •
Physical activity	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Health	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Weight control	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • No difference between the intervention group (behavioural counselling) and 	<ul style="list-style-type: none"> •

		<p>control group (nutritional counselling) on BMI (NS) and on body weight (NS) (Steptoe <i>et al.</i> 2003++)</p> <ul style="list-style-type: none"> • No significant difference across time for the intervention group (Mediterranean-type diet intervention) or control group (healthy eating information) on weight (NS) or on BMI (NS) (McKellar <i>et al.</i> 2007+) 	
Consumption of high fat foods	<ul style="list-style-type: none"> • There was a greater increase in the ratio of monounsaturated to saturated fats consumed in the intervention group (Mediterranean-type diet intervention) relative to the control group (healthy eating information) ($p=0.022$) (McKellar <i>et al.</i> 2007+) 	<ul style="list-style-type: none"> • No difference between the intervention group (behavioural counselling) and control group (nutritional counselling) on fat intake (NS) (Steptoe <i>et al.</i> 2003++) 	<ul style="list-style-type: none"> •
Physiological measurements	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • No difference between the intervention group (behavioural counselling) and control group (nutritional counselling) on systolic blood pressure, diastolic blood pressure and cholesterol (NS) (Steptoe <i>et al.</i> 2003++) • No significant difference across time for the intervention group (Mediterranean-type diet intervention) or control group (healthy eating information) on diastolic blood pressure (NS), total cholesterol (NS), high-density lipoprotein (HDL) cholesterol (NS), total cholesterol to HDL ratio (NS) or glutathione (NS), however there was a significant reduction in the systolic blood pressure of the intervention group ($p=0.016$) with no change in the control group (McKellar <i>et al.</i> 2007+) 	<ul style="list-style-type: none"> •
Psychosocial	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

variables			
Food preparation	•	•	•
Nutrition knowledge	•	<ul style="list-style-type: none"> • Two out of the four (nutrition education) groups scored significantly higher at post-test than at pre-test on nutrition knowledge ($p < 0.05$), however two out of the four groups did not score significantly higher at post-test than at pre-test on nutrition knowledge (NS) (no comparison group) (Kennedy <i>et al.</i> 1998 -) 	•
Other eating habits	•	<ul style="list-style-type: none"> • No difference across time between the intervention group (informal educational sessions) and control group on mean consumption of tuna, total fish, total bread, pasta and rice and all starchy foods at time 2 and time 3 (NS) (Wrieden <i>et al.</i> 2006 +) • No difference between the intervention group (behavioural counselling) and control group (nutritional counselling) on fibre intake (NS) (Steptoe <i>et al.</i> 2003 ++) 	•
Other health behaviours	•	•	•

6.3.2 Food retail interventions

Two studies examined the effectiveness of the introduction of large-scale food retailing to low socio-economic status communities on relevant outcomes; one prospective cohort study (Cummins *et al.* 2005) and one case series (Wrigley *et al.* 2003). These outcomes included fruit and vegetable intake, self-reported health and psychosocial variables (see Table 5). Only effectiveness data for which statistical comparisons have been made have been synthesised in the tables and narrative, as it is difficult to assess the effectiveness of an intervention where no statistical analysis has been undertaken.

The evidence for the effectiveness of food retail interventions for increasing fruit and vegetable intake is mixed. One reasonable quality prospective cohort study examining the introduction of a large-scale food retailing outlet in comparison with a similar community with no new retailing outlet (Cummins *et al.* 2005) found an increase in overall average fruit and vegetable consumption in both groups over the duration of the study, but no significant change in either groups in average fruit or vegetable consumption. The authors report differences in consumption of fruit compared to vegetables, but these findings need to be viewed with caution. One poor quality case series examining eating habits before and after the introduction of a large-scale food retailing outlet with no comparison group (Wrigley *et al.* 2003) found an increase in fruit and vegetable consumption among those who switched to the new store, but not among those who did not. Among both switchers and non-switchers, those with low pre-intervention levels significantly increased their fruit and vegetable consumption. Overall levels of fruit and vegetable intake before and after the introduction of the outlet were not reported. It may be worth noting that in the prospective cohort study baseline and follow-up data were collected in October, one year apart (Cummins *et al.* 2005), whereas in the case series baseline and follow-up data were collected in the summer, one year apart (Wrigley *et al.* 2003). Therefore, it is unlikely that seasonal variation was a central confounding factor.

Evidence statement 1.7: Effectiveness of food retail interventions on fruit and vegetable intake

Evidence of mixed effectiveness was found in relation to fruit and vegetable intake. One reasonable quality prospective cohort study found an overall increase in overall average fruit and vegetable consumption in both the community where a new food hypermarket had opened and the comparison community with no new hypermarket over 12 months. There was however no significant change in either groups in average fruit consumption, and an increase in only the comparison community in vegetable consumption (Cummins *et al.* 2005 prospective cohort study +). One poor quality case series examining the impact of the introduction of a new large-scale food retail outlet over a one-year period found an increase in fruit and vegetable consumption among those who switched to the new store, but not among those who did not. Among both switchers and non-switchers, those with low pre-intervention levels significantly increased their fruit and vegetable consumption (Wrigley *et al.* 2003 case series -).

There is no evidence for the effectiveness of food retail interventions for improving self-reported health. No significant change was found in the intervention (large-scale food retailing outlet introduced to the community) or comparison (no new outlet) groups in prevalence of fair to poor self-reported health in one reasonable quality prospective cohort study (Cummins *et al.* 2005).

Evidence statement 1.8: Effectiveness of food retail interventions on health (self-reported)

No evidence was found for the effectiveness of interventions in relation to self-reported health status. One reasonable quality prospective cohort study found no significant change in prevalence of fair to poor self-reported health in either the community where a new food hypermarket had opened and the comparison community with no new hypermarket over 12 months (Cummins *et al.* 2005 prospective cohort study +).

However, there is some evidence of the effectiveness of food retail interventions for improving psychosocial variables. One reasonable quality prospective cohort study

(Cummins *et al.* 2005) found a significant decrease in the prevalence of poor psychological health in the intervention group (large-scale food retailing outlet introduced to the community) but not in the comparison group (no new outlet) over the duration of the study.

Evidence statement 1.9: Effectiveness of food retail interventions on psychosocial variables

One reasonable quality prospective cohort study found a significant decrease in the prevalence of poor psychological health in the community where a new food hypermarket had opened but not in the comparison community with no new hypermarket over 12 months (Cummins *et al.* 2005 prospective cohort study +).

Table 5: Intervention Outcomes for food retail interventions

Outcome	Evidence of a positive effect	No evidence of effect / mixed effect	Evidence of a negative effect
Fruit and vegetable intake		<ul style="list-style-type: none"> • There was no significant change in either the intervention group (large-scale food retailing) or the comparison group on mean fruit intake (NS), or in the intervention group on mean vegetable intake (NS), however there was a significant increase in mean vegetable intake in the comparison group (p=0.01) and mean fruit and vegetable intake in both groups (p=0.003) (Cummins <i>et al.</i> 2005+) • Fruit and vegetable intake significantly increased pre-post in those who switched to the new store (large-scale food retailing) (p=0.034), and of those who switched, in those with lower pre-intervention levels of fruit and vegetable consumption (p<0.001) and among those who did not switch, also in those with lower pre-intervention levels of fruit and vegetable consumption (p<0.001) (no comparison group), however there was no significant change in fruit and vegetable intake in those who did not switch to the new store (NS), and among those who did not switch, in those with intermediate pre-intervention levels of fruit and vegetable consumption (NS); among those who switched, there was no significant change in fruit and vegetable intake in those with intermediate and higher pre-intervention levels of fruit and vegetable consumption (NS); in those who did not switch to the new store, fruit and vegetable consumption significantly decreased in those with higher pre-intervention levels of fruit and vegetable consumption (p=0.005) (no comparison group) (Wrigley <i>et al.</i> 2003-) 	
Physical activity			
Health		<ul style="list-style-type: none"> • Prevalence of fair to poor self-reported health did not change significantly in either the intervention group (large-scale food retailing) or the comparison group (NS) (Cummins <i>et al.</i> 2005+) 	

Weight control			
Consumption of high fat foods			
Physiological measurements			
Psychosocial variables	<ul style="list-style-type: none"> • Prevalence of poor psychological health decreased pre-post in intervention (large-scale food retailing) ($p=0.017$) but not comparison group (NS) (Cummins <i>et al.</i> 2005+) 		
Food preparation			
Nutrition knowledge			
Other eating habits			
Other health behaviours			

6.3.3 Physical activity interventions

Two studies examined the effectiveness of physical activity interventions on relevant outcomes; one study reporting on two RCTs (Lowther *et al.* 2002) and one non-RCT (Cochrane & Davey, 2008). These outcomes included physical activity and self-reported health (see Table 6). Only effectiveness data for which statistical comparisons have been made have been synthesised in the tables and narrative, as it is difficult to assess the effectiveness of an intervention where no statistical analysis has been undertaken.

The evidence for the effectiveness of physical activity interventions for increasing physical activity is mixed. One reasonable quality non-RCT reported increases in physical activity in the intervention group (a low-income community-level neighbourhood awareness and peer influence physical activity intervention) but not in the control group (a similar low-income community with no intervention) (Cochrane & Davey, 2008). Similarly, one of the RCTs (exercise consultation intervention vs. printed information control) reported in a good quality study (Lowther *et al.* 2002) found increases in physical activity in the intervention group and not the control group, however no differences between intervention and control groups at each follow-up point were reported, and the other RCT (fitness assessment intervention vs. printed information control) reported in a good quality study (Lowther *et al.* 2002) found no increases in physical activity and no differences between intervention and control groups at each follow-up point.

Evidence statement 1.10: Effectiveness of physical activity interventions on physical activity

Evidence of mixed effectiveness was found in relation to changes in physical activity. One reasonable quality n-RCT found that a one-year community awareness of physical activity campaign increased physical activity over the duration of the study, whereas a comparison community with no community awareness of physical activity interventions did not (Cochrane & Davey 2008 n-RCT +). Similarly, one of the RCTs (exercise consultation RCT) reported in a good quality study found that an single 30-minute exercise consultation increased physical activity from baseline to one year, whereas an information leaflet and body measurement control did not (Lowther *et al.* 2002 RCT ++). However, no differences between intervention and control groups at each follow-up point were reported, and the other RCT (fitness assessment RCT) reported in the same good quality study found no increases in physical activity and no differences between those who had a single-session fitness assessment and those who received an information leaflet and body measurement control at each follow-up point (Lowther *et al.* 2002 RCT ++).

However, there is some evidence of the effectiveness of physical activity interventions for improving self-reported health. One reasonable quality non-RCT investigating the effectiveness of a low-income community-level neighbourhood awareness and peer influence physical activity intervention compared with a similar low-income community with no intervention (Cochrane & Davey, 2008) found intervention group participants reported having better health in general and better health compared with a year previously than did control group participants, although no comparisons between self-reported health at baseline and follow-up were reported in either group or between groups.

Evidence statement 1.11: Effectiveness of physical activity interventions on health (self-reported)

Some evidence of effectiveness was found in relation to self-reported health status. One reasonable quality n-RCT found that those who received a one-year community awareness of physical activity campaign reported having better health in general and better health compared with a year previously than did a comparison community with no community awareness of physical activity (Cochrane & Davey 2008 n-RCT +).

Table 6: Intervention Outcomes for physical activity interventions

Outcome	Evidence of a positive effect	No evidence of effect / mixed effect	Evidence of a negative effect
Fruit and vegetable intake			
Physical activity	<ul style="list-style-type: none"> Intervention group participants (neighbourhood physical activity promotion) were more likely to report being more active than they were a year previously ($p < 0.001$) and being in a more advanced stage of change ($p < 0.001$) at follow-up than control group participants (Cochrane & Davey, 2008+) 	<ul style="list-style-type: none"> Levels of physical activity significantly increased from baseline to 1-year follow-up in the exercise consultation intervention group ($p < 0.05$) (Lowther <i>et al.</i> 2002 ++) There were no differences between the intervention and control groups in both the fitness assessment RCT and the exercise consultation RCT at 4-week and 3-month follow-up (NS) or at 3-month, 6-month and 1-year follow-up (NS); in addition, levels of physical activity did not change significantly from baseline to 1-year follow-up in the fitness assessment intervention group (NS) (Lowther <i>et al.</i> 2002 ++) 	
Health	<ul style="list-style-type: none"> Intervention group participants (neighbourhood physical activity promotion) were more likely to report better general health ($p = 0.001$) and better health compared with a year previously ($p = 0.001$) than control group participants (Cochrane & Davey, 2008+) 		
Weight control			
Consumption of high fat foods			
Physiological measurements			
Psychosocial variables			
Food			

Preventing pre-diabetes in adults from a lower socioeconomic group

preparation			
Nutrition knowledge			
Other eating habits			
Other health behaviours			

6.3.4 Multi-component interventions

One study (a reasonable-quality RCT) examined the effectiveness of a multi-component intervention (a new computer, Internet access and access to the 'Hearts of Salford' portal and optional drop-in sessions) versus control (a new computer and Internet access only) on relevant outcomes (Lindsay *et al.* 2008). These outcomes included physical activity, consumption of high fat foods, psychosocial variables, other eating habits and other health behaviours (see Table 7). Another study (a reasonable quality non-RCT) examined the effectiveness of a multi-component intervention (incorporating behaviour change, educational, empowerment and medical components) on lifestyle factors including eating habits, exercise, obesity or overweight, blood pressure and cholesterol (Baxter *et al.* 1997; see Table 7). Only effectiveness data for which statistical comparisons have been made have been synthesised in the tables and narrative, as it is difficult to assess the effectiveness of an intervention where no statistical analysis has been undertaken.

The non-RCT found evidence of effectiveness for the multi-component intervention incorporating behaviour change, educational, empowerment and medical elements on consumption of low-fat milk (an increase in the intervention group relative to control group) and smoking prevalence (a decrease in the intervention group relative to control group) (Baxter *et al.* 1997).

The RCT found no evidence of effectiveness for the 'Hearts of Salford' multi-component intervention on physical activity behaviour (measured in terms of number of days a week exercise was undertaken, where no significant changes were identified in either group); other eating habits (no significant changes in either group in the number of new healthy foods eaten); and other health behaviours, with some weak evidence of a negative effect (no significant change in alcohol consumption on the heaviest day, smoking behaviour or second-hand smoke exposure over the duration of the study in either intervention or control group, and no significant change in weekly alcohol consumption in the intervention group, but a significant decrease in weekly alcohol consumption in the control group) over the duration of the study (Lindsay *et al.* 2008). The non-RCT found no evidence of effectiveness for the multi-component intervention incorporating behaviour change, educational, empowerment and medical elements on exercise (no details given as to how this was measured), prevalence of obesity or overweight, consumption of low-fat spread, blood pressure, cholesterol and consumption of wholemeal bread over the duration of the study (Baxter *et al.* 1997).

The RCT also found evidence of mixed effectiveness for the 'Hearts of Salford' multi-component intervention on the consumption of high fat foods (no significant change in the frequency of 'bad' foods eaten in the intervention group, but a significant increase in the frequency of 'bad' foods eaten in the control group) and psychosocial variables (no significant change in the frequency health locus of control (internal) or total health sources of information over the duration of the study in either intervention or control group, and no significant change in social support score and mental health score in the intervention group, but a significant increase in the social support score and mental health score in the control group over the duration of the study) over the duration of the study (Lindsay *et al.* 2008).

Evidence statement 1.12: Effectiveness of multi-component interventions on physical activity

No evidence of effectiveness was found in multi-component interventions in relation to changes in physical activity. One reasonable quality RCT found no significant change in exercise frequency in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Similarly, one reasonable quality non-RCT found no significant changes in exercise across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.13: Effectiveness of multicomponent interventions on consumption of high fat foods

Evidence of mixed effectiveness was found in multi-component interventions in relation to consumption of high-fat foods. One reasonable quality RCT found no significant change in the frequency of 'bad' foods eaten in those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention, but a significant increase in the frequency of 'bad' foods eaten in control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Likewise, one reasonable quality non-RCT found no significant changes in low-fat spread consumption across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community), but identified a significant increase in low-fat milk consumption in the intervention group relative to the control group (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.14: Effectiveness of multi-component interventions on physiological measurements

No evidence of effectiveness was found in multi-component interventions in relation to changes in physiological measurements. One reasonable quality non-RCT found no significant changes in blood pressure or cholesterol across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 non-RCT+).

Evidence statement 1.15: Effectiveness of multi-component interventions on psychosocial variables

Mixed evidence for effectiveness was found in terms of psychosocial variables in multi-component interventions. One reasonable quality RCT found no significant change in the frequency of those who believed they were in control of their health or total health sources of information over the six-month duration of the study in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). The same reasonable quality RCT found no significant change in social support score and mental health score in those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention, but a significant increase in the social support score and mental health score in the control group over the six-month duration of the study (Lindsay *et al.* 2008 RCT+).

Evidence statement 1.16: Effectiveness of multi-component interventions on other eating habits

No evidence of effectiveness was found in multi-component interventions in relation to other eating habits. One reasonable quality RCT found no significant change in the number of new healthy foods eaten in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). Similarly, one reasonable quality non-RCT identified a significant decrease in smoking prevalence in the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components relative to the control group (comparison community) (Baxter *et al.* 1997 n-RCT+).

Evidence statement 1.17: Effectiveness of multi-component interventions on other health behaviours

No evidence for effectiveness was found in terms of other health behaviours in multi-component interventions. One reasonable quality RCT found no significant change in alcohol consumption on the heaviest day of drinking, smoking behaviour or second-hand smoke exposure over the six-month duration of the study in either those who received a new computer and one-year broadband subscription with access to the 'Heart of Salford' portal intervention or control group participants who received only a new computer and one-year broadband subscription. The same RCT found no significant change in weekly alcohol consumption in the 'Heart of Salford' portal intervention group, but a significant decrease in weekly alcohol consumption in the control group over the six-month duration of the study (Lindsay *et al.* 2008 RCT+). However, one reasonable quality non-RCT found no significant changes in wholemeal bread consumption across the four-year duration of the study between the intervention group who received an intervention involving behaviour change, educational, empowerment and medical components and the control group (comparison community) (Baxter *et al.* 1997 n-RCT+).

Table 7: Intervention Outcomes for multicomponent interventions

Outcome	Evidence of a positive effect	No evidence of effect / mixed effect	Evidence of a negative effect
Fruit and vegetable intake			
Physical activity		Exercise frequency did not change significantly in either group (NS) (Lindsay <i>et al.</i> 2008+) There was no difference between the intervention (incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on exercise (Estimated effect=2.7, CIs -17.2 to 27.3) (Baxter <i>et al.</i> 1997+)	
Health			
Weight control		There was no difference between the intervention (incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on obesity or overweight (Estimated effect=9.7, CIs -15.1 to 41.6) (Baxter <i>et al.</i> 1997+)	
Consumption of high fat foods	The intervention group incorporating behavioural, educational, empowerment and medical components) significantly increased their consumption of low-fat milk relative to the control group (comparison area) across time (Estimated effect=42.5, CIs 14.8 to 77.0; $\text{Chi}^2=10.3$, $p<0.001$) (Baxter <i>et al.</i> 1997+)	Frequency of 'bad' foods eaten significantly increased over the duration of the study in the control group ($p=0.04$), but did not change significantly over the duration of the study in the intervention group (access to an internet portal) (NS) (Lindsay <i>et al.</i> 2008+) There was no difference between the intervention (incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on consumption of low-fat spread (Estimated effect=-1.1, CIs -19.4 to 21.5) (Baxter <i>et al.</i> 1997+)	
Physiological measurements		There was no difference between the intervention (incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on blood pressure (Estimated effect=28.8, CIs -4.6 to 73.9) (Baxter <i>et al.</i> 1997+) There was no difference between the intervention	

		(incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on cholesterol (Estimated effect=-2.4, CIs -25.1 to 27.3) (Baxter <i>et al.</i> 1997+)	
Psychosocial variables		Social support score (p=0.02) and mental health score (p=0.004) significantly decreased over the duration of the study in the control group, however social support score (NS) and mental health score (NS) did not change significantly in the intervention group (access to an internet portal), and internal health locus of control (NS) and total health sources of information (NS) did not change significantly in either group (Lindsay <i>et al.</i> 2008+)	
Food preparation			
Nutrition knowledge			
Other eating habits		Number of new healthy foods eaten did not change significantly in either the intervention group (access to an internet portal) or the control group (NS) (Lindsay <i>et al.</i> 2008 +) There was no difference between the intervention (incorporating behavioural, educational, empowerment and medical components) and control (comparison area) groups across time on consumption of wholemeal bread (Estimated effect=9.2, CIs -11.7 to 35.1) (Baxter <i>et al.</i> 1997+)	
Other health behaviours	The intervention group incorporating behavioural, educational, empowerment and medical components) had a significantly lower smoking prevalence than the control group (comparison area) across time (Estimated effect=-24.5, CIs -39.4 to -6.1) (Baxter <i>et al.</i> 1997+)	Number of units of alcohol consumed on the heaviest day (NS), number of cigarettes smoked per day (NS) and second-hand smoke exposure (NS) did not change significantly over the duration of the study in either group, and number of units of alcohol consumed per week (NS) did not change significantly over the duration of the study in the intervention group (access to an internet portal) (NS), but significantly decreased over the duration of the study in the control group (p=0.02) (Lindsay <i>et al.</i> 2008 +)	

6.4 Synthesis of views study findings

Three included survey studies of moderate to good quality assess the nutritional knowledge of study respondents. Evaluations of interventions to improve lifestyle behaviours, 8 of which are detailed in the effectiveness review, were also assessed for data addressing acceptability and barriers and facilitators to intervention implementation of interventions. In addition, 14 stand alone qualitative studies of mainly moderate to good quality assess beliefs, attitudes and practice relating to nutrition / dietary and physical activity behaviours. Such knowledge and behaviours inform of barriers and facilitators outside the research setting, placing lifestyle behaviour in the context of real life.

6.4.1 Nutritional knowledge and attitudes in low-income groups

Three cross-sectional studies of moderate to good quality examined nutritional knowledge; one in the broad UK population, one in low-income men and women, and a third in low-income men.

A survey of 1040 English residents in three GP practice areas was carried out (Parmenter and Wardle 2003) to establish the extent of nutritional knowledge by demographics. Knowledge increased with education level and socioeconomic status level. It was also higher in women than in men. Attitudes to nutrition also differed by gender; Dibsall *et al.* (2003) found in their survey of 680 Housing Association tenants, 18% of whom claimed to eat the recommended 5+ fruit and vegetables per day, that women were more willing to consider eating more fruit and vegetables for health reasons and would consider cutting out other foods to do so.

A survey of 55 Scottish low-income men participating in a larger longitudinal study (McPherson *et al.* 2004) supported concerns of the Scottish government about nutritional intake in this group, in that consumption of fat was too high in Scottish men, whilst the amount of complex carbohydrate was seen as too low.

Nutrition knowledge and attitudes also differed by age, with level of knowledge higher in middle years than in younger and older participants (Parmenter and Wardle 2000). Participants in increasing age groups were more likely to believe they were eating healthily and enjoyed eating fruit and vegetables than younger groups (Dibsall *et al.* 2003).

In terms of marital status, single participants perceived they had less choice in the fruit and vegetables they could buy than those married or living with a partner

(Parmenter and Wardle 2000). They were also less likely to believe they enjoyed or ate enough fruit and vegetables for their health. Widowed participants were more likely to agree they were eating healthily and found fruit and vegetables more affordable, and were more likely to use public transport.

Nutritional knowledge was particularly vague in the areas of polyunsaturated fats, monounsaturated fats, and the importance of consuming sufficient complex carbohydrate (Parmenter and Wardle 2000). Respondents appeared to confuse type of fat with amount of fat so that 'low in polyunsaturates' may be read as 'low in fat', when in fact, the total amount of fat is the same (McPherson *et al.* 2004). Complex carbohydrates may be seen as unhealthy, when in fact they need to be a major part of a balanced diet.

Links with disease were clearer in terms of heart disease, and the majority linked high sugar consumption with diabetes. There was low awareness of the guidelines for eating at least 5 portions of fruit and vegetables per day (Parmenter and Wardle 2000).

Evidence statement 1.18: Nutritional knowledge in low-income groups

There was evidence that nutritional knowledge in low-income groups is mixed in terms of content, and by demography.

Two cross-sectional studies (McPherson *et al.* 2004+; Parmenter *et al.* 2000++) found that nutritional knowledge in low-income groups is particularly poor in the realm of fat type and the importance of complex carbohydrate consumption as part of a balanced diet. Knowledge levels were found to be higher in women, in higher educational and SES groups, and in middle aged groups. Another survey study (Dibsdall *et al.* 2003++) found that attitudes to healthy eating differed by gender, age, employment, and marital status. Those living alone were particularly vulnerable to lack of motivation toward healthy eating.

Table 8: Summary of qualitative evaluations and views studies

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
Bremner 2006 +	98640	Evaluation of local food initiatives	Community settings not specified.	Residents in 66 (former) UK health authorities with the highest levels of deprivation and poorest health status.	'5-a-day' community intervention to increase fruit & vegetable intake, including home delivery & transport links, voucher schemes, media campaigns, growing & cookery skills & encouraging networking in groups involved in promoting healthy eating	To explore local people's views about a range of food initiatives
Cavill 2006 ++	23	Evaluation Focus Groups Photographs (2) used to prompt discussion	Liverpool, UK	Members of general public		To explore local people's views about cycling
Coleman 2007 ++	75 in total. 23 aged 18 or over.	Interviews	South East and west Midlands, UK			To explore the leading influences upon physical activity participation among young women.
Daborn 2005 ++	11	In-depth interviews	Norfolk	All male, tenants of Housing Association properties		To explore the attitudes and experiences of a group of low-income males toward food and health.
Dibsdall 2002 (linked to Dibsdall 2003)	14	In-depth interviews IPA	Norfolk, UK	Housing association tenants All female, low-income.		To provide an in-depth account of the beliefs and experiences

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
survey) ++						pertaining to food and health
Dobson 2000 +	86	Evaluation: In-depth interviews Focus Groups Participant observation Diaries	Leicester UK	Urban / suburban low income	Saffron Food and Health Project	To investigate the processes by which knowledge is converted into behaviour change.
Gough 2006 ++	24	Semi-structured interviews	Yorkshire (mainly from manufacturing companies)	Men of both white collar & blue collar profession (only blue collar data reviewed)		To provide an analysis of men's accounts of food and health using concepts pertaining to masculinity
Gray 2009 +	16 men and 8 partners	Evaluation 2 Focus Groups	Scotland	Men (almost 50% from deprived areas) with individual risk factors for a range of conditions, including diabetes.	Camelion Model – men's weight management: Men's Health Clinic – weekly and monthly at 2 centres. 40 minutes discussion of lifestyle and health. Given opportunity to discuss with nurse, obtain leaflets, and join programme. Assessment. Description of 12 week programme baseline measurements.	To evaluate the Camelion model during its first 4 years. To consider the extent to which the model has reached its target population, the characteristics of the participants, weight loss outcomes and views of the programme.
Kennedy 1998 ++	26	Evaluation Interviews and nutritional scores	N. England	Mainly low-income, lone parents.	'Friends with Food' nutritional educational programme. 10 weeks; 2 hour sessions	To investigate how and to what extent social and economic constraints were

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
					Control: Pre-programme scores; scores of women outside intervention area	important in determining the response to nutritional education.
Kennedy 1999 +	8 CNAs 1 male, 11 female	Evaluation Interviews and work diaries at two points in time during a six month period.	N. England	Community nutrition assistants' (CNAs) and their contacts.	Utilisation of community nutrition assistants' (CNAs)	To evaluate the role and impact of 'community nutrition assistants' (CNAs) on access to local community dietetic services, and changes in determinants of healthy eating.
Lawrence 2009 +	42 (56 in total, including women not of lower educational attainment)	Focus groups	Southampton	Women of lower educational attainment (up to GCSE level)		To identify and provide an insight into factors that influence the food choices of women with lower educational attainment

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
Lindsay 2008 +	108	RCT with qualitative evaluation Data collected from discussion forums on the facilitated website.	Salford UK		New computer and a one-year broadband subscription along with training and access to the project's portal. Drop-in sessions and phone-in support for technical difficulties. Control: As above but no access to the project's portal. Drop-in sessions and phone-in support for any technical difficulties	Why might there have been an improvement in the diet of the experimental group?
Nic Gabhain 1999 +	74	Focus groups	Two workplaces (a local government authority and a local health authority) in Ireland (locality not specified)	Employed people across the socioeconomic spectrum (only low SES groups' data reviewed)		To assess knowledge of and attitudes to coronary heart disease and associated risk factors reflecting the perspectives of employed people across the socioeconomic spectrum
Ogilvie 2008 +	1322	Survey (cross-sectional)	Glasgow (deprived urban neighbourhoods)	Residents in deprived urban neighbourhoods in Glasgow		To examine the contribution of putative personal and environmental correlates of active travel and overall physical activity in deprived urban neighbourhoods in

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
Parry 2007 +	NR	Evaluation Focus Groups Photographs of relevant features in area	Birmingham; Black Country; UK Community groups		NDC	Glasgow How residents in deprived areas believe that where they live influences their health
Peerbhoy 2008 +	5 families	Evaluation Focus groups with families	Liverpool UK		Intervention: 'Family fit' healthy lifestyle programme for in deprived area (PA and diet) Control: None	Evaluation of the impact of a 14-week community-based initiative which attempts to tackle unhealthy / over eating and lack of exercise.
Price 2004 +	30	Interviews		Mothers of a child aged 3 or under		To understand how mothers use their resources and overcome constraints to protect and promote their families' health, in particular that of their children.
Rankin 2006 ++ (same intervention as Rankin 2009)	6 sites	Evaluation Interviews (single and group) with providers and service users. Observation of activities, services, meetings and daily interactions.	Scotland		HLC (Healthy Living Centre) food project. (To enhance skills To promote social inclusion and to influence food accessibility) Control: None	To improve the understanding of the implementation of health-focused ABIs (Area-based Initiatives) in order to contribute to learning and to inform best practice.

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
		Telephone contact to maintain recording of developments.				
Rankin 2009 ++ (same intervention as Rankin 2006)	6 sites	Evaluation: Interviews, discussion groups, documentary analysis, observation of activities, meetings; telephone and e-mail contact.	Scotland		HLC (Healthy Living Centre) food project. (To enhance skills To promote social inclusion and to influence food accessibility) Control: None	To explore how HLC practitioners conceptualise 'health inequalities' and apply the construct to their work.
Spence 2005 +	6	Evaluation Semi-Structured Interviews over 6 months after participation	Northeast Scotland		'Now you're Cooking'; a community based 'cook and eat' project covering basic cookery skills, budgeting and food hygiene. Led by health promotions assistant for 8 weeks. Aims to change eating habits of entire families, as well as providing the opportunity to socialise and make new friends. Control: None	To establish participants' motivation and expectation of the NYC project, and the effect of the project on cooking, eating and food budgeting behaviour / skills.
Stead, 2004 +	16	Exploratory Study Focus Groups	Scotland, UK (2 areas Greenock and Alloa, both having high	Mainly female, many with young children (no figures supplied); 2	CookWell Nutrition Educational programme	To inform the content of an intervention designed to address

Preventing pre-diabetes in adults from a lower socioeconomic group

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
			unemployment rates and deprivation indices)	men.		low food skills among low-income communities
Thomson 2003 +	81	Evaluation Focus groups	Two case study areas, socio-demographically similar and classified as deprived. Riverside part of £80m housing led regeneration programme. No similar investment in Parkview.	Individuals residing in the area >4 years.	Modern swimming pool and leisure complex opened in Jan 2000 in one case area (Riverside). In Dec 1999 the other case area (Parkview) pool was closed. Comparison of experiences of a change in two different areas.	To gather a collective community narrative of health, neighbourhood, local amenities, and contextual change. To assess the health impacts of neighbourhood swimming pool and leisure facilities
Whelan 2002 +	23 aged <65 (36 in total)	Focus groups	A deprived area in Leeds	Opportunistic sample of local residents	New food retail outlet (focus groups conducted before this opened)	To develop a deeper understanding of the qualitative nature of 'life in a food desert' using insights that can be obtained by focus groups
Withall 2009 +	46 mothers	Interviews	Llanedeyrn, Wales	Mothers of children aged 16 or less living within a relatively deprived community.		To explore mothers' understandings of health-promotion recommendations for healthy eating.
Wardle 2001 +	956 women 938 men	Evaluation Interview questionnaires	National; UK	UK population	BBC 'Fighting Fat, Fighting Fit' awareness raising campaign	To evaluate the effectiveness of the campaign at raising awareness of the need for obesity prevention.
Wood 2010	8 health	Interviews with	UK	Low-income families		To examine reported

Preventing pre-diabetes in adults from a lower socioeconomic group

Study	n	Design	Delivery setting	Target population	Intervention / Control	Research question
+	professionals 27 residents	health professionals Focus Groups with residents		with existing issues of overweight or obesity		barriers to consuming a healthy diet and engaging in regular physical activity
Wormald 2006 +	16	Evaluation Focus Groups	Kingston-upon-Hull	Over 12 years Sedentary lifestyle or a range of mild to moderate physical / mental health problems such as overweight, obesity, hypertension, anxiety, depression.	Active Lifestyles (AL); PA based Behavioural change theory.	To explore participants' perceptions of the operation and effectiveness of the AL service.

6.4.2 Barriers and facilitators relating to intervention implementation

Available Resources

A number of studies indicated that sufficient available resources were an important factor in successful intervention implementation.

In a moderate quality 14-week community-based initiative which attempts to tackle unhealthy / over eating and lack of exercise evaluated by Peerhboy *et al.* (2008), all the families spoken to indicated that the programme should last longer than 14 weeks, and be promoted to more people. A barrier to implementation of an internet portal intervention (Lindsay *et al.* 2008) were short follow up (6 months), some of which was taken up in familiarisation with using a computer as approximately half were not computer literate.

One evaluation (Kennedy *et al.*1998) found that programmes such as Friends with Food (FWF) are relatively labour-intensive and low-income groups hard to reach. However, some success is possible and practical courses are necessary in order to translate complex nutritional messages. Another evaluation of several UK initiatives (Bremner *et al.* 2006) found that it takes longer than expected to organise and set up an initiative suggesting that organisers take time to develop a focused action plan and to decide on which activities are best for the local area. In addition, funding activities can be problematic. There was evidence that continuous funding from a large award can provide the flexibility and autonomy required to resource a food and health project (Dobson *et al.* 2000).

In one evaluation of a food project, a lack of available and accessible kitchens of a suitable size in the area was an issue. In addition, food storage and transport facilities need to be taken into account when designing food activity interventions (Dobson *et al.* 2000).

Evidence statement 1.19: Available Resources

There is evidence that interventions require sufficient organising and follow up time, utilising available collaborating resources and funding.

One evaluation of a number of local food projects (Bremner *et al.* 2006+) found that barriers included insufficient funding, as well as time for organising the interventions effectively. Collaboration with related organisations was found to be an important facilitating factor. Another qualitative evaluation (Kennedy *et al.* 1998+) found that organising nutritional educational interventions was labour intensive. Follow up time was regarded as insufficient for participants to engage in one evaluation of an intervention aimed at enhancing nutritional and physical activity behaviours (Peerhboy *et al.* 2008+) and an evaluation of an internet portal intervention (Lindsay *et al.* 2008+)

There was evidence from one evaluation of a food and health project that long-term funding can assist in providing flexibility and autonomy. In addition, adequate facilities are required, for example, sizeable kitchens with adequate storage facilities, as well as transportation facilities for obtaining food. (Dobson *et al.* 2000+).

Awareness of interventions

One evaluation used a range of strategies to raise awareness of a food and health initiative, including leaflets, posters distributed to public places such as schools, GP practices, libraries, and community centres. Word of mouth was stated to be more successful (Dobson *et al.* 2000):

"I came because my friend went to the last one and she loved it.."

In one interview study with health professionals and users (Withall *et al.* 2009), parents expressed their view that there was not enough awareness of interventions around diet and physical activity. Word of mouth was again the main form of advertising:

"it's only been by word of mouth really we've heard of it" (female, overweight. 44-54 years).

Evidence statement 1.20: Awareness of interventions

There was evidence from one multi-method evaluation (Dobson *et al.* 2000+) that despite the distribution of leaflets and posters to public venues, word of mouth was anecdotally the best method of raising awareness about a food and health intervention. Another study of health professional and parents views (Withall *et al.* 2009+) also provided evidence that word of mouth is perceived to be the main way that people learn about interventions.

Acceptability of interventions

a) Health professional / health workers

One major success factor in an evaluation of a GP referred physical activity programme (Active Lifestyles) for at-risk individuals was the personality of the AL advisor who provided a counselling approach, was caring, sincere, supportive and knowledgeable. This helped people to feel cared about, and had a positive impact on their own confidence (Wormald *et al.* 2006).

One of the leaders in an evaluation by Kennedy *et al.* (1998) was relatively unsuccessful in delivering the Friends with Food (FWF) programme compared to the nutritional expert who was seen as more 'down to earth' and understanding of the women's situation, approachable, interactive and responsive to questions and comments.

Satisfaction with the Community Nutrition Assistant (CNA) service was high. Positive factors were available time and a practical approach. A local person was seen as more approachable, more empathic, as well as more trustworthy than a health professional (Kennedy *et al.* 1999). Similarly, many participants were complimentary about the health promotions assistant (HPA) who ran the course evaluated by Spence *et al.* (2005), and the ability of local food and nutrition workers involved in a food and health project to share information in a non-authoritative way (Dobson *et al.* 2000):

"...being able to ask questions and getting an answer you understand is what I like. She [FNW] explains things and isn't telling you not to eat this or that..."

Participants of a physical activity intervention 'Family Fit', a GP referred healthy lifestyles programme perceived staff as providing social and motivational support during circuit training (Peerhboy *et al.* 2008). Similarly, the male participants of a

weight management programme (Gray *et al.* 2009) valued the rapport with the community nurses.

b) Delivery and content

In an evaluation of a GP referred physical activity programme (Active Lifestyles) for at-risk individuals (Wormald *et al.* 2006), physical activity was gradually developed, allowing individuals to work to their own capabilities. Similarly, in a food and health project, small changes across shopping, cooking and eating behaviours were encouraged (Dobson *et al.* 2000).

Evaluation of a family intervention 'Family Fit' resulted in several suggestions for change; the development of women only sessions, more dance classes and more weekend activities to fit in with busy schedule (Peerhboy *et al.* 2008). Evaluation of a weight management programme (Gray *et al.* 2009) found that the male-only classes and an approach that did not emphasise weight reduction and dieting, and included humour was an important factor in acceptability. The programme also used sand-bags as a proxy for mid-way weight measurement, and this was seen as motivating by the participants.

An exploratory study carried out in 2 areas of Scotland was useful in identifying topics and educational needs that were acceptable to potential participants in relation to a nutritional intervention 'CookWell' (Stead *et al.* 2004). In an evaluation of a food and health programme, questionnaires collected data on shopping and eating behaviours in order to gain insight into the needs of the group and tailor the Cook and Eat course accordingly (Dobson *et al.* 2000). One area where information was needed was how to interpret the information on food labels.

The women in Dobson's evaluation (2000) also expressed a need for assistance in managing their weight through physical activity. This information led to free facilities being set up at the local sports hall as well as a tutor who ensured that the women (who had previously not exercised regularly) were comfortable with levels of activity.

Practical knowledge was perceived as being the most useful for translating abstract messages (e.g. about fats). Approximately half the women in a programme evaluated by Kennedy *et al.* (1998) reported change in food-related practice. The greatest impact was changing the amount of fat in manageable ways. Course participation was facilitated by allowing 'free' experimentation with unfamiliar foods, preparation, cooking methods. It increased confidence to use, for example, rice rather than chips.

Free food (Rankin *et al.* 2006) was also an incentive to attract and increase the uptake of users to services in a Healthy Living Centre HLC and a food and health project. In another evaluation, free childcare facilities as well as free sessions that were timed to fit in with family commitments were valued by participants (Dobson *et al.* 2000). The use of familiar and affordable food in recipes yet developing experimental ways of cooking and presenting food in acceptable ways were also facilitating factors in this intervention:

“..they won't eat garlic so what we came up with was adding more herbs to give it some flavour and not bothering with garlic...”

Interventions that were delivered by community members rather than health professionals tended to encourage community participation and meet local needs with an open and holistic agenda (Dobson *et al.* 2000).

c) Social Inclusion

Rankin *et al.* (2006) carried out an evaluation of Healthy Living Centre (HLC) food initiatives in 6 Scottish sites with varying range of activity. Interviews with health professionals were also carried out in these sites (Rankin *et al.* 2009). Food co-ops encouraged social engagement and a forum to obtain advice on, for example, housing. Increase in the uptake of users to services such as dance classes was encouraged. Health professionals were concerned that social cohesion be an aim in community interventions.

Lindsay *et al.* (2008) reported on an RCT that assessed whether giving a community based, facilitated access to an Internet health portal would improve the capacity of adults with heart disease to manage their own heart conditions. Drop-in sessions were available and the study facilitated access to social support with those in a similar situation, thereby potentially strengthening the social ties and reinforcing behaviour change. In one evaluation of the intervention 'Family Fit' (Peerhboy *et al.* 2008), and in a weight management programme evaluated by Gray *et al.* (2009), there was positive feedback on the mix of participants, and the importance of socialising with other people on the project. Conversely, a loss of leisure facilities was reported by Thomson *et al.* (2003) to have affected social capital at least as much as health; mental health was linked to the extent to which appropriate social capital was accessible.

d) Associated Image

Interviews with young women (Coleman *et al.* 2007) found that those who do not perceive that they have sporting capabilities, or that they do not 'look the part' physically, or do not like the images associated with sporting activity (e.g. clothing) will not be motivated to continue to participate after leaving school.

Barriers to the evaluation of Healthy Living Centre (HLC) food initiatives (Rankin *et al.* 2006) included user's negative associations of the work with the government 'healthy eating' policies. Adopting an image that appeals to users was reported as difficult by professionals in the HLC initiative (Rankin *et al.* 2009) who avoided connotations of 'health improvement' in their social marketing and delivery, as these may be seen as judgemental in terms of existing practices.

'Healthy eating' was also seen as negative in terms of being boring, and the food not filling, in the evaluation of the 'CookWell' nutritional intervention (Stead *et al.* 2004).

Evidence statement 1. 21: Acceptability of interventions

1.21 a) Attributes of health workers

There is evidence that information is more accessible and interventions more acceptable where key workers possess the appropriate knowledge, skills and personal attributes, such as empathy and trustworthiness.

One evaluation (Wormald *et al.* 2006+) found that trained lay workers were able to access and raise awareness in hard to reach groups through their knowledge of the community in which they were working, and their personal communication skills. Attributes of workers were found to be influential on the success of interventions (Kennedy *et al.* 1998+; Kennedy *et al.* 1999+; Gray *et al.* 2009+). Other evaluations found that the skills of an intervention advisor facilitated the feeling of empowerment among participants (Wormald *et al.* 2006+; Peerhboy *et al.* 2008+), and that skills were learned through engaging the interest of the participants (Spence *et al.* 2005+) as well as disseminating information in a meaningful way (Dobson *et al.* 2000+).

1.21 b) Delivery and content

Three evaluations (Wormald *et al.* 2006+; Spence *et al.* 2005+; Kennedy *et al.* 1998+) of the included intervention studies found evidence that acceptability is increased when practical demonstrations make abstract concepts and scientific language more meaningful, and when progressive small steps are taken in terms of behaviour change.

Two evaluations reported suggestions made by participants that might increase acceptability. These were the development of women only classes and more activities at weekends to fit in with other commitments (Peerhboy *et al.* 2008+); free sessions, free child-care, especially in school holidays, free food, individual and group tailored recipes and useful enjoyable activities (Dobson *et al.* 2000+).

In one evaluation (Gray *et al.* 2009+) there was evidence that male-only classes using creative ways to conceptualise weight management increased acceptability and motivation.

One exploratory study (Stead *et al.* 2004+) and one evaluation (Dobson *et al.* 2000+) found that acceptability of a food educational intervention was increased by first exploring participants' needs in terms of topic content. Three evaluations (Kennedy *et al.* 1998+; Rankin *et al.* 2006++; Dobson *et al.* 2000+) found that incentives such as access to free food increased motivation to participate in nutrition educational

interventions. The experimental use of familiar and affordable food increased the acceptability of a food and health project (Dobson *et al.* 2000+).

There was evidence that interventions delivered by community members rather than health professionals tended to encourage community participation and meet local needs with an open and holistic agenda (Dobson *et al.* 2000+).

1.21 c) Social Inclusion

There is evidence that acceptability of interventions that aim to change behaviour is enhanced by the added value of social inclusion. Social interaction has a positive subjective effect on well-being as well as providing a shared forum for discussion of concerns.

Evaluations of a Healthy Living Centre (Rankin *et al.* 2006++; 2009++) found that social inclusion was stated as one aim of the intervention, whilst another RCT qualitative evaluation (Lindsay *et al.* 2008+) found that interactive internet portals increased social capital for people with shared health issues. Social interaction was a positive and facilitating factor for participation in four interventions (Thomson *et al.* 2003+; Peerhboy *et al.* 2008+; Gray *et al.* 2009+) aimed at increasing physical activity, and one aimed at improving eating behaviours (Dobson *et al.* 2000+). Positive social aspects of the interventions included an informal atmosphere, the opportunity to chat and discuss with other participants, as well as humour.

1.21 d) Associated Image

There is evidence that interventions aimed at raising awareness of healthy behaviours are more acceptable when they are made appropriate to the target audience and have a positive image.

One qualitative study (Coleman *et al.* 2007++) found that young women will be less motivated to participate in sporting activities if the image associated with those activities, for example the required clothing, is perceived as negative. Two process evaluations found that participants held negative associations with the term 'healthy eating'. The group in one study (Rankin *et al.* 2006++) associated the term with government policy and the other study group (Stead *et al.* 2004+) regarded healthy eating as boring and not filling.

Qualitative outcomes and satisfaction with interventions

In one evaluation a group of seven women met weekly for ten weeks (Dobson *et al.* 2000). The women asked to be weighed each week to monitor their own progress.

Most kept a record of what they had eaten the previous week and this was discussed with the food and nutrition worker. Over the ten weeks women made changes in their own and their families' diet, including eating breakfast and the use and consumption of fruit and vegetables. The women reported that they had learned to eat vegetables in different ways in order to make them palatable:

"...before it was meat on this bit of your plate and your potatoes over there. Now what I do is has the veg in with it so you can eat them without really thinking"

They also reported a developing interest in cooking as well as an improved sense of well being. Half of the women experienced weight loss and none gained weight. Approximately half the women in a programme evaluated by Kennedy *et al.* (1998) reported change in food-related practice. The greatest impact was changing the amount of fat in manageable ways.

Evidence statement 1.22: Outcomes and satisfaction with interventions

There was qualitative evidence from two multi-method evaluations (Dobson *et al.* 2000+; Kennedy *et al.* 1998+) of changes in participants' and their family's eating behaviour, and also of a developing interest in cooking as well as increased feelings of well-being. In one of these evaluations (Kennedy *et al.* 1998+), the use of fat in cooking had reduced in ways that were manageable to the participants.

Activity and views of health professionals and health workers

Aims of interventions

One evaluation (Rankin *et al.* 2009) highlighted the extended aims that professionals held in relation to interventions. For example, social cohesion and improved well being were discussed as being at least as important as any positive changes in behaviour. In addition, access was a factor that practitioners expressed as important in reaching disadvantaged groups. In order to increase access, local activities needed to be affordable and appropriate, and avoid stigmatisation (Rankin *et al.* 2009):

"a lot of that stuff [food provision] cements social circles and social networks. So to be able to think... it's not a conscious kind of thinking but that, those social networks will then create a feeling of, of wellbeing." (Chair of the board).

Some professionals reported that a wider variety of activities were necessary to attract disadvantaged people to carrying out physical activity, and that some of these need to be free or low cost to increase accessibility (Withall *et al.* 2009).

A stance that could be perceived as judgemental was also avoided, with empowerment the specified aim. Rankin *et al.* (2009) also highlighted that knowledge of target groups and their particular needs had been variable over preceding years, implying that professionals require a deeper knowledge of the groups they are assisting.

Evidence statement 1.23: Views and experiences of health professionals and health workers

a) Aims and characteristics of interventions

There was evidence from one evaluation (Rankin *et al.* 2009 ++) that health workers held extended aims in relation to interventions. Social cohesion and improved well being were discussed as being at least as important as any positive changes in behaviour.

In addition, access was a factor that practitioners expressed as important in reaching disadvantaged groups. In order to increase access, local activities needed to be affordable, appropriate, and avoiding stigmatisation (Rankin *et al.* 2009++). Some professionals reported that in order to attract disadvantaged people to carrying out physical activity, a wider variety of activities were necessary with some of these being free or low cost (Withall *et al.* 2009+).

Interventions were marketed and delivered with the aim of user empowerment in order to avoid the perceptions of a judgemental stance (Rankin *et al.* 2009++).

b) Knowledge

There was evidence from one evaluation that uneven learning about target groups was a factor in responses to tackling health inequalities over the previous five years (Rankin *et al.* 2009++).

6.4.3 Barriers and facilitators relating to health behaviour change

Information

a) Available Information

In one qualitative study (Dibsdall *et al.* 2002) it was found that participants felt bombarded with information on food and health, most of which they found complicated, confusing, and contradictory. The conflicting information from experts led to mistrust and scepticism of the content and sources. Information was like 'background noise', and women had hazy recollections of the information. Information was more actively assimilated if it was sought after (this was only evident among New Age women).

Information was often obtained from TV/radio, magazines and newspapers. Information from hospitals and medical practitioners was trusted but there was limited trust in scientists who were perceived to have mainly fuelled the conflicting messages. Most participants did not trust newspapers or politicians. Information from family and friends was mainly believed. Information was better assimilated when provided in an appropriate environment, for example in a GP surgery.

Male blue collar workers also expressed scepticism about media claims due to conflicting messages and messages seen as political in motivation, with the aim of cost-saving rather than an interest in helping people to eat healthily (Gough & Conner 2006). Some men ridiculed the government advice, suggesting it was akin to 'brainwashing' and taking the health message too far.

Despite feeling bombarded with information, participants wanted even more information that was definitive regarding healthy eating, yet they felt irritated when being told what to eat. TV was seen as the best medium for presenting information; some felt that personalised information would be more effective. Mothers in another interview study (Wood *et al.* 2010) mentioned TV as the main source of information, and used this source positively to improve their knowledge of food and nutrition:

"Like this Jamie Oliver, he's made people sort of sit up and think, oh yeah what is going on, what is going into our food and all that. So I think people are more aware" (social class IV, age 38 years, divorced, 4 children).

Interviews with men in the same geographical area of Norfolk (Daborn *et al.* 2005) provided more evidence that available information was often seen as overwhelming,

possibly providing an excuse to ignore it, yet again it was also reported by some as vague and leaving the men needing more.

b) Understanding messages

In an evaluation of a mass media campaign by Wardle *et al.* (2001), it was recognised that understanding a campaign message is an important first step towards persuading people to make behavioural changes.

Understanding may be overestimated by service deliverers – there is evidence that messages and language used to convey messages are not always understood by users. One evaluation (Gray *et al.* 2009) found that simple lessons introduced into nutrition education such as learning to understand nutrition labels on food packets was useful. Similarly, Stead *et al.* (2004) found in focus groups that there was uncertainty about even the basic language and concepts of cooking. For some, the problem seemed to be understanding measurements, while others seemed put off by the need to follow a sequence of instructions, claiming that they got ‘lost’ or confused. The language of recipes was difficult; with some claiming they ‘hadn’t a clue’ what instructions such as ‘dice’ or ‘sauté’ meant.

Wood *et al.* (2010) provided evidence for misunderstandings in mothers regarding some food messages, particularly those around sugars and the classification of fats. Healthy eating messages were seen as complex compared to smoking cessation messages. A balanced diet was interpreted as achieving a balance of ‘good’ food and ‘bad’ food consumption. ‘Good’ food was perceived as “*all the things that don’t taste so good*”. The ‘5-a-day’ message was also misunderstood by women of lower educational attainment in one focus group study, who misinterpreted the recommendation to eat five portions of fruit and vegetables a day as five portions of fruit a day, which they saw as unfeasible and thus a barrier to consumption (Lawrence *et al.* 2009).

Evidence statement 1.24: Information

a) Available information

There was evidence that adopting healthy lifestyle behaviours can be influenced by the extent and nature of available information, as well as the level of understanding attached to health promotion messages.

Three qualitative studies (Dibsdall *et al.* 2002++; Daborn *et al.* 2005+; Gough & Conner 2006++) found evidence of information bombardment, and of confused messages. Distrust of information sources was a barrier to implementation.

Evidence from two qualitative studies (Dibsdall *et al.* 2002++; Wood *et al.* 2010+) showed that TV was the main source of information; used positively this source was stated to improve knowledge of food and nutrition.

b) Understanding messages

Clarity of information was found to be important in three evaluations (Wardle *et al.* 2001+; Gray *et al.* 2009+; Stead *et al.* 2004+). Scientific language can be a barrier to understanding messages.

Two interview studies with mothers (Lawrence *et al.* 2009+; Wood *et al.* 2010+) provided evidence for misunderstandings regarding some food messages; healthy eating messages were seen as complex compared to smoking cessation messages (Wood *et al.* 2010+). The main confusion was around sugar content and the classification of fats. A balanced diet was interpreted as achieving a balance of 'good' food and 'bad' food consumption. The '5-a-day' message was slightly misunderstood as a recommendation to eat five portions of fruit (rather than fruit and vegetables) a day (Lawrence *et al.* 2009+).

Attitudes / beliefs relating to health

In interviews with women Housing Association tenants, Dibsdall *et al.* (2002) found a clear spectrum from 'health-conscious' to 'health-apathetic'. Typically, health conscious women had given up smoking, did not eat red meat, ate lots of fruit and vegetables and were followers of 'New Age' thinking. These women actively sought out books and information promoting this particular lifestyle and a social circle that reinforced their beliefs. In contrast, some women displayed little interest in health

issues and healthy lifestyles. Developing illness was generally seen to be beyond own their control.

Similarly, Withall *et al.* (2009) found that participants felt a lack of control over their weight status. When questioned, rationales for excess weight included a flawed metabolism (which led them to gain weight easily) and genetics (taking after a family relative who was large). One interview study (Wood *et al.* 2010) found that for the mothers in the study, the 5-a-day message was perceived as impractical and a joke.

Nic Gabhain *et al.* (1999) found that lack of exercise was generally not emphasised as a risk factor for chronic conditions by male and female blue collar workers (in contrast with white collar workers), in a cross-SES focus group study. Lack of exercise was, however, mentioned in passing by blue collar workers.

Women of lower educational attainment (up to GCSE level) discussed 'good' and 'bad' food and their consequences for health in a focus group study, although these women were not clear about links between food and health and often equated health with weight in their beliefs about food (Lawrence *et al.* 2006). They also believed that it was not good to be 'too healthy'. These women were, however, concerned with providing healthy food for their children to ensure their children's long-term health.

In a focus group study of mothers, some reported deliberately seeking out a cheap, healthy alternative to the cheap, unhealthy foods commonly consumed, such as processed meat with chips, however others were less concerned about the healthiness of their family meals (Whelan *et al.* 2002). Other women expressed a desire to eat healthily, even on a restricted budget, perceiving fruit and vegetables as inexpensive and pasta and rice as cheap, quick and easy to cook, with mothers of older children in particular placing emphasis on good quality foods.

Evidence statement 1.25: Attitudes to health

There is evidence that adopting healthy lifestyle behaviours can be influenced by existing attitudes toward health.

One qualitative study (Dibsdall *et al.* 2002++) found evidence of a range of attitudes from actively seeking to improve health prospects to a disinterest in health issues.

Another interview and focus group study (Withall *et al.* 2009+) found a perceived lack of control over weight status. Two rationales for excess weight included a flawed metabolism and genetics, neither of which were perceived as subject to change.

There was evidence from one interview study (Wood *et al.* 2010+) that for the mothers in the study, the 5-a-day message was perceived as impractical and a joke.

One focus group study (Nic Gabhain *et al.* 1999+) found that lack of exercise was generally not emphasised as a health risk factor by male and female blue collar workers.

In another focus group study (Lawrence *et al.* 2006+), women of lower educational attainment were not clear about the links between food and health, often equating weight with health, and believed it was not good to be 'too healthy', although the long-term health of their children was considered important and related to food.

Another focus group study (Whelan *et al.* 2002+) found that some mothers deliberately sought out cheap and healthy foods, however others were less concerned about the healthiness of their family meals.

Perceived capabilities

Coleman *et al.* (2007) found that young women that do not perceive that they have sporting capabilities will not be motivated to continue to participate after leaving school. Peer and family support were found to be motivating. In the evaluation of a family intervention 'Family Fit' poor level of fitness at baseline was inhibiting physically and psychologically (Peerhboy *et al.* 2008). The absence of difficulty walking was found to be a predictor of active travel and physical activity in a large-scale cross-sectional survey (Ogilvie *et al.* 2008).

Evaluation of the 'CookWell' nutritional intervention indicated that confident respondents liked the experience of cooking and expressed confidence in their ability to cook a range of dishes. They had a wider repertoire than groups who were less

confident and were more familiar with a range of techniques, though they felt in need of advice and encouragement to help them be more adventurous (Stead *et al.* 2004).

Many women of lower educational attainment lacked confidence in cooking meals from scratch, although some women were more confident about their skills and were happy to experiment (Lawrence *et al.* 2009). The women's confidence for eating the recommended amount of fruit and vegetables, however, was generally low, with many believing five a day to be excessive.

Evidence statement 1.26: Perceived capabilities

There is evidence that participation in interventions varies to the extent that potential participants perceive that they are capable of carrying out the component activities.

One qualitative evaluation found that a poor level of fitness at baseline was inhibiting both physically and psychologically (Peerhboy *et al.* 2008+) and one cross-sectional survey found the absence of difficulty walking to be a predictor of active travel and physical activity (Ogilvie *et al.* 2008+). A qualitative study (Coleman *et al.* 2007++) found that young women who did not perceive that their sporting capabilities were sufficient lacked motivation for participation. Similar findings from another qualitative study (Stead *et al.* 2004+) found a perceived lack of cooking skills to be demotivating. Enhancing skills in a non-threatening way may therefore be motivating. Peer and family support have also been found to increase motivation.

One focus group study (Lawrence *et al.* 2009+) found that women of lower educational attainment generally lacked confidence in cooking meals from scratch, although some were more confident about their skills, and lacked confidence in being able to eat the recommended amount of fruit and vegetables.

Lifestyle

In the evaluation of 'Family Fit', Peerhboy *et al.* (2008) found that challenges to participation in physical activity included shift work, lack of time; poor level of fitness at baseline was inhibiting physically and psychologically. For the men in a weight management programme (Gray *et al.* 2009) suggested reasons for dropping out of the programme included holidays, work commitments, health problems, not losing enough weight, boredom, and feeling out of place.

For some people, the effort of looking after children and household tasks was seen as sufficient physical exercise (Price 2004; Withall *et al.* 2009). Withall *et al.* (2009) also found that participants of focus groups cited lack of time, particularly if employed in work or looking after children as a barrier to physical activity.

Lack of time was also cited as a barrier to exercise by older female blue collar workers in a cross-SES focus group study (Nic Gabhain *et al.* 1999). Other reasons given were habit and being tired after work, although the authors did not expand on these reasons in detail. Work commitments and lifestyle choices were common restrictions on time, which was a barrier to a healthier diet given by male blue collar workers (Gough & Conner 2006), although the authors did not discuss these factors in detail due to their existing prevalence in the literature.

Time and convenience were important factors among women with younger and older children (Whelan *et al.* 2002). These were of particular concern for mothers of older children, who often worked full-time and whose children often had early evening activities.

Parents in one qualitative study (Withall *et al.* 2009) cited 'stress', 'comfort eating' 'being stuck in a rut' and 'embarrassment' as reasons for not carrying out sufficient physical activity. Health professionals interviewed in the same study discussed the prevalence of mental health issues such as depression in the area, and its impact on health behaviours.

Boredom was also given as a reason for unhealthy snacking during the day by women of lower educational attainment who did not work, as they felt they had less control over their eating being in an environment where food was nearby than when they had worked (Lawrence *et al.* 2009). Conversely, however, many women also reported not having the time to cook healthy meals, and many were aware of the apparent contradiction. The main reason for not having the time to cook appeared to be due to the pressure to feed hungry children.

Evidence statement 1.27: Lifestyle

There is evidence that adopting healthy lifestyle behaviours can be influenced by current lifestyle.

Two evaluations (Peerhboy *et al.* 2008+; Gray *et al.* 2009+) and one interview and focus group study (Withall *et al.* 2009+) found evidence that commitments and responsibilities were seen as a barrier to participation in physical activity. There was also evidence that for some, existing activity around the home is sufficient (Price 2004+). Withall *et al.* (2009+) also found that participants cited lack of time, particularly if employed in work or looking after children, as a barrier to physical activity. Lack of time was also commonly cited as a barrier to physical activity and healthy eating in four focus group studies (Gough & Conner 2006++; Lawrence *et al.* 2009+; Nic Gabhain *et al.* 1999+; Whelan *et al.* 2002+). In one such study, the unemployed women also cited boredom as a reason for unhealthy eating, and some were aware of the apparent contradiction of this with not having enough time to prepare healthy food; although the pressure to feed hungry children may have been responsible for a perceived lack of time (Lawrence *et al.* 2009+). There was evidence from one qualitative study (Withall *et al.* 2009+) that parents cited 'stress', 'comfort eating' 'being stuck in a rut' and 'embarrassment' as reasons for not carrying out sufficient physical activity. Health professionals interviewed in the same study discussed the prevalence of mental health issues such as depression in the area, and its impact on health behaviours.

Affordability

In an evaluation of the Friends with Food (FWF) (Kennedy *et al.* 1998) cost, rather than access to food, or availability, was perceived as a major disincentive to change. Estimated household expenditure on food was below the national average and for some, the largest item in the household budget. It was not practical or affordable to cook different meals for family members, thus inhibiting the trial of new recipes. Instead, subtle changes were seen as more realistic. Common-sense advice to 'buy in bulk' was inappropriate due to the low purchasing power in this group. Changes in buying patterns were generally seen as a potential financial risk in terms of wasted food.

In an interview study with 30 deprived mothers, financial constraints limited the extent to which a healthy diet could be provided despite awareness of healthy eating messages (Price 2004). Parry *et al.* (2007) used focus groups to explore the beliefs of individuals living in deprived areas of Birmingham (New Deal for Communities (NDC) designated areas) There was a perceived lack of shops and affordable goods within the local area; local shops were more expensive for fresh food. The cost of using public transport negated savings made in high street and entailed carrying heavy shopping on buses. Withall *et al.* (2009) found that pre-packaged fruit, even in discounted stores, was an obstacle for families living in a neighbourhood renewal area, not only due to the cost but also because of the waste incurred by having to purchase more pieces of fruit than is required. Pricing strategies were not regarded as helpful – however professional views held that prioritisation of purchasing could assist in healthy eating:

“if they weren’t buying some of those other fatty, high salt expensive ready meals then they could afford ...things like fruit and veg” (dietitian).

The cost of food in relation to other priorities was seen as a barrier to healthy eating in a focus group study of women of lower educational attainment (Lawrence *et al.* 2009). The belief that healthier food was more expensive appeared to be perpetuated by marketing strategies used by supermarkets to place special offers on chocolate and cakes but not on fruit and vegetables and by the waste generated by buying food that their families would not want to eat. In another focus group study, Whelan *et al.* (2002) found that mothers with young children were heavily influenced by financial constraints when shopping for food, and would often choose less healthy cheaper options such as frozen beef burgers and sausages rather than more expensive cuts of fresh meat. Again, many were wary of wasting money on food that their children would not eat, so therefore the same types of food were generally bought every week, with the exception of ‘special offers’.

Dibsdall *et al.* (2002) found that money was limited but the 14 women interviewed had sound budgetary control, with money not an overriding influence on dietary habits. Some occasionally ate ‘exotic’ foods (mango, asparagus etc.). Two factors fell outside budgetary control: organic food seen as prohibitively expensive, and the notion of buying additional food (i.e. more fruit and vegetables), seen as too expensive.

Interventions aiming to educate low-income groups about diet and nutrition can include budgeting as a topic in order to address affordability (Peerhboy *et al.* 2008).

In one qualitative study (Withall *et al.* 2009) cost was also a barrier to physical activity – transport to as well as use of facilities incurred costs. Physical activity referral schemes were suggested as one way to overcome this barrier:

“If you’re living on benefit... you’ve got two pound, what do you do, get some exercise or get some bread and milk for the kids” (female, overweight 35-44 years)

Professionals in this study also expressed their view that physical activity needed to be local, as well as free or low cost in order that low income groups benefit. They were enthusiastic about exercise on prescription, probably because it was one way in which professionals felt they could assist in a practical way. For users, it was not clear whether the schemes were popular due to their being ‘free’ or due to the perception that they were being supported.

Gough and Conner (2006) reported that expense was a barrier to healthy eating among male blue collar workers, although the authors did not discuss this in detail due to an existing prevalence in the literature.

Evidence statement 1.28: Affordability

There was mixed evidence that affordability has an impact on lifestyle behaviour change. One briefly reported qualitative study (Price 2004+) found that costs limited the extent to which deprived mothers could buy healthy food. Another qualitative study exploring the beliefs of those living in NDC communities (Parry *et al.* 2007+) found a perceived lack of affordable goods in the local area, with public transport costs also regarded as prohibitive.

Affordability in two studies was only an issue where buying added amounts of food, or organic food might be considered; one evaluation and one qualitative study (Kennedy *et al.* 1998+; Dibsall *et al.* 2002++) found that cooking different meals to suit the preferences of family members was considered too expensive. In one evaluation (Kennedy *et al.* 1998+) there was evidence that low-income groups are resistant to change in dietary behaviour because of the fear of financial risk. In one interview study, both users and professionals stated that pricing strategies were not regarded as helpful in encouraging healthy eating. However professional views also held that shopping behaviour could include prioritisation of healthy food over convenience foods (Withall *et al.* 2009+).

One focus group study (Lawrence *et al.* 2009+) identified the cost of food as a barrier to healthy eating due to its cost in relation to other priorities, marketing strategies and special offers not being placed on healthier foods and the waste generated by buying food that did not get eaten. Similarly, another focus group study (Whelan *et al.* 2002+) found that mothers would choose less healthy but cheaper options when shopping and wasting money on food that their families would not eat was a consideration. Expense was also reported by men as a barrier to healthy eating in another focus group study (Gough & Conner 2006++), although the authors did not explore this in detail.

There is evidence that affordability may be addressed using budgeting as a topic in nutrition educational programmes (Peerhboy *et al.* 2008+)

Evidence from one interview study (Withall *et al.* 2009+) showed cost as a perceived barrier to physical activity in disadvantaged groups for both users and professionals. Transport and use of facilities were both costly. Physical activity referral schemes were suggested as one way to overcome this barrier.

Environmental factors

In one qualitative study (Parry *et al.* 2007), shopping for healthy food was perceived by respondents to be negatively affected by a lack of shops and affordable goods within their NDC area. Physical activity was also negatively affected in the area; residents feared to take walks in the park in case they were attacked.

In a focus group study, women of lower educational attainment regarded access to food shopping to be a barrier to healthier eating. Shopping for food with small children was perceived to be stressful; navigating round shops with pushchairs and coping with bored and demanding children could be particularly problematic. Pushchairs often broke while being manoeuvred onto buses or bearing the weight of the shopping, and getting small children, pushchairs and shopping to the top of high rise flats when the lifts were broken was also problematic. These women were thus less likely to buy items such as fresh fruit and vegetables, perceiving them as heavy.

Focus groups were carried out with 14 adult members of the public to elicit views of physical activity and cycling in general, followed by a discussion of the PCT funded programme to encourage the public use of a cycle path ('Loop Line') in North Liverpool (Cavill *et al.* 2006). Concerns with cycling generally included safety on the roads, and fear of theft of the cycle (mostly by young people). There was concern that youths occupy positions along the route, particularly at night, and under railway bridges. Groups of youths were seen as intimidating, and so the best time to cycle is during the day when more people are around.

Poor weather and lack of daytime light during winter was a barrier to physical activity for 3 families in the evaluation of 'Family Fit', a GP referred healthy lifestyles programme targeted toward families showing CHD risk factors (Peerhboy *et al.* 2008).

In a large-scale cross-sectional survey of deprived urban areas of Glasgow, active travel was associated with being younger, living in owner-occupied accommodation, travelling less than four miles to work, having access to a bicycle and not having access to a car (Ogilvie *et al.* 2008). In the same study, overall physical activity was associated with living in social-rented accommodation and not being overweight.

Evidence statement 1.29: Environmental factors

Evidence was found that environmental factors can be a barrier to behaviour change in terms of nutritional behaviour.

One qualitative study (Parry *et al.* 2007+) found that a perceived lack of local amenities was a prohibiting factor in shopping for healthy foods.

Access to food shopping was regarded as a barrier to healthy eating among women with lower educational attainment in one focus group study, in particular navigating round shops with pushchairs, coping with demanding children and bringing the shopping home on public transport and into high rise flats (Lawrence *et al.* 2009+).

Evidence was also found that environmental factors can be a barrier to behaviour change in terms of physical activity.

One qualitative evaluation (Cavill *et al.* 2006++) found that fear of crime and intimidation inhibited the motivation to participate in a new cycling initiative. One qualitative study (Parry *et al.* 2007+) found that fear of attack prevented walking in certain areas. Another evaluation (Peerhboy *et al.* 2008+) showed that dark evenings and poor weather are barriers to physical exercise outdoors.

One large-scale cross-sectional survey (Ogilvie *et al.* 2008+) found that active travel was associated with being younger, living in owner-occupied accommodation, travelling less than four miles to work, having access to a bicycle and not having access to a car, whereas overall physical activity was associated with living in social-rented accommodation and not being overweight.

Social norms, preferences, habitual behaviours and lifestyle

One interview study shows evidence that mothers often prioritised personal choice of food over healthy food; 'bad' food was seen as a treat whilst 'good' food was seen as boring and bland (Wood *et al.* 2010):

"It's a short life that we lead, and I think if you haven't got a little of a vice in your life, it's a bit boring, isn't it? ...I mean, you know, you can't be like, what's the name, uhm, that woman on "You Are What You Eat" [a UK television program]. Blimey! I'd kill myself, I think, if I had to eat that diet all the time..." (social class II, age 35 years, single, child aged 7 years).

A cross-SES focus group study also found that blue-collar men had a preference for 'bad' foods, whereas healthy foods were seen as 'boring', not tasty and unsatisfying (Gough & Conner 2006). The authors contextualise this in the world of heavy industry, in which participants worked, which is structured by 'masculine' ideals of toughness and prowess, with little opportunity to pursue healthy eating. However, despite such an environment, one participant openly expressed positive beliefs concerning healthy eating and criticised his co-workers' unhealthy diet. Generally, the male blue collar workers enjoyed food regarded as 'bad for you' and labelled as unhealthy by government advisors, and took control by reclaiming eating as a personal choice and upheld the right to eat such food, normalising the consumption of 'treats' and an occasional 'binge'.

An evaluation of the 'Friends with Food' (FWF) programme (Kennedy *et al.* 1998) found that behaviour change was more likely when family members, especially male partners, are also receptive to change. Social norms, food habits and socio-cultural influences had an influence on consumption patterns (Stead *et al.* 2004; Kennedy *et al.* 1998). If the two were in conflict, family preferences overruled the women's concern for nutrition or health. Traditional food tastes limited the range of acceptable foods for the family. Men were generally more conservative and less flexible toward change. Unfamiliar foods were considered 'foreign' (Kennedy *et al.* 1998). A belief that fruit coming from foreign countries could be dangerous was also a barrier to change among older female blue collar workers, however this was not expanded upon by the researchers (Nic Gabhain *et al.* 1999). Peerhoy *et al.* (2008) also found that a limitation to success in the 'Family Fit' programme was changing prior health behaviours and children's behaviours in regard to diet. In one qualitative study (Dibsdall *et al.* (2002), childhood experiences were an important feature in shaping current dietary behaviours. Some women saw a healthful diet as being 'traditional' fare; what their mother used to cook. Some participants in a qualitative study (Withall *et al.* 2009) cited their mothers' lack of cooking skills as a reason for their own. Health professionals in this study expressed negative views about the family influence on eating behaviours. For participants in Dibsdall *et al.* (2002), specific foods were still seen as a 'treat' due to shortages after the war. The formation and breakdown of relationships and the arrival of children were other influential life stages. These centred on the impact of significant others on shopping and cooking practices.

Childhood experiences were also found to be important in a focus group study of women of lower educational attainment, many of whom were not taught to cook at

home; one participant cited the pressure on her mother to prepare food for a large family as the reason (Lawrence *et al.* 2009). Many were exposed to a limited range of foods while growing up and often the first opportunity they had to learn how to cook was when they left home. Social factors were also important in healthy eating, and a lack of support from other family members could be a barrier to women providing and eating a healthier diet. Indeed, while being tasked with shopping and cooking, the women very rarely felt in control of the food they provided, reporting that their partner or children, even very young children, would determine the food that was served, through preference or refusal. Very often it was felt to be easier to meet such demands than to face a daily battle, however some women managed to exercise control of their family's food, although they did not always feel positively about it. Thus, the women also gave up on eating a healthier diet themselves. Finally, the way the women viewed themselves was also a factor in healthy eating. Negative affect was prevalent in the women's dialogue in that they did not feel important enough to bother with their own health and well-being. Implicated in this was a negative body image and self-consciousness of being overweight, which the authors suggest could be a consequence, as well as a cause, of an unhealthy diet. Whelan *et al.* (2002) also found that what they family would eat heavily influenced the diet of mothers with young children in a deprived area of Leeds, with many women reluctant to try new foods as their children were 'fussy eaters'.

Social norms may also affect attitudes to body size. Men in the evaluation of a weight management programme (Gray *et al.* 2009) stated that they did not want to become too thin, that their ideal weight would be in the overweight range. Men were seen in one qualitative study (Daborn *et al.* (2005) as more likely to take risks with their health in terms of nutrition. The authors speculate that this may be related to traditional roles; men are less likely to be required to take on a nurturing role. In a cross-SES focus group study, male blue collar workers seemed to view their (unhealthy) diets as healthy because they had no current health problems (Gough & Conner 2006). In addition, these men believed that engaging in other healthy behaviours such as physical activity could compensate for an unhealthy diet, which the authors suggest could be related to notions of masculinity and femininity; eating healthy food and 'dieting' was regarded as feminine, whereas sports, going to the gym and keeping fit were regarded as masculine. Physical vulnerability appeared to be the only thing to engage male blue collar workers in changing to more healthy eating habits, such as a medical diagnosis followed by specific, individual medical advice.

Habitual actions built up with respect to mealtimes and menus, shopping and lifestyle. Dibsall *et al.* (2002) found that the majority of participants in their interview study tended to buy the same varieties of food items, including fruit and vegetables, every week in the certain knowledge that they would be eaten, especially if they were cooking for others in the household. They also tended to do their shopping on the same day at the same supermarket, using local shops for perishable and forgotten items. An evaluation of an internet portal showed that participants reflected on their habitual behaviours and required frequent reinforcement of lifestyle change messages in order to maintain change (Lindsay *et al.* 2008). Some participants in a physical activity programme (Wormald *et al.* 2006) had influenced the health behaviours of their family and friends, who were now taking part in similar activities.

In evaluations of the nutritional intervention 'Now You're Cooking' (Spence *et al.* 2005) and the 'Family Fit' programme (Peerhboy *et al.* 2008), authors conclude that a motivating force was the potential to enhance their cooking skills in order to improve their children's diet. Similarly, women interviewed by Dibsall *et al.* (2002) were mostly preoccupied with the busyness of their own lives and had established routines. Food was only one aspect of their lives, and even for the health conscious, there was a sense that food was low priority. Many saw shopping and cooking as a chore and something that had to be fit in around more important demands. For those living alone, there was an even stronger reluctance to make an effort. Daborn *et al.* (2005) also found that living alone was associated with a degree of apathy and this was compounded by fatalistic attitudes to health.

Evidence statement 1.30: Social norms, preferences, habitual behaviours and lifestyle

There is evidence that behaviour change is influenced by preferences, social norms and habitual behaviours, as well as the needs and preferences of family members.

One interview study shows evidence that mothers often prioritise personal choice of food over healthy food; 'bad' food was seen as a treat whilst 'good' food was boring and bland (Wood *et al.* 2010+). Similarly, one focus group study found that blue collar working men also viewed healthy foods as 'boring' and not satisfying, and upheld the right to personal choice and to eat unhealthy foods, although some expressed a desire to eat healthily (Gough & Conner 2006++).

Two evaluations (Kennedy *et al.* 1998+; Peerhoy *et al.* 2008+) and one exploratory study (Stead *et al.* 2004+) found evidence that the traditional food tastes and preferences of family members were often prioritised over healthy nutritional choices. Foreign fruits were sometimes regarded with suspicion (Nic Gabhain *et al.* 1999+).

Childhood experiences of cooking were found to be important in adult healthy cooking habits among women in one focus group study (Lawrence *et al.* 2009+); likewise was support from other family members for eating more healthily, where lack of support and lack of control over the family's food and a feeling of not being important led to eating an unhealthy diet. Similarly, women in another focus group study (Whelan *et al.* 2002+) were heavily influenced by what the family would eat at mealtimes.

Men were found to be generally more conservative in terms of food choices. There is evidence from one evaluation that men hold particular views about body size, preferring to be overweight than 'thin' (Gray *et al.* 2009+), and that men are more likely to take risks with their health (Daborn *et al.* 2005++). In a focus group study, male blue collar workers viewed their unhealthy diets as healthy in light of their lack of health problems, although those with health problems had changed to healthier eating habits (Gough & Conner 2006++). These men also believed that engaging in more 'masculine' health behaviours such as physical activity could compensate for an unhealthy diet.

Two qualitative studies (Dibsdall *et al.* 2002++; Withall *et al.* 2009+) found evidence that participants were influenced by their parents in terms of cooking and eating. There was evidence from one qualitative study (Dibsdall *et al.* 2002++) that

participants continued shopping and consumption behaviours that were often unhealthy and that these behaviours had become habitual.

However, one evaluation provided evidence that a discussion forum could encourage reflection on habitual behaviour and that frequent reinforcement was needed in order to change habits (Lindsay *et al.* 2008+). One qualitative study (Spence *et al.* 2005+) that focussed on deprived mothers and one evaluation (Peerhboy *et al.* 2008+) provided evidence that women were motivated to cook healthy foods in order to enhance the health of their children. In contrast, living alone was found to reduce the motivation for cooking healthy meals in two qualitative studies (Dibsdall *et al.* 2002++; Daborn *et al.* 2005++). In addition, there was evidence from one evaluation (Wormald *et al.* 2006+) that participants in interventions can have a positive effect on the health behaviours of family and friends.

7. DISCUSSION

Evidence on the effectiveness of dietary and nutritional interventions for encouraging increased fruit and vegetable consumption among UK low socio-economic status populations is mixed (with no studies suggesting a negative impact on fruit and vegetable intake) and of reasonable and good quality. Findings from some studies require caution in interpretation due to the reporting of consumption of fruit and vegetables separately.

There was less evidence on the effectiveness of physical activity for encouraging increased physical activity levels among UK low socio-economic status populations. Available evidence was mixed (again, with no studies suggesting a negative impact on physical activity levels) and of good quality.

There was a dearth of objective or measured outcome measures within the effectiveness outcome data. Behavioural outcomes were mainly self-reported; therefore caution is required in interpreting the findings reported here.

Caution is also required in interpreting the effectiveness review findings due to substantial numbers of eligible people who did not participate in the studies. There is reason to believe that those who are eligible but do not volunteer, or who volunteer but subsequently default from baseline assessment may be different from participant samples. A recent survey compared the demographics of non-volunteers, defaulters and participants from a large physical activity trial, finding that participants were more likely to be female and less likely to be current smokers or within the lowest quartile of socio-economic status (Chinn, White, Howel, Harland & Drinkwater, 2006). Thus, the findings of trials may not necessarily be representative of those who are traditionally regarded as hardest to reach. In addition, differences in barriers to health promotion behaviours such as physical activity may differ among SES groups. Survey data suggests that low-SES groups, classified by education, housing tenure, employment status, occupational social status for the household, car ownership and annual household income are more likely to cite lack of money, lack of access to transport and illness/disability and less likely to cite lack of leisure time and lack of motivation as barriers to physical activity (Chinn, White, Harland, Drinkwater & Raybould, 1999).

There is evidence from cross-sectional studies of poor understanding of certain dietary messages, in particular regard to types of fat and the role of complex

carbohydrate in a balanced diet. Such understanding and accompanying attitudes differ by gender, marital and age groups.

Barriers to intervention implementation include inadequate funding and time taken to organise and plan interventions. Factors that facilitate the acceptability of interventions include the procurement of adequate resources, and the employment of lay workers with appropriate skills, knowledge and personal attributes. In particular, as well as knowledge and skills in the topic being delivered, participants can be better accessed and facilitated in their learning when workers have knowledge of local activities and issues as well as skills in sensitive communication. Intervention content that is meaningful to potential participants is more acceptable than content which is associated with negative images and connotations, or content that is difficult to understand. For people in low-income groups, acceptability was enhanced by incorporating the element of social inclusion; in particular the ability to engage with other individuals with shared issues is valued.

Health professionals held the view that social inclusion was an important aspect of community interventions; there was also a view that facilities to increase physical activity in low income groups need to be free or low cost.

Motivation to engage with interventions was increased with incentives such as free food. Barriers to behaviour change included a perceived lack of ability in terms of cooking or physical activities. There was mixed evidence for affordability as an influence on lifestyle behaviours; perceived lack of available shops from which to purchase reasonably priced food, and adding items to the shopping list in order to cater for family preferences were regarded as more prohibitive than replacing 'unhealthy' foods with 'healthy' foods.

Barriers to effective behaviour change include a lack of useful and relevant information, or conversely, 'information overload'. Attitudes to healthy lifestyle behaviours range from active interest to lack of interest; this may be influenced by perceived capabilities and current lifestyle.

Environmental factors such as darkness, poor weather and fear of intimidation were barriers to outdoor physical activity. Social norms, family preferences and habitual behaviours influenced dietary behaviours, creating in some cases a barrier to introducing new ways of shopping, cooking and eating.

Assessment of survey data on nutritional knowledge and barriers and facilitators to implementation of interventions and to behaviour change generally give an insight into the complexity of intervening to prevent pre-diabetes and related conditions in

lower socioeconomic groups. There is evidence that interventions require creativity of design in order to enhance attendance; in particular, knowledge of local issues and preferences increase acceptability.

No data for cost-effectiveness were found for the assessed interventions. Health economic issues will therefore be considered within the Modelling Report. Further well-reported primary research is required that evaluates, with adequate follow-up, the outcomes of population level preventive interventions.

7.1 Relationship between behaviour change and diabetes risk

The first is the assumption that interventions which have an impact on intermediate outcomes including behaviour change and BMI, will also result in a reduced risk of diabetes. The evidence for a causal relationship between diet, physical activity and diabetes risk comes from international trials which have consistently shown that trial participants who achieve behaviour changes also reduce their risk of diabetes (Alberti *et al.* 2007). Cohort studies suggest a consistent relationship between self-reported dietary practice and physical activity and diabetes incidence. The potential impact for the UK population of specific behaviour changes has been estimated using data from the EPIC cohort (Simmons *et al.* 2006). This analysis assessed the association between achievement of five diabetes healthy behaviour prevention goals (BMI <25 kg/m², fat intake <30% of energy intake, saturated fat intake <10% of energy intake, fibre intake ≥15 g/4,184 kJ, physical activity >4 h/week) and risk of developing diabetes at follow-up (mean 4.6 years) and found that diabetes incidence was inversely related to the number of goals achieved. These findings will be directly relevant to deprived communities at high risk of diabetes in the UK as populations with a higher than average baseline risk will have even more to gain from these specific lifestyle changes than the general population.

7.2 Applicability and transferability of evidence

The second consideration is the extent to which evidence from the interventions identified by this review, which focused specifically on interventions to change diet and physical activity implemented in specific deprived UK populations is applicable to the development of similar interventions for other relatively deprived UK populations with the objective of diabetes prevention. The evidence on the relationship between social, cultural and economic context and intervention effectiveness, reviewed to inform the NICE Behaviour Change Guidance, is inconsistent and does not support broad generalisations from one context to another (Taylor *et al.* 2007). Applicability

and feasibility of specific interventions are also likely to be highly context dependant and need to be assessed for each potentially transferable intervention (Wang *et al.* 2006). It is therefore important to re-iterate that, whilst the evidence base can very helpfully suggest elements of an intervention, or contextual factors, which will increase the probability of successful implementation and population impact, it is still very important to consider developing, or at least tailoring, specific diabetes prevention interventions in collaboration with the population in which they will be implemented.

7.3 Interpreting findings in the context of the wider evidence base relevant to diabetes prevention

The relatively limited findings of this review should also be interpreted in the context of the very large volume and diversity of existing relevant evidence-based guidance and systematic reviews in the specific fields of physical activity, dietary change and weight management and in the broader field of behaviour change in general. This focused review, of a specific strand of the evidence-base, should be considered in the context of the much wider evidence-base in relation to the effectiveness of interventions at all levels (population, community and individual) and with a wide range of objectives including increasing physical activity, dietary change, prevention and management of obesity and overweight and prevention of both pre-diabetes and diabetes. Overall this review largely confirms that there remains limited evidence for the effectiveness of specific interventions implemented in deprived communities and that there are a range of specific barriers to behaviour change that would need to be considered when developing or tailoring new interventions for diabetes prevention in socio-economically deprived populations.

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9. APPENDICES

Appendix 1: Included studies

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Appendix 2: Excluded studies

Studies excluded after review of full paper

Author	Ref ID	Reason for exclusion
Baig <i>et al.</i> 2009	43	Population outside criteria (age)
Carroll <i>et al.</i> 2007	3545	Population outside criteria (clinical)
Chambers <i>et al.</i> 2006a	3254	Population outside criteria (non-UK)
Chambers <i>et al.</i> 2006b	3255	Population outside criteria (non-UK)
Chowdhury <i>et al.</i> 2003	3580	Population outside criteria (clinical)
Dugdill <i>et al.</i> 2000	3083	Population outside criteria (small business)
Gillies <i>et al.</i> 2008	3835	Screening
Holmes 2008	106	Review
Hoskins & Lakey 1997	3107	Commentary
Hussain-Gambles <i>et al.</i> 2004	650	Topic not relevant
Hussain-Gambles <i>et al.</i> 2006	409	Topic not relevant
Ingleby 2006	2320	Commentary
Kelleher & Islam 1994	1246	Population outside criteria (clinical)
Khalsa 2004	2690	Review; not relevant
Khunti <i>et al.</i> 2008	177	Population outside criteria (age)
Kooiker & Christiansen 1995	2991	Not relevant
Kousta <i>et al.</i> 2006	440	Population outside criteria (clinical)
Lip <i>et al.</i> 1996	1146	Population outside criteria (pregnancy)
Madden <i>et al.</i> 2008	4156	Review
McFarlane 2007	4194	Population outside criteria (clinical)
Mobley & Mobley 2004	4226	Review
Oldroyd <i>et al.</i> 2008	3215	Review
Patel 2001	2557	Correlates study
Pill <i>et al.</i> 1993	1272	Correlates study
Pollard <i>et al.</i> 2003	749	Correlates study
Rahman <i>et al.</i> 2008	4365	Screening
Ramachandran <i>et al.</i> 2005	499	Screening
Robinson <i>et al.</i> 2004	679	Correlates study
Rudolf <i>et al.</i> 2006	377	Population outside criteria (age)
Simmons & Williams 1997	1126	Correlates study
Singh 1994	4465	Not relevant
Smith & Brunner 1997	1135	Review
Sooman <i>et al.</i> 1993	1263	Correlates study
Spijkerman <i>et al.</i> 2004	4484	Screening
Spijkerman <i>et al.</i> 2002	4485	Screening
Uitenbroek <i>et al.</i> 1996	1162	Correlates study
Vohr 2008	4595	Review
Von Wagner <i>et al.</i> 2007	209	Correlates study
Wardle <i>et al.</i> 2002	3041	Correlates study

Author	Ref ID	Reason for exclusion
Wardle & Griffith 2001	947	Correlates study
Williams & Shams 1998	1064	Correlates study
Williams <i>et al.</i> 1993	1271	Correlates study
Wills <i>et al.</i> 2006	452	Population outside criteria (age)
Sowden <i>et al.</i> 2008	117	Correlates study
Billingham 1994	1238	Descriptive
Charikar 2008	80	Descriptive
Kennedy 2001	944	Descriptive
Pritchard <i>et al.</i> 2006	340	Descriptive
Radcliffe 2001	3068	Descriptive
Sport England 2009	4734	Descriptive
National Coordinating Centre for Health Technology Assessment 2006	3386	Existing pre-diabetes
Jeffery <i>et al.</i> 1995	4726	Non-UK study
Kahn <i>et al.</i> 2002	4732	Non-UK study
Meyers <i>et al.</i> 1996	4725	Non-UK study
Narayan <i>et al.</i> 1998	4728	Non-UK study
Polley <i>et al.</i> 1997	4727	Non-UK study
Active England 2007	4733	Outcomes
Gokal <i>et al.</i> 2007	2460	Population non-specific
Raynor & Lang 2004	2349	Population non-specific
Attree 2005	4800	Review
Davey <i>et al.</i> 2008	121	Study design paper
Wall <i>et al.</i> 2009	4719	Study design paper
Williams 2009	4731	Study design paper

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Appendix 3: Search Strategies and Details of Evidence Sources

List of Databases Searched

Medline via OVID
Embase via OVID
CINAHL via EBSCO
British Nursing Index via OVID
Cochrane Library via Wiley
Science Citation Index via Web of Knowledge
Social Science Citation Index via Web of Knowledge
PsycINFO via OVID

Mapping Review Search Strategies

Sample Search Strategy Search One Mapping Review Medline (via OVID)

- 1 (prediabetes or pre?diabetes).ti,ab.
- 2 ((impaired glucose adj (level* or tolerance or regulation or metabolism)) or raised glucose tolerance or IGT or impaired fasting glucose or insulin resistance or metabolic syndrome or hyperinsulinaemia or non diabetic hyperglycaemia or abnormal blood glucose level* or dysglycaemia or intermediate hyperglycaemia).ti,ab.
- 3 (((type II or type 2) N1 diabetes) or T2D).ti,ab.
- 4 1 or 2 or 3
- 5 *prediabetic state/ or *diabetes mellitus, type 2/
- 6 (risk* or prevent* or reduce* or protect* or limit* or control*).ti,ab.
- 7 *risk reduction behaviour/ or *risk factors/
- 8 ((prediabetes or pre?diabetes or ((impaired glucose adj (level* or tolerance or regulation or metabolism)) or raised glucose tolerance or IGT or impaired fasting glucose or insulin resistance or metabolic syndrome or hyperinsulinaemia or non diabetic hyperglycaemia or abnormal blood glucose level* or dysglycaemia or intermediate hyperglycaemia) or (((type II or type 2) adj diabetes) or T2D)) adj5 (risk* or prevent* or reduce* or protect* or limit* or control*).ti,ab.
- 9 4 and 7
- 10 6 and 5
- 11 8 or 10 or 9

- 12 great britain/ or england/ or scotland/ or wales/ or northern ireland/
- 13 (uk or united kingdom or britain or gb or england or scotland or wales or northern ireland).ti,ab.
- 14 13 or 12
- 15 11 and 14
- 16 limit 15 to (english language and humans and yr="1990 -Current")
- 17 from 16 keep 1-912

Sample Search Strategy Search Two Mapping Review Medline (via OVID)

1. (south asia* or black africa* or black caribbean* or pakistan* or bangladesh* or india* or (Ethnic adj1 minorit*)).ti,ab.
2. (blue collar or working class or underclass or low* class or low* income or poverty).ti,ab.
3. social* exclu*.ti,ab.
4. social* inclu*.ti,ab.
5. (depriv* or disadvantage* or inequalit* or underprivilege*).ti,ab.
6. *income/ or *poverty areas/ or *social class/ or *socioeconomic factors/
7. 1 or 2 or 3 or 4 or 5 or 6
8. *body mass index/ or *obesity/ or *food habits/
9. (obes* or waist circumference or BMI or nutrition or "bmi > 3?" or "bmi > 24" or diet or overweight).ti,ab.
10. (weight adj (gain or change or retention)).ti,ab.
11. *Motor Activity/ or *Exercise/
12. (physical* inactiv* or physical* activ* or physical exercise).ti,ab.
13. (sedentary lifestyle* or active lifestyle*).ti,ab.
14. *Physical exertion/ or *Physical fitness/
15. (blood pressure or cardiovascular disease or blood cholesterol).ti,ab.
16. (history adj5 diabet*).ti,ab.
17. gestational diabetes.ti,ab.
18. *Diabetes, gestational/ or *Genetic predisposition to disease/
19. (genetic* or hereditary).ti,ab.
20. (behaviour change or social marketing).ti,ab.
21. *social marketing/ or *health behaviour/ or *health knowledge, attitudes, practice/ or *health promotion/

22. (diabetes education or cultural sensitivity or culturally competent).ti,ab.
23. *cultural competency/ or *communication barriers/
24. 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
25. great britain/ or england/ or scotland/ or wales/ or northern ireland/
26. (UK or United Kingdom or Britain or GB or England or Scotland or Wales or Northern Ireland).ti,ab.
27. 25 or 26
28. 7 and 24 and 27
29. limit 28 to (english language and humans and yr="1990 -Current")

Additional Websites searched for Mapping Review

Diabetes UK

<http://www.diabetes.org.uk/>

NHS Evidence specialist collection for Diabetes <http://www.library.nhs.uk/diabetes/>

NHS Evidence specialist collection for Ethnicity and Health

<http://www.library.nhs.uk/ethnicity/>

Search strategy review one and two Medline grounded on evidence capture from the mapping review

1. (south asia* or black africa* or black caribbean* or pakistan* or bangladesh* or india* or (ethnic adj1 minorit*)).ti,ab.
2. (blue collar or working class or underclass or low* class or low* income or poverty).ti,ab.
3. social* exclu*.ti,ab.
4. social* inclu*.ti,ab.
5. (depriv* or disadvantage* or inequalit* or underprivilege*).ti,ab.
6. *income/ or *poverty areas/ or *social class/ or *socioeconomic factors/or *gypsies/or *vulnerable populations/
7. hard to reach or marginalised communit* or social cohesion or gypsy-travellers or romany or romani or roma or gipsy or seldom heard

8. OR 1-7

9. food skill* or food project* or cook* skill* or cook* project* or exercise on prescription or healthy eating advice or physical activity intervention or nutritional education or exercise referral scheme* or group based weight management or diet therapy or community dietetic service* or community cook* class* or cook* class* or food class* or cook* club* or food club*

10. *food services/ or *food habits/ or *food labelling/ or *swimming pools/ or *exercise therapy/ or *diet therapy/

11 OR 9-10

12. population level or community health or retail intervention or non-health care intervention or peer education programme* or public awareness campaign* or family counselling or behaviour* counselling or mass education or health education or behaviour goal* or healthy living centre* or cultural collaboration or relaxation or partnership or holistic or ecological or ICT or new media or "men's health clinic"

13. community adj2 (participation or project or approach or engagement or care or intervention or strategy)

14. *communications media/or *leisure activities/ or *social marketing/ or *program development/ or *health education/ or *behaviour therapy/ or *community health planning/ or *persuasive communication/ or *internet/ or *holistic health/ or *relaxation/ or *family therapy/

15 OR 12-14

16. dietary change or healthy eating or wellbeing or weight management

17 ((lifestyle or behaviour*) adj change)

18. exercise/ or diet/ or nutritional physiological phenomena/

19. OR 16-18

20 15 AND 19

21. 11 OR 20

22. 8 AND 21

23. leisure provision or pool provision or language barrier* or access to care or food choice* or participation or nutritional knowledge or community level barrier* or dietary intake or motivation or eating behaviour or dietary belief* or dietary perception* or fatalistic outlook or cultural heritage or views or food related experience* or lifestyle

health impact or food consumption patterns or awareness or food desert or illness belief* or religious leader* or questionnaire or interview or focus group or participant observation or delphi study or group meeting* or feedback or video-tape instruction or video tape instruction or role-play or role play or telephone survey

24. (gender) adj3 weight

25. ((environment* or cultur* or religious) adj factor)

26. (physical activity) adj2 (attitudes or behaviour or perception)

27. *religion/ or *multilingualism/ or *cultural diversity/ or *choice behavior/ *cooking/ or *culture/ or *cultural characteristics/ or *perception/ or *social support/ or *communication barriers/ or *self concept/ or *food preferences/ or *risk reduction behavior/ or *motivation/ or *social environment/ or *consumer participation/

28. OR 23-27

29 8 AND 28 AND 19

30. 22 OR 29

31. great britain/ or england/ or scotland/ or wales/ or northern ireland/

32. (UK or United Kingdom or Britain or GB or England or Scotland or Wales or Northern Ireland).ti,ab.

33. 31 OR 32

34. 30 AND 33

ADD DATE LIMIT 1990-2009, ENGLISH LANGUAGE, HUMANS

Additional Sources Searched for Review one and Two

Grey Literature: British Library Integrated Catalogue, Conference papers index, Medical Research Council and Economic and Social Research Council.

Websites: Public Health Observatories, NHS Evidence: National Library for Public Health, Joseph Rowntree Foundation, Diabetes UK

Appendix 4: Quality rating of included papers

a) Effectiveness papers

Study	Population			Intervention (& comparison)										Outcomes				Time		Results					Summary		Summary quality rating		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		27	
Ashfield-Watt 2007	-	-	NR	NA	+	NA	NR	+	-	NR	++	++	+	+	+	+	+	++	+	+	-	++	+	+	+	+	+	+	+
Baxter 2006	NR	NR	NR	+	NR	NA	NA	NR	+	NA	NA	++	NR	NR	NR	+	+	+	+	+	-	++	++	++	++	+	NR	+	
Bremner 2006	NR	NR	NR	+	+	-	NR	NR	NR	+	-	++	+	+	+	+	++	++	+	+	+	-	NR	NR	+	+	+	++	+
Cochrane 2008	+	-	+	+	+	NA	NR	+	-	NR	-	++	+	+	+	+	+	++	+	+	NR	-	-	-	-	+	++	+	
Cummins 2005	-	-	-	++	+	NA	NR	+	+	+	+	++	+	+	+	+	+	++	+	++	-	NR	++	+	++	+	++	+	
Dobson 2000	++	+	NA	NA	++	NA	NA	NR	NA	NA	-	++	+	+	+	-	+	NA	-	NA	-	-	-	-	-	-	++	-	
Gray 2009	-	+	+	-	+	NA	NA	+	NA	NA	-	++	+	+	+	+	+	NA	-	++	-	NR	NR	+	-	+	+	+	
Kennedy 1998	-	-	-	NA	+	NA	NR	+	NA	NA	+	+	-	+	+	-	-	NA	-	++	NR	NR	-	+	-	+	+	-	
Kennedy 1999	NR	NR	NR	NA	++	NA	-	+	NA	NA	-	++	+	-	NR	-	-	NA	+	NA	-	-	-	+	-	-	+	-	
Lindsay 2008	+	+	-	-	+	NR	NR	+	NR	++	++	+	+	+	+	+	-	++	+	-	NR	NR	NR	+	-	+	+	+	
Lowther 2002	-	-	+	+	+	NA	NR	+	+	+	++	+	+	++	++	+	++	++	++	++	+	+	+	++	+	++	++	++	
McKellar 2007	NR	-	-	-	+	NA	NR	+	++	+	+	+	+	+	+	+	+	++	+	+	+	NR	+	+	+	+	+	+	
Peerbhoy 2008	NR	NR	NR	NA	++	NA	-	+	NA	NA	NR	+	+	-	+	-	-	NA	-	NA	-	NR	-	-	-	-	+	-	
Stephoe 2003	-	+	+	++	++	-	-	+	NR	+	++	++	-	+	+	+	+	++	+	+	++	++	++	+	++	++	++	++	
Wimbush 1998	+	+	-	NA	++	NA	NA	+	NA	NA	-	++	++	-	+	+	+	NA	+	NA	-	NR	-	-	-	-	++	-	
Wrieden 2006	-	+	+	-	+	NA	NR	+	-	NA	-	+	+	+	+	+	+	++	+	NR	NR	-	-	+	-	++	++	+	
Wrigley 2003	NR	NR	+	NA	+	NA	NA	+	NA	NA	-	++	++	+	+	+	+	NA	+	NA	-	++	+	+	+	-	++	-	

NR = Not Reported, NA = Not Applicable

b) Qualitative papers

Study	1	2	3	4	5	6	7	8	9	10	11	12	13		14	Quality rating
Bremner 2006	++	++	+	+	+	++	+	+	++	+	++	++	++	+	NA	+
Cavill 2006	++	++	++	+	+	++	++	+	+	+	++	++	++	++	NA	++
Coleman 2007	++	++	++	+	++	++	++	+	+	++	++	++	+	+	++	++
Daborn 2005	++	++	++	++	+	++	++	++	++	+	+	++	+	+	NA	++
Dibsdall 2002	++	++	++	++	++	++	++	++	++	++	++	++	++	++	+	++
Dobson 2000	++	++	++	+	+	++	+	++	++	+	+	++	+	+	NA	+
Gough 2006	++	++	+	+	-	+	-	++	+	++	++	++	+			++
Gray 2009	++	++	++	-	+	+	+	+	+	++	++	++	++	+	+	+
Kennedy 1998	++	++	+	-	+	+	++	+	+	++	+	+	+	++	NA	+
Kennedy 1999	++	+	+	+	+	+	+	+	-	+	+	+	+	+	NA	+
Lawrence 2009	++	++	+	+	-	+	-	+	+	+	+	++	+			+
Lindsay 2008	++	++	++	+	NA	+	+	+	++	+	+	+	++	+	++	+
Nic Gabhain 1999	++	+	+	+	-	+	-	+	+	+	+	++	+			+
Parry 2007	++	++	+	+	+	++	+	-	+	+	+	++	+	+	NA	+
Peerbhoy 2008	++	+	+	+	++	++	+	+	+	+	++	++	++	+	+	+
Price 2004	++	++	+	+	+	+	++	+	+	++	++	+	+	+	+	+
Rankin 2006	++	++	++	+	+	++	+	+	+	++	++	++	++	++	NA	++
Rankin 2009	++	++	++	+	+	++	+	+	++	++	++	++	++	++	+	++
Spence 2005	++	++	+	-	-	+	+	-	+	-	++	++	+	+	+	+
Stead 2004	++	++	++	+	-	++	+	+	++	+	++	++	++	+	NA	+
Thomson 2003	++	++	+	+	-	++	+	+	++	+	++	+	++	+	NA	+
Wardle 2000	+	+	++	+	-	+	-	-	-	+	+	+	+	-	NA	-
Whelan 2002	++	++	+	+	-	+	-	+	+	-	+	++	+			+
Withall 2009	++	++	++	++	+	++	++	+	++	+	+	+	+	+	+	+
Wood 2010	++	++	++	+	++	+	++	++	++	+	+	++	+	+	+	+
Wormald 2006	++	++	+	+	+	++	+	+	++	++	++	++	+	+	+	+

Appendix 5: Narrative description of included studies by intervention aim / lifestyle behaviour

Nutritional Educational and Awareness-Raising programmes

Ashfield-Watt *et al.* 2007 (n-RCT)

A prospective cohort study examined whether fruit and vegetable intakes in deprived communities would be increased by improving awareness, attitudes and access to fresh fruits and vegetables. The aims of the study were to assess the ability of the Five-a-day Community Evaluation Tool (FACET) to estimate fruit and vegetable intakes (compared with a food diary; both being self-report measures) and to evaluate the community fruit and vegetable interventions in terms of improving awareness of the importance of fruit and vegetables in the diet and improving access to these foods. These interventions involved building community networks to achieve and sustain increased fruit and vegetable intakes through collaboration between retailers, educators, primary care teams, employers and local media. The control group were a convenience cohort from subjects in European Prospective Investigation into Cancer and Nutrition (EPIC) study in Norfolk, where there were no attempts made to influence fruit and vegetable consumption. The authors do not comment on the similarity of the control site to the intervention site. One year after the pilot interventions had begun follow-up questionnaires were mailed to all intervention and control subjects who had returned baseline questionnaires.

General awareness of local efforts to encourage people to eat more fruit and vegetables was similar in the intervention and control group (21%). The proportion of subjects who agreed strongly (indicated by selecting 5 on a 5-point Likert scale) that fruits and vegetables are protective against (a) coronary heart disease, (b) cancer, (c) digestive problems and (d) overweight increased in the intervention group. However, there was no significant difference in the proportions of intervention and control group subjects who increased, decreased or maintained their baseline agreement level for each condition (all $p > 0.05$ by chi-square test).

Total fruit and vegetable intakes decreased significantly over one year in the control group (-0.4 portions day, $p < 0.01$), but there was no significant change in total fruit and vegetable intakes in the intervention group. Fruit intakes did not significantly change in either group, but there was a small reduction in vegetable intakes in both

groups that was statistically significant (control $p < 0.01$, intervention $p < 0.05$), possibly indicating a trend towards greater fruit and vegetable intakes in individuals who demonstrated awareness of the initiatives, whether in terms of beliefs or access to fruit and vegetables.

Baxter *et al.* 1997 (Community based prospective comparative study)

Baxter *et al.* carried out a study to determine whether a community based coronary heart disease health promotion project, undertaken over four years, was associated with changes in the prevalence in adults of lifestyle risk factors known to affect the development of coronary heart disease, and to estimate whether such an approach was cost effective.

The study was carried out in urban communities with a high incidence of CHD. Questionnaires were mailed to a randomly chosen sample of adults from the Rotherham Family Health Services Authority register. The follow-up survey involved a similar approach but sent to a different random sample. At both baseline and post-intervention, high response rates of 82-86% were reported.

The Action Heart health promotion intervention – conducted in adjacent communities of Swinton and Wath; used several recognisable health promotion approaches:

- Behaviour change
- Educational
- Empowerment
- Medical
- Social change

In Maltby, a similar record for CHD and similar socioeconomic composition was used as a control. No health promotion intervention was undertaken. Univariate analysis was used to compare the prevalence of lifestyle risk factors between the control and intervention communities from baseline to follow-up, using weighted data to adjust for undercoverage and overcoverage in the 4 age-sex subgroups.

The odds ratio for drinking low fat milk at follow-up compared with baseline in the intervention area was 2.58 (2.22 to 3.01) and in the control area 1.81 (1.55 to 2.11; $\chi^2=10.3$, $P < 0.001$). There was no evidence that the intervention effect differed between the age groups ($\chi^2=0.11$, $P > 0.5$), but there was weak evidence that it differed between sexes ($\chi^2=3.12$, $P < 0.05$). There was an approximate doubling in the odds of

using low fat milk between baseline and follow-up in men in both the intervention (odds ratio=2.30) and control (1.95) areas; the effect was slightly less for women in the control area (1.68), while for women in the intervention area the odds trebled (2.93).

There were no statistically significant odds ratio differences for the other risk factors, which included consumption of low-fat spreads and wholemeal bread.

Cost-effectiveness results are not included in this review as they relate to smoking cessation which is outside the scope.

Bremner *et al.* 2006 (n-RCT; evaluation)

Bremner *et al.* report on the evaluation of a 5-a-day local community initiative that aimed to encourage people (particularly those with a low-income and disadvantaged) in 66 areas to eat at least 5 portions of fruit and vegetables a day as well as raise awareness, improve access to fruit and vegetables, and change attitudes and beliefs.

Activities included home delivery services, improving transport to local markets, voucher schemes, media campaigns, growing and cookery skills, and promoting networking among existing healthy food groups.

A pre-test survey was carried out in 2003 to measure baseline consumption of fruit and vegetables nationally as well as beliefs and attitudes. A process review and qualitative case study interviews were carried out in 2004 and 2005. Finally, a post-test review was also carried out in 2005.

A total of 57 PCTs completed the review (86%). Most of the PCTs worked in collaboration with other PCTs. The most popular activities were cook and eat interventions (75%) and mass media campaigns (70%). Whilst demand for Cook and Eat activities was high, the sessions worked better in small groups. There was also an issue about how the sessions should be positioned, with some programme areas reporting that the lack of basic cooking skills meant that sessions became longer and more time-consuming than planned. The perceived main benefit of Cook & Eat activities was that through teaching and improving skills, they managed to improve the confidence levels of those who attended whilst simultaneously promoting healthy eating messages. Among the least popular activities were transport schemes where those providing the service report a 'stigma' of using shuttle buses and concern about creating competition with existing local traders.

Lessons learned were:

1. It takes longer than expected to organise and set up the initiative.

Solution: Take time to develop a focused action plan. Take time to decide on which activities are best for the local area and promote them locally. A needs assessment may be helpful.

2. Funding activities can be problematic and there is a need for continued funding.

Solution: Funding for 3-4 years would allow a better grounding on which projects could be built. All participants need to be realistic about what can and cannot be achieved.

3. Liaison with other projects and partners is important.

Solution: Liaise with other programme areas on good practice and pitfalls. Research what worked well and not so well in areas with similar demographics. Ensure that the project has access to skilled food and health workers, as well as nutritionist/dietician support. Cut down on the number of co-ordinators and line managers and identify a single influential person for each initiative who can act as a 'champion'.

4. Good communications are essential. There is a need for a nationwide, centralised campaign.

Solution: It would be useful to have bespoke resources for particular groups and for these resources to be designed to suit the target participants. Examples include the availability of Cook & Eat recipes specifically designed for children or for the black and ethnic minority population. Continued availability of 5 A DAY materials would be helpful. Co-ordinate local and national strategies to reinforce messages.

Staff had varying degrees of success at recruiting participants. Activities offering tangible and instant benefits tended to be the easiest to recruit. Some staff successfully recruited participants by approaching existing groups such as parenting classes or weight loss clubs.

Attendance at activities was dominated by females. The exception to this was Sow & Grow activities, these activities manage to attract men and women but are biased in terms of attracting older and more experienced growers. There was evidence from every case study area visited that benefits have been experienced by participants. The evidence was a general change in attitude towards healthy eating and it appeared that early claims of increased consumption of fruit and vegetables were being maintained. The most common change reported was to reduce unhealthy foods from the participant's diet and, in turn, to increase consumption of fruit and vegetables. In addition to the 5 A DAY benefits, many participants benefited socially

from attending activities. The results from the case studies show the potential for 5 A DAY initiatives to be run alongside other projects in the health and social care field. Staff should be inventive and adopt a multi-pronged approach to activity and message promotion.

The authors concluded that activities should inspire participants, who need to be told why certain behaviours such as eating 5-a-day are important. Aims should be achieved slowly, using several activities, and healthy habits should be encouraged.

Quantitative findings showed that experimental group respondents were slightly more likely to consume fruit as a between meal snack with 62% of respondents in 2003 rising to 67% in 2005 consuming at least one portion of fruit in this manner (significance not reported). Similarly, control group respondents were slightly more likely to consume fruit as between meal snack with 63% of respondents in 2003 rising to 66% in 2005 consuming at least one portion of fruit in this manner (significance not reported).

In terms of vegetable consumption, experimental group respondents were slightly more likely to consume vegetables as portions with main meals with 78% of respondents in 2003 rising to 83% in 2005 consuming at least one portion of vegetables in this manner (significance not reported). Respondents were least likely to consume vegetables as key ingredients in home-made style vegetable soup, with 11%, increasing to 17% in 2005 claiming to have consumed vegetables in this manner during the previous 24 hours (significance not reported).

Similarly, control group respondents were slightly more likely to consume vegetables as an accompaniment to main meals with 82% of respondents in 2003 increasing to 83% in 2005 consuming at least one portion of vegetables in this manner (significance not tested). Respondents were least likely to consume vegetables as a key ingredient of home-made style vegetable soup with only 10% in 2003 and 12% in 2005 claiming to have consumed vegetables in this manner during the previous 24 hours.

The authors report a significant difference between groups on the average amount of fruit and vegetables consumed ($F=4.42$, $p=0.0354$). Both groups also differed significantly on deprivation ($F=4.86$, $p=0.0275$), although no further details were provided. The authors also report a significant change in the average amount of fruit and vegetables consumed among all participants ($T=2.79$, $p=0.0052$).

Overall, the likes and dislikes of the household and the quality of fruit and vegetables available were rated as the most important factors. This did not appear to vary

between groups but varied slightly by age and gender. There were slight increases in the percentage of respondents in both groups intending to increase consumption (32% in 2003, 39% in 2005, experimental group; 31% in 2003, 35% in 2005, control group) and those possibly to increase consumption (39% in 2003, 40% in 2005, experimental group; 39% in 2003, 40% in 2005, control group) and a slight decrease in the percentage of respondents in both groups saying no to an increase (26% in 2003, 22% in 2005, experimental group; 28% in 2003, 24% in 2005, control group), although there was test of statistical significance was conducted.

The majority of respondents in the experimental group (64% in 2003, increasing to 77% in 2005) and control group (66% in 2003, 79% in 2005) were aware that the government recommendation was for five portions of fruit and vegetables a day. Awareness was lower at both time-points in low wage earners; however it increased from 2003 to 2005 in all income categories. Knowledge of which foods and drinks constitute a portion of fruit or vegetables also improved in both groups from 2003 to 2005 (significance not tested). Again, this was lower among lower wage earners. The majority of respondents in both groups believed that people can reduce their chances of getting a stroke, cancer and heart disease, and this increased slightly from 2003 to 2005 in both groups.

Generally, ethnicity and region made minimal impact on the results; however, income appeared to affect responses to the statements. In particular, the statements about money available to spend, price and how heavy shopping was to carry had variances between ages. These factors were more important to those in households with a pre-tax income of up to £10k per annum compared to those with a pre-tax income of more than £15.5k.

The authors concluded that overall, the percentage of respondents consuming fruit and vegetables in a typical day marginally increased from 2003 to 2005. Using the primary measure, the 5 A DAY Index, consumption marginally increased with the most sizeable of these increases in the experimental group (0.28 compared to an increase of 0.15 in the control group). Increases were made in every demographic variable in the experimental group and in almost all variables in the control group. In more than half of the variable categories, increases were larger in the experimental group. Within every variable category, the largest increases were made by the sub-categories with the lowest level of consumption at the pre- test period. A slightly higher proportion of the experimental group were in the categories of average to most deprivation. Whilst concluding that average responses suggest a change in consumption, the authors stress for caution: the increases are very marginal, and the

cause of the change cannot be determined. Whilst the average number of respondents has improved, there are respondents who had not improved. Respondents were reported as being *laissez-faire* when considering whether or not they would increase their fruit and vegetable consumption over the next year. In addition, average consumption was lower than the target Index of 5, highlighting that there is still considerable work to be done.

The difference *between* the experimental group and the control group was minimal and not statistically significant. As a collective group, however, the change in the 5 A DAY Index across the experimental and control group respondents was statistically significant. It was also concluded that across the two groups, the effect of deprivation was significant: those in areas of greater deprivation increased consumption at a higher level than those in less deprived areas.

According to the authors, respondents generally became more aware, had greater understanding and improved their knowledge over the survey period. However, again, the authors recommend caution because the cause of the shift in awareness, understanding and knowledge cannot be determined. Caution should also be exercised in terms of the disparity between knowledge and behaviour. Whilst many respondents were aware, this was not equalled by action; this is highlighted in the very minimal changes measured following the interventions.

In addition, the authors reported some methodological limitations that may impact on the findings. Only those included on the Electoral Roll were sampled, and not everyone who completed the evaluation will have participated in the 5-a-day activities, thus only the wider impact of the intervention activities on the local population can be assessed, rather than the effectiveness of the intervention activities *per se*. All outcomes were self-reported, which can be open to errors such as inaccuracy in recall and recording, misunderstandings about portion size and day-to-day fluctuations in consumption. In addition to limitations identified by the authors, it also seems that no intention to treat analysis was conducted, as only those with pre-test and post-test data were analysed, which can lead to over-estimation of effect. Finally, the increase in consumption and knowledge in both groups over time suggests the possibility of contamination of the 5-a-day message.

Kennedy *et al.* 1998 (Case series and qualitative evaluation)

Kennedy *et al.* evaluated a nutrition education program aimed at low-income families, named Friends with Food (FWF based on EFNEP, the Expanded Food and Nutrition

Education Program, originally modelled in the US). The programme was set in an urban area of a town in Northern England. Although aimed at low-income families, the participants were low-income mothers with young children. The FWF program comprised 10 weekly 2-hour sessions led by two project workers, each taking two separate groups. The aims of the study were to evaluate the intervention and to assess the type of effects/impact the program have on participants.

The aim was to investigate how and to what extent social and economic constraints were important in determining the response to nutritional education. Interviews were carried out with five groups of women (actual sample size not given) prior to and following participation (3 months later) in the programme and with controls from outside the Deighton area. The final version of the piloted programme (following focus groups) were 10 weekly 2-hour sessions led by 2 project workers. At least 30 minutes was spent on topic material, for example the link between dietary fat and CHD.

A combination of quantitative and qualitative methods was used including calculation of nutrition scores and a coding scheme for qualitative data. A total of 26 low-income mothers (mean age 27.2) participated in the final evaluation. Most women were in income group (V) with 15/39 being single parents. Approximately 75% depended on state benefits.

Practical knowledge was perceived as being the most useful for translating abstract messages (e.g. about fats). Approximately half the women in 4 of the groups reported change in food-related practice. The greatest impact was changing the amount of fat in manageable ways. Course participation was facilitated by allowing 'free' experimentation with unfamiliar foods, preparation, cooking methods. It increased confidence to use, for example, rice rather than chips. Introduction of healthier foods was easier for those whose families were receptive to change, particularly if partners were interested in health.

However, half of the participants did not change their practices; half of these had contemplated doing so but identified barriers such as social norms and food habits, socio-cultural influences on consumption patterns. If the two were in conflict, family preferences overruled the women's concern for nutrition or health. Traditional food tastes limited the range of acceptable foods for the family. Men were generally more conservative and less flexible toward change. Unfamiliar foods were considered 'foreign'.

Cost, rather than access to food, or availability, was perceived as a major disincentive to change. Estimated household expenditure on food was below the national average and for some, the largest item in the household budget. It was not practical or affordable to cook different meals for family members, thus inhibiting the trial of new recipes. Instead, subtle changes were seen as more realistic.

The authors state that programmes such as FWF are relatively labour-intensive and low-income groups hard to reach. However, some success is possible and practical courses are necessary in order to translate complex nutritional messages. The problem is multi-factorial and the sum of these factors and their inter-relationships are more powerful than any single factor. Nutrition education targeted at solely women was inappropriate. Success is more likely if the family, especially male partners, are receptive to change. Cost was pivotal, with change being seen as a financial risk (cost of initial food and potential waste). Common-sense advice to 'buy in bulk' is inappropriate; purchasing power in this group is low. One of the leaders was relatively unsuccessful in delivering the FWF programme compared to the nutritional expert who was seen as more 'down to earth' and understanding of the women's situation, approachable, interactive and responsive to questions and comments.

The quantitative analysis was basic, with little effectiveness data. For the sample overall, 10 participants (out of a sample of 26) reported changing their cooking methods, 9 reported changing their food preparation methods, 8 reported using a wider range of recipes, 8 reported increased consumption of cereals/starchy vegetables and 7 reported decreased consumption of high fat foods, although no pre- and post-intervention data were reported, with, likewise, no significance testing. Nutrition knowledge was reported by intervention group, rather than for the sample as a whole. Two of the groups scored significantly higher on practical nutrition knowledge, including knowledge of food purchasing, preparation and cooking methods, distinguishing facts from misconceptions (e.g. "margarine has the same calories as butter"; "bread and potatoes themselves are not fattening"), knowledge of the health benefits of extending meat dishes with vegetables and identifying approximate fat contents from a range of items. Two of the groups, however, did not demonstrate increased nutrition knowledge. Little detail is provided on why this might be the case.

The limitations of the study should be considered when interpreting effectiveness findings. The authors report that one of the two session leaders was relatively unsuccessful in delivering the FWF programme, which may have impacted on the

findings. In addition, no pre-test scores on nutrition knowledge were reported, and change in behaviour was measured by self-report of a change in cooking, food preparation and eating habits, rather than by assessing these variables before and after the intervention, which may have been susceptible to bias in recall and reporting. Finally, compliance with the intervention was poor, with an attendance rate of six out of the 10 sessions reported on average.

Lindsay *et al.* (2008) (RCT with related qualitative component)

Lindsay *et al.* (2008) report on an RCT that assessed whether giving a community based, facilitated access to an Internet health portal would improve the capacity of men and women (n=108, aged 50-74) with heart disease to manage their own heart conditions. The study was set in Salford, a deprived area of Manchester. Both intervention (n=54) and control (n=54) groups received new computers and a one-year broadband subscription; only the intervention group received training and access to the project's portal. Drop-in sessions were available as was phone-in support for any technical difficulties. In addition, the experimental group had access to a purpose-built, password-protected portal through which facilitated group interaction could take place, although little detail as to the content of this portal was reported. Mixing of groups was facilitated only after 6 months' access. Participants completed questionnaires immediately after the start of the study and six months later. Dietary behaviour was measured by adding together variables derived from the Health Survey for England, and included consumption frequency of foods such as chips, sweets, cakes/biscuits (potential scores 6-30). Sources of health related information were explored and mental health was assessed (score 1-6 on feeling a particular way all to none of the time).

Only one significant difference (a change in diet) was found. Here a higher score indicates eating 'bad' foods more frequently. The experimental group slightly improved their diet over time by eating such foods less often (mean score at baseline = 14.26; mean score at 6 months = 13.76), whereas the control group reported consuming such foods slightly more often (mean score at baseline = 13.71; mean score at 6 months = 14.55; $p = 0.014$). Being male was a predictor of eating 'bad' foods more often ($p < 0.001$). Notable, non-significant, trends included improved social support, mental health and the number of sources of health information accessed (for the experimental group), while the control group reported significantly decreased levels of social support ($p = 0.02$) and mental health ($p = 0.004$) at follow-up. There were no significant changes in exercise frequency (the number of days per week on

which moderate intensity exercise was taken), the number of new healthy foods eaten, daily cigarette smoking frequency, exposure to second hand smoke or the number of units of alcohol consumed on the heaviest day of drinking, however the control group decreased their alcohol consumption, measured in terms of units per week, from baseline to follow up (mean number of units at baseline = 7.05; mean number of units at 6 months = 3.72; $p=0.02$), while there was no significant change in the alcohol consumption of the experimental group (mean number of units at baseline = 10.66; mean number of units at 6 months = 8.98).

The effectiveness findings should be interpreted in light of their limitations. As the authors concede, the 6-month follow-up period was rather short and longer-term changes in health behaviour would not have been captured. In addition, there appear to be several methodological limitations. For example, change over time was analysed separately in each group, rather than comparing the groups across time, for each outcome variable. Multiple univariate comparisons invariably increase the likelihood of a significant finding and a Type I error (attributing a change to the experiment when it was in fact due to chance). In addition, as the differences between the groups across time were not examined, it was not possible to compare the groups on the outcomes provided; all that is known is whether or not each group changed significantly, not how different they were from each other in terms of the change. This difficulty in interpreting the findings is compounded by the authors not reporting whether or not the groups differed significantly at baseline on the outcome variables of interest. For example, at a glance, the experimental group appeared to have higher baseline frequencies of bad foods eaten and alcohol consumption, which may have influenced the change in these outcomes. The usual problems associated with self-reported outcome measures (e.g. potential errors in recall, understanding of meaning and reporting) should also be borne in mind. Finally, the measure used to assess physical activity (number of days per week on which moderate intensity exercise has been undertaken) is not a very sensitive measure of physical activity. For example, this measure would not distinguish between someone who exercised for two hours a day on three days of the week and someone who exercised for 15 minutes a day on three days.

Qualitative analysis was carried out on data from Internet portal discussion forms, facilitated by researchers. The participants reminisced about their eating habits whilst growing up and recognised the changes (from fresher food and less availability of meat to ready-made meals) as part of a faster lifestyle change in general (cars, TV, materialism, not sitting together at the table). There was also recognition that

information provided allowed the participants to reflect on their habits and how they reverted back to bad habits without reinforcement. An advertisement that portrayed the fat content of crisps through images of bottles of oil made an impact; imagery was a powerful tool in driving the message.

The study also measured mental health and this improved for the cases but not for the controls. Some barriers to the study implementation were short follow up (6 months), some of which was taken up in familiarisation with using a computer as approximately half were not computer literate. A longer follow up may have provided more robust findings in terms of behaviour change.

The authors conclude that social capital can be gained or lost depending on whether there is access to interaction with significant others who are part of the same group - e.g. those with similar health issues. This study facilitated access to social support with those in a similar situation, thereby potentially strengthening the social ties and reinforcing behaviour change.

Peerbhoy *et al.* 2008 (Evaluation)

Peerbhoy *et al.* evaluated the impact of a 14-week community-based initiative which attempts to tackle unhealthy / over eating and lack of exercise that contributes to a high prevalence of overweight and obesity. The study describes the successes and challenges of 'Family Fit', a GP referred healthy lifestyles programme targeted toward families showing CHD risk factors.

The intervention is based on modifiable determinants (information-based, behavioural, social, environmental, policy) of physical activity and healthy eating. These determinants are known to influence psychological and physiological outcomes. In terms of stages of change, the programme does not focus on one particular stage.

Data from 34 participating families (90 individuals - 48 adults and 42 young people) with individual risk factors (obesity n=25) were analysed. Focus groups were carried out with 5 participating families (1 retired couple; 1 parent and child; 3 sets of parents with 3 children) to discuss aspects of the programme (activities, support, health behaviours and challenges).

One participant (a father) reported feeling apprehensive at start of programme; this diminished over 2-3 weeks. There were several suggestions for change; the development of women only sessions, more dance classes and more weekend activities to fit in with busy schedule.

Most families took part in the healthy eating activities such as cooking classes and supermarket tours. The response was positive from all participants.

Health behaviours were mainly focused on dietary and eating habits; for example, good intentions and becoming more conscious of patterns and food shopping. Participants seemed to perceive that physical activity came from scheduled classes, though one participant was "trying to go a little faster and a bit further" when walking the dog. Exercise was maintained beyond the course of the programme (6 months), and there was an attempt to walk more in and around work.

There was positive feedback on the mix of participants, and the importance of socialising with other people on the project. Participants perceived staff as providing social and motivational support during circuit training. Challenges included shift work, lack of time; poor level of fitness at baseline was inhibiting physically and psychologically; changing prior health behaviours and children's behaviours in regard to diet.

Poor weather and lack of daytime light during winter was a barrier to physical activity for 3 families. Practical hassles included washing and drying the children's hair after swimming.

All families indicated that the programme should last longer than 14 weeks, and be promoted to more people.

The authors conclude that positive indicators were identified, such as a healthier lifestyle, improved nutritional intake and engagement in physical activity.

Spence *et al.* 2005 (Qualitative Evaluation)

Spence *et al.* report on qualitative evaluation of 'Now you're Cooking' (NYC), a cooking initiative in North East Scotland that provides cooking classes in deprived areas.

Six semi-structured interviews were carried out; there was no description of how the data were collected or analysed.

Some of the participants were motivated to make changes in their cooking behaviour, in terms of learning new skills. All the participants enjoyed the course, especially the recipes. One found the course to be less complex than she expected. Many were complimentary about the health promotions assistant (HPA) who ran the course. Skills were learnt in 3 new arenas: cooking, budgeting and food hygiene. For 2

interviewees the course had an effect on personal diet (though one of these was diagnosed with diabetes).

The authors conclude that a motivating force was the potential to enhance their cooking skills in order to improve their children's diet. Attendance was influenced by engaging the interest of potential participants. Food budgeting might be equally important or even more important to learn than cooking skills for some in lower socio-economic circumstances. There was a general increase in reported knowledge of food hygiene, and some participants went on to take courses in food safety; one gained employment.

Stead *et al.* 2004 (Focus Groups)

An exploratory study was carried out in 2 areas of Scotland out to identify the educational needs and topic preferences of potential participants in relation to a nutritional intervention (CookWell). Three focus groups were facilitated with a total of 16 individuals. Topics of most interest were sauces, budget cooking and soup. Those of least interest were fish, 'healthy eating. Fish was mainly eaten covered in batter or breadcrumbs and not whole. Tuna was mainly eaten in sandwiches. Healthy eating was seen as boring and not filling. Participants divided into 3 groups in terms of their self-rated cooking abilities:

1. Confident; 2. Basic but fearful and 3. Hopeless and useless.

Confident respondents liked the experience of cooking and expressed confidence in their ability to cook a range of dishes. They had a wider repertoire than other two groups and were more familiar with a range of techniques, though they felt in need of advice and encouragement to help them be more adventurous.

Basic but fearful respondents perceived their cooking as basic and in need of improvement. Despite expressing feelings of competence in some aspects of cooking, they found it a chore and basically lacked confidence. They felt that their repertoire was boring and unadventurous. There was anxiety about venturing beyond familiar dishes, and reluctance to experiment on even a small scale:

There were also concerns with the broader planning and organisation of family meals.

'Useless' and 'hopeless' respondents reported lacking many basic cooking skills and felt disempowered by the process, describing themselves variously as 'useless', 'hopeless, and 'crap' at cooking. They relied heavily on frozen and pre-prepared

foods and a microwave, or on others to cook for them – both men were in this group. They found it difficult to identify specific areas for potential improvement.

There was uncertainty about even the basic language and concepts of cooking. Age did not seem to be related to any increase in confidence or feelings about cooking; older respondents appeared more likely to be able to cook more traditional dishes such as roasts and casseroles, and were sometimes less familiar with pasta, rice and curry.

In general, both the 'basic' and 'hopeless' respondents tended to be pessimistic in their assessments of their cooking ability and skills. For the least confident group (useless/hopeless), cooking from scratch was daunting. The terms 'cooking from scratch' and 'home cooking' were used to refer to what were seen as 'proper' methods of cooking. They relied heavily on the microwave and had little experience in using the oven, preparing a dish 'all in a big pot', or techniques such as steaming.

Attempts to cook from scratch which ended in apparent failure had the effect of reinforcing respondents' poor ratings of their abilities and encouraging them to turn to convenience and 'easy cook' products such as packet sauces and boil-in-the-bag rice. Because these 'worked' more often and did not result in wasted food, many came to rely on them despite being less economical. The anxiety of not knowing whether a dish would turn out properly discouraged participants from trying new techniques. Another problematic area was following a recipe. Only one participant found it easy, the rest described themselves as unable to follow recipes, with some having tried and 'failed' and others believing it was beyond them. For some, the problem seemed to be understanding measurements, while others seemed put off by the need to follow a sequence of instructions, claiming that they got 'lost' or confused. The language of recipes was difficult; with some claiming they 'hadn't a clue' what instructions such as 'dice' or 'sauté' meant.

In terms of topics for the intervention, the three most popular were Sauces, Soups and Budget Cooking. Sauces had been cooked mainly from packets in the less confident groups.

The least popular topics were 'healthy eating' which was seen as boring, and the food not filling, and fish which, unless served covered in breadcrumbs or batter was often seen as distasteful; i.e. participants did not like to deal with unprepared fish. It was decided from the discussions that the healthy eating and fish topics should be introduced whilst talking about particular recipes, rather than as topics in their own right. Cooking at home was heavily influenced by the preferences and arrival times of

other family members, and so there needs to be awareness of the barriers that individuals face outside the classroom, in terms of putting classes into practice.

Step toe *et al.* 2003 (RCT)

A parallel group randomised controlled trial was carried out in which patients of a primary health centre in a deprived, low-income, ethnically mixed inner city area were asked to participate. Two hundred and seventy-one participants (aged 18-70 years) agreed to take part; 136 were randomly assigned to the intervention group, behavioural dietary counselling. This intervention was founded on social learning theory and the stage of change model, which posits that the most appropriate methods of encouraging change in behaviour vary with the motivational readiness of the individual. A total of 135 were assigned to the control arm of brief nutritional counselling (education about the importance of increasing consumption of fruit and vegetables, emphasising beneficial nutritional constituents and the way these act biologically to maintain health).

The aim of the study was to measure the effect of brief behavioural counselling in general practice on patients' consumption of fruit and vegetables in adults from a low income population. The main measure of consumption was a two item frequency questionnaire that asked participants how many pieces of fruit and how many portions of vegetables they ate on a typical day and gave them detailed information about portion sizes.

Both groups increased the number of portions consumed a day; at baseline both groups consumed a similar amount of fruit and vegetables to the general population (intervention mean 3.60 portions per day; control mean 3.67; national food survey 1999 mean 3.85). After adjustment for covariates, the increase was greater in the behavioural counselling (mean increase of 1.49 portions a day) than in the nutrition counselling group (mean increase of 0.87 portions a day; mean difference 0.62 portions, 95% confidence interval 0.09 to 1.13, $p=0.021$). The increase in the number eating five or more portions a day was also greater in the behavioural group (difference 15%, 3% to 28%, $p=0.019$).

Secondary outcomes include increased plasma β carotene and α tocopherol concentrations in both groups, with no changes in plasma ascorbic acid concentration or potassium excretion. The increase in β carotene was greater in the behavioural group (difference 0.16 $\mu\text{mol/l}$, 0.001 $\mu\text{mol/l}$ to 1.34 $\mu\text{mol/l}$).

The authors suggest that the control arm was not inactive; rather it provided general advice and in itself had substantial effects. For this reason it cannot be known whether changes would have occurred with the absence of professional advice, for example by using a usual care control condition. In addition, the nurses who administered the intervention were also involved in data collection, which the authors recognise was not preferable but was essential due to lack of resources. There may have been a risk of selection bias, as only 21% of the eligible population expressed an interest in participating. Finally, self-reported measures of dietary behaviour are open to errors in recall, reporting, daily fluctuation and understanding of common meaning, although the latter was addressed by the provision of clear and relatively comprehensive definitions of what constitutes a portion of fruit or vegetables.

Wardle *et al.* 2001 (Evaluation)

Wardle *et al* report on the evaluation of the BBC campaign 'Fighting Fat, Fighting Fit' that ran for 7 weeks and included a group of programmes that typically utilised celebrities and experts to portray messages and advise on healthy eating and physical activity for different groups of the population. There was also the chance to apply for registration (£3) which included booklets, a video, and cards on which to monitor progress with weight management over a 5 week period.

Data was collected by interview as part of the Omnibus Survey of the ONS 1999. A total of 1894 interviews with individuals aged 16 and over were completed out of a potential 2690.

BME groups were poorly represented, with over 94% of the sample white. Women had a lower mean BMI than the men and more of them were in the normal range. More men were overweight, but more women were obese. 57% had heard of the campaign; 29% recalled watching one of the programmes; about the same number remembered that the campaign involved either healthy eating or being more active.

Active involvement through registration was rare in any group (1% total). Those who were overweight / obese were no more likely to have watched, or correctly recalled the content than those of normal weight. Facilitators included the recognition that understanding a campaign message is an important first step towards persuading people to make behavioural changes. TV may be more accessible to some groups in society and could therefore minimise SES bias in health education. However, correctly recalling the message is quite different from agreeing with it or acting upon it.

Wreiden *et al.* 2006 (n-RCT)

This was a UK prospective cohort study, evaluating an educational food skills intervention aimed at families in deprived communities in Scotland. The programme comprised 2-hour sessions over seven weeks delivered in community settings with suitable food preparation areas. The aims of the study were to evaluate the intervention and to assess the type of effects/impact the programme may have on participants. Participants were interviewed immediately after the programme and six months later.

At T2, a mean change equivalent to one portion a week was seen in the intervention group for fruit consumption (excluding fruit juice), which was significantly different from the change (very small decrease) in the control group ($p=0.047$). This change was not sustained and there were no significant differences between the intervention and comparison groups (T1–T3). No other significant differences in changes were seen (i.e. no significantly different changes in the consumption of fruit juice, fruit and fruit juice, vegetables and salads, overall fruit and vegetables, tuna, all fish, bread, pasta and rice or all starchy foods).

It is possible very few significant differences in changes made between the groups were detected because, as the authors suggest, the study failed to reach the sample size required by the power calculation, and so the study may therefore have been underpowered. Similarly, they report that the duration of the intervention may have been inadequate, and that the high attrition rates (reaching 53% in the intervention group and 60% in the control group at 6-month follow-up) may have been due at least in part to the burden of assessment. The issue of attrition may have been compounded by the lack of an intention to treat analysis, which can over-inflate estimates of effect. In addition, no baseline comparisons were reported between groups, so the extent to which they differed from each other is not known. This is particularly pertinent, given that group differences are more likely in non-randomised trials. Finally, it is possible that the final follow-up time point of six months was not long enough to assess any longer-term changes in diet.

Interventions aimed at improving physical activity and general lifestyle behaviours

Cavill *et al.* 2006 (Focus Groups)

Focus Groups were carried out with 14 adult members of the public; the views of young people were excluded as outside the scope of this review. Discussion elicited views of physical activity and cycling in general, followed by a discussion of the PCT funded programme to encourage the public use of a cycle path ('Loop Line') in North Liverpool. The path follows the course of a disused railway and borders on open countryside.

Whilst there were generally positive views regarding physical activity, this particular group featured only two cyclists, although some of the older participants had cycled in their youth.

Concerns with cycling generally included safety on the roads, and fear of theft of the cycle (mostly by young people). The Loop line was seen as a place that could potentially offer a place to exercise and obtain fresh air, possibly with led cycling sessions, provided the public felt safe. There was concern that youths occupy positions along the route, particularly at night, and under railway bridges. Groups of youths were seen as intimidating, and so the best time to cycle is during the day when more people are around. There was a sense that publicity for the programme painted an optimistic and exciting picture, whilst locals were aware of the risks.

It was suggested that PCTs might provide security in the form of regular monitoring, but there is currently no evidence base for this strategy. The authors conclude that collaborations with the local authority need to take place to design safe and attractive areas for recreation.

Dobson *et al.* 2000 (Mixed method evaluation)

Dobson *et al.* carried out an evaluation of the Saffron Food and Health Project, a community food project that aimed to achieve an improvement in the eating behaviour of people living on a low income in the Saffron Lane area of Leicester. They also investigated the processes by which knowledge is converted into behaviour change.

The study used 86 in-depth interviews to explore perceptions of health eating and establish baseline experiences and understanding. Focus groups were also carried out with participants and non-participants. These had similar objectives as the

interviews as well as additional information about a particular cook and eat course that had been completed. Participant observation was utilised to observe and assess the impact, both perceived and measured, of the programme. Self-completed diaries recorded food consumption of the participants and their families to measure the extent of change during and after completion of the course. Content analysis of magazines, newspapers and other literature relating to food and health put local information into context.

Although initiatives varied, there were commonalities in the processes involved in setting up:

- *Finding suitable locations with appropriate facilities*
- *Funding for food* (National Lottery Charities Board) gave flexibility and autonomy.
- *Transporting and storing food and equipment*; required funding
- *Compliance with health, hygiene and safety requirements*
- *Timing and childcare*; free childcare was a facilitator
- *Publicity*; the best form of advertisement was word-of-mouth
- *Free access*

Other practical considerations:

- Each initiative worked with small groups of people
- All recipes used food available on the estate were familiar to local people

General reasons for attendance:

- *Free sessions*
- *No charge for food*
- *Could take meals home for family to try*
- *Recipes and advice tailored to individuals and groups*
- *Familiar foods used*
- *Free childcare*
- *Small groups and informal atmosphere*
- *Activities useful and enjoyable*

It became clear that an holistic approach to healthier eating was needed. Constraints were also around confidence to try new foods and methods. An informal approach was used and the participants were asked what they would like to do and to know about. They were also encouraged to ask questions and make suggestions.

Cook and Eat groups:

Almost 100 women attended 20 courses and groups over the 3 years. Agreement was made on what to cook the previous week and meetings were held in the kitchens. Halfway through sessions the groups stopped for coffee and a chat. This was used to discuss issues around feeding the family or other questions that were raised. Suggestions for recipe improvement were also discussed, as well as certain ingredients that were not liked by the women or their families. Groups were informal and friendly with lots of laughing. Those that were more accomplished cooks helped the others and all helped with washing and tidying up. At the end the women had created a main course and pudding for 4 people that they could take home. They were also given a laminated copy of the recipe to put in their folder.

At the first session there was a discussion with the Family Nutrition Worker. The aim and content of these were agreed and a researcher also attended. Questionnaires were administered to collect data on shopping and eating behaviour. This was used to tailor the course to particular needs of the group. Data on eating behaviour was collected again to measure any changes. There was discussion around why changes had or had not been made.

Data from a postal questionnaire to attendees of the 'Family Food and fun Day' revealed that some women wanted help to lose weight. After discussions it was agreed to set up a Healthy Eating and Exercise course.

The group of 7 women met weekly for 10 weeks. The women asked to be weighed each week to monitor their own progress. Most kept a record of what they had eaten the previous week and this diet sheet was discussed with the FNW. Over the 10 weeks people did make changes in their own and their families' diet. They also reported improved sense of well being. Half of the women experienced weight loss and none gained weight.

Work with mothers of babies and young children:

There was concern by health professionals that some young mothers living on the estate were very isolated and would appreciate having somewhere to meet and ask about feeding themselves and their babies. A group was set up in two Community

Centres. Women attended weekly between 10am and 12.30. There was a play period for the children and the mothers would look after the remaining children whilst a group went into the kitchen following which the groups would swap over. A crèche worker attended the sessions at Kingfisher to supervise and help.

The Family Club:

As well as activities such as pottery and arts and crafts, some cooking sessions were run weekly by the SFHP for parents and children. Meals were healthy and the ingredients locally sourced. They were popular, and recipe booklets were distributed to parents. Parents commented on how nice it was not to have to cook once during the week.

Family Food and Fun Day:

Most people wanted a wide range of information including feeding children, losing weight and feeding the family on a budget. In response, the SFHP set up exercise and healthy eating classes, extended the cook and eat courses and provided a range of information about healthy eating to local residents.

Non-attendance:

Six focus groups were carried out with people who lived on the estate but did not use the SFHP (2 groups of mothers with children under 5; 2 groups with mothers of school age children; 2 groups of grandmothers). The groups were chosen to represent people with different routines and pressures.

Findings:

- More information would be useful about understanding the information on food labels. If they had a specific question on healthy eating they would ask their GP.
- Women in the groups said they were too busy to attend.
- Around half of the women had heard about the course, mainly through the fun day. Word of mouth seemed the most important form of advertising – the majority stated that hearing good things about the course from friends would encourage attendance.
- Younger mothers were the least confident cooks and were most enthusiastic about 'cook and eat' courses. These were the most dissatisfied and bored with the foods they cooked.

- The more experienced cooks were on the whole satisfied with the foods they cooked and ate. They were interested in some new ideas and in losing weight.

Findings from the Saffron Food and Health project

- School holidays were identified as a problem due to lack of childcare or because feeding children an extra meal whilst not at school was hard to fund.
- Shopping locally was more expensive but saved on bus fares. The women spent 30% less than the amount required (according to the Family Budget Unit 1998) to feed a family of 2 adults and 2 children per week an acceptable diet.
- Almost 75% said they wanted new ideas for feeding the family as well as some suggestions on how to make ends meet. Almost 2/3 wanted to be able to prepare quick and healthy meals. Almost 50% said they wanted advice and information about eating more healthily; their concern was for their children.
- Many of the women did not own kitchen equipment such as scales or oven dishes. To overcome this, the SFHP provided dishes to take home, and sold equipment at cost price.

Meal patterns:

- After attendance, more women were eating healthy meals than before. 20% had not previously eaten breakfast; this was reduced to 8%. Participants were eating lunch and dinner more often for a variety of reasons.
- Changes attributed to 'being more interested in cooking' and having different ideas for what to cook. They used recipes that they had cooked or were given during the project.

Patterns of food consumption:

- Almost 2/3 were now eating fruit and 3/4 eating vegetables at least once a day.

Making dietary changes:

- Over half of attendees were interested in finding out about healthy eating.
- Prior to the project 30% had not made and did not intend to make any changes to their eating behaviour, and a further 18% hoped to make some changes but had not attempted to do so as yet:

- After the project more of the women had tried and succeeded to make changes to their own and their families' eating behaviour. Over 2/3 were currently trying to change what they ate and no-one who wanted to make changes was unable to do so. Many of the women were surprised that meals they were cooking were healthier. Some assumed that healthy foods were 'all salads and boring' and that eating healthily increases the cost. They were pleasantly surprised that the recipes they used in sessions incorporated healthy eating guidelines.

Reasons for change:

- The approach used – Practical and informal
- Enjoyment and confidence
- Experimenting – being able to try meals before having to buy them. This minimised waste and encouraged experimentation.
- Familiarity – use of familiar, locally produced foods.
- Appropriate foods – some guidelines used foods that the women said they could not afford
- Opportunity for discussion

Participants described most changes they had made as 'small'. This included eating less fried foods and processed meat products, eating more bread, rice and pasta, fruit and vegetables. On average participants had made 9 changes to their diets; the main changes were increased fruit and vegetable consumption, eating more starchy foods and pulses and eating fewer fried foods, processed meats and sweets. Though small, the cumulative effect of these changes was substantial.

Other outcomes:

Many participants looked forward to attending particular activities and commented on the social aspect of the project. For some women they were an opportunity to talk with adults without children being around. They were able to exchange ideas, as well as pass on advice and information to each other. A noticeable feature was the friendly and helpful atmosphere. For some women the project represented the first step in deciding to take other courses and acquire new skills and gave the confidence to move on.

Author's comments:

The reality is that many professionals find themselves trying to implement a hybrid version of community development which has the same time and resource implications but also imposes strict targets and specifies particular outcomes. In so many instances the organisational and structural frameworks remain the same and do not allow flexibility or resources they require to fully incorporate a community development approach into their working practice. These difficulties are compounded when funding agencies fail to acknowledge the importance of wider social outcomes

Gray *et al.* 2009 (Case series with qualitative process evaluation)

Gray *et al.* investigated the impact of a 12-week weight management intervention aimed at men (the Camelion weight management programme) on the weight loss, waist circumference reduction and BMI reduction of men living in a deprived community, using a case series design with a qualitative process evaluation. The aim of this study was to evaluate and consider the extent to which the Camelion model has reached its target population; the characteristics of the participants; weight loss outcomes; and participants' views of the programme.

There were four main components of the Camelion programme: 40 minute appointments at two men's health clinics in different locations (one weekly and the other monthly); a pre-programme assessment; the weight management programme; and post-programme meetings. The 40 minute men's health clinic appointments also served as a method of recruiting to the programme. Baseline data was collected at the pre-programme assessment (which lasted 20 minutes and during which the programme was explained by a community nurse) and follow-up data was collected immediately post-programme (short-term) and at post-programme meetings (long-term).

Within the weight management programme, groups of no more than 12 men met weekly for twelve weeks, for one hour in the evening. The programme was modelled on an initiative from NHS forth valley dieticians and adhered to SIGN and NICE recommendations, which emphasise using behavioural modification techniques to achieve a balanced healthy diet, increased physical activity and a moderate (0.55-1kg per week) weight loss, ideally in a group setting with trained staff. Throughout the programme, it was stressed that the programme was not a diet but a way of facilitating long-term changes. The programme was made more 'male-friendly' by including an emphasis on portion size and nutrition, 'masculinisation' of exercise advice (e.g. an emphasis on endurance, strength and competition), use of humour,

use of quizzes and games, illustrating mid-point weight loss using sandbags, a full session on alcohol and de-emphasising the link between food & emotions.

The authors reported on the content of each session of the programme in detail. Session 1 provided an introduction and overview of the programme, with emphasis on the need for commitment. A food diary was also distributed at this session, for use on two days the following week. Session 2 involved demonstrations of a healthy balanced diet and appropriate portion sizes, using the food plate model and real foodstuffs. In session 3, the men were given examples of daily eating plans and motivation, confidence and support from others were discussed. Physical activity was discussed in session 4, with importance, possible barriers, goal-setting and application for a free pass for local authority sports centres covered. Session 5 focused on the role of alcohol in weight management, covering myths about alcohol and drink goal-setting. Session 6 concentrated on the psychology of behaviour change in weight management, and a previous programme completer attended the group. Weight and waist measurements were taken at the mid-point of the intervention duration, the purpose of which was probably motivational only, as these measurements were not reported in the findings. Each man's own personal weight loss as recorded in session 6 was given out in session 7 in the form of sandbags, and the group discussed progress thus far, continued motivation and confidence. Session 8 focused on ways of making favourite meals healthier at home, in restaurants and in takeaways, and recipes were used. Session 9 examined choosing healthier options using nutritional labelling on food packaging, including a wallet-sized guide. Weight loss tips and becoming more active in family food shopping were discussed. In session 10, the group discussed common myths about eating healthily, reasons for eating and ways of dealing with relapses, and a food diary was also distributed at this session, to be completed the following week. This was compared with the week 1 food diary in session 11, as evidence of the change in eating habits to maintain motivation, and the importance of physical activity was re-stated. In session 12, short-term follow-up (end point) weight and waist measurements were taken, managing weight in the long-term was discussed and invitations were extended to attend the organised post-programme meetings.

Males living in a community in the top 20% of the most deprived communities in Scotland were recruited over the period of November 2002 to May 2007. Sixty-one percent of the sample were recruited at GP practices through an extended consultation with a men's health nurse; no information was reported on how the

remainder were recruited. Clinic attendees were invited to join the programme if they had a BMI ≥ 30 or a waist ≥ 102 cm (≥ 40 "), 42% (770) of whom met these criteria.

The impact of each intervention on weight loss, waist circumference reduction and BMI reduction were assessed objectively using measurements taken. Measurements were taken at baseline (pre-programme), short-term (12 weeks from baseline; immediately post-programme) and long-term (one to 49 months after the programme), however only change data (e.g. weight lost) was reported; mean values at baseline and follow-up periods were not reported. Means and ranges were reported for weight loss, waist circumference reduction and BMI reduction were reported, however baseline and follow-up values were not reported and no tests of statistical significance were conducted. The percentage of programme completers who had gained weight, remained stable and lost $<5\%$, $\geq 5\%$ and $\geq 10\%$ of their baseline weight was reported, however again no statistical analyses were conducted.

The authors found a mean short-term (end of 12-week programme) weight loss for completers of 4.98kg (range = lost 17.20kg to gained 2.60kg), mean waist circumference reduction of 7.53cm (range = lost 27.50cm to gained 3.00cm) and a mean BMI reduction of 1.29 (range = lost 5.46 to gained 2.24). On the whole, it seems that more weight, centimetres and BMI points were lost than gained, although without baseline and follow-up mean values or statistical analysis it is difficult to interpret this data. In terms of short-term (end of 12-week programme) weight change, the authors report that 6.3% of completers gained weight, 5.1% remained stable (within 0.5kg of their baseline weight), 44.3% achieved a weight loss of less than 5% of their baseline weight, 35.4 achieved a weight loss of 5-10% and 8.9% lost 10% of their baseline weight or more. These data suggest that the majority of those who finished the programme achieved a moderate weight loss, however again without statistical analysis it is not possible to determine with any degree of certainty whether this is due to the intervention or chance. The authors also reported an average long-term weight loss of 3.7% baseline weight (range = 32.6% weight loss to 25.6% weight gain). Compared with pre-programme weight, 14 participants weighed less, two were stable (± 0.5 kg) and four weighed more, however no further detail was reported and again no statistical analyses were conducted.

The findings of this study should be interpreted with consideration of its many methodological limitations. Reliance on existing databases meant group attendance figures were incomplete and, therefore, the attendance rate of completers is unknown. Missing data made it difficult to track all weight management group attendees back to the Men's Health Clinic, probably producing a conservative

estimate of reach. In addition, the sub-sample who provided long-term weight loss outcomes is likely to be unrepresentative, probably consisting of more motivated individuals, with no follow-up of those not enrolled in the programme. As mentioned earlier, change figures were reported instead of baseline and follow-up data, and no statistical analyses were conducted, making it difficult to determine with any degree of certainty whether this is due to the intervention or chance. In addition, average long-term weight loss of 3.7% may not be representative as change values ranged from 32.6% weight loss to 25.6% weight gain. Finally, 'long-term' follow-up was defined as occurring between one and 49 months post-programme, which raises questions about the comparability between participants of long-term follow-up data identified by the authors.

In terms of acceptability of the intervention, it was deemed important that groups were men-only, and that the programme was not aiming to enforce a reducing diet. Some men attended out of pressure from family members. Generally, participants were pleased that the programme didn't focus on weight loss, and they appreciated having choices in regards to programme design. The use of humour was also welcomed. Many men found the use of sandbags to represent mid-way weight loss a useful way of maintaining motivation. Support from other members of the group was also valued.

Participants considered the positive actions about food choices (e.g. reducing portion sizes, grilling, etc.) had helped both short and long-term weight management. Learning to understand nutrition labels on food packets was also useful. Participants and their wives stated that increasing physical activity levels had been effective for losing and maintaining weight. However, the men didn't want to become too thin; most agreed that their ideal weight would be in the overweight range.

The main reason for adhering to the programme was out of enjoyment. Men also found the programme educational and valued the rapport with the community nurse leader. Suggested reasons for dropping out of the programme included holidays, work commitments, health problems, not losing enough weight, boredom, and feeling out of place.

A number of wives stated that the men's involvement had influenced other family members (including themselves). Some women had followed the programme alongside their husbands. In some households children had snacked less and the whole family had started to eat more fruit and vegetables or to take more exercise.

Lowther *et al.* 2002 (Two parallel randomised controlled trials)

Lowther *et al.* report on two parallel RCTs that assess the effectiveness of a fitness assessment and an exercise consultation. The two interventions were not directly compared; rather each was assessed in its own RCT. The aim of the research was to assess the impact of each intervention on physical activity over one year in non-regularly active participants living in a socially and economically deprived community.

The fitness assessment intervention consisted of a single session that involved measurement of height, mass, blood pressure, strength, flexibility, lung capacity and cardio-respiratory fitness. These measurements were then used to develop an exercise programme. In addition, participants were given vouchers allowing them free use of various local sports facilities for the course of the study, including a swimming pool, badminton courts, a golf course and a fitness gymnasium. No information was reported on the duration nor who delivered the fitness assessment. The control group had their height and body mass measured, following which they were given a short explanation of the study and information on physical activity ('Hassle Free Exercise' booklet, Health Education Board for Scotland, 1994) and any questions were answered regarding the study or physical activity participation. Control group participants received the same vouchers as the intervention group, and were also given the option of receiving the intervention at the end of the study period.

The exercise consultation intervention was delivered in the form of a single session lasting 30 minutes conducted by the researcher, and involved a discussion of becoming more physically active on a regular basis. The authors cite the article by Loughlan and Mutrie (1995) as the source for their exercise consultation. According to Loughlan and Mutrie (1995), an exercise consultation involves: discussing the client's current and past activity to understand their likes and dislikes; asking the client to complete a decision balance sheet prompting them to consider potential gains and losses of becoming more active, and encouraging the client to arrive at the view that the gains outweigh the losses; discussing perceived barriers and ways of overcoming them; assisting the client in setting short-term, intermediate and long-term goals, tailored to the client's needs with consideration of their personal motivations and barriers. As with the fitness assessment intervention, participants were also given exercise vouchers allowing them free use of local swimming, badminton, golf and fitness facilities. Control group participants in the exercise consultation RCT were treated the same as control participants in the fitness assessment RCT.

Residents of two socially and economically deprived housing estates in Kilmarnock were mailed application forms inviting them to participate in the study. Of 3000 forms sent, 12.3% volunteered to participate in the study. Participants were given the option of volunteering for either intervention, following which they were block randomised (block size of two) to the intervention or control group for the RCT of the intervention of their choice, by blinded coin tossing between pairs of forms. Data from participants who were regularly active and not regularly active at baseline were analysed separately, and the current paper reports data on those not regularly active.

The impact of each intervention on physical activity levels was assessed using the Scottish Physical Activity Questionnaire (SPAQ) in terms of minutes per week⁻¹ of leisure-time physical activity. Measurements were taken at baseline, four weeks, three months, six months and one year. Differences in intervention choice for activity status and dropout rates were reported as secondary outcomes.

Group by time data were analysed separately for each test phase using a two-way ANOVA: intermediate (baseline, four weeks and three months); and long-term (three months, six months and one year). Analyses were also undertaken separately for each RCT. The authors found no change in the pattern of activity between the groups across time for either the fitness assessment RCT or the exercise consultation RCT, at either the intermediate or the long-term test phase.

Change from baseline to one year post-test in each of the four groups was also examined using four one-sample t-tests. Of these, only the exercise consultation intervention group showed a significant increase in physical activity at one year post-test ($t_{21}=3.43$, $p<0.05$), which was still present when examined by intention to treat ($t_{39}=3.09$, $p<0.05$). The authors suggest this indicates a lack of attrition bias.

In terms of the secondary outcomes, the authors found significant differences in activity status distribution when comparing interventions ($X^2_1=5.03$, $p<0.05$). The authors identified that exercise consultations could have long-term benefit to those not regularly active, with no evidence for any long-term benefit of fitness assessments to those not regularly active, implying that exercise consultations may be a more suitable intervention for this population. In addition, significant dropout rates between at least two groups were identified ($X^2_3=8.49$, $p<0.05$), and confirmatory tests indicated that the fitness assessment experimental group had higher dropout rates than did the exercise consultation experimental group.

Methodological limitations identified by the authors include the possibility of interventions being discussed and compared, since volunteers came from close-knit

communities, the possibility of attrition rates impacting on long-term differences between groups and that statistical analyses revealed several exceptions where normality was rejected. Other limitations include a low recruitment rate (12%), which raises the possibility of selection bias, little detail on recruitment being reported and longer-term effects of the intervention (i.e. beyond a year) were not examined. Finally, physical activity levels were self-reported, raising the possibility of errors such as inaccurate recall and recording, misunderstandings about physical activity and fluctuations in activity levels.

McKellar *et al.* 2007 (n-RCT)

McKellar *et al.* (2007) conducted a n-RCT comparing baseline, 3-month follow-up and 6-month follow-up data in an intervention group (n=75) with a control group (n=55). The study was conducted in Glasgow, UK and allocation to group was pragmatic, based on participant availability for participation in the intervention. The aim of the study was to examine the feasibility of a Mediterranean-type diet intervention among females with rheumatoid arthritis living in areas of social deprivation. The authors also aimed to examine the impact of the intervention on changes in lifestyle, rheumatoid arthritis activity (not reported in this review) and cardiovascular risk. Data on cardiovascular risk (systolic and diastolic blood pressure, total and high-density lipoprotein (HDL) cholesterol, body mass index) and dietary assessment (food frequency questionnaire (FFQ), intake of fruit, vegetables and legumes (from which a composite score of the weekly number of servings of each was calculated, additional questions about fruit intake, intake of monounsaturated and saturated fats) were collected during clinical assessment visits.

The intervention consisted of a 6-week cookery course, delivered in the form of weekly 2-hour sessions, delivered by nutritionists, teaching staff from local colleges and occupational therapy staff, who provided advice on aids for food preparation. Throughout the course an emphasis was placed on the Mediterranean-type diet, which involved increased fruit, vegetable and legume consumption and substituting saturated fat with monounsaturated fat (i.e. olive oil, spreads containing olive oil). Sessions contained information about food hygiene, nutrition and where to access affordable ingredients locally, hands-on food preparation and a folder was given to each participant containing information on a Mediterranean-type diet, healthy eating and recipes. The 6-week cookery course cost £84 per person.

Data analysis was conducted using a Wilcoxon matched-pairs signed ranks test to assess changes from baseline to the 3-month and 6-month follow-up time points. In terms of dietary outcomes, the intervention group had increased their fruit, vegetable and legume intake from baseline (mean portions/week = 23.5) to 3-month follow up (mean portions/week = 36) ($p=0.016$), however there was no significant difference in the fruit, vegetable and legume intake of the control group from baseline (mean portions/week = 21.5) to 3-month follow-up (mean portions/week = 23) ($p=0.84$). In addition, there was also a significant increase in the proportion of monounsaturated fats relative to saturated fats in the diet of the intervention group from baseline (mean ratio of monounsaturated fats to saturated fats = 0.86) to 3-month follow-up (mean ratio of monounsaturated fats to saturated fats = 0.92) ($p=0.22$), but no significant difference in the proportion of monounsaturated fats relative to saturated fats in the diet of the intervention group from baseline (mean ratio of monounsaturated fats to saturated fats = 0.82) to 3-month follow-up (mean ratio of monounsaturated fats to saturated fats = 0.83) ($p=0.726$).

In terms of cardiovascular risk outcomes, there was a significant drop in the systolic blood pressure (BP) of intervention group participants from baseline (mean systolic BP = 132 mm Hg) to 6-month follow-up (mean systolic BP = 128 mm Hg) ($p=0.016$) (3-month follow-up mean systolic BP = 130 mm Hg), but no change in the systolic BP of control group participants from baseline (mean systolic BP = 130 mm Hg) to 3-month follow-up (mean systolic BP = 129 mm Hg) or 6-month follow-up (mean systolic BP = 130 mm Hg) (not significant, p -value not reported). Neither group showed any significant change in diastolic BP, total cholesterol, HDL, weight, or BMI.

A number of limitations should be considered when interpreting the findings of this study. The authors suggest that the FFQ contained a limited number of fruits and vegetables and participants may have increased their intake of items not listed in the FFQ. Additional limitations include the potential for allocation bias as allocation to group was based on participants' availability on the dates of the cookery course, the lack of a statistical baseline comparison of groups on demographic or key outcome variables, no statistical comparison of groups across time (e.g. analysis of variance) and participants in the intervention group were more likely to be in the most deprived social classes.

Rankin *et al.* 2006 (Process Evaluation)

Rankin *et al.* carried out an evaluation of Healthy Living Centre (HLC) food initiatives in 6 Scottish sites with varying range of activity. The aim of the research was to

understand intervention implementation issues in order to inform best practice. Methods included individual and group interviews, observation and continuous contact with providers.

Findings:

- Each case sought to devise or support an initiative according to the needs of local users, with the HLC aims of enhancing social inclusion, skills and influencing food accessibility.
- Food and food work was used to address inequalities and improve health.

Using food as a tool to promote social inclusion:

- Free food was an incentive to attract and increase the uptake of users to services such as dance classes, aromatherapy, etc.
- Food co-ops encouraged social engagement and a forum to obtain advice on, for example, housing.
- Affordable food was available, with plans to encourage local people to engage with food growing and food markets.

Influencing the accessibility of quality food choices:

- Services sought to improve accessibility to healthy food choices by improving retailing and retailing structures.
- Services brought together healthy food at affordable prices in an accessible way using food co-ops and virtual food co-ops, and 'fruit barras' which provide subsidised fruit that has been purchased by the HLC, delivered to a pick up point and then distributed to groups.
- There was collaboration with businesses to provide free food that is near its sell-by date.
- Collaboration with businesses was developed in order to allow workers to provide leaflets and advice on specific healthy foods in their premises.
- Barriers included user's negative associations of the work with the government 'healthy eating' policies.

Using food as a method to enhance knowledge and develop skills:

- Food preparation classes were used as a vehicle to provide education about how to source food and prepare a healthy meal, and on topics such as obesity and nutrition.
- Food is used to train users in food hygiene and food handling techniques. Courses run to instruct on buying affordable healthy foods and provide recipes and directions to other sources of information.

The authors conclude that it could be argued that HLCs are activating the policies of the time (1999) which were more about changing individual behaviour than attending to structural and planning issues. This limits the HLC sites abilities to widen the reforms beyond local measures.

Rankin *et al.* 2009 (Mixed method evaluation)

A range of qualitative methods including interviews, discussion groups and observation was used by Rankin *et al.* to explore how practitioners involved in 6 Healthy Living Centre (HLC) programmes conceptualised 'health inequalities' and applied the construct to legitimate their public health and health improvement work.

Findings:

Practitioners' perspectives on health inequalities: putting explanations into practice:

- The incorporation of food and eating activities, while originally intended to improve physical health, were increasingly delivered by practitioners in a format that was perceived to improve social contacts.
- Multiple approaches were used tackle barriers to access, appropriateness of services, lifestyles, social exclusion/capital and poverty.
- Class-related issues, such as the avoidance of stigma, were considered to be important for ensuring uptake.

Promoting health improvement while avoiding stigmatisation:

- Several HLCs highlighted the difficulty of marketing their activities as 'health improvement'. In part this was a consequence of adopting a social model of health but there were also problems in being explicit about a health focus with certain target groups.
- Through engaging with different cultural or 'classed' outlooks, most HLC practitioners worked more indirectly to effect health relevant changes and

avoid appearing to sit in judgement on existing practices. Just being identified as a target group could be seen as stigmatising.

- Instead, 'personal empowerment' was quickly seen as an important part of promoting services focused on lifestyle change. This was the preferred way of enhancing the HLC's appeal to the target community.
- All HLCs faced the challenge of avoiding the generation of feelings of stigma that might be associated with, and prevent uptake of, services. This could be seen as conflicting with notions of targeting particularly disadvantaged and hard to reach groups.

Allowing time to develop rapport with target groups:

- All HLCs highlighted the challenge of the length of time taken to become familiar with, and accepted by, communities and groups. In rural communities, coordinators were seen to be the "glue" that engaged the community in services.
- Co-ordinators in several sites discussed the time pressures of their roles but emphasised the increasing importance of relationship building when working with disadvantaged clients.

The challenge of measuring 'success':

- The challenge of quantifying the impact of HLC interventions was universally recognised. Often only 'anecdotal' information could be collected. For instance, practitioners felt that asking participants for information about themselves, in order to provide relevant statistics, could be experienced as intrusive, stigmatising or offensive.

Practitioners were responding to their own roles in the everyday interactional aspects of class and feeling uncomfortable about the behaviours expected of them. The need to account for success conflicted with the imperatives to avoid surveillance or pressure on beneficiaries and to respect their privacy. Most HLCs felt that quantitative measures of 'success' did not adequately capture the social outcomes or "bigger picture". Many grappled with the difficulty of providing evidence that they had made a 'measurable' difference to clients' lives. For practitioners working with social disadvantage, small successes could be perceived as major achievements.

Health inequalities as moving targets: insider knowledge and outsider influences:

- Responses to tackling health inequalities were variable across time and between HLCs. This variability resulted from uneven learning about target groups and their changing needs, a changing policy agenda and different routes to achieving sustainability.

Adopting more focused approaches to targeting specific need:

- The broad community-wide approach was criticised, whilst future refinements would aim to ensure that greater attention is given to specific disadvantaged groups, maximising the impact of developed relationships and working skills:
- Changes were proposed in response to learning how inequalities experienced by the target group might be better addressed.
- Drawing links between employment and well-being aimed to assist users in become productive. This in turn would increase their 'status' within society.

Discussion

The authors state that future initiatives established to work with socially disadvantaged groups might consider broader forms of service delivery and normalising of social contact, which foreground more traditional health improvement work such as promoting healthy eating messages. In addition, a greater focus on social elements should be considered, in particular when local and programme evaluations to determine effectiveness are being designed.

Restructuring of local amenities

Cummins *et al.* 2005 (prospective quasi-experimental study)

A prospective study was carried out by Cummins *et al.* (2005) utilising a quasi-experimental design that compared baseline and follow up data in an intervention community (n=174) with a matched comparison community (n=199) in Glasgow, UK (total n=412 at follow-up; response rate 68.4%). The aim of the study was to assess the self-reported effect of a 'natural experiment' on daily fruit and vegetable consumption, where one portion of fruit was defined as one medium sized piece of fruit, and one portion of vegetables as the equivalent of 3 tablespoons of vegetable or one medium bowl of salad. Self reported psychological health was measured using the GHQ-12 questionnaire. The intervention comprised of the introduction of a new food hypermarket in a deprived Scottish community. The control group was another deprived community in the same city, where no new food hypermarket was

introduced. Postal questionnaires were sent pre-intervention and after one year, to both intervention and control participants.

When assessing changes in means for each group using t-tests, both groups reported a slight increase in mean vegetable intake, mean fruit and vegetable intake and mean fruit intake, however this increase (of 0.35 to half a portion) was only statistically significant in the control condition for vegetable intake (mean at baseline = 2.16; mean at 1 year = 2.41; $p=0.01$) (intervention group means at baseline and 1 year = 2.06 and 2.21 respectively) and fruit and vegetable intake (mean at baseline = 4.16; mean at 1 year = 4.60; $p=0.003$) (intervention group means at baseline and 1 year = 3.92 and 4.91 respectively). There were no significant changes in the prevalence of fair to poor self-reported health in each group, however the intervention group reported a significant decrease in the prevalence of poor psychological health (mean at baseline = 38.6; mean at 1 year = 26.47; $p=0.017$), whereas there was no significant change among the control group (mean at baseline = 26.63; mean at 1 year = 25.79).

When modelled using an ANCOVA model, there was no evidence for an effect of the intervention on mean fruit consumption (-0.03, 95% CI -0.25 to 0.30), mean vegetable consumption (-0.11, 95% CI -0.44 to 0.22), and fruit and vegetables combined (-0.10, 95% CI -0.59 to 0.40). The significance of these effects was not reported, and since the confidence intervals span the value of zero, these effects are not likely to be statistically significant. For self reported health, the unadjusted odds of having fair to poor health increased among respondents in the intervention community (OR 1.29, 95% CI 0.86 to 1.93, not statistically significant).

There was no evidence for a change in psychological or self-reported health. The unadjusted odds of having poor psychological health slightly increased in the intervention group compared with the comparison group (unadjusted OR 1.04 95% CI 0.65 to 1.66, not statistically significant). The adjusted odds of having fair to poor self rated health rose (OR 1.52, 95% CI 0.77 to 2.99, not statistically significant) showing that the proportion of respondents with fair to poor self-reported health increased in the intervention area compared with the comparison area during the follow up period. The odds of having poor psychological health were reduced (OR 0.57 95% 0.29 to 1.11, not statistically significant).

Again, this study was limited by the use of self-report methods for assessing fruit and vegetable consumption, which are open to errors in recall, reporting, understandings of portion size and daily fluctuations in dietary behaviour. The authors also suggest

that the study may have been prone to selection bias as the response rate to the postal questionnaire was low (15%), and the study had low power to detect a true effect. In addition, intention to treat analysis did not appear to have been conducted.

Thomson *et al.* 2003 (Qualitative Evaluation)

Focus groups were carried out with a total of 81 residents in 2 Scottish areas; one where a swimming pool had been closed and another where new pool facilities had been opened. The loss of facilities was reported to have affected social capital at least as much as health - though mental health was linked to the extent to which appropriate social capital was accessible. Women had used the centre for keep fit sessions and saw this as healthy as well as social (though they also reported smoking and visiting the chippy on the way home). There was reference to a need for interaction in order to keep depression at bay, as many faced financial stresses and needed to talk to others. Residents living in the vicinity of the new pool mirrored the advantages of the centre - mainly social interaction.

Wrigley *et al.* 2003 (Case series)

Wrigley *et al.* 2002 (Case series)

The study focuses on a local authority housing estate of approximately 15,000 households (38,000 population), 6km to east of the city centre, and rated among the top 5% deprived wards in England. With some variability in sub-areas, the area is generally low-income, deprived, and white, epitomizing areas that failed to share in the revitalisation of the local economy. Traditionally, a central shopping centre was the focus in the 1960s, which had become degraded by the 1990s. Extremely poor levels of food retail was provided per household (70% beyond walking reasonable (500m) distance of a retail outlet selling a modest variety of healthy foods), with an average distance travelled pre-intervention >2.5km.

Tesco sought to develop the district centre around a superstore plus 10 units in 1998; 230 out of 320 jobs went to long-term unemployed residents. Each wave of the data collection involved diary and questionnaire completion (household composition, benefits, income, education, work, disabilities, health issues, smoking, attitudes to healthy eating, food-store choice, mode of travel to stores, car ownership / access, perceived constraints on choice of foods bought). The sample was biased toward being female, older, non-working, low income, low education.

Analysis pre-intervention showed poor diet (low fruit and vegetable consumption) to be associated with young respondents, heavy smokers, typically with children, one or two markers of deprivation, with negative attitudes to healthy eating. Those with a poor diet were also most likely to have access problems and display coping mechanisms for dealing with this.

Following the intervention, 45% switched to Tesco as their main food retail source (35% as the main source for fruit and vegetables). Travel distance fell to 0.98km with the main travel mode walking compared to bus or taxi previously, and 60% increased their intake of fruit and vegetables.

The reasons that respondents (45% / 276) gave for switching to the new store were 'easy to get to' (79%), 'near to home' (67%) and convenience. Those that did not switch expressed concerns about 'expensiveness' (28%), and the store's size and layout (21%).

Average fruit and vegetable consumption was measured in terms of portions per day, and the change in this variable was not assessed from before to after the opening of the new store among the whole sample. Instead, change among subsamples were analysed (although the differences in changes among the subsamples was not compared statistically). Consumption of fruit and vegetables in those who switched to the new store significantly increased (although by much less than a whole portion a day) in the intervention group (mean number of portions per day at baseline = 2.66; mean number of portions per day at 1 year = 2.89; $p=0.034$), whereas there was a slight but non-significant decrease in the consumption of non-switchers (mean number of portions per day at baseline = 3.07; mean number of portions per day at 1 year = 2.94). Distance to the new store did not appear to moderate changes in fruit and vegetable consumption. Among those who switched to the new store, a significant increase in consumption was detected in those with initially low levels of fruit and vegetable consumption, and among those who did not switch to the new store, a significant increase in consumption was detected in those with initially low levels of fruit and vegetable consumption, with a significant decrease in consumption found among those with initially higher levels of fruit and vegetable consumption.

The authors suggest that their findings may have been influenced by selection, in that questionnaire respondents may have differed from non-respondents both at baseline and 1-year follow-up. The issue of low response rates may have been compounded by the lack of an intention to treat analysis, which can over-inflate estimates of effect. In addition, the lack of a comparison condition is a limitation of

this study, as there may have been other factors influencing fruit and vegetable consumption among urban deprived communities in Leeds than retail availability of fruit and vegetables. Again, this study was limited by the use of self-report methods for assessing fruit and vegetable consumption, which are open to errors in recall, reporting, understandings of portion size and daily fluctuations in dietary behaviour.

The authors conclude that diet improved with switching to the new store, and particularly for those near to a limited range or budget store, with proximity to the new store, and for those with previously poor diets. However, there are concerns that supermarkets are piggybacking into development sites. Also, the increase in fruit and vegetable consumption was modest and remained below recommended levels. A combination of population and individual level interventions is recommended in order to access the homogeneous nature of dietary behaviour.

Restructuring of health prevention worker roles

Kennedy *et al.* 1999 (Descriptive evaluation)

The aim of this study was to evaluate the role and impact of 'community nutrition assistants' (CNAs) on access to local community dietetic services, and changes in determinants of healthy eating. Lay community members are trained to assist professionals with tasks such as accessing local groups or individuals with the aim of encouraging increased service use by hard to reach groups. The aim is not to educate, rather to overcome barriers to eating healthily. The initiative was evaluated using interviews and monitoring records of 8 CNAs (1 male, 11 female) work diaries at two points in time during a six month period.

Preliminary findings:

- Modifications to the training programme and work experience are needed in terms of increasing inclusion to meet different needs, clarifying the CNA role at recruitment stage, and alternating an extended programme between theoretical and practical sessions so that the two are related.
- An average of 5.5 hours a week was worked with at least half of this time spent with contacts or community members. The number of contacts made during the first quarter was 244 (groups or individuals).
- There was more activity in terms of food related events aimed at local needs, and an average of 260 people per month came into contact with CNA

work. CNAs were more flexible in regard to working patterns than food and health advisors (FHAs) and were therefore more accessible.

- CNAs had good knowledge of their neighbourhood, local food and health issues, and existing groups. Typical contacts were schools, Mums, food co-ops, slimming groups and hard to reach groups such as elderly, disadvantaged and ethnic minorities.
- More than half of contacts spoken to during telephone interviews reported having made changes to their eating and shopping habits as a result of taking part in activities ranging from discussion of food issues to shopping and cook and taste sessions.
- Satisfaction with the CNA service was high (87% rated 'good' or 'very good'). Available time and a practical approach were cited as positive attributes. A local person was seen as more approachable, more empathic, as well as more trustworthy than a health professional.

The authors comment that CNAs have unique attributes which are useful for overcoming barriers between health professionals or the health system and local communities. The type of people they contacted was at higher risk of nutritional problems. There are potential problems however regarding boundaries between professional and lay status – training may alter the status of a 'lay' member and no longer be perceived as 'one of us'. There should be clear guidelines as to what CNAs cannot do and where referrals are necessary. Small changes at community level can have significant effects – the CNAs had 4 times as many contacts as the FHAs.

Views, beliefs and attitudes toward healthy eating and physical activity

Coleman *et al.* 2007 (Interviews)

In-depth interviews were carried out with a large sample of 15-19 year old girls of which 23 were aged 18 or over and therefore inclusive for this review question. The study highlights that participation in physical activity later in life can be influenced in childhood, with school activities an opportunity to discover talents. Conversely, girls that do not perceive that they have sporting capabilities, or that they do not 'look the part' physically, or do not like the images associated with sporting activity (e.g. clothing) will not be motivated to continue to participate after leaving school. This is significant for over-18s, as leaving school is a transitional stage where sport might

cease due to work commitments, new social scenes, low energy levels, time limitations.

The authors recommend propositions to increase uptake of physical activity in young women, given the findings:

1. To provide encouragement and guidance for families to be more supportive toward their children's sports and physical activity participation (even if they are not frequent participators)
2. More friendship-focussed interventions promoting sports and physical activity, which are inclusive of all friends in the group irrespective of their own abilities.
3. Provision of more women-only sessions or facilities to reduce anxieties over self-consciousness.
4. Provide enhanced support to young women during key transitions in their lives where levels of sports participation may be affected.

Daborn *et al.* 2005 (Interviews)

This paper is linked to Dibsall (2002) and Dibsall (2003). It reports the findings of interviews with 11 men (mean age 48.1, all white) from the same population as the women interviewed in Dibsall (2002) - housing association tenants in Norwich.

Findings

- Similar to the interviews with women in terms of influence of previous experiences, though men seemed to be nostalgic for the cooking of significant women in their lives, with their own cooking being influenced by these memories.
- Available information often seen as overwhelming, possibly providing an excuse to ignore it, yet it was also reported by some as vague and leaving the men needing more.
- Concern over environmental effects on food; scientists given less credence in terms of knowledge than family and friends.
- Men differed from the women in their emphasis on work as a means of independence and self-esteem - though the authors do not expand on this in terms of the association with food. Men were also less likely to be interested in 'New Age' ideals, and were more likely to take risks with their health - the

authors propose a rationale for this - that men have stronger physiques and are generally required to be less nurturing.

- Living alone was associated with a degree of apathy compounded by fatalistic attitudes to health.
- There was no evidence that a lack of knowledge or affordability were associated with poor nutrition.

Dibsdall et al. 2002 (Interviews)

This qualitative study is linked to the Dibsdall survey and Daborn study of interviews with men. All three papers are based on work carried out in Norfolk, the same geographical area and during the same time as EPIC, the large epidemiological study. The three papers describe part of a long-standing investigation by the Institute of Food Research into attitudes, beliefs and behaviours of tenants renting from a major Housing Association (3500 homes) toward food and health issues. This paper focuses on data from 14 interviews with white, 40-60 year old women (mean age 51) using Interpretative Phenomenological Analysis (IPA) methods.

The three main driving themes were:

1. Egocentric system: effects of experiences, family, friends, social and organisational systems:
 - *Healthy Lifestyles*
 - *Life-course influences on diet*
 - *Habitual behaviours*
 - *Food as low priority*
2. Information Characteristics:
 - *Information overload*
 - *Sources of information and trust*
 - *Information on healthful eating*
 - *Suggestions to improve communication*
3. Issues of Control:
 - *Fatalism*

- *Ill health and loss of control:*
- *Control of food supply*
- *Budgetary control*
- *Control over what they eat*

Gough & Conner 2006 (Interviews)

Semi-structured interviews were conducted with 24 men of white collar and blue collar profession as part of a previous study (Povey *et al.* 1998; not included in the review), which focused on definitions of healthy eating and motivation to change diet. Gough and Conner re-analysed the data using open-ended thematic analysis, with techniques from grounded theory methods, focusing on participants' responses to the following questions:

- How would you describe your diet?
- Do you think that ideas about healthy eating have changed during your lifetime?
- What do you think would be the advantages of healthy eating for you?
- Imagine you decided to make changes to your current diet to make it healthier—what changes would you make?
- Can you think of any health problems, which might be related to what people eat?

Findings:

Themes were relevant to white and blue collar workers, however only the data relating to blue collar workers has been included in this review. Three core themes were identified: (1) practical constraints; (2) an intrusive health lobby – prompting resistance and reclaiming healthy eating as a personal choice; and (3) healthy eating as monotonous and insubstantial – but necessary when physically vulnerable.

Practical constraints:

- Time and expense were cited as obstacles to a more healthy diet, with time constrained by work commitments and lifestyle choices.
- The authors felt that this theme did not require close attention due to already being prevalent in the literature.

An intrusive health lobby – prompting resistance and reclaiming healthy eating as a personal choice:

- Media messages were perceived by blue collar men with scepticism and uncertainty, and were sometimes perceived as having a political and cost-saving motivation.
- Government campaigns were perceived as excessive in nature, with some men seeing them as ‘brainwashing’ people, especially children.
- The blue collar men valued personal preference and pleasure over government advice, and upheld the right to eat food viewed as appealing by deemed unhealthy by government advisors, normalising the consumption of ‘treats’ such as chocolate and the occasional binge.
- The authors commented that conventionally masculine virtues of reason, autonomy and control prevailed, with the preservation of individual agency through the containment of irrational forces from external sources.

Healthy eating as monotonous and insubstantial – but necessary when physically vulnerable:

- A key objection to health foods was that they don’t taste as good and fail to satisfy, with many participants expressing a preference for ‘bad foods’, and the perception of healthy eating as ‘boring’ could be a major barrier to dietary change.
- Unhealthy dietary habits were defended on the grounds of good current health status – the men saw their diets as healthy because they did not have any health problems.
- Since healthy eating was viewed as less tasty and less appealing (described by one participant as ‘starving myself’), the men favoured other forms of health protection, principally sport and exercise.
- With one exception, an unhealthy diet was the norm within the context of heavy industry, structured by ‘masculine’ ideals such as physical toughness and prowess, which seems incompatible with opportunities for healthy eating.
- In general, food that was enjoyed by participants is that which was perceived to be denounced in a health conscious climate, whereas in the past eating habits were less under scrutiny.

- When a healthier diet was adopted, the main reason was due to the intervention of medical authority, in particular advice delivered in an individualised, direct manner.

Lawrence *et al.* 2009 (Focus Groups)

Focus groups were held with 42 women of lower educational attainment (i.e. up to GCSE level; plus 14 women of higher educational attainment – not reported on in the current review) to identify and provide an insight into factors that influence their food choices. The discussion focused on environmental, social, historical and psychological factors.

Findings:

Environmental factors:

- The cost of food in relation to other priorities was seen as a barrier to healthy eating, in particular the belief that healthier food was more expensive, which appeared to be perpetuated by marketing strategies used by supermarkets to place special offers on chocolate and cakes but not on fruit and vegetables.
- The cost of the waste generated by buying food that their families would not want to eat was also considered a barrier to healthy cooking and eating.
- Boredom due to extra time on their hands was given as a reason for unhealthy snacking during the day, as they felt they had less control over their eating being in an environment where food was nearby than when they had previously worked.
- Conversely, however, many women also reported not having the time to cook healthy meals, and many were aware of the apparent contradiction. The main reason for not having the time to cook appeared to be due to the pressure to feed hungry children.
- Access to food shopping was also regarded as a barrier, with particular access issues including the perceived stress of shopping with young children, navigating round shops with pushchairs and coping with bored and demanding children. Pushchairs often broke while being manoeuvred onto buses or bearing the weight of the shopping, and getting small children, pushchairs and shopping to the top of high rise flats when the lifts were

broken was also problematic, which led to women buying less fruit and vegetables, which they perceived as heavy.

Social factors:

- There did not appear to be much support from other family members when the women tried to feed them a healthier diet, with the women feeling limited by the position adopted by family members on what they would and would not eat, thus the women often gave up on providing healthy food and eating healthily.

Historical factors:

- Women of lower educational attainment reported not being taught to cook at home and generally lacked the opportunity to observe healthy eating practices, for example because their mothers cooked either a limited range of foods or did not allow them into the kitchen due to the pressures of cooking for a large family.

Psychological factors:

- The women did not perceive much control over food they provided to the household, since other family members appeared to determine what the family would or would not eat, including very young children.
- Rather than face a daily battle, the women often felt it was easier to meet such demands, however unreasonable or costly.
- There was a sense among those who attempted to gain control over the family's eating habits that they did not always feel positive about it, which undermined their motivation to provide a healthier diet for their families and therefore themselves.
- The control of food choices by other family members also negatively impacted on the women's dietary quality, as they were generally not prepared to cook food separately for themselves.
- Negative affect was prevalent in the dialogue of women of lower educational attainment, in the sense that some did not value themselves highly enough to cook, choosing to snack or eat nothing.
- The women also appeared to have a negative body image and were conscious of being overweight, which the authors speculate may be due to the diet they were consuming.

- Partners' beliefs of healthy foods as related to weight loss (e.g. "I ain't fat, you are. I don't need to diet") contributed to their unwillingness to try such foods.
- Self-efficacy was also a pertinent psychological issue; many women lacked confidence in their ability to cook, although some were more confident and enjoyed experimenting with food, regardless of the outcome.
- Many women also lacked confidence in being able to meet the recommended healthy eating guidelines for fruit and vegetable intake, and sometimes misinterpreted them as eating five portions of fruit a day, which they believed was futile.
- While the women discussed 'good' and 'bad' food and their consequences with health, the women were not very explicit about the link between good nutrition and long-term health, with eating patterns more often described in terms of losing weight rather than aiming for health improvement.
- Healthy eating was generally not seen as a high priority, and women were often more concerned about providing their children rather than themselves with a diet that would ensure good long-term health.

The authors suggest that many of the factors identified appeared to be related, equating healthy eating with dieting and valuing health outcomes for their children but being inhibited in attempts to make healthier food choices for the family by a perceived lack of control, which may in turn be related to lack of confidence, social support and positive role models, perceived cost and potential waste of healthy food and conflicts between managing relationships and providing healthier meals. The authors conclude that the findings suggest an intervention for women of lower educational attainment would need to increase their sense of control, improve affective state, raise the level of social support from within the family and highlight the important consequences of eating a healthy diet for the women and their families.

Nic Gabhain *et al.* 1999 (Focus Groups)

Focus groups were conducted with male and female blue collar (i.e. lower SES) and white collar workers to assess knowledge and attitudes to coronary heart disease (CHD) and associated risk factors. Data that was specifically reported as being related to blue collar workers was included in the review.

Findings:

- Lack of exercise as a risk factor was not emphasised by blue collar groups generally, particularly among the younger participants, although it was mentioned in passing (e.g. 'lack of exercise').
- Older blue collar women identified the widest variety of barriers to change (e.g. 'A [water] filter is expensive', 'It's habit', 'Fruit coming from foreign countries [is dangerous]', 'Time', 'You're tired when you're finished work').
- Younger blue collar groups were least specific about these likely benefits (e.g. 'longer life', 'feel better after it').

Parry *et al.* 2007 (Focus Groups)

Parry *et al.* used focus groups to explore the beliefs of individuals living in deprived areas of Birmingham (New Deal for Communities (NDC) designated areas) and the Black Country regarding the influence that the area in which they live has on health. In the first session, the term 'health' was not mentioned; the discussion focussed on what it is like to live in the area. Disposable cameras were distributed to participants who then took photos of features relevant to the focus group discussion. A second focus group was held to discuss the meaning of the photos and validate the first discussion.

Findings:

- The authors point to physical structures and social structures as well as service provision as being perceived influences on the participants' health.
- Perceived lack of shops and affordable goods within the local area; local shops were more expensive for fresh food. The cost of using public transport negated savings made in high street and entailed carrying heavy shopping on buses. There was a lack of community engagement; for example, local cafes are not frequented.
- Perception that council personnel do not understand how people in the area have to live, and that other areas are 'better'; that this is unfair.
- Fear of walking to shops or using public transport at certain times of the day because of intimidation by others
- Recognition of the importance of physical exercise, but few would walk in the park or beside a canal for fear of attack.

Price 2004 (Interviews)

An interview study with 30 deprived mothers. Each mother had a child under the age of 3. There is only brief detail given and the findings are mainly relating to other health aspects.

- Regarding diet, mothers prioritised their children and didn't eat unless the children needed to eat.
- Financial constraints limited the extent to which a healthy diet could be provided despite awareness of healthy eating messages.

Exercise from looking after children and household tasks was seen as sufficient

Whelan *et al.* 2002 (Focus Groups)

Whelan *et al.* conducted focus groups with three age groups of women (mothers with younger children, mothers with older school-aged children and elderly participants; only data from the first two groups has been included in the review) from a low SES area with little food provision to develop a deeper understanding of the qualitative nature of 'life in a food desert'. Analysis was undertaken using a descriptive comparative approach. Specific research questions were:

- What factors affected food shopping and purchasing patterns in the pre-intervention period?
- What factors affected food consumption patterns in the pre-intervention period?
- Was healthy eating an issue?

Findings:

Women with younger children:

- Financial constraints, special offers, what the family would eat and convenient foods to cook influenced the foods the mothers bought.
- Money was the main controlling factor, and thus the women preferred to buy cheaper foods such as frozen beef burgers and sausages rather than more expensive pieces of fresh meat, and potatoes, especially frozen chips.
- Many women were wary of wasting money (and energy) on food that their children would not eat, so therefore the same types of food were generally bought every week, with the exception of 'special offers'.

- Very few of the participants mentioned eating pasta or rice, and meals seemed to consist of a processed meat product with potatoes and vegetables, with foods such as pies, beef burgers, sausages, pizzas, baked beans and chips as staples.
- Some women reported deliberately seeking out a cheap, healthy alternative (e.g. stews, corn beef hash and bananas and yoghurts for really young children) to the cheap, unhealthy foods commonly consumed, however others were less concerned about the healthiness of their family meals and gave the children what they wanted.

Women with older school-aged children:

- Quality, convenience and ease of preparation were important in influencing the food that these women bought.
- Slightly more expensive food choices were made that reflected a healthier eating style, for example, although processed meat with potatoes/chips and vegetables were still popular, this group of participants also claimed to regularly eat pasta and rice dishes, which were seen as being healthy and also cheap and easy to prepare.
- Financial considerations, healthy eating considerations, quality issues and convenience influenced the food consumption patterns of women with older children, although the emphasis placed upon these factors varied between individuals and circumstances.

The authors comment that it seems that as their children grew older, the mothers adopted increasingly healthy eating practices and, contrary to their previous beliefs, they could enjoy a healthy and varied diet. The authors found this difficult to explain in terms of circumstances and food available, which were not likely to have changed, but suggested it may be due to children's tastes maturing and becoming less fussy. The authors also noted that many of the mothers with older children may have been disposed towards 'self improvement' including leading a healthier lifestyle as they had been attending a community college.

Withall et al. 2009 (Interviews)

Twenty-seven interviews were carried out with families residing in a UK Neighbourhood Renewal area, and with at least one child under 11 years old. Focus groups were carried out with 8 health professionals working in these areas. The aim

of the study was to examine reported barriers to consuming a healthy diet and engaging in regular physical activity among low-income families with existing issues of overweight or obesity.

Findings:

Availability:

- A public sports centre and swimming pool were lacking within the area. There was a local private health club but this was inaccessibility to local residents.
- Lack of availability of open spaces was reported to be due to safety issues.
- Lack of available activities.
- Some professionals felt that a wider variety of activities were required if more people were to be attracted to carrying out physical activity.
- Lack of availability of healthy foods, especially fruit and vegetables in the locality was an issue for residents and professionals.
- The recent closure of the only local fruit and vegetable shop had a negative impact on availability, although some felt that availability was reasonable.
- The selling of pre-packaged fruit and vegetables in the local deep discounting stores was an issue for some parents on grounds of cost and spoiling.
- The availability of a variety of unhealthy foods such as takeaways and convenience foods were mentioned in terms of their negative impact on the diet of some in the community.

Cost:

- In terms of physical activity, costs were implicated through facilities and transport.
- The relative costs of healthy and unhealthy foods and of energy costs for cooking were an issue.
- Suggestions to overcome barriers included free support offered by exercise and slimming on referral schemes and Healthy Food vouchers.
- Professionals felt that exercise opportunities had to be free or very low cost in order to have an impact.

- The sense that food outlets did not often support healthy eating habits with their pricing strategies. Professionals concurred in this view but some felt that a healthy diet was affordable if other food purchases were re-thought.
- Professionals were very supportive of exercise on referral schemes and were happy to have something to 'prescribe'.
- Referral schemes were often mentioned with enthusiasm by some parents who were currently participating.
- Although the free nature of referral schemes was popular, it was not clear how important cost was compared with the process of being referred and supported in behaviour change.

Perceived helplessness:

- Perceived helplessness was a consistent theme incorporating issues that participants felt impacted on their weight status, but that they were unable to change. These were:
- Metabolism –in response to questions about why people put on weight, examples were given of people who ate badly and exercised little, while remaining slim, while the participant's own 'metabolism led them to gain weight very easily.
- Genetics and family shape – 'taking after' seemed to imply a pre-ordained outcome making sustained change unlikely.
- Lack of time: particularly if employed, improving diet or increasing exercise levels was not currently viable. A small number of parents felt this could be overcome by effective time management and prioritisation, but most participants with young children felt that they were particularly restricted in terms of exercising.
- Childcare and time management - many parents were unable to afford childcare, crèche facilities or were without family in the area, further generating a perceived helplessness and inability to change.

High optimistic bias:

- A high optimistic bias in terms of diet and exercise in favour of participant's own behaviours. Broadly healthy diets, active lifestyles and the positive impact of having small children on their activity levels were reported. Despite

such statements, parents also claimed that having young children restricted their ability to exercise.

Networks and communication channels:

- Family eating habits were widely referenced in terms of learning from their Mum how to cook (or not).
- Where suggestions for activities were made they were often based on existing social networks i.e. within the nurseries and toddler groups.
- Health professionals regarded family networks and influences as negative in terms of activity and eating habits.
- While many parents stated they were keen for more local activities (variety of exercise activities, advice sessions, cooking skills etc.), professionals felt their own efforts to launch these were marred by low turn-out and high drop-out rates.
- Many parents felt there wasn't enough publicity around and were aware of a failure of communication in the broader community.
- Education was viewed as a valuable information source and enabler of awareness and behaviour change. Cooking skills, nutritional advice, government guidelines and labelling were popular topics.

Emotional status:

- Professionals mentioned the prevalence of mental health issues, particularly depression in the area, and its impact on health behaviours.
- Parents did not mention depression or other mental health problems but rather issues of 'boredom', 'stress', and 'comfort eating' leading to weight gain, and 'being stuck in a rut' or 'embarrassed' as reasons for not exercising.

Authors' comments:

Social marketing skills appeared to be needed to increase intervention participation; health and health promotion professionals have few skills in this area.

There is also a need for strategies that provide increased motivation to prioritise shopping for and preparing healthy, quick, inexpensive meals and time – efficient physical activities, crèche facilities, etc.

Wood et al., 2010 (Interviews)

Interviews were carried out with 46 mothers of children 16 years and under to explore understanding of health-promotion recommendations for healthy eating. The women lived in a deprived area of Wales.

Findings:

Awareness of Healthy Eating Messages:

- Thirty-two of the 46 mothers associated poor diet with ill-health. The basic slogans of health promotion in relation to diet were known by these mothers and had entered into their everyday language. The 5-a-day slogan was sometimes seen as impractical and thus a joke.
- Television was the most frequently mentioned source of information about diet, with mothers referring to prime-time programmes that discuss family nutrition and that had provided a stimulus for learning about food and nutrition.
- Some mothers were proud of their responsible attitudes to family nutrition, explaining how they planned and prepared family meals. However, descriptions of such food were at odds with official recommendations for healthy eating.

Barriers to Making Dietary Changes:

- Most mothers stated that an unhealthy diet was one of the main reasons for poor health. They also recognized that their diet was often unhealthy.
- Individual responsibility for diet and health was resisted by mothers who stressed the importance of personal choice and pleasure above the nutritional value of their family's diet.
- A reduction in immediate quality of life was perceived to be the downside to healthy eating. Personal preference and pleasure were valued above government advice. Health promotion advice was sometimes mocked for its austerity.
- Bad food was acknowledged as generally bad for physical health, but it was also viewed as a treat that one earns at the weekend or after a hard day's work and thus normalized as part of everyday life. Mothers from across the range of social class categories saw eating foods that could be considered a poor diet as a coping strategy that could serve to improve other aspects of family well-being.

- Good food was discussed as flavourless, boring, and associated with self-denial.
- Reported obstacles to making changes to diet were limited time, money, cooking skills, and restrictions on the availability of healthy food close to home. The emphasis was on convenience.
- Partners and children constrained food choices and forced mothers to compromise between notions of nutritional adequacy and the family's food preferences.

Interpretations of Healthy Eating Messages:

- Mothers in the sample possessed a basic understanding of healthy and unhealthy food, but misunderstood information about some aspect of the food or about how to incorporate healthy changes into their eating habits.
- In comparison with other lifestyle behaviours, such as smoking, where the message is clear, promotion of healthy eating was seen as complex. Mothers struggled to make sense of how to eat healthily, particularly in relation to sugar content and categorisation of fats.
- Some mothers had misinterpreted the generalized message of the importance of eating a balanced diet, which incorporated the notion of balancing good food with bad food and was therefore very different from official definitions, although the authors state that both definitions of balance (spread and equilibrium) could be valid.

The authors state that advice about diet and nutrition, received from a variety of agencies including the media, was being personally modified to make it more acceptable to the recipients.

Wormald *et al.* 2006 (Evaluation)

Evaluation of a GP referred physical activity programme (Active Lifestyles) for at-risk individuals (e.g. obese, sedentary, other conditions such as arthritis and back pain). The programme consists of 6 monthly sessions. Five focus groups were carried out to explore perceptions of the service. Some participants claimed to have gained weight following smoking cessation. Awareness of the programme was low among the public, and participants reported that health professional awareness was also low. Some expected an authoritarian approach, were anxious, and were pleasantly

surprised that this was not the case. There were suggestions that awareness could be raised by placing posters and leaflets in community spaces, and by use of local radio.

Findings:

- Most participants did not attend all 6 sessions. Regular monitoring and the keeping of diaries were regarded as motivational, and an informal approach was appreciated.
- Access for some on public transport was a barrier.
- Facilitating factors included the opportunity to discuss health issues outside the consultation setting, which felt time-constrained. Other activities were signposted from the programme.
- The personality of the AL advisor who provided a counselling approach, was caring, sincere, supportive and knowledgeable. This helped people to feel cared about, and had a positive impact on their own confidence.
- Physical activity was gradually developed, allowing individuals to work to their own capabilities.
- Most participants felt more active as a result of the programme, having made small significant changes to their physical activity levels.
- Some participants had influenced their family and friends, who were now taking part in similar activities.
- A range of benefits had been noted, including increased mobility, less joint stiffness and more toned muscles. Many mentioned weight loss or maintenance. The programme also supported other lifestyle changes such as healthy eating, smoking cessation and stress management.

The authors recommend that such programmes require sufficient staffing and funding, with time allocated to meet demands. Advisors require appropriate skills, knowledge and an empowering approach. Programmes need to be well publicised, including information as to what can be expected. Activities need to be built up gradually, and links to other activities and advice health behaviours need to be made available.

Nutritional / dietary knowledge and behaviour: Findings from cross-sectional studies.

Dibsdall et al. 2003 (Survey)

The authors surveyed 680 low-income men and women aged 17-100 years (Housing Association tenants) in Norfolk using a questionnaire based on the qualitative findings in Daborn (2005) and Dibsdall (2002) (these three papers are from the same study). There was a 23% response rate, and six factors were found to explain 59.4% of the total variance (choice, health, affordability, change, organic, transport). Only 18% claimed to eat the recommended 5+ fruit and vegetables per day; 49% claimed to eat less than 2 portions per day; 22% claimed to eat some organic foods, 6% claimed to be vegetarian.

Findings:

Gender:

Differences in men and women's attitudes toward healthy eating differed significantly ($p < 0.05$), but only for 'change'. Women therefore more willing to consider eating more fruit and vegetables for health reasons and would consider cutting out other foods to do so.

Age:

Participants in increasing age groups were more likely to believe they were eating healthily and enjoyed eating fruit and vegetables than younger groups ($p < 0.001$). However, the eldest group (outside the scope at 71-100) were less likely to consider changing their diet and were most likely to use public transport.

Employment:

Retired participants were more likely to strongly agree that they ate enough fruit and vegetables for their health than any other group. Jobseekers believed they had greater difficulties buying more fruit and vegetables than those employed full or part time ($p < 0.001$).

Marital status:

Single participants perceived they had less choice in the fruit and vegetables they could buy than those married or living with a partner. They were also less likely to believe they enjoyed or ate enough fruit and vegetables for their health. Widowed participants were more likely to agree they were eating healthily and found fruit and vegetables more affordable, and were more likely to use public transport.

Access to food:

45% had no access to a car for shopping; 71% of these still thought supermarket shopping was easy to do. 20% of them did not think the bus was affordable; only 32% claimed to eat 5+ fruit and vegetables per day yet 72% still believed they were healthy. 90% of sample used supermarkets; 79% shopped once or more than once a week. 23% regularly used the bus for access, 15% taxis, 10% had shopping delivered.

Affordability:

66% did not think that the cost of healthy foods would represent a large barrier to healthy eating, and 73% thought they ate healthily anyway. Less than half of those that did not think they ate healthily believed that lack of money was a factor. It was more of an issue for those on jobseekers or sick leave. 76.5% thought that fruit and vegetables were affordable where they shopped and less than 5% complained about the price. Yet 53.5% thought that buying more fruit and vegetables would be difficult on their budget (mainly jobseekers).

Motivation to eat healthily:

Participants claiming to eat 0-2 portions of fruit and vegetables perceived they had less choice than those claiming to eat 5+ ($p < 0.001$). The greater the number of portions perceived eaten, the greater they agreed that they were eating healthily and that they would like to eat more organic food. Those claiming to eat 5+ portions tended to be aged 51-70, and mainly women and widowed, whilst those claiming to eat 0-2 tended to be young, single, male, smokers and jobseekers.

McPherson *et al.* 2004 (Survey)

McPherson *et al.* carried out a survey of 55 Scottish low-income men participating in a larger longitudinal study. The Nutritional Knowledge Questionnaire was completed by the sample and analysed in terms of the number of questions wrongly answered by >60% of the sample.

Findings:

- Concerns of the Scottish government about nutritional intake in this group are confounded by the lack of knowledge shown. In particular, consumption of fat was regarded as too high in Scottish men, whilst the amount of complex carbohydrate was seen as too low.

- Responses to the questionnaire highlight confusion over dietary terms such as 'polyunsaturated fat' and 'monosaturated fat'. The respondents seem to have confused type of fat with amount of fat so that 'low in polyunsaturates' may be read as 'low in fat', when in fact, the total amount of fat is the same.
- Complex carbohydrates may be seen as unhealthy, when in fact they need to be a major part of a balanced diet.

The authors (though cautiously) maintain that marketing has a responsibility in making sure messages are not confusing to lay people who may not be aware of nutritional complexities.

Ogilvie *et al.* 2008 (Survey)

A postal survey of 1322 inhabitants of deprived urban neighbourhoods in Glasgow was conducted to examine the contribution of putative personal and environmental correlates of active travel and overall physical activity behaviour among these people. The median age of respondents was 48 years (range 16-89), 61% were female, 47% were employed, 52% lived in owner occupied accommodation, 41% lived in social rented accommodation, 48% had no car, 40% had one car, 25% reported difficulty walking for a quarter of a mile, 39% reported a long-term health problem or disability and 50% were overweight (median BMI 25.1 kg/m²).

Findings:

Travel behaviour:

Respondents recorded about an hour's travel per day on average (mean 61.5 minutes, median 50.0 minutes), of which a minority was spent using active modes of transport (walking or cycling: mean 20.0 minutes, median 10.0 minutes). 304 respondents (28%) recorded at least 30 minutes of active travel, of whom 294 (97%) recorded at least 30 minutes of walking.

Physical activity:

Respondents reported a mean of 318 minutes' walking per week and a mean estimated total physical activity energy expenditure of 3000 METminutes per week. Only 316 respondents (38%) were categorised as having achieved a 'high' (i.e. sufficient) level of physical activity.

Correlates of active travel:

Active travel was significantly associated with being younger, living in owner-occupied accommodation, not having to travel more than four miles to work, having access to a bicycle, not having access to a car and the absence of any difficulty walking.

Correlates of physical activity:

Physical activity was significantly associated with living in social-rented accommodation, not being overweight and the absence of any difficulty walking.

Parmenter & Wardle 2000 (Survey)

Parmenter and Wardle undertook a survey of 1040 English residents in 3 clusters (GP practice areas) to establish the extent of nutritional knowledge by demographics.

Knowledge increased with education level and Socioeconomic Status level, and was higher in middle years than in younger and older participants. It was also higher in women than in men.

Knowledge was particularly vague in the areas of polyunsaturated fats, monounsaturated fats, and the importance of consuming sufficient complex carbohydrate. Links with disease were clearer in terms of heart disease, and the majority linked high sugar consumption with diabetes. There was low awareness of the guidelines for eating at least 5 portions of fruit and vegetables per day.

The authors conclude that marketing messages need to be clearer and that there is a need to target low educated and low SES groups in order to bring their level of awareness up.

Other important factors may be the knowledge - behaviour gap, influenced by taste, affordability, access to fresh food, and habit, or family preferences.

Creating diet and health campaigns built on scientific 'rational' thinking may not be effective for many of the public who do not relate easily to this 'world'. For example, many people do not know what a portion is, do not count how many portions they eat, and do not conceptualise risk factors especially when projected decades into the future. The public is not as highly engaged with health issues as are health professionals. Centrally processed information is more likely to be assimilated than peripherally processed information. The latter was how many of the women saw nutrition and health information.

The problem for promoters was the gap between knowledge and behaviour; a key construct linking diet to feared diseases was 'vulnerability, i.e. the person needs to feel at personal risk from the threat before performing the behaviour. Most believe they already eat healthily (optimistic bias), so that health messages are targeted at those more vulnerable than themselves. People are generally less likely to worry about health hazards over which they have some control, and this includes healthy eating. More fearful is contamination of food.

Contrary to some reports, access and affordability were not major barriers for these women, apart from the case of organic food and buying 'more' food. However, this could be an artefact of this sample.

Women were in the 'non-contemplation' phase of the trans-theoretical model (consistent with optimistic bias). Such individuals are difficult to reach. Stereotyping and treating all low-income groups as one entity should be avoided. There is a need to be aware of the egocentric systems of those being targeted for health promotion.

Appendix 6: Evidence Tables

Effectiveness studies

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes																								
<p>Author: Ashfield-Watt, Welch, Godward, Bingham</p> <p>Year: 2007</p> <p>ID: 281</p> <p>Citation: Effect of a pilot community intervention on fruit and vegetable intakes: use of FACET (Five-a-day Community Evaluation Tool). <i>Public Health Nutrition</i>, 10, 671-680</p> <p>Aim of study: To assess the success of pilot initiative in improving awareness,</p>	<p>Source population/s: UK urban deprived populations. Intervention - residents in five deprived areas that were on the electoral roll. Control participants in the European Prospective Investigation into Cancer and Nutrition (EPIC) study in Norfolk.</p> <p>Eligible population: Individuals for intervention group selected in selected areas by random stratified sampling method. No other criteria specified other than being on electoral roll and living in identified deprived area.</p>	<p>Method of allocation: Not applicable.</p> <p>Intervention/s description: Aimed to increase fruit and vegetable intakes in five deprived communities by improving awareness, attitudes and access to fresh fruits and vegetables. These initiatives involved building community networks to achieve and sustain increased fruit and vegetable intakes through collaboration between retailers, educators, primary care teams, employers and local media.</p> <p>Control/comparison/s description: No attempts made to influence fruit and vegetable consumption.</p> <p>Sample sizes: Total n= 1554 Intervention n= 1284 Control n= 270</p> <p>Baseline comparisons: Control group subjects were</p>	<p>Primary outcomes: General awareness of local efforts to encourage people to eat more fruit and vegetables.</p> <p>Fruit & vegetable intake, measured using a short dietary/attitude questionnaire, The Five-a-day Community Evaluation Tool (FACET). Subjects were requested to indicate on a 5-point scale (0 to 4+ portions day) how often they consumed certain foods at various meal times during the previous day. Nine of the 14 questions are relevant to the assessment of fruit and vegetable intakes. FACET</p>	<p>Primary outcomes:</p> <p>Fruit & vegetable intake:</p> <p>Median total fruit and vegetable intakes decreased significantly over one year in the control group (-0.4 portions per day, $p<0.01$), but there was no significant change in total fruit and vegetable intakes in the intervention group. Fruit intakes did not significantly change in either group, but there was a small reduction in median vegetable intakes in both groups ($p<0.05$ intervention, $p<0.01$ control), possibly indicating a trend towards greater fruit & vegetable intakes in individuals who demonstrated awareness of the initiatives, whether in terms of beliefs or access to fruit & vegetables.</p> <p>Median (IQR) total fruit & vegetable intakes:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>4.0 (3,6)</td> <td>4.0 (3,6)</td> <td>NS</td> </tr> <tr> <td>Ctrl</td> <td>5.5 (4,7)</td> <td>5.0 (4,6)</td> <td><0.01</td> </tr> </tbody> </table> <p>Median (IQR) fruit intake:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.0 (1,3)</td> <td>2.0 (1,3)</td> <td>NS</td> </tr> <tr> <td>Ctrl</td> <td>3.0 (2,4)</td> <td>3.0 (2,4)</td> <td>NS</td> </tr> </tbody> </table>	Grp	Pre	Post	Sig	Int	4.0 (3,6)	4.0 (3,6)	NS	Ctrl	5.5 (4,7)	5.0 (4,6)	<0.01	Grp	Pre	Post	Sig	Int	2.0 (1,3)	2.0 (1,3)	NS	Ctrl	3.0 (2,4)	3.0 (2,4)	NS	<p>Limitations identified by author: Comparative data were available for the control group only at a single time point; therefore the repeatability of the FACET was not addressed in this study. Control group subjects were not matched to the intervention group on certain key factors such as smoking habit, age and residential area that are known to influence dietary behaviour.</p> <p>Limitations identified by review team: The study does not indicate if the control site was similar to the deprived areas of the intervention</p>
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<p>attitudes and access to fresh fruit and vegetables.</p> <p>Study design: Non-randomised controlled trial</p> <p>Quality score: +</p>	<p>Selected population: 62.5% (975/1560) of intervention group and 77.3% (309/400) of intervention group eligible populations participated. No information reported as to the representativeness of the eligible population in the selected population.</p> <p>Excluded population/s: None specified</p> <p>Setting: Five deprived areas (not specified) were compared to a control group comprising participants in an unrelated study based in Norfolk</p> <p>Year: Not stated</p>	<p>older on average than intervention group subjects and smoked less (males 69 vs. 49 years, females 67 vs. 50 years respectively; current smokers 6% vs. 28% respectively; all comparisons P <0.001).</p> <p>Study sufficiently powered? Yes</p>	<p>values were validated against a food diary.</p> <p>Part 2 of the FACET questionnaire concerned health beliefs relating to fruit and vegetable intakes: optimum fruit and vegetable intake levels; perceptions of current fruit and vegetable intakes; and perceived ability to change intake.</p> <p>Secondary outcomes: None reported</p> <p>Measurement points: Baseline & follow-up (1 year after the start of the intervention)</p> <p>Methods of analysis: Within groups, pre- and post-intervention intakes were compared using Wilcoxon's test. Between-group differences were compared by the Mann-Whitney or</p>	<p>Median (IQR) vegetable intake:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.0 (1,3)</td> <td>2.0 (1,3)</td> <td><0.05</td> </tr> <tr> <td>Ctrl</td> <td>3.0 (2,3)</td> <td>2.0 (2,3)</td> <td><0.01</td> </tr> </tbody> </table> <p>Mean (SD) total fruit & vegetable intakes:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>4.8 (2.6)</td> <td>4.6 (2.5)</td> <td>NS</td> </tr> <tr> <td>Ctrl</td> <td>5.6 (2.1)</td> <td>5.1 (2.1)</td> <td>NS</td> </tr> </tbody> </table> <p>Mean (SD) fruit intake:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.3 (1.7)</td> <td>2.3 (1.6)</td> <td>NS</td> </tr> <tr> <td>Ctrl</td> <td>2.8 (1.5)</td> <td>2.7 (1.4)</td> <td>NS</td> </tr> </tbody> </table> <p>Mean (SD) vegetable intake:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.5 (1.5)</td> <td>2.3 (1.5)</td> <td>NS</td> </tr> <tr> <td>Ctrl</td> <td>2.7 (1.2)</td> <td>2.4 (1.3)</td> <td>NS</td> </tr> </tbody> </table> <p>Secondary outcomes: None reported</p> <p>Attrition details: 165 intervention group, 39 control group were lost to follow-up</p> <p>Beliefs & access:</p> <p>General awareness of local efforts to encourage people to eat more fruit and vegetables was similar</p>	Grp	Pre	Post	Sig	Int	2.0 (1,3)	2.0 (1,3)	<0.05	Ctrl	3.0 (2,3)	2.0 (2,3)	<0.01	Grp	Pre	Post	Sig	Int	4.8 (2.6)	4.6 (2.5)	NS	Ctrl	5.6 (2.1)	5.1 (2.1)	NS	Grp	Pre	Post	Sig	Int	2.3 (1.7)	2.3 (1.6)	NS	Ctrl	2.8 (1.5)	2.7 (1.4)	NS	Grp	Pre	Post	Sig	Int	2.5 (1.5)	2.3 (1.5)	NS	Ctrl	2.7 (1.2)	2.4 (1.3)	NS	<p>group.</p> <p>Evidence gaps and/or recommendations for future research: N/A</p> <p>Source of funding: Department of Health</p>
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			independent t-test, as appropriate. Associations between categorical variables were assessed using the chi-square test.	in the intervention and control group (21%). The proportion of subjects who agreed strongly (indicated by selecting 5 on a 5-point Likert scale) that fruits and vegetables are protective against (a) coronary heart disease, (b) cancer, (c) digestive problems and (d) overweight increased in the intervention group. However, there was no significant difference in the proportions of intervention and control group subjects who increased, decreased or maintained their baseline agreement level for each condition (all P > 0.05 by chi-square test, means/median values not reported).													
<p>Authors: Baxter, Milner, Wilson, Leaf, Nicholl, Freeman & Cooper</p> <p>Year: 1997</p> <p>Citation: A cost-effective, community based heart health promotion project in England: prospective comparative study. BMJ, 315, 582-585.</p> <p>Ref ID: 5022</p>	<p>Source population/s: Urban (?) communities with a high incidence of CHD. Typical non-teaching health district.</p> <p>Eligible population: Questionnaires were mailed to a randomly chosen sample of named adults from the Rotherham Family Health Services Authority population age-sex register. The follow-up survey involved a similar approach but sent to a different</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: Action Heart health promotion intervention – conducted in adjacent communities of Swinton and Wath; used several recognisable health promotion approaches:</p> <ul style="list-style-type: none"> • Behaviour change: Attitude and behaviour change to encourage adoption of healthier lifestyles. Examples of interventions include stop smoking support, weight control clinics, healthier eating activities (no further detail reported) • Educational: Information about cause and effects of factors detrimental to health, exploration of values and attitudes, development of skills required for healthy 	<p>Primary outcomes: Self-completed questionnaire to assess risk factor status using a self completed questionnaire covered:</p> <ul style="list-style-type: none"> • Personal details • Sources of health information • Personal history of blood pressure and cholesterol measurement • Family health history • Diet • Exercise • Smoking <p>Questions were chosen on the basis that they had</p>	<p>Primary outcomes:</p> <p><u>Univariate analysis</u></p> <p>Smoking decreased in the intervention area between baseline and follow-up but increased in the control area: the difference in smoking prevalence between the two areas increased from 4.2% at baseline to 9.2% at follow-up. The only other marked difference in risk factor prevalence between the areas was for low fat milk consumption, which increased by 7.6%.</p> <p>Active smoking:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect % (95% CI)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>32.2 (495)</td> <td>28.8 (417)</td> <td>-24.5 (-39.4 to -6.1)</td> </tr> <tr> <td>Ctrl</td> <td>36.4 (511)</td> <td>38.0 (578)</td> <td></td> </tr> </tbody> </table>	Area	Pre	Post	Est effect % (95% CI)	Int	32.2 (495)	28.8 (417)	-24.5 (-39.4 to -6.1)	Ctrl	36.4 (511)	38.0 (578)		
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<p>Aim of study: To determine whether a community based coronary heart disease health promotion project, undertaken over four years, was associated with changes in the prevalence in adults of lifestyle risk factors known to affect the development of coronary heart disease, and to estimate whether such an approach was cost effective.</p> <p>Study design: Prospective, comparative study (?)</p> <p>Quality score: +</p>	<p>random sample; the proportions of mailed questionnaires were adjusted to try to achieve equal numbers of respondents in each of the four age-sex subgroups (males & females aged 18-40 & 41-64) based on baseline survey response rates. (The authors argue that it was not practical to follow the cohort of individuals identified in the baseline survey due to cost, although this would have increased statistical power.) 1887 questionnaires were mailed to each area, assuming an 80% response rate. The representativeness of the eligible population to the source population was not reported.</p> <p>Selected population: At both baseline and post-</p>	<p>living, e.g. 'My Body Project', 'Look After Yourself' courses, information leaflets, library resources (no further detail reported)</p> <ul style="list-style-type: none"> • Empowerment: Working with health issues, choices and actions which clients identify, e.g. 'Action Heart Club' (no further detail reported) • Medical: Promotion of medical intervention to prevent or ameliorate health problems, e.g. blood pressure screening, Action Heart body checkups, nicotine patch scheme (no further detail reported) • Social change: Political/social action to change physical/social environment, e.g. Institutional Action Heart charters (no further detail reported) <p>Control/comparison/s description: Area of Maltby, similar record for CHD and similar socioeconomic composition. No health promotion intervention was undertaken. The authors report that the distance between intervention and control areas was sufficiently far to minimise contamination.</p>	<p>previously been used in postal questionnaires; were free from bias and ambiguity; were appropriate for the Action Heart survey; had content validity; and were the subject of previous research.</p> <p>The smoking measure assessed:</p> <ul style="list-style-type: none"> • Whether or not respondents smoke (inc. living/working in smoking and smoke-free areas and attitudes towards a smoking ban) • Whether the respondent smokes daily or occasionally • Whether they smoke cigarettes, cigars or pipes • Number of years as a regular smoker • Whether or not they have tried to quit • Desire to give up smoking 	<p>Passive smoking:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect % (95% CI)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>41.8 (495)</td> <td>28.8 (417)</td> <td>-7.6 (-28.8 to 19.8)</td> </tr> <tr> <td>Ctrl</td> <td>49.2 (450)</td> <td>42.4 (397)</td> <td></td> </tr> </tbody> </table> <p>Wholemeal bread:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect % (95% CI)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>23.6 (368)</td> <td>25.0 (355)</td> <td>9.2 (-11.7 to 35.1)</td> </tr> <tr> <td>Ctrl</td> <td>17.2 (247)</td> <td>18.9 (283)</td> <td></td> </tr> </tbody> </table> <p>Low fat spreads:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect % (95% CI)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>61.8 (963)</td> <td>66.0 (946)</td> <td>-1.1 (-19.4 to 21.5)</td> </tr> <tr> <td>Ctrl</td> <td>58.0 (831)</td> <td>62.5 (937)</td> <td></td> </tr> </tbody> </table> <p>Low fat milk:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect %</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Area	Pre	Post	Est effect % (95% CI)	Int	41.8 (495)	28.8 (417)	-7.6 (-28.8 to 19.8)	Ctrl	49.2 (450)	42.4 (397)		Area	Pre	Post	Est effect % (95% CI)	Int	23.6 (368)	25.0 (355)	9.2 (-11.7 to 35.1)	Ctrl	17.2 (247)	18.9 (283)		Area	Pre	Post	Est effect % (95% CI)	Int	61.8 (963)	66.0 (946)	-1.1 (-19.4 to 21.5)	Ctrl	58.0 (831)	62.5 (937)		Area	Pre	Post	Est effect %					
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	<p>intervention, high response rates of 82-86% were reported. (Precise response rates for each group at each time point were not reported.)</p> <p>Excluded population/s: Those not living in the areas sampled.</p> <p>Setting: Community</p> <p>Year: July 1991 to June 1995.</p>	<p>Sample sizes: Total n=not reported Intervention n= Control n=</p> <p>Baseline comparisons: Not reported</p> <p>Study sufficiently powered? Yes – calculated to detect a 1% change in smoking prevalence.</p>	<p>Milk consumption was assessed in terms of the type of milk usually consumed in the home (options were: whole milk, semi-skimmed, skimmed, other, do not use milk)</p> <p>Secondary outcomes: Cost-effectiveness</p> <p>Follow-up periods: Baseline and post-intervention follow-up (four years post-baseline)</p> <p>Methods of analysis: Univariate analysis to compare the prevalence of lifestyle risk factors between the control and intervention communities from baseline to follow-up, using weighted data to adjust for undercoverage and overcoverage in the 4 age-sex subgroups. The</p>		<table border="1"> <tr> <td></td> <td></td> <td></td> <td>(95% CI)</td> </tr> <tr> <td>Int</td> <td>48.2 (752)</td> <td>71.0 (1038)</td> <td>42.5 (14.8 to 77.0)</td> </tr> <tr> <td>Ctrl</td> <td>53.6 (767)</td> <td>68.8 (1055)</td> <td></td> </tr> </table>				(95% CI)	Int	48.2 (752)	71.0 (1038)	42.5 (14.8 to 77.0)	Ctrl	53.6 (767)	68.8 (1055)				
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				Int	53.7 (836)	52.78 (781)	2.7 (-17.2 to 27.3)													
				Ctrl	52.7 (754)	50.6 (790)														
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				Ctrl	50.5 (697)	57.9 (887)														
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				Int	81.8 (1268)	86.4 (1274)	28.8 (-4.6 to													

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			<p>effect of the intervention on lifestyle behaviours evaluated using multiple logistic regression to model the proportion with a particular behaviour in the study communities as a function of age-group (18-40 or 41-64 years), sex, the year of observation (1991 or 1995), and area (intervention or control). After modelling the prevalence of the lifestyle behaviours for sex, area, and age group separately, the effect of the intervention was measured by comparing the change in the proportion showing that behaviour between baseline and follow-up in the intervention area with the change between baseline and follow-up in the control area, the test being based on the interaction between</p>	<table border="1"> <tr> <td>Ctrl</td> <td>84.4 (1204)</td> <td>85.3 (1317)</td> <td>73.9</td> </tr> </table> <p>Cholesterol:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Pre</th> <th>Post</th> <th>Est effect % (95% CI)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>14.7 (228)</td> <td>29.6 (436)</td> <td>-2.4 (-25.1 to 27.3)</td> </tr> <tr> <td>Ctrl</td> <td>13.1 (186)</td> <td>30.2 (467)</td> <td></td> </tr> </tbody> </table> <p>Estimated effect % = estimated adjusted percentage change in the odds of the risk factor in the intervention group compared with the control group over the study period.</p> <p><u>Multiple logistic regression</u></p> <p>The odds ratio for active smoking in the intervention area at follow-up compared with baseline was 0.83 (95% confidence interval 0.71 to 0.97); in the control area it was 1.1 (0.95 to 1.29). The difference in these odds ratios was statistically significant (2=6.4, P=0.01), providing statistical evidence of an effect for the intervention over all age-sex groups. There was no evidence that the intervention effect differed between the age groups (2=0.33, P>0.5), but weak evidence that it differed for men and women between follow-up and baseline (2=2.6, P=0.11), which the authors say suggests a relative increase in smoking rates for women in the control area but little difference for men.</p> <p>The odds ratio for drinking low fat milk at follow-up</p>	Ctrl	84.4 (1204)	85.3 (1317)	73.9	Area	Pre	Post	Est effect % (95% CI)	Int	14.7 (228)	29.6 (436)	-2.4 (-25.1 to 27.3)	Ctrl	13.1 (186)	30.2 (467)		
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			<p>year and area. Difference in the effect of the intervention between the age groups and sexes was also examined.</p> <p>Outcomes were measured in units of life years gained, estimated from reported changes in smoking status using an epidemiological model. Cost data were collected in two ways. Firstly, data were extracted from financial records kept during the trial which listed actual expenditure over the four year study from a designated budget. Secondly, estimates of non-project staff costs and overheads incurred by the project were measured using diaries and timesheets kept by staff since the launch of Action Heart. Whitley Council pay scale rates were used to estimate the</p>	<p>compared with baseline in the intervention area was 2.58 (2.22 to 3.01) and in the control area 1.81 (1.55 to 2.11; $z=10.3$, $P<0.001$). There was no evidence that the intervention effect differed between the age groups ($z=0.11$, $P>0.5$), but there was weak evidence that it differed between sexes ($z=3.12$, $P<0.05$). There was an approximate doubling in the odds of using low fat milk between baseline and follow-up in men in both the intervention (odds ratio=2.30) and control (1.95) areas; the effect was slightly less for women in the control area (1.68), while for women in the intervention area the odds trebled (2.93).</p> <p>There were no statistically significant odds ratio differences for the other risk factors. An alternative analysis was also done using the baseline values as a covariate in a covariance style regression model. The results were very similar to those presented above.</p> <p>Secondary outcomes:</p> <p><u>Cost effectiveness</u></p> <p>The costs of the Action Heart community project incurred by Rotherham Priority Health Trust are shown in the table below:</p> <table border="1"> <thead> <tr> <th>Resources used</th> <th>Units used</th> <th>Cost per unit (£/hr)</th> <th>Total cost (£)</th> </tr> </thead> <tbody> <tr> <td colspan="4">Action Heart Project Office:</td> </tr> <tr> <td>Community project officer</td> <td>1 worker</td> <td>11.19</td> <td>25 332</td> </tr> <tr> <td>Community</td> <td>1</td> <td>5.38</td> <td>12 439</td> </tr> </tbody> </table>	Resources used	Units used	Cost per unit (£/hr)	Total cost (£)	Action Heart Project Office:				Community project officer	1 worker	11.19	25 332	Community	1	5.38	12 439	
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			<p>value of staff time. Costs relating to the research aspects of the trial were excluded from this analysis. Costs were discounted at the government recommended rate of 6%.</p>	<table border="1"> <tr> <td>project worker</td> <td>worker</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Consumables</td> <td>N/A</td> <td>N/A</td> <td>22 653</td> <td></td> <td></td> </tr> <tr> <td>Other costs e.g. telephone</td> <td>N/A</td> <td>N/A</td> <td>1 300</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td>61 714</td> <td></td> <td></td> </tr> <tr> <td colspan="6">Other NHS staff:</td> </tr> <tr> <td>Meetings</td> <td>889 hrs</td> <td>10.86</td> <td>9 654</td> <td></td> <td></td> </tr> <tr> <td>Events – preparing</td> <td>1663 hrs</td> <td>10.86</td> <td>18 060</td> <td></td> <td></td> </tr> <tr> <td>Events – executing</td> <td>983 hrs</td> <td>10.86</td> <td>10 665</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td>38 379</td> <td></td> <td></td> </tr> <tr> <td colspan="3">Schools expenditure</td> <td>8 681</td> <td></td> <td></td> </tr> <tr> <td colspan="3">Grand total</td> <td>108 774</td> <td></td> <td></td> </tr> </table> <p>N/A = unable to express in terms of cost per unit</p> <p>Overall, 57% of the £108 774 spent went on Action Heart project staff, 35% on other NHS workers, and 8% on schools expenditure.</p> <p>A computer model based on the American Cancer Society's 50 state study on cancer prevention predicts that the median gain in life expectancy for the age group 18-64 years will be 3.5 years (R Anderson, Department of Health). Of the 14 500 people in the intervention area, the authors estimated that 6.9% (1.3 to 12.25) more of them would be active smokers had Action Heart not taken place, resulting in an estimated health gain of 3581 life years in the intervention area.</p> <p>The cost of the project was about £110 000. The greatest area of uncertainty in this figure relates to other NHS costs, which contributed about £40 000.</p>				project worker	worker					Consumables	N/A	N/A	22 653			Other costs e.g. telephone	N/A	N/A	1 300			Total			61 714			Other NHS staff:						Meetings	889 hrs	10.86	9 654			Events – preparing	1663 hrs	10.86	18 060			Events – executing	983 hrs	10.86	10 665			Total			38 379			Schools expenditure			8 681			Grand total			108 774			
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				<p>If these costs had been underestimated by 100% Action Heart would have cost £150 000. This potential underestimate was used as the basis for a sensitivity analysis. If the project cost was accurate the undiscounted cost per life year gained associated with Action Heart was £31; if the cost was in fact £150 000, the undiscounted cost would increase to £42. With a discount rate of 6% the costs would be £117 and £160 respectively. In either case, Action Heart represents good value when compared with other healthcare interventions for a variety of diseases, health checks such as the Oxcheck and British family heart studies, primary and secondary coronary heart disease prevention using statin therapies and another community based coronary heart disease prevention programmes.</p> <p>Attrition details: N/A (separate cohorts at baseline and follow-up)</p>	
<p>Authors: Bremner, Dalziel, Evans</p> <p>Year: 2006</p> <p>Citation: Evaluation of the 5 a day programme. London: The Big Lottery Fund</p> <p>Aim of study: Measure change in consumption</p>	<p>Source population/s: UK, those in 66 (former) health authorities with the highest levels of deprivation and poorest health status.</p> <p>Eligible population: Every programme area (all 66 areas) selected for funding, full population surveyed. Population included</p>	<p>Method of allocation: Non-randomised – controls matched to intervention programme areas in terms of indices of multiple deprivation and urban-rurality where possible.</p> <p>Intervention/s description: '5 A DAY' community health promotion intervention: Aimed at encouraging people to eat ≥5 portions of fruit or vegetables a day</p> <p>partnerships work across local communities and use the evidence base to address local barriers</p>	<p>Primary outcomes: Five A Day Consumption Evaluation Tool (FACET) used for the pre- and post-test survey. This asks respondents to report on the number of portions (0, 1, 2, 3, 4+) following food types eaten in the past 24 hours: breakfast cereal, fruit for breakfast, e.g. on cereal, crisps, fruit as a between meal</p>	<p>Primary outcomes: Fruit consumption (unadjusted): Experimental group respondents were more likely to consume fruit as a between meal snack with 62% of respondents in 2003 rising to 67% in 2005 consuming at least one portion of fruit in this manner (significance not reported). Similarly, control group respondents were more likely to consume fruit as between meal snack with 63% of respondents in 2003 rising to 66% in 2005 consuming at least one portion of fruit in this manner (significance not reported).</p> <p>Vegetable consumption (unadjusted): Experimental group respondents were more likely to consume vegetables as portions with main meals with 78% of respondents in 2003 rising to 83% in</p>	<p>Limitations identified by author: The design only allows comparison of the pre- and post intervention results for the population within the Electoral Wards used for each programme area The sampling frame included only those registered on the Electoral Roll Not all the individuals who responded to the</p>

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<p>(intake) of fruit and vegetables and also changes in access, awareness and knowledge relating to the benefits of increased fruit and vegetable consumption in representative samples of the adult private household population targeted for intervention in each of the participating 66 programme areas both pre-intervention and post-intervention and relative to controls</p> <p>Study design: Non-randomised controlled trial</p> <p>Quality score: +</p>	<p>'adults registered on the Electoral Roll living in the electoral wards in which 5 A DAY activities were planned' and a matched control group. Representativeness of source population not reported.</p> <p>Selected population: Participants were sampled from the eligible population using a random sampling approach, using the PCTs' list of the Electoral Wards in which activities were planned, or failing this, the Electoral Wards included within the programme area were used. Representativeness of eligible population not reported. 91% of the experimental group and 78% of the control was of average to most deprived (IMD quintiles).</p>	<p>and contribute to: increasing consumption of fruit and vegetables; increasing awareness or knowledge; changing attitudes and beliefs; increasing access to fruit and vegetables</p> <p>Activities include home delivery services, improving transport to local markets, voucher schemes, media campaigns, growing and cookery skills, and promoting networking among existing healthy food groups</p> <p>Each programme area was charged to address the needs of the following groups: people who are socially and economically disadvantaged; people without access to affordable food for a healthy diet; people with poor diet; people who lack the opportunity to make choices about healthy eating; people in manual labour/low socio-economic groups; children; people at high risk of developing coronary heart disease due to other factors such as ethnicity</p> <p>Reported activities included (those in italics specifically targeted at low income groups):</p> <p>Work with school age children (run by 82% programme areas);</p> <p>Cook & Eat (run by 75%);</p> <p>Other key projects (run by</p>	<p>snack, a glass of pure, unsweetened fruit juice (not squashes or fruit drink), fruit as a starter to a meal, a baked potato, a bowlful of home-made style vegetable soup, portions of vegetables with main meals (include baked beans and pulses as vegetables but not potatoes), any type of meat, a vegetable based meal, any type of fish, a bowlful of salad, fruit as a dessert.</p> <p>Secondary outcomes: Also assessed by the FACET:</p> <p>Knowledge of current recommendations for the consumption of fruit and vegetables; Knowledge of how many portions are provided in certain foods and drinks (a small glass (150 mls) of unsweetened orange juice, one glass of orange squash (diluted), a</p>	<p>2005 consuming at least one portion of vegetables in this manner (significance not reported). Respondents are least likely to consume vegetables as key ingredients in home-made style vegetable soup, with 11%, increasing to 17% in 2005 claiming to have consumed vegetables in this manner during the previous 24 hours (significance not reported).</p> <p>Similarly, control group respondents were more likely to consume vegetables as an accompaniment to main meals with 82% of respondents in 2003 increasing to 83% in 2005 consuming at least one portion of vegetables in this manner (significance not tested). Respondents are least likely to consume vegetables as a key ingredient of home-made style vegetable soup with only 10% in 2003 and 12% in 2005 claiming to have consumed vegetables in this manner during the previous 24 hours.</p> <p>Average number of portions consumed in a typical day:</p> <table border="1"> <thead> <tr> <th>Group</th> <th>2003</th> <th>2005</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Exp</td> <td>3.36</td> <td>3.64</td> <td>0.28</td> </tr> <tr> <td>Ctrl</td> <td>3.49</td> <td>3.64</td> <td>0.15</td> </tr> </tbody> </table> <p>The authors report a significant difference between groups on the average amount of fruit and vegetables consumed using ANCOVA ($F=4.42$, $p=0.0354$). Both groups also differed significantly on deprivation ($F=4.86$, $p=0.0275$), although no further details were provided.</p> <p>The authors also report a significant change in the average amount of fruit and vegetables consumed among all participants ($T=2.79$, $p=0.0052$).</p>	Group	2003	2005	Change	Exp	3.36	3.64	0.28	Ctrl	3.49	3.64	0.15	<p>survey would have taken part directly in one of the interventions and it is not known whether any of the respondents taking part in the pre- and post-test survey attended local programmes. (Local evaluations conducted to examine the outcome of individuals who participated are reported elsewhere.) Therefore, all that can be tested is whether activities had a wider impact on the local population</p> <p>Self-reporting of consumption of fruit and vegetables is open to a number of sources of error, including inaccuracies in recording consumption, misunderstandings about portion size and daily variations. A factor has been used in analysis to</p>
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	<p>Excluded population/s: No information reported</p> <p>Setting: Community</p> <p>Year: 2003 (pre-test survey), 2004 (process), 2005 (post-test survey)</p>	<p>72%); Media campaigns (70%); Sow & Grow (60%); Food co-ops (44%); Work with men (23%); Voucher schemes (19%); Home delivery schemes (12%); Transport schemes (12%) Detail on delivery personnel or duration of the programme was not reported, however it may be assumed that the programme lasted for at least one year (between the pre- and post-programme surveys)</p> <p>Control/comparison/s description: No intervention – no further detail reported.</p> <p>Sample sizes: Total n=98640 Intervention n=83160 Control n=15480</p> <p>Baseline comparisons: Both groups similar at baseline (no statistical test reported – examination of frequencies)</p> <p>Study sufficiently powered? Insufficient information reported</p>	<p>thin slice of tomato, three heaped tablespoons of carrots, one medium-sized apple, one small raspberry flavoured yoghurt); The importance of various factors in their own fruit & vegetable consumption (financial, knowledge, time, ease of shopping, tastes and preferences and quality of food); Intentions regarding fruit & vegetable consumption over the forthcoming year; Knowledge of the role of fruit & vegetable consumption in preventing stroke, cancer, back pain, hearing problems and heart disease; Demographic information</p> <p>Follow-up periods: Baseline (pre-test) was in 2003 and follow-up (post-test) was in 2005.</p>	<p>Average number of portions consumed in a typical day in those with a total household income of <£10k pa:</p> <table border="1"> <thead> <tr> <th>Group</th> <th>2003</th> <th>2005</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Exp</td> <td>3.27</td> <td>3.60</td> <td>0.33</td> </tr> <tr> <td>Ctrl</td> <td>3.40</td> <td>3.68</td> <td>0.28</td> </tr> </tbody> </table> <p>Average number of portions consumed in a typical day in those categorised as ‘most deprived’ on IMD quintile:</p> <table border="1"> <thead> <tr> <th>Group</th> <th>2003</th> <th>2005</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Exp</td> <td>3.13</td> <td>3.46</td> <td>0.33</td> </tr> <tr> <td>Ctrl</td> <td>3.21</td> <td>3.41</td> <td>0.20</td> </tr> </tbody> </table> <p>Secondary outcomes: Importance: Overall, the likes and dislikes of the household and the quality of fruit & vegetables available were rated as the most important factors. This did not appear to vary between groups but varied slightly by age and gender.</p> <p>Intention to increase consumption: There were slight increases in percentage of respondents in both groups saying yes (32% in 2003, 39% in 2005, experimental group; 31 in 2003, 35 in 2005, control group) and possibly (39% in 2003, 40% in 2005, experimental group; 39% in 2003, 40% in 2005, control group) and a slight decrease in the percentage of respondents in both groups saying no (26% in 2003, 22% in 2005, experimental group; 28% in 2003, 24% in 2005, control group), although there was test of statistical significance was conducted.</p>	Group	2003	2005	Change	Exp	3.27	3.60	0.33	Ctrl	3.40	3.68	0.28	Group	2003	2005	Change	Exp	3.13	3.46	0.33	Ctrl	3.21	3.41	0.20	<p>correct for the tendency to over-report consumption (relative to food diaries, identified in previous research) Response bias – the authors suggest that the data need to be weighted to population statistics to correct for this</p> <p>Limitations identified by review team: Only those with both pre-test and post-test responses were analysed, with no intention to treat analysis Possibility of contamination with mean consumption, intended consumption & knowledge about consumption increasing in both groups across time</p> <p>Evidence gaps and/or recommendations for future research: None reported</p> <p>Source of funding:</p>
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Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
			<p>Methods of analysis: Frequencies and means, ANCOVA (co varying for age, gender & deprivation)</p>	<p><u>Knowledge of recommendation:</u> The majority of respondents in the experimental group (64% in 2003, increasing to 77% in 2005) and control group (66% in 2003, 79% in 2005) were aware that the recommendation was for five portions of fruit and vegetables a day. Awareness was lower at both time points in low wage earners, however it increased from 2003 to 2005 in all income categories. Knowledge of which foods and drinks constitute a portion of fruit or vegetables also improved in both groups from 2003 to 2005 (significance not tested). Again, this was lower among lower wage earners.</p> <p><u>Knowledge of the role of fruit & vegetable consumption in disease:</u> The majority of respondents in both groups believed that people can reduce their chances of getting a stroke, cancer and heart disease, and this increased slightly from 2003 to 2005 in both groups.</p> <p>Attrition details: 68128/98640 (69.1%) of the sample overall; 57610/83160 (69.3%) in the experimental group and 10518/15480 (67.9%) in the control group. Response rate calculated at 56% using the American Association for Public Opinion Research (AAPOR) model.</p>	<p>The Big Lottery Fund</p>
<p>Author: Cochrane, Davey</p> <p>Year: 2008</p> <p>ID: 182</p> <p>Citation: Increasing</p>	<p>Source population/s: UK urban deprived area.</p> <p>Eligible population: Deprived areas on the basis of being in the lowest quintile</p>	<p>Method of allocation: Not applicable.</p> <p>Intervention/s description: Adopted the working title 'Burngreave in action', with emphasis on adults and operating on neighbourhood & peer influences. Sought to influence the cultural</p>	<p>Primary outcomes: Two main outcome measures were used, a self-reported change in physical activity behaviour and change in health compared with one year ago, and stage of change with</p>	<p>Primary outcomes: Relative to the control sample, the intervention sample demonstrated a trend towards being more physically active compared with one year ago, a shift towards a greater readiness to take up physical activity, a self-reported trend towards better general health and improved health compared with one year ago, all of which were statistically significant in χ^2 analysis ($p \leq 0.001$).</p>	<p>Limitations identified by author: None reported</p> <p>Limitations identified by review team: Groups not randomised Possibility of selection bias as</p>

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<p>uptake of physical activity: a social ecological approach. <i>Journal of The Royal Society for the Promotion of Health</i>, 128, 31-40</p> <p>Aim of study: The study aimed to test the hypothesis that it is possible to change the environment in a deprived urban community so as to promote the uptake of more health-enhancing behaviour, in this instance, regular, moderate-intensity physical activity.</p> <p>Study design: Non-randomised controlled trial</p> <p>Quality score: +</p>	<p>on both the Jarman and Townsend indices of deprivation. Addresses (n=2500 in each area) were selected randomly from the Postcode Address File. Eligible population appeared similar to citywide census data on age and gender.</p> <p>Selected population: 34% (846/2500) intervention (Burngreave) & 27% (686/2500) comparison (Manor) participants returned the questionnaire. No information on representativeness of the selected population to the eligible population reported.</p> <p>Excluded population/s: Not stated</p> <p>Setting: Two deprived areas (Burngreave and</p>	<p>norm of low physical activity by changing the environment & peer influences to promote health enhancing physical activity within the community</p> <p>Community awareness campaign, that included: focus group meetings and presentations; household leaflet drops; posters in public places and thoroughfares, general practices, libraries, leisure centres, community halls and pubs; events and competitions.</p> <p>Physical Activity interventions, which were introduced in accessible community areas in five broad categories: walking, exercise referral, sports, water activities and pastimes and active leisure pursuits (Burngreave area only)</p> <p>Intervention activities took place over a year</p> <p>No detail reported on who delivered the various components</p> <p>Control/comparison/s description: No community awareness or physical activity interventions (Manor area).</p> <p>Sample sizes: Total n= 1532 Intervention (Burngreave) n=846</p>	<p>respect to physical activity was also recorded to determine the extent to which attitudes towards engagement with physical activity had shifted, if at all, during the intervention period.</p> <p>Secondary outcomes: None reported</p> <p>Measurement points: 12 months from the start of the intervention (immediately after the end of the intervention)</p> <p>Methods of analysis: Area by category classifications were compared by cross-tabulation and examined for statistical significance of the difference in distributions using the χ^2 test. Multinomial logistic regression analysis was used to test a</p>	<p>Physical activity compared with a year ago:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>More active</th> <th>Same</th> <th>Less active</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>257 (31%)</td> <td>442 (53%)</td> <td>142 (17%)</td> </tr> <tr> <td>Ctrl</td> <td>125 (8%)</td> <td>433 (64%)</td> <td>124 (18%)</td> </tr> <tr> <td>Tot</td> <td>382 (25%)</td> <td>875 (58)</td> <td>266 (18%)</td> </tr> </tbody> </table> <p>χ^2 ($p < 0.001$, Cramer's V=0.142)</p> <p>Stage of change for physical activity:</p> <table border="1"> <thead> <tr> <th></th> <th>Precon</th> <th>Con</th> <th>Prep</th> <th>Act</th> <th>Maint</th> </tr> </thead> <tbody> <tr> <td>I:</td> <td>116 (14%)</td> <td>142 (17%)</td> <td>219 (26%)</td> <td>99 (12%)</td> <td>270 (32%)</td> </tr> <tr> <td>C:</td> <td>168 (26%)</td> <td>108 (16%)</td> <td>164 (24%)</td> <td>63 (9%)</td> <td>183 (27%)</td> </tr> <tr> <td>T:</td> <td>284 (19%)</td> <td>250 (16%)</td> <td>383 (25%)</td> <td>162 (11%)</td> <td>453 (30%)</td> </tr> </tbody> </table> <p>χ^2 ($p < 0.001$, Cramer's V=0.143)</p> <p>General health (self-report):</p> <table border="1"> <thead> <tr> <th></th> <th>Excellent</th> <th>V good</th> <th>Good</th> <th>Fair</th> <th>Poor</th> </tr> </thead> <tbody> <tr> <td>I:</td> <td>100 (12%)</td> <td>207 (26%)</td> <td>277 (33%)</td> <td>180 (21%)</td> <td>82 (10%)</td> </tr> <tr> <td>C:</td> <td>44 (6%)</td> <td>154 (22%)</td> <td>221 (32%)</td> <td>182 (27%)</td> <td>85 (12%)</td> </tr> <tr> <td>T:</td> <td>144 (9%)</td> <td>361 (27%)</td> <td>498 (33%)</td> <td>362 (24%)</td> <td>167 (11%)</td> </tr> </tbody> </table> <p>χ^2 ($p = 0.001$, Cramer's V=0.113)</p> <p>Health compared with one year ago:</p> <table border="1"> <thead> <tr> <th></th> <th>Much better</th> <th>Some-what better</th> <th>Same</th> <th>Some-what worse</th> <th>Much worse</th> </tr> </thead> <tbody> <tr> <td>I:</td> <td>74</td> <td>120</td> <td>506</td> <td>105</td> <td>41</td> </tr> </tbody> </table>	Grp	More active	Same	Less active	Int	257 (31%)	442 (53%)	142 (17%)	Ctrl	125 (8%)	433 (64%)	124 (18%)	Tot	382 (25%)	875 (58)	266 (18%)		Precon	Con	Prep	Act	Maint	I:	116 (14%)	142 (17%)	219 (26%)	99 (12%)	270 (32%)	C:	168 (26%)	108 (16%)	164 (24%)	63 (9%)	183 (27%)	T:	284 (19%)	250 (16%)	383 (25%)	162 (11%)	453 (30%)		Excellent	V good	Good	Fair	Poor	I:	100 (12%)	207 (26%)	277 (33%)	180 (21%)	82 (10%)	C:	44 (6%)	154 (22%)	221 (32%)	182 (27%)	85 (12%)	T:	144 (9%)	361 (27%)	498 (33%)	362 (24%)	167 (11%)		Much better	Some-what better	Same	Some-what worse	Much worse	I:	74	120	506	105	41	<p>only 34% & 27% of intervention & comparison group participants respectively returned surveys</p> <p>Data presented as percentages rather than means and SDs</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: Health Development Agency</p>
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	<p>Manor) in Sheffield, UK</p> <p>Year: Not stated</p>	<p>Control (Manor) n= 686</p> <p>Baseline comparisons: Samples in both areas had good representation across the age bands and ethnic and gender mixes expected in the two populations.</p> <p>Study sufficiently powered? Yes</p>	<p>prediction model for categories of change in physical activity by area and age classification, allowing a comparison of odds ratios for the various categories of physical activity by area. Similar analysis was performed to model the effects of area on stage of readiness to engage in physical activity.</p>	<table border="1"> <tr> <td></td> <td>(9%)</td> <td>(14%)</td> <td>(60%)</td> <td>(12%)</td> <td>(5%)</td> </tr> <tr> <td>C:</td> <td>41 (6%)</td> <td>67 (10%)</td> <td>429 (63%)</td> <td>123 (18%)</td> <td>26 (4%)</td> </tr> <tr> <td>T:</td> <td>115 (8%)</td> <td>187 (12%)</td> <td>935 (61%)</td> <td>228 (15%)</td> <td>67 (4%)</td> </tr> </table> <p>χ^2 ($p=0.001$, Cramer's $V=0.112$)</p> <p>Regression: Relative to those whose physical activity had remained the same compared with one year ago, intervention residents were more likely than comparison residents to report that they were more active (OR=1.79, 95% CI=1.38-2.32, $p<0.001$).</p> <p>Relative to those not intending to exercise, intervention residents were more likely than comparison residents to report being in one of the other four categories ($p<0.001$, OR & 95% CI not reported).</p> <p>Secondary outcomes: None</p> <p>Attrition details: Not applicable as surveyed at post-test.</p>		(9%)	(14%)	(60%)	(12%)	(5%)	C:	41 (6%)	67 (10%)	429 (63%)	123 (18%)	26 (4%)	T:	115 (8%)	187 (12%)	935 (61%)	228 (15%)	67 (4%)	
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<p>Author: Cummins, Petticrew, Higgins, Findlay, Sparks</p> <p>Year: 2005</p> <p>Citation: Large scale food retailing as an intervention for diet and health:</p>	<p>Source population/s: UK urban deprived population</p> <p>Eligible population: Random sample of households in two deprived areas of Glasgow (DEPCAT score of 7). Addresses were</p>	<p>Method of allocation: Prospective controlled "before and after" postal survey of a representative sample of residents in two areas, intervention and comparison, using a quasi-experimental design. The boundaries of each study site were delineated by the postcode district that encompassed the main shopping provision (pre-intervention) of each defined</p>	<p>Primary outcomes: Fruit and vegetable consumption, self reported and psychological health, and sociodemographic variables, reported by the main household shopper.</p> <p>Secondary outcomes: None</p>	<p>Primary outcomes:</p> <p>Changes within areas:</p> <p>Mean fruit intake (portions/day):</p> <table border="1"> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> <tr> <td>Int</td> <td>1.97</td> <td>2.06</td> <td>0.35</td> </tr> <tr> <td>Ctrl</td> <td>2.11</td> <td>2.23</td> <td>0.19</td> </tr> </table> <p>(t-test for difference in means)</p> <p>Mean vegetable intake (portions/day):</p>	Grp	Pre	Post	Sig	Int	1.97	2.06	0.35	Ctrl	2.11	2.23	0.19	<p>Limitations identified by author: The response rate to the postal questionnaire was low, which may make the study prone to selection bias. The study has low power to detect a true effect, particularly for the</p>						
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<p>quasi-experimental evaluation of a natural experiment. <i>Journal of Epidemiol Community Health</i>, 59, 1-35-1040</p> <p>ID: 466</p> <p>Aim of study: To assess the effect on fruit and vegetable consumption, self reported, and psychological health of a “natural experiment”— the introduction of large scale food retailing in a deprived Scottish community.</p> <p>Study design: Prospective cohort study</p> <p>Quality score: +</p>	<p>drawn from a postcode address file. No information was reported on the representativeness of the eligible population to the source population.</p> <p>Selected population: Response rate was 15% (603/3975) for questionnaires administered pre-intervention. No information was reported on the representativeness of the selected population to the eligible population.</p> <p>Excluded population/s: Not reported</p> <p>Setting: Glasgow, Scotland.</p> <p>Year: Baseline questionnaires administered October 2001, store opened November 2001, respondents followed up October 2002.</p>	<p>area. The two study areas were geographically distant (~5km apart), which the authors say helped to reduce contamination.</p> <p>Intervention/s description: Provision of a new food hypermarket within the intervention area.</p> <p>Control/comparison/s description: No new food hypermarket within area.</p> <p>Sample sizes: Total n= 603 Intervention n= 310 Control n= 293</p> <p>Baseline comparisons: No statistically significant differences were found.</p> <p>Study sufficiently powered? No information given.</p>	<p>reported</p> <p>Follow-up periods: 12 months.</p> <p>Methods of analysis: Multivariate analyses were undertaken using analysis of covariance (ANCOVA) for fruit and vegetable consumption & linearity tested for quadratic term – adjusting for pre-intervention mean difference between areas, age sex, economic activity & education. Logistic regression for general health outcomes.</p>	<p>Results</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.06</td> <td>2.21</td> <td>0.14</td> </tr> <tr> <td>Ctrl</td> <td>2.16</td> <td>2.41</td> <td>0.01</td> </tr> </tbody> </table> <p>(t-test for difference in means)</p> <p>Mean fruit and vegetable intake (portions/day):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>3.92</td> <td>4.911</td> <td>0.07</td> </tr> <tr> <td>Ctrl</td> <td>4.16</td> <td>4.60</td> <td>0.003</td> </tr> </tbody> </table> <p>(t-test for difference in means)</p> <p>Fair to poor self-reported health (prevalence):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>37.7</td> <td>45.05</td> <td>0.17</td> </tr> <tr> <td>Ctrl</td> <td>40.41</td> <td>38.94</td> <td>0.76</td> </tr> </tbody> </table> <p>(Z test off two proportions)</p> <p>Poor psychological health (prevalence):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>38.6</td> <td>26.47</td> <td>0.017</td> </tr> <tr> <td>Ctrl</td> <td>26.63</td> <td>25.79</td> <td>0.85</td> </tr> </tbody> </table> <p>(Z test off two proportions)</p> <p>Comparing intervention & comparison areas:</p> <p>ANCOVA model – intervention effects estimates & 95% confidence intervals for fruit, vegetable, fruit & vegetable consumption in portions per day for intervention compared with comparison community.</p> <p>Model 1 – unadjusted:</p> <table border="1"> <thead> <tr> <th>Outcome</th> <th>Effect est</th> <th>95% CI</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Grp	Pre	Post	Sig	Int	2.06	2.21	0.14	Ctrl	2.16	2.41	0.01	Grp	Pre	Post	Sig	Int	3.92	4.911	0.07	Ctrl	4.16	4.60	0.003	Grp	Pre	Post	Sig	Int	37.7	45.05	0.17	Ctrl	40.41	38.94	0.76	Grp	Pre	Post	Sig	Int	38.6	26.47	0.017	Ctrl	26.63	25.79	0.85	Outcome	Effect est	95% CI				<p>analysis of the switchers subgroup</p> <p>Limitations identified by review team: No ITT analysis</p> <p>Evidence gaps and/or recommendations for future research: None stated</p> <p>Source of funding: Not stated.</p>
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				Fruits	-0.19	-0.44 to -0.05	
				Vegetables	-0.21	-0.48 to 0.06	
				Fruits & vegetables	-0.44	-0.86 to -0.01	
				Model 2 – adjusted for baseline:			
				Outcome	Effect est	95% CI	
				Fruits	-0.10	-0.32 to 0.12	
				Vegetables	-0.16	-0.42 to 0.10	
				Fruits & vegetables	-0.28	-0.67 to 0.11	
				Model 3: adjusting for sex, age, employment & education:			
				Outcome	Effect est	95% CI	
				Fruits	0.03	-0.25 to 0.30	
				Vegetables	-0.11	-0.44 to 0.22	
				Fruits & vegetables	-0.10	-0.59 to 0.40	
				Model 4 – model 3 plus a quadratic term:			
				Outcome	Effect est	95% CI	
				Fruits	-	-	
				Vegetables	-0.11	-0.44 to 0.22	

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				<table border="1"> <tr> <td>Fruits & vegetables</td> <td>-0.10</td> <td>-0.59 to 0.40</td> </tr> </table> <p>Weak evidence for an effect of the intervention on mean fruit consumption (-0.03, 95% CI -0.25 to 0.30), mean vegetable consumption (-0.11, 95% CI -0.44 to 0.22), and fruit and vegetables combined (-0.10, 95% CI -0.59 to 0.40).</p> <p>Odds ratios & 95% confidence intervals of reporting fair to poor self-reported health and poor psychological health for the intervention compared with comparison community.</p> <p>Model 1 – unadjusted odds ratio:</p> <table border="1"> <thead> <tr> <th>Outcome</th> <th>OR</th> <th>95% CI</th> </tr> </thead> <tbody> <tr> <td>Fair to poor self-rated health</td> <td>1.29</td> <td>0.86 to 1.93</td> </tr> <tr> <td>Poor psychological health</td> <td>1.04</td> <td>0.65 to 1.66</td> </tr> </tbody> </table> <p>Model 2 – odds ratios adjusted for baseline outcome:</p> <table border="1"> <thead> <tr> <th>Outcome</th> <th>OR</th> <th>95% CI</th> </tr> </thead> <tbody> <tr> <td>Fair to poor self-rated health</td> <td>1.55</td> <td>0.93 to 2.62</td> </tr> <tr> <td>Poor psychological health</td> <td>0.81</td> <td>0.48 to 1.38</td> </tr> </tbody> </table> <p>Model 3 – odds ratios adjusting for model 2, sex, age, employment & education</p>	Fruits & vegetables	-0.10	-0.59 to 0.40	Outcome	OR	95% CI	Fair to poor self-rated health	1.29	0.86 to 1.93	Poor psychological health	1.04	0.65 to 1.66	Outcome	OR	95% CI	Fair to poor self-rated health	1.55	0.93 to 2.62	Poor psychological health	0.81	0.48 to 1.38	
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<p>Authors: Dobson, Kellard & Talbot</p>	<p>Source population/s: Urban/suburban low SES population in</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description:</p>	<p>Primary outcomes:</p> <p>Fruit and vegetable</p>	<p>Primary outcomes:</p> <p><u>Fruit and vegetable consumption:</u></p>										

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Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
<p>Year: 2000</p> <p>Citation: A recipe for success? An evaluation of a community food project. Loughborough: Centre for Research in Social Policy, Loughborough University.</p> <p>Ref ID: 5024</p> <p>Aim of study: To achieve an improvement in the eating behaviour of people living on a low income in the Saffron Lane area of Leicester and to investigate processes by which knowledge is converted into behaviour change.</p> <p>Study design: Evaluation of project – case series and qualitative evaluation</p> <p>Quality score: -</p>	<p>Leicester, UK.</p> <p>Eligible population: Questionnaires were administered to all those who attended the cook and eat sessions (almost 100 women) and the health and exercise classes as well as the Kingfisher group. No information provided on the similarity of the eligible population to the source population.</p> <p>Selected population: No information of percentages of eligible population completing the questionnaire, due to incomplete reporting of numbers distributed (86 women completed a questionnaire). No information provided on the similarity of the selected population to the eligible population.</p> <p>Excluded population/s: Not reported</p> <p>Setting: Community</p> <p>Year: From April 1997, for 3 years</p>	<p>The Saffron Food and Health Project, a community food project:</p> <ul style="list-style-type: none"> • Multicomponent intervention, including (1) activities with women and mothers and (2) young people and youth workers (not reported here, as age is outside inclusion criteria) • Activities with women and mothers included (a) cook and eat groups, (b) healthy eating and exercise classes and (c) weaning and other nutritional advice for mothers with young children • 20 cook and eat courses (attended by almost 100 women) were run throughout the 3-year project, each one of which consisted of 2-hour sessions over 10 weeks. They were run by the Family Nutritional Worker (FNW; this was the third author, a female state registered dietician), and at the first session there was a discussion between this individual and the women on the course where the aims and content were agreed. This first session was also attended by a researcher, who administered questionnaires about shopping and eating behaviour. This information was used to tailor the course to the each group's needs. The group agreed what to cook before each subsequent session. The FNW distributed recipe cards and explained the recipes. There was a short coffee break and informal 'chat' halfway through the group, which was 	<p>consumption (how often participants eat fruit and vegetables; response options were at least once a day, 4-6 times per week, 1-3 times per week, <once a week, never).</p> <p>Stage of change for dietary changes: measured using a modified version of the stages of change questions (McQueen <i>et al</i>, 1999; Lamb <i>et al</i>, 1996; Prochaska <i>et al</i>, 1982), which asked the women to place themselves on a 5-point scale as follows:</p> <ol style="list-style-type: none"> 1. Have made no changes to their diets and do not want to; 2. Have not yet made any changes but hope to soon; 3. Have tried to make changes but have not succeeded; 4. Currently trying to change their eating behaviour; 5. Have succeeded in making changes <p>Number of positive changes made to diet (sale ranges from 0 or less to 14) – changes included eating less</p>	<p>Fruit: From baseline to post-intervention, more participants reported eating fruit at least once a day and 4-6 times per week and fewer participants reported eating fruit 1-3 times per week, less than once a week and never, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p>Vegetables: From baseline to post-intervention, more participants reported eating vegetables at least once a day and fewer participants reported eating vegetables 4-6 times per week, 1-3 times per week and less than once a week (no participants reported never eating vegetables at either time point), however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Stage of change for dietary changes:</u> From baseline to post-intervention, fewer people reported being in the first three stages (1, 2 and 3 – roughly corresponding to precontemplation, contemplation and preparation) and more people reported being in the latter two stages (4 and 5 – roughly corresponding to action and maintenance) for dietary changes, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Number of positive changes made to diet:</u> From baseline to post-intervention, fewer people reported making 0 or less, 1, 3, 4, 5 and 10 positive changes to their diets and more people reported making 7, 8, 9, 11, 12, 13 and 14 positive changes to their diets (with no-one reporting making 2 positive changes and an equal proportion reporting making 6 positive changes at both time points), however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Fat consumption:</u></p>	

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
		<p>used (whenever possible) to discuss issues around feeding the family or other questions raised by the women, including suggestions for modifying recipes for ingredients they had or family preferences. The groups were informal and friendly. More experienced women helped those less accomplished in cooking and all helped with tidying and washing up. Those who had cooked a main course and pudding for 4 people took the food home for their families to try. At the end of each course, there was a discussion to evaluate the course, at which the FNW was not present. These 'after' sessions were used to establish if the course had met participants' needs, found out if they found the course useful and enjoyable and establish if there had been any changes in eating behaviour through another questionnaire, as well as reasons for changing or not changing.</p> <ul style="list-style-type: none"> • Healthy eating and exercise classes were developed following discussions with the Steering Group and local residents, after the findings of a postal questionnaire sent to those who attended a community 'Family Food and Fun Day', held at the end of the first year of the project, suggested that some women wanted help to lose weight. The exercise component was set up in conjunction with 	<p>fried foods and processed meat products, eating more bread, rice, potatoes, pasta, fruit and vegetables (referred to as small changes the women were happy to make).</p> <p>Fat consumption: fat index score (out of 100) for following a healthy diet – reported in deciles. The higher the score, the closer the individual is to following healthy eating nutrition guidelines.</p> <p>Fibre consumption: fibre index score (out of 100) for following a healthy diet – reported in deciles. The higher the score, the closer the individual is to following healthy eating nutrition guidelines.</p> <p>Sugar consumption: sugar index score (out of 100) for following a healthy diet – reported in deciles. The higher the score, the closer the individual is to following healthy eating nutrition guidelines.</p> <p>Healthy diet: healthy diet index – overall</p>	<p>From baseline to post-intervention, fewer people reported a fat index of 31-40, 51-60, 61-70 and 91-100 and more people reported a fat index of 71-80 and 81-90 (with an equal proportion reporting a fat index of 41-50 at both time points), however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Fibre consumption:</u></p> <p>From baseline to post-intervention, fewer people reported a fibre index of 11-20, 41-50 and 51-60 and more people reported a fibre index of 31-40, 71-80, 81-90 and 91-100 (with an equal proportion reporting a fibre index of 21-30 at both time points), however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Sugar consumption:</u></p> <p>From baseline to post-intervention, fewer people reported a sugar index of 21-30, 31-40, 71-80 and 81-90 and more people reported a sugar index of 41-50, 51-60, 61-70 and 91-100, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>Overall healthy diet:</u></p> <p>From baseline to post-intervention, fewer people reported a healthy diet index of less than 50, a similar proportion of people reported a healthy diet index of 50-75 and more people reported a healthy diet index of 76-100, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p>Secondary outcomes:</p> <p><u>How often participants ate breakfast:</u></p> <p>From baseline to post-intervention, fewer participants reported eating breakfast never or 1-2 days a week and more participants reported eating breakfast 3-4 days a week and >5 days a week, however no exact figures were</p>	

Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
		<p>staff from Southfields Drive Sports Hall, who provided free facilities and an exercise tutor experienced in helping women to lose weight. The tutor ensured that the (mostly sedentary) women were comfortable with the level of activity and enjoyed it. The classes involved 40 minutes of exercise followed by 40 minutes of discussion with the FNW, which included topics such as how to reduce fat intake, what constituted a healthy diet, why healthy eating is important, healthier cooking techniques, how to modify recipes, tasting of new or different foods, understanding food labels and discussing the factors that made it difficult to change eating habits and suggestions for overcoming these barriers. Seven women attended the group weekly for 10 weeks, and asked to be weighed so they could monitor their progress. Most of them kept a record of what they had eaten the previous week, and this was discussed with the FNW, especially with a view to replacing certain things with healthier alternatives. After the first 10-week course the exercise tutor left and finding a replacement was difficult. The format of the exercise had to be changed and the women were offered sports such as badminton, short tennis and netball, which they seemed to enjoy. The group remained</p>	<p>improvement in women's diets (again scored out of 100; higher score indicates being closer to following healthy eating guidelines), reported in quartiles.</p> <p>Secondary outcomes:</p> <p>How often participants ate breakfast (response options were never, 1-2 days per week, 3-4 days per week, >5 days per week).</p> <p>How often participants ate lunch (response options were never, 1-2 days per week, 3-4 days per week, >5 days per week).</p> <p>How often participants ate dinner (response options were never, 1-2 days per week, 3-4 days per week, >5 days per week).</p> <p>Follow-up periods: At the start and end of each intervention activity (usually 10 weeks)</p> <p>Methods of analysis: Frequency data reported; no statistical comparison across</p>	<p>reported and no statistical comparisons of pre-post data were made.</p> <p><u>How often participants ate lunch:</u></p> <p>From baseline to post-intervention, fewer participants reported eating lunch never or 1-2 days a week and more participants reported eating lunch 3-4 days a week and >5 days a week, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p><u>How often participants ate dinner:</u></p> <p>From baseline to post-intervention, fewer participants reported eating dinner never or 1-2 days a week, similar amounts of participants reported eating dinner 3-4 days a week and more participants reported eating dinner >5 days a week, however no exact figures were reported and no statistical comparisons of pre-post data were made.</p> <p>Attrition details: 35/86 (41%) participants did not appear to provide data for both time points.</p>	

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		<p>small, with approximately seven members. The total number of groups run was not reported.</p> <ul style="list-style-type: none"> • Nutritional advice for mothers with young children arose from the concern of professionals and local people that some of the young mothers living on the estate were very isolated. Following discussions with youth workers and midwives, a group was set up in the Kingfisher Community Centre and an existing group at the Magpie Community Centre was also used (on an adjacent estate but used by Saffron Lane residents). The format of both groups was informal and were planned on a drop-in basis, but the women in the Kingfisher Centre requested a more definite structure, so they attended on a weekly basis between 10.00am and 12.30pm. The mothers and children would play together for half an hour then those who wanted to cook would go into the kitchen and leave their friends in charge of the children, swapping over when they finished cooking. The cooking was similar to the cook and eat groups. The idea was to provide advice and information about weaning and feeding young children, however some children were only just starting to eat solids and adequate sterilisation facilities were not available so in these cases women were give examples to make at home. There was a lot 	time.		

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		<p>of discussion and the FNW were asked questions about how and when to wean their baby. A crèche worker attended the Kingfisher group to supervise and help with the care of the children (it was not possible to offer full crèche facilities, but the room in which the children played was inspected with regard to health and safety regulations prior to the group being set up). The toys played with were loaned from the toy library and were brought and cleared up by the crèche worker. The Kingfisher Centre group ran for nearly a year. It ended because the group became too large, which caused difficulties with regulations governing the supervision and care of young children. Most of the women who had attended the group were encouraged to try different activities</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n=86 (response rate) Intervention n=86 (response rate) Control n=N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered? Not reported</p>			
<p>Author: Gray, Anderson, Clarke, Dalziel,</p>	<p>Source population/s: Males living in a UK</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description:</p>	<p>Primary outcomes: Short-term and long-term weight loss.</p>	<p>Primary outcomes: Short-term (end of 12 weeks programme) weight loss for completers was a mean weight loss of 4.98 kg. 44.3%</p>	<p>Limitations identified by author: Reliance on existing</p>

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<p>Hunt, Leishman, Wyke</p> <p>Year: 2009</p> <p>Citation: Addressing male obesity: an evaluation of a group-based weight management intervention for Scottish men. JMH, 6, 70-81</p> <p>ID: 1355</p> <p>Aim of study: the aim of the study was to evaluate and consider the extent to which the Camelon model has reached its target population; the characteristics of the participants; weight loss outcomes; and participants' views of the programme.</p>	<p>deprived community – one of the 20% most deprived communities in Scotland.</p> <p>Eligible population: 61% were recruited through GP practices (no information on how the remainder were recruited), during an extended consultation with a men's health nurse. If they had a BMI \geq 30 or a waist \geq 102cm, they were invited to join the programme.</p> <p>Selected population: 42% (770) men met the BMI or waist criteria and were comparable to non-participants on age, marital status, employment status & deprivation quintile but not on postcode.</p> <p>Excluded population/s: BMI</p>	<p>Camelon men's weight management group programme is a 12-week programme with four main components: A weekly Men's Health Clinic at the Camelon Clinic and a monthly one at Grangemouth Health Centre, 40min appointments (also a method of recruiting to the programme). A pre-programme assessment: 20min individual appointments Most men invited on within 3 months of joining the waiting list</p> <p>Community nurse describes the 12-week weight management programme</p> <p>Baseline data (weight, waist circumference, blood pressure, blood samples for measuring cholesterol, glucose & thyroid function) are recorded at this session</p> <p>The weight management programme: Each group (max 12 men) met over 3 months, in 12 1-hour evening sessions</p> <p>Modelled on an initiative from NHS forth valley dieticians, adheres to sign & NICE recommendations, which emphasise using behavioural modification techniques to achieve a balanced healthy diet, increased physical activity and a moderate (0.55-1 kg per</p>	<p>Weight loss, waist circumference reduction, BMI reduction. Weight change (gain, stable, <5% loss, \geq5% loss, \geq10% loss).</p> <p>Secondary outcomes: None</p> <p>Measurement Points: Pre-programme, short-term (12-week, immediately post-programme), long-term (1 to 49 months after programme).</p> <p>Methods of analysis: Reporting of means with range and frequency data (percentages) for weight change categories</p>	<p>achieved a weight loss of 5% to 10%.</p> <table border="1"> <thead> <tr> <th>Index</th> <th>Mean</th> <th>Range</th> </tr> </thead> <tbody> <tr> <td>Weight loss (kg)</td> <td>4.98</td> <td>Lost 17.20 – gained 2.60</td> </tr> <tr> <td>Waist reduction (cm)</td> <td>7.53</td> <td>Lost 27.50 – gained 3.00</td> </tr> <tr> <td>BMI reduction (kg/m²)</td> <td>1.29</td> <td>Lost 5.46 – gained 2.24</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Weight change</th> <th>% of completers</th> </tr> </thead> <tbody> <tr> <td>Gain</td> <td>6.3</td> </tr> <tr> <td>Stable (\pm0.5 kg)</td> <td>5.1</td> </tr> <tr> <td><5% Loss</td> <td>44.3</td> </tr> <tr> <td>\geq5% loss</td> <td>35.4</td> </tr> <tr> <td>\geq10% Loss</td> <td>8.9</td> </tr> </tbody> </table> <p>Long-term weight loss maintained an average 3.7% weight loss (range = 32.6 weight loss to 25.6% weight gain) compared with their baseline weight (no further information on what this actually meant). Compared with pre-programme weight, 14 weighed less, 2 were stable (\pm0.5 kg) 4 weighed more; no further detail reported.</p> <p>Secondary outcomes: Not reported</p> <p>Attrition details: Of 110 enrolled, 80 (73%) completed the programme. Only 20 (25% of completers, 18% of those enrolled) gave long-term follow-up.</p>	Index	Mean	Range	Weight loss (kg)	4.98	Lost 17.20 – gained 2.60	Waist reduction (cm)	7.53	Lost 27.50 – gained 3.00	BMI reduction (kg/m ²)	1.29	Lost 5.46 – gained 2.24	Weight change	% of completers	Gain	6.3	Stable (\pm 0.5 kg)	5.1	<5% Loss	44.3	\geq 5% loss	35.4	\geq 10% Loss	8.9	<p>databases meant group attendance figures were incomplete and, therefore, the attendance rate of completers is unknown. Missing data made it difficult to track all weight management group attendees back to the Men's Health Clinic, probably producing a conservative estimate of reach. The sub-sample who provided long-term weight loss outcomes is likely to be unrepresentative.</p> <p>Limitations identified by review team: No follow-up of those not enrolled in the programme. No intent to treat analysis Average long-term weight loss of 3.7% may not be representative as ranged from 32.6% weight loss to 25.6% weight gain 'Long-term' follow-up</p>
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<p>Study design: Case series (with qualitative process evaluation)</p> <p>Quality score: +</p>	<p><30 and/or waist <102cm</p> <p>Setting: Deprived community in Scotland.</p> <p>Year: March 2003 to September 2007. (?November 2002 to May 2007)</p>	<p>week) weight loss, ideally in a group setting with trained staff (see below)</p> <p>Message that the programme is not a diet but aims to help facilitate long-term changes is stressed</p> <p>Made more 'male-friendly' by including: emphasis on portion size and nutrition; 'masculinisation' of exercise advice (e.g. emphasis on endurance, strength & competition); use of humour; increased quizzes & games; using sandbags to illustrate mid-point weight loss; full session on alcohol; de-emphasis of link between food & emotions</p> <p>Post-programme meetings: Held quarterly at Camelon Aimed at helping programme completers sustain their focus on weight management & related men's health issues</p> <p>Overview of the Camelon weight management programme: <u>Session 1.</u> Introduction and overview of the programme's contents, including a re-statement of the need for commitment. The men are told that they must be personally responsible for their own weight management. They are asked</p>			<p>was between one and 49 months post-programme, which raises questions about the comparability between participants of long-term follow-up data</p> <p>Evidence gaps and/or recommendations for future research: None reported</p> <p>Source of funding: Not reported</p>

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		<p>to keep a food diary for two days the following week. [Tools used: weight management booklet; food diary]</p> <p><u>Session 2.</u> A healthy balanced diet and appropriate portion sizes are demonstrated using the food plate model and real foodstuffs. The men compare these with their own food diaries. Individual weight loss SMART (Specific, Measurable, Achievable, Realistic and Time-limited) goals are set. [Tools used: food plate model; weight loss goals]</p> <p><u>Session 3.</u> The men are given examples of daily eating plans to help them lose weight and consider their progress towards last week's goals. Motivation, confidence and the value of support from others are discussed. [Tools used: eating plans]</p> <p><u>Session 4.</u> The important role of physical activity in weight management and potential barriers to exercise are discussed. The men set their own exercise SMART goals and can apply for a free pass for local authority sports centres. [Tools used: exercise goals; free activity pass]</p> <p><u>Session 5.</u> The role of alcohol in weight gain is considered and the group explores myths</p>			

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		<p>about alcohol. Each man sets SMART goals to improve his drinking habits. [Tools used: drinking goals]</p> <p><u>Session 6.</u> The psychology of behaviour change with regard to weight management is explored and the group meet a previous programme completer. Midpoint weight and waist measurements are taken.</p> <p><u>Session 7.</u> Sandbags representing midpoint weight loss are handed out to each man. The group reflects on progress to date and discusses continued motivation and confidence. [Tools used: sandbags]</p> <p><u>Session 8.</u> Ways of making favourite meals healthier, whether at home, in restaurants or takeaways, are explored. [Tools used: recipes for healthier meals]</p> <p><u>Session 9.</u> Advice on how to use nutrition labels on food packaging to choose healthier options is given. The group considers useful weight loss tips and the men are encouraged to be more active in family food shopping. [Tools used: Food labels Wallet-sized healthy eating guides]</p> <p><u>Session 10.</u> Common myths about healthy eating and reasons for eating (other than</p>			

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		<p>hunger) are discussed. Advice on dealing with relapses is given and the men are asked to keep a food diary the following week.</p> <p><u>Session 11.</u> The Week 10 food diary is compared with the Week 1 food diary to provide the men with concrete evidence of how their eating habits have changed. The crucial role of exercise in weight maintenance is re-stated. [Tools used: food diary]</p> <p><u>Session 12.</u> End weight and waist measurements are taken and the men consider how to manage their weight in the long term. The group is encouraged to continue meeting up and the men invited to join the organised post-programme meetings.</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n= 110 Intervention n=110 Control n= N/A</p> <p>Baseline comparisons: No statistically significant differences reported.</p> <p>Study sufficiently powered? Not reported</p>			

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes														
<p>Author: Kennedy, Hunt, Hodgson</p> <p>Year: 1998</p> <p>Citation: Nutrition Education Program Based on EFNEP for Low-Income Women in the United Kingdom: "Friends with Food" <i>Journal of Nutrition Education</i> 30, 89-99</p> <p>ID: 3167</p> <p>Aim of study: The aim of the study was to evaluate the intervention with respect to what extent were the original aims and objectives of the project achieved? What type of effects and what impact does the programme have on</p>	<p>Source population/s: UK urban deprived area, low-income mothers with young children.</p> <p>Eligible population: Participant groups in Deighton, recruited with the help of the local community health coordinator (?via posters inviting women or women's groups to discussions on diet and health, placed in local shops and meeting places in the community), included two local community groups and two groups from local authority family centres.</p> <p>Selected population: No information on recruitment rates reported.</p> <p>Excluded population/s: Not reported.</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: The Friends with Food (FWF) program comprised 10 weekly 2-hour sessions focused on translating recommendations to practice, led by two project workers, each taking two separate groups. Both field workers had a background in food and nutrition: the community nutrition educator (CNE) was formerly a clinical dietician for 14 years and the community nutrition educator assistant (CNEA) was a graduate in nutrition with 2 years' work experience in health promotion (nutrition). Main emphasis was on achieving current dietary recommendations to reduce total fat in the diet and increase consumption of bread, other cereals, potatoes, and vegetables Focused specifically on how current dietary recommendations relating to "heart health" can be translated into practice Established nutrition facts were mixed with practical activity (i.e., guided "hands-on" food preparation and cookery) Less emphasis was given to advice about reducing intakes</p>	<p>Primary outcomes: Dietary change</p> <p>Secondary outcomes: Nutrition knowledge</p> <p>Measurement points: Immediately after the programme ('post-test') and three months later ('follow-up'). No pre-test data was obtained.</p> <p>Methods of analysis: Nutrition scores were analyzed using MINITAB. Intergroup differences were investigated using analysis of variance (ANOVA) and single-sided t-tests.</p>	<p>Primary outcomes:</p> <p>Dietary change: Approximately half of the participants (67%, 50%, 50%, 17) in groups 1 to 4, respectively, had reported changing their food-related practice. This varied from subtle changes to normal food preparation or cooking methods to shifts in the type, amount, or frequency of foods consumed (see table). The greatest impact of FWF was in helping to reduce the families' intake of dietary fat through discreet and manageable changes.</p> <table border="1"> <thead> <tr> <th>Types of dietary change</th> <th>No. reporting changes</th> </tr> </thead> <tbody> <tr> <td>Cooking methods</td> <td>10</td> </tr> <tr> <td>Food preparation methods</td> <td>9</td> </tr> <tr> <td>Using wider range recipes</td> <td>8</td> </tr> <tr> <td>Increase consumption of cereals/starchy vegetables</td> <td>8</td> </tr> <tr> <td>Decreased consumption of high fat foods</td> <td>7</td> </tr> <tr> <td>Total</td> <td>42</td> </tr> </tbody> </table> <p>Secondary outcomes:</p> <p>Nutrition knowledge: For program-specific items, groups 1 and 3 scored significantly higher ($p > .5$) for post-test aggregate scores than the control group 5 (see table). According to univariate analysis, this</p>	Types of dietary change	No. reporting changes	Cooking methods	10	Food preparation methods	9	Using wider range recipes	8	Increase consumption of cereals/starchy vegetables	8	Decreased consumption of high fat foods	7	Total	42	<p>Limitations identified by author: One session leader was relatively unsuccessful in delivering the FWF programme</p> <p>Limitations identified by review team: The reporting was confusing as to whether or not there was a comparison group Poor compliance with intervention (average attendance 6/10 sessions) No pre-test scores were obtained</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: Health Education Authority (HEA) Look After Your Heart (LAYH) programme (1990-1993) in collaboration with the University of Huddersfield and Huddersfield Health Promotion Unit</p>
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<p>participants? What factors influence and determine programme effectiveness? How was the program developed and implemented and what lessons can be learned?</p> <p>Study design: Case series</p> <p>Quality score: -</p>	<p>Setting: Urban area (Deighton) of a town in the North of England, community setting</p> <p>Year: 1990 to 1994</p>	<p>of salt or sugar, the relatively expensive option of increasing fruit consumption, or to the technicalities of saturated and polyunsaturated fats</p> <p>Participants experimented with familiar recipes modified to reduce fat and increase their complex carbohydrate content. Alternative cooking methods, such as grilling instead of frying, trimming or draining fat off meat, "extension" of meat dishes with starchy and root vegetables and pasta, etc., were demonstrated.</p> <p>Session leaders spent at least 30 minutes on topic material e.g. the link between dietary fat and CHD, cross-referencing supplementary handouts and the practical activity.</p> <p>Visual aids such as a "food wheel" showing the five different food groups were specifically developed.</p> <p>Simple models were used to explain more technical points (e.g., plastic drainpipes and papier mache to illustrate the deposition of fatty deposits in arteries; teaspoons of butter to demonstrate the amounts of hidden fat in a range of common foods such as pork pies, sausages, cheese, cakes, and biscuits)</p> <p>Participants were encouraged</p>		<p>was unlikely to be due to differences in baseline sociodemographic characteristics. Both groups 1 and 3 shared the same session leader. Between groups, there was no significant difference in their ability to describe the benefits of reducing dietary fat intake. Groups 1 and 3, however, showed significantly greater practical knowledge of how this could be achieved (e.g., in food purchasing, preparation, cooking methods). The same groups were better at distinguishing nutrition facts from common misconceptions (e.g., "margarine has the same calories as butter," "bread and potatoes themselves are not fattening"). They also understood the possible health benefits of extending meat dishes using vegetables and that eating more bread of any type (not just wholemeal) is now recommended, and could identify approximate fat contents of a range of food items.</p> <p>Aggregate nutrition scores by group for programme-specific knowledge questions</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>%TOT NUT</th> <th>%FWF NUT</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>77.1</td> <td>84.26</td> </tr> <tr> <td>2</td> <td>55.8</td> <td>60.7</td> </tr> <tr> <td>3</td> <td>84.0</td> <td>80.9</td> </tr> <tr> <td>4</td> <td>43.7</td> <td>43.36</td> </tr> </tbody> </table> <p>Attrition details: 22 of the 26 participants completed follow-up interviews.</p>	Grp	%TOT NUT	%FWF NUT	1	77.1	84.26	2	55.8	60.7	3	84.0	80.9	4	43.7	43.36	
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Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
		<p>to ask questions on various food-related issues throughout the demonstrations</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n= 26 Intervention n= 26 Control n= N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered? Not reported.</p>			
<p>Authors: Kennedy, Ubido, Elhassan, Price & Sephton</p> <p>Year: 1999</p> <p>Citation: Dietetic helpers in the community: the Bolton community nutrition Assistant's project. <i>Journal of Human Nutrition and Dietetics</i>, 12, 501-512.</p>	<p>Source population/s: UK North-West urban deprived community. No socioeconomic details of source population provided.</p> <p>Eligible population: Those living in the local neighbourhoods in Bolton who had been contacted by a CAN, whether as part of a group or as an individual</p> <p>Selected population: Of the</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: Community nutrition assistants (CNAs): A further development of the existing Community Dietetic Service, which already helps people to overcome barriers to eating healthily Trained lay workers, whose task it is to explore and act on the food & health needs of local communities, particularly those in disadvantaged areas, using the principles of community development Work in own neighbourhoods Trained to be nutrition facilitators rather than nutrition experts</p>	<p>Primary outcomes: Self-reported changed in behaviour: eating differently; shopping differently; cooking differently</p> <p>Secondary outcomes: None reported</p> <p>Follow-up periods: Between 5 and 14 months (calculated from study dates reported)</p> <p>Methods of analysis: Frequency data reported</p>	<p>Primary outcomes: 54% reported that they ate differently as a result of taking part in activities linked to the project; 54% reported that they shop differently, purchasing more healthier foods for the household such as low-fat spread, bread, pasta, oven chips; 42% reported cooking differently, including grilling and baking rather than frying food.</p> <p>Secondary outcomes: None reported</p> <p>Attrition details: Not reported</p>	<p>Limitations identified by author: Risk that non-nutritionists may disseminate incorrect or misleading information</p> <p>Limitations identified by review team: Baseline data not reported Measures of dietary behaviour change not the most reliable Specific population information not reported No comparison condition Data collected by</p>

Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
<p>Aim of study: To evaluate the role and impact of 'community nutrition assistants' (CNAs).</p> <p>Study design: Non-comparative (?case series) with qualitative process evaluation</p> <p>Quality score: -</p>	<p>1028 individuals who had had contacts with CNAs, 92 had had a contact that was 'more than a brief exploratory session' in the month chosen for sampling, 50% of whom were randomly selected for telephone interview. 41 participants completed telephone interviews, but no information on numbers approached and agreeing to participate was reported.</p> <p>Excluded population/s: None reported</p> <p>Setting: Community setting in Bolton</p> <p>Year: Evaluation took place over the second quarter: November 1996, January-March 1997 (CNAs monitored over the first</p>	<p>Training included: getting to know the community; communication skills; food & health knowledge; working with individuals & groups; working in a multicultural setting; food & health topics/issues (resources/activities); practical cooking & food hygiene; programme planning & evaluation; course review & summary</p> <p>Paid hourly with flexible working arrangements</p> <p>Daily work included: making initial contacts with members of the community or key people; introductory talks to groups, e.g. Young Women's Hostel; preparation & planning for practical activities, e.g. cook & taste; providing healthy eating advice or supporting food-related activities; monitoring & evaluation</p> <p>Types of activity undertaken during a contact with a CNA over 2 monitoring periods (November 1996, January—March 1997) included: initial contact with group/needs assessment; initial contact with individual/needs assessment; discussion on food issues; cook & taste session; display; resource-based activity; shopping.</p> <p>A typical CNA might: assist</p>			<p>those delivering the intervention Risk of selection bias in contacts with CNA</p> <p>Evidence gaps and/or recommendations for future research: Provide more support from the professional body</p> <p>Source of funding: North West Regional Health Authority, Community Healthcare Bolton NHS Trust</p>

Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
	<p>quarter: January-April 1996)</p>	<p>individuals to interpret dietary advice from their GP by advising on shopping or cooking tips to adopt a low-fat diet; help communities to establish food co-operatives in areas where access to fruit & vegetables is limited; support parent groups in campaigning for healthier school tuck shops; take practical advice on healthy eating to young teenage mothers in temporary accommodation and/or homeless hostels</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n=41 participated in quantitative evaluation (out of 1028 people, over 191 contacts) Intervention See above Control N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered? No detail reported</p>			
<p>Author: Lindsay, Bellaby, Smith, Baker</p> <p>Year: 2008</p>	<p>Source population/s: UK urban deprived community with nearly half its electoral wards in</p>	<p>Method of allocation: Random method of allocation reported but not described.</p> <p>Intervention/s description: The intervention group received</p>	<p>Primary outcomes: Exercise frequency, measured in terms of 'how many days during a typical week spent in moderate</p>	<p>Primary outcomes: Only one significant difference was found, which was a change in diet. Here a higher score indicates eating 'bad' foods more frequently. The experimental group improved their diet over time by eating such foods less often compared to the controls (p=0.014).</p>	<p>Limitations identified by author: That the six month follow-up period was too short and it may take more time for</p>

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<p>Citation: Enabling healthy choices: is ICT the highway to health improvement? Health; An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine, 12, 313-331</p> <p>ID: 140</p> <p>Aim of study: To test whether community based, facilitated access to an Internet health portal could improve the capacity of men and women with heart disease to manage their own heart conditions.</p> <p>Study design: RCT</p> <p>Quality score: +</p>	<p>the top 10% of the most multiply deprived wards in England, including for risk of heart disease.</p> <p>Eligible population: Men and women aged 50 to 74 years living in Salford were sampled from GPs' coronary heart disease (CHD) registries. Representativeness of eligible population to source population not reported.</p> <p>Selected population: The percentage of the eligible population recruited to the study as not reported, although it looks like 100% consented. Representativeness of selected population to eligible population not reported.</p> <p>Excluded population/s: not</p>	<p>new computers and a one-year broadband subscription along with training and access to the project's portal, Hearts of Salford, which contained discussion forums. Drop-in sessions were available as was phone-in support for any technical difficulties, however the intervention group were better informed about drop-in sessions as these were promoted by the portal.</p> <p>Control/comparison/s description: The control group received new computers and a one-year broadband subscription along with training but no access to the project's portal. Drop-in sessions were available as was phone-in support for any technical difficulties.</p> <p>Sample sizes: Total n= 108 Intervention n= 54 Control n= 54</p> <p>Baseline comparisons: No baseline comparisons were reported.</p> <p>Study sufficiently powered? Not reported.</p>	<p>exercise', where a higher score indicates more time spent in exercise.</p> <p>Alcohol consumption, measured by 'how many units of alcohol you drink in a typical week'.</p> <p>Smoking, measured by average number of cigarettes smoked per day, and exposure to second-hand smoke, measured by asking 'approximately how many hours per week are you exposed to second-hand smoke?</p> <p>Diet, measured by adding a series of variables together, which are standardized from the Health Survey for England and include: 'How often do you eat the following foods: chips, sweets, crisps, fried foods, ready-made meals and cakes/biscuits?' For each option, the</p>	<p>Exercise frequency:</p> <p>Days/week moderate exercise, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>p</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>3.63 (1.31)</td> <td>3.75 (1.01)</td> <td>-0.87</td> <td>0.39</td> </tr> <tr> <td>Ctrl</td> <td>3.55 (1.30)</td> <td>3.89 (1.08)</td> <td>-1.67</td> <td>0.10</td> </tr> </tbody> </table> <p>Alcohol consumption:</p> <p>Alcohol units/week, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>10.66 (11.75)</td> <td>8.98 (11.50)</td> <td>1.25</td> <td>0.22</td> </tr> <tr> <td>Ctrl</td> <td>7.05 (10.89)</td> <td>3.72 (4.72)</td> <td>2.37</td> <td>0.02</td> </tr> </tbody> </table> <p>Alcohol # units on heaviest day, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>4.48 (5.60)</td> <td>3.89 (4.51)</td> <td>1.38</td> <td>0.17</td> </tr> <tr> <td>Ctrl</td> <td>NR</td> <td>NR</td> <td>NR</td> <td>NR</td> </tr> </tbody> </table> <p>NR = not reported</p> <p>Smoking:</p> <p>Cigarettes smoked per day, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>p</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.42 (6.28)</td> <td>1.83 (4.66)</td> <td>0.81</td> <td>0.42</td> </tr> <tr> <td>Ctrl</td> <td>3.94 (7.39)</td> <td>2.98 (5.79)</td> <td>1.24</td> <td>0.22</td> </tr> </tbody> </table> <p>Exposure to second hand smoke:</p>	Grp	Pre	Post	t	p	Int	3.63 (1.31)	3.75 (1.01)	-0.87	0.39	Ctrl	3.55 (1.30)	3.89 (1.08)	-1.67	0.10	Grp	Pre	Post	t	P	Int	10.66 (11.75)	8.98 (11.50)	1.25	0.22	Ctrl	7.05 (10.89)	3.72 (4.72)	2.37	0.02	Grp	Pre	Post	t	P	Int	4.48 (5.60)	3.89 (4.51)	1.38	0.17	Ctrl	NR	NR	NR	NR	Grp	Pre	Post	t	p	Int	2.42 (6.28)	1.83 (4.66)	0.81	0.42	Ctrl	3.94 (7.39)	2.98 (5.79)	1.24	0.22	<p>changes in health behaviours to manifest.</p> <p>Limitations identified by review team: No baseline comparison reported, unclear if the two groups were similar at the start of the study. Method of randomisation was not reported Exercise measure seems too simplistic and not sensitive enough Multiple univariate comparisons increase the chance of making a type I error</p> <p>Evidence gaps and/or recommendations for future research: Whether changes can be sustained over the longer term & whether other changes may be more apparent over the longer term. Design online health portals that are responsive to the needs of deprived communities so that</p>
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	<p>stated</p> <p>Setting: Salford in Greater Manchester.</p> <p>Year: Study ended in June 2007, not clear when study started.</p>		<p>participant could select from a scale ranging from 'at least once/day', 'several times/week', 'about once a week', 'rarely' and 'never'. A higher score indicates eating these foods more often. A total score was summed for all of these six items where the scores could range from 6–30.</p> <p>Secondary outcomes: Total sources of health information accessed were summed and included: health professionals, leaflets, books/magazines, word-of-mouth, pharmacist, health shows, newspaper, family/friends, library, therapists, NHS direct (telephone help line), A&E department, local community support groups, NHS direct online, NHS walk-in centres, health audiotapes, radio,</p>	<p>Hours exposed to second hand smoke, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>4.52 (9.24)</td> <td>4.14 (9.21)</td> <td>0.46</td> <td>0.66</td> </tr> <tr> <td>Ctrl</td> <td>6.37 (16.19)</td> <td>3.62 (8.69)</td> <td>1.41</td> <td>0.16</td> </tr> </tbody> </table> <p>Diet:</p> <p>Frequency of 'bad' foods eaten, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>14.26 (3.13)</td> <td>13.76 (3.39)</td> <td>1.37</td> <td>0.17</td> </tr> <tr> <td>Ctrl</td> <td>13.71 (3.30)</td> <td>14.55 (3.71)</td> <td>- 2.12</td> <td>0.04</td> </tr> </tbody> </table> <p>Number of new healthy foods eaten, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>3.59 (1.64)</td> <td>3.63 (1.55)</td> <td>- 0.17</td> <td>0.87</td> </tr> <tr> <td>Ctrl</td> <td>3.24 (1.69)</td> <td>3.53 (2.01)</td> <td>- 1.04</td> <td>0.30</td> </tr> </tbody> </table> <p>Secondary outcomes: Notable, non-significant, trends included improved social support, mental health and the number of sources of health information accessed (for the experimental group).</p> <p>Social support:</p> <p>Social support score, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>16.62 (4.35)</td> <td>16.94 (4.85)</td> <td>- 0.45</td> <td>0.65</td> </tr> <tr> <td>Ctrl</td> <td>16.00</td> <td>13.77</td> <td>2.37</td> <td>0.02</td> </tr> </tbody> </table>	Grp	Pre	Post	t	P	Int	4.52 (9.24)	4.14 (9.21)	0.46	0.66	Ctrl	6.37 (16.19)	3.62 (8.69)	1.41	0.16	Grp	Pre	Post	t	P	Int	14.26 (3.13)	13.76 (3.39)	1.37	0.17	Ctrl	13.71 (3.30)	14.55 (3.71)	- 2.12	0.04	Grp	Pre	Post	t	P	Int	3.59 (1.64)	3.63 (1.55)	- 0.17	0.87	Ctrl	3.24 (1.69)	3.53 (2.01)	- 1.04	0.30	Grp	Pre	Post	t	P	Int	16.62 (4.35)	16.94 (4.85)	- 0.45	0.65	Ctrl	16.00	13.77	2.37	0.02	<p>they can enhance improvements in health.</p> <p>Source of funding: Economic and Social Research Council within its 'e-society' programme and the HEFCE Social Research Infrastructure Fund.</p>
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			<p>health websites and 'other' sources.</p> <p>Mental health was measured by asking, 'How do you feel you have been with the following during the past four weeks: full of life, nervous, down in the dumps, calm and peaceful, lot of energy, downhearted and blue, worn out, happy, tired?' Scales ranged from 1–6 where 1 indicated all of the time and 6 indicating none of the time.</p> <p>Measurement points: Beginning of the study (before participants were given computers) and 6 months after entry into study.</p> <p>Methods of analysis: T-tests and an OLS multiple regression were used to examine the influence of the health portal on health behaviours. Changes in</p>	<p>(4.87) (6.84)</p> <p>Mental health:</p> <p>Mental health score, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>34.51 (3.77)</td> <td>32.83 (8.92)</td> <td>1.41</td> <td>0.16</td> </tr> <tr> <td>Ctrl</td> <td>34.79 (6.41)</td> <td>28.68 (14.36)</td> <td>3.00</td> <td>0.004</td> </tr> </tbody> </table> <p>Health locus of control:</p> <p>Health locus of control (internal), mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>23.98 (3.93)</td> <td>22.96 (3.78)</td> <td>1.63</td> <td>0.11</td> </tr> <tr> <td>Ctrl</td> <td>21.97 (4.83)</td> <td>22.34 (3.85)</td> <td>- 0.55</td> <td>0.59</td> </tr> </tbody> </table> <p>Total sources of health information:</p> <p>Total sources of health information, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Post</th> <th>t</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>3.27 (2.71)</td> <td>3.18 (2.78)</td> <td>0.21</td> <td>0.83</td> </tr> <tr> <td>Ctrl</td> <td>2.03 (2.56)</td> <td>1.81 (1.97)</td> <td>0.74</td> <td>0.47</td> </tr> </tbody> </table> <p>Attrition details: All subjects accounted for at end of follow-up period.</p>	Grp	Pre	Post	t	P	Int	34.51 (3.77)	32.83 (8.92)	1.41	0.16	Ctrl	34.79 (6.41)	28.68 (14.36)	3.00	0.004	Grp	Pre	Post	t	P	Int	23.98 (3.93)	22.96 (3.78)	1.63	0.11	Ctrl	21.97 (4.83)	22.34 (3.85)	- 0.55	0.59	Grp	Pre	Post	t	P	Int	3.27 (2.71)	3.18 (2.78)	0.21	0.83	Ctrl	2.03 (2.56)	1.81 (1.97)	0.74	0.47	
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			behaviour were determined by calculating the difference from scores in Time 2 (six months) from Time 1 (beginning of the study).																						
<p>Author: Lowther, Mutrie & Scott</p> <p>Year: 2002</p> <p>Citation: Promoting physical activity in a socially and economically deprived community: a 12 month randomised control trial of fitness assessment and exercise consultation. <i>Journal of Sports Sciences</i>, 20, 577-588</p> <p>ID: 838</p> <p>Aim of study: To assess the</p>	<p>Source population/s: UK socially and economically deprived urban community – two housing estates in Kilmarnock</p> <p>Eligible population: 3000 application forms were mailed to residents of two housing estates. No information reported on the representativeness of the eligible population to the source population.</p> <p>Selected population: Only 12.3% of the eligible population volunteered. . No information reported on the</p>	<p>Method of allocation: Participants were given the choice of volunteering for either intervention. Then randomly assigned to intervention group or control group for each RCT. Randomisation was obtained by blinded coin tossing between pairs of forms (block randomisation, with a block size of two).</p> <p>Intervention/s description: Intervention 1 was a fitness assessment involving measurement of height, mass, blood pressure, strength, flexibility, lung capacity and cardio-respiratory fitness, which was then used to develop an exercise programme. The duration of this session and the delivery personnel were not reported. Participants were also given exercise vouchers for the course of the study, which offered free use of various local sports facilities, including swimming pool, badminton</p>	<p>Primary outcomes: Level of physical activity was measured using the Scottish Physical Activity questionnaire (SPAQ).</p> <p>Secondary outcomes: Differences in intervention choice for activity status, regularly active and not regularly active and to compare long-term (one year) outcomes between groups for those not regularly active at onset.</p> <p>Measurement points: Baseline, four weeks, three months (including an intervention re-test), six months and one year.</p>	<p>Primary outcomes: At baseline, four weeks follow-up and three months follow-up, two-way analysis of variance was conducted. There were no differences in the pattern of activity between the groups for either RCT.</p> <p>Leisure-time PA (min week⁻¹) at intermediate test phase, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>4 wks</th> <th>3 mths</th> </tr> </thead> <tbody> <tr> <td>FAE (n=24)</td> <td>207 (115)</td> <td>428 (203)</td> <td>478 (237)</td> </tr> <tr> <td>FAC (n=34)</td> <td>283 (135)</td> <td>498 (228)</td> <td>536 (201)</td> </tr> <tr> <td>ECE (n=38)</td> <td>179 (100)</td> <td>475 (215)</td> <td>485 (156)</td> </tr> <tr> <td>ECC (n=27)</td> <td>158 (81)</td> <td>442 (439)</td> <td>390 (386)</td> </tr> </tbody> </table> <p>FAE = fitness assessment experimental, FAC = fitness assessment control, ECE = exercise consultation experimental, ECC = exercise consultation control</p> <p>Two-way analysis of variance was at three months, six months and one year follow-up period. There were no differences in pattern of activity between study groups for either RCT.</p> <p>In the a priori planned comparison to test for any</p>	Grp	Pre	4 wks	3 mths	FAE (n=24)	207 (115)	428 (203)	478 (237)	FAC (n=34)	283 (135)	498 (228)	536 (201)	ECE (n=38)	179 (100)	475 (215)	485 (156)	ECC (n=27)	158 (81)	442 (439)	390 (386)	<p>Limitations identified by author: As volunteers came from close knit communities, there was a possibility that the interventions were discussed and compared. Rates of attrition may have impacted on long-term differences between groups Statistical analysis revealed several exceptions where normality was rejected</p> <p>Limitations identified by review team: Only 12% of potential participants participated, raising the possibility of selection bias Little detail on recruitment was reported Effects beyond 1 year</p>
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<p>impact of a fitness assessment and an exercise consultation on physical activity over one year in non-regularly-active participants drawn from a socially and economically deprived community.</p> <p>Study design: Two parallel RCTs one for each of the two interventions.</p> <p>Quality score: ++</p>	<p>representativeness of the selected population to the eligible population.</p> <p>Excluded population/s:</p> <p>Setting: Two socially and economically deprived communities within the Scottish town of Kilmarnock.</p> <p>Year: Study started May 1997, initial interventions conducted June 1997 to August 1997.</p>	<p>courts, golf course and a fitness gymnasium.</p> <p>Intervention 2 was an exercise consultation involving a discussion of becoming more physically active on a regular basis. This lasted for 30 minutes, was conducted by the researcher and incorporated the following elements (Loughlan & Mutrie, 1995, cited by the authors as the source for their exercise consultation): Discussion of current and past activity as a means to discovering likes and dislikes Client asked to complete a decision balance sheet, which prompts them to think of the potential gains and losses that might occur as a result of increased activity levels (client must come to the view that the gains outweigh the losses) Discussion of the client's perceived barriers and how they may be overcome A prompt to seek out social support for increased activity from family, friends or workmates (or to join a beginners' exercise class for support) With help from the consultant, the client sets short-term intermediate and long-term goals, designed to meet the</p>	<p>Methods of analysis: Two-sample t-tests, two-way analysis of variance with repeated measures. Separate analyses were conducted for each test phase (intermediate and long-term effect) for each RCT (fitness assessment vs. control, exercise consultation vs. control). Secondary outcomes were analysed using χ^2. Those regularly active and not regularly active were analysed separately – only those not regularly active are reported on in this paper.</p>	<p>significant change from baseline to 1 year post-test for each intervention group using 4 one-sample t-tests, only the exercise consultation intervention group showed a significant increase in physical activity at 1 year post-test ($t_{21}=3.43$, $p<0.05$). When an intention to treat analysis was calculated, this was still the case ($t_{39}=3.09$, $p<0.05$). The authors suggest this indicates a lack of attrition bias.</p> <p>Leisure-time PA (min week⁻¹) at intermediate test phase, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>3 mths</th> <th>6 mths</th> <th>1 year</th> </tr> </thead> <tbody> <tr> <td>FAE (n=10)</td> <td>512 (307)</td> <td>354 (185)</td> <td>281 (100)</td> </tr> <tr> <td>FAC (n=16)</td> <td>510 (198)</td> <td>497 (423)</td> <td>317 (159)</td> </tr> <tr> <td>ECE (n=22)</td> <td>462 (147)</td> <td>444 (212)</td> <td>314 (160)</td> </tr> <tr> <td>ECC (n=14)</td> <td>424 (225)</td> <td>309 (180)</td> <td>248 (158)</td> </tr> </tbody> </table> <p>FAE = fitness assessment experimental, FAC = fitness assessment control, ECE = exercise consultation experimental, ECC = exercise consultation control</p> <p>Secondary outcomes: There was a significant difference in activity status distribution when comparing interventions ($\chi^2_{1}=5.03$, $p<0.05$). Exercise consultations are beneficial in the long-term to those who are not regularly active, with no evidence that fitness assessments have any long-term benefit to this group. Likewise, there was also a significant drop-out rates between at least two groups ($\chi^2_{3}=8.49$,</p>	Grp	3 mths	6 mths	1 year	FAE (n=10)	512 (307)	354 (185)	281 (100)	FAC (n=16)	510 (198)	497 (423)	317 (159)	ECE (n=22)	462 (147)	444 (212)	314 (160)	ECC (n=14)	424 (225)	309 (180)	248 (158)	<p>were not examined</p> <p>Evidence gaps and/or recommendations for future research: Continue to target low-SES populations</p> <p>Source of funding: Not reported.</p>
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		<p>client's needs taking into account the motivations and barriers that exist for that person</p> <p>Participants were also given exercise vouchers for the course of the study, which offered free use of various local sports facilities, including swimming pool, badminton courts, golf course and a fitness gymnasium.</p> <p>Control/comparison/s description: Both control groups received the same treatment – participants were given a short explanation of the study after measurement of height and body mass and also information on physical activity ('Hassle Free Exercise' booklet, Health Education Board for Scotland, 1994) and any general questions relating to the study or physical activity participation were answered. Participants were also given exercise vouchers for the course of the study, which offered free use of various local sports facilities, including swimming pool, badminton courts, golf course and a fitness gymnasium. Control group participants were given the option of receiving their desired intervention at the end</p>		<p>$p < 0.05$); confirmatory analyses suggest that drop-out rates were higher for the fitness assessment experimental group than for the exercise consultation experimental group.</p> <p>Attrition details: Eight lost at baseline, a further 19 at four weeks follow-up, 13 at three months follow-up, 18 at six months follow-up and 43 at one year follow-up.</p>	

Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes		
		<p>of the study period.</p> <p>Sample sizes: Total – fitness assessment n=225 Total – exercise consultation n=145. Intervention – fitness assessment n=112 Intervention – exercise consultation n=73 Control – fitness assessment n=113, Control – exercise consultation n=72.</p> <p>Baseline comparisons: No significant differences on physical activity level at baseline for each RCT.</p> <p>Study sufficiently powered? Yes</p>					
<p>Authors: McKellar, Morrison, McEntegart, Hampson, Tierney, Mackle, Scoular, Scott, Capell</p> <p>Year: 2007</p> <p>Ref ID: 4931</p> <p>Citation: A pilot</p>	<p>Source population/s: Urban UK females with rheumatoid arthritis living in areas of social deprivation, in a community setting.</p> <p>Eligible population: Residents within any of the Social inclusion partnership</p>	<p>Method of allocation: Pragmatic allocation based on participant availability (those available on the dates of the programmed cookery course assigned to the intervention group)</p> <p>Intervention/s description: Mediterranean-type diet intervention: 6-week cookery course, comprised of weekly 2-hour sessions</p>	<p>Primary outcomes: Data collected during clinical assessment visits.</p> <p>Cardiovascular risk: Smoking habits Systolic & diastolic blood pressure Total & high-density lipoprotein cholesterol Glutathione (plays important role in</p>	<p>Primary outcomes: Cardiovascular risk:</p> <p>Evaluation of cardiovascular risk factors showed a significant drop in systolic blood pressure by an average of 4 mm Hg in the intervention group (p=0.016), while the control group showed no change. No significant change in cholesterol or glutathione levels was found with this intervention (see tables).</p> <p>Ever smoker (%):</p> <table border="1"> <tr> <td>Grp</td> <td>Pre</td> </tr> </table>	Grp	Pre	
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<p>study of a Mediterranean-type diet intervention in female patients with rheumatoid arthritis living in areas of social deprivation in Glasgow. Ann Rheum Dis, 66, 1239-1243</p> <p>Aim of study: To explore the feasibility of introducing a Mediterranean-type diet to female patients with rheumatoid arthritis living in areas of social deprivation and to assess any change in lifestyle, disease activity and cardiovascular risk.</p> <p>Study design: Non-RCT</p> <p>Quality score: +</p>	<p>areas in Glasgow were recruited over nine months at three hospital sites; no further detail reported. No information reported on the representativeness of the eligible population to the source population.</p> <p>Selected population: No detail reported on the proportion of the eligible population who agreed to participate. Likewise, no information reported on the representativeness of the eligible population to the source population.</p> <p>Excluded population/s: Males, females aged under 30 and over 70 years, those without rheumatoid arthritis</p> <p>Setting: Community</p>	<p>≤10 participants in each session Organised by Greater Glasgow Health Board's Health Promotion Department (GGHBHPD) Emphasis placed on a Mediterranean-type diet Delivered by nutritionists and teaching staff from local colleges, with advice from occupational therapy staff on the provision of aids for food preparation Folder given to each participant containing information on a Mediterranean-type diet, healthy eating and recipes promoting increased fruit, vegetable and legume consumption and substituting saturated fat with monounsaturated fat (i.e. olive oil, spreads containing olive oil) Sessions contained information about food hygiene, nutrition and where to access affordable ingredients locally, in addition to the 'hands-on' preparation The cost per patient for the 6 week cookery course was £84 (J124) (met by the GGHBHPD)</p> <p>Control/comparison/s description: Received readily available healthy eating information only.</p>	<p>preventing oxidative stress, metabolising nutrients & regulating cellular events – deficiency has been implicated in the pathogenesis of heart disease) BMI</p> <p>Dietary assessment: Food Frequency Questionnaire (FFQ): Composite score of the weekly no. of servings of the three food groups (fruit, vegetables & legumes) was calculated Additional questions about fruit intake were included, from which daily intake of vitamins A, C & E were calculated</p> <p>Secondary outcomes: Clinical features of rheumatoid arthritis were also assessed, but these are not reported in this review.</p> <p>Follow-up periods: Baseline, 3 months,</p>	<table border="1"> <tr> <td>Int (n=75)</td> <td>64</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ctrl (n=55)</td> <td>62</td> <td></td> <td></td> <td></td> </tr> </table> <p>Systolic BP (mm Hg):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>132</td> <td>130</td> <td>128</td> <td>0.016</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>130</td> <td>129</td> <td>130</td> <td>NS</td> </tr> </tbody> </table> <p>Diastolic BP (mm Hg):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>80</td> <td>78</td> <td>80</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>80</td> <td>80</td> <td>78</td> <td>NS</td> </tr> </tbody> </table> <p>Total cholesterol (mmol/l):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>5.55</td> <td>5.4</td> <td>5.3</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>5.3</td> <td>5.18</td> <td>5.4</td> <td>NS</td> </tr> </tbody> </table> <p>HDL (mmol/ml):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>1.55</td> <td>1.6</td> <td>1.6</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>1.5</td> <td>1.46</td> <td>1.5</td> <td>NS</td> </tr> </tbody> </table> <p>Total cholesterol:HDL ratio:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3</th> <th>6</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Int (n=75)	64				Ctrl (n=55)	62				Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	132	130	128	0.016	Ctrl (n=55)	130	129	130	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	80	78	80	NS	Ctrl (n=55)	80	80	78	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	5.55	5.4	5.3	NS	Ctrl (n=55)	5.3	5.18	5.4	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	1.55	1.6	1.6	NS	Ctrl (n=55)	1.5	1.46	1.5	NS	Grp	Pre	3	6	Wilcoxon						
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		<p>Sample sizes: Total n=130 Intervention n=75 Control n=55</p> <p>Baseline comparisons: The authors qualitatively report similarity between both groups on age, disease duration and BMI, and display means, but do not compare groups using statistical analysis.</p> <p>Study sufficiently powered? Not reported</p>	<p>6 months</p> <p>Methods of analysis: A Wilcoxon matched-pairs signed-ranks test was used for within-group analyses and a Mann–Whitney U test for comparison between intervention and control groups.</p>	<table border="1"> <thead> <tr> <th></th> <th></th> <th>3 mth</th> <th>6 mth</th> <th></th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>3.44</td> <td>3.40</td> <td>3.40</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>3.50</td> <td>3.52</td> <td>3.23</td> <td>NS</td> </tr> </tbody> </table> <p>Glutathione (nmol/ml):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>3.23</td> <td>3.26</td> <td>2.72</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>2.94</td> <td>3.2</td> <td>2.66</td> <td>NS</td> </tr> </tbody> </table> <p>Weight (kg):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>66.0</td> <td>64.1</td> <td>65.1</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>70</td> <td>70</td> <td>72.5</td> <td>NS</td> </tr> </tbody> </table> <p>BMI (kg/m²):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>6 mth</th> <th>Wilcoxon</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>25.86</td> <td>25</td> <td>25.39</td> <td>NS</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>27.65</td> <td>27.65</td> <td>28.22</td> <td>NS</td> </tr> </tbody> </table> <p>Dietary assessment:</p> <p>Consumption of fruit, vegetables and legumes was below the recommended minimum of five portions a day, in both groups at baseline. By 3 months this had improved significantly in the intervention group who were attending cooking</p>			3 mth	6 mth		Int (n=75)	3.44	3.40	3.40	NS	Ctrl (n=55)	3.50	3.52	3.23	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	3.23	3.26	2.72	NS	Ctrl (n=55)	2.94	3.2	2.66	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	66.0	64.1	65.1	NS	Ctrl (n=55)	70	70	72.5	NS	Grp	Pre	3 mth	6 mth	Wilcoxon	Int (n=75)	25.86	25	25.39	NS	Ctrl (n=55)	27.65	27.65	28.22	NS	
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Ctrl (n=55)	3.50	3.52	3.23	NS																																																													
Grp	Pre	3 mth	6 mth	Wilcoxon																																																													
Int (n=75)	3.23	3.26	2.72	NS																																																													
Ctrl (n=55)	2.94	3.2	2.66	NS																																																													
Grp	Pre	3 mth	6 mth	Wilcoxon																																																													
Int (n=75)	66.0	64.1	65.1	NS																																																													
Ctrl (n=55)	70	70	72.5	NS																																																													
Grp	Pre	3 mth	6 mth	Wilcoxon																																																													
Int (n=75)	25.86	25	25.39	NS																																																													
Ctrl (n=55)	27.65	27.65	28.22	NS																																																													

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				<p>classes (see tables).</p> <p>At the same time, this group also had a significant improvement in the ratio of monounsaturated:saturated fats consumed. Alcohol consumption was low in both groups with a mean consumption of 1.5 units/week in the intervention group and 1.9 units/week in the control group.</p> <p>Fruit, vegetable and legume intake (portions/week) (median):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>p value</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>23.5</td> <td>36</td> <td>0.016</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>21.5</td> <td>23</td> <td>0.84</td> </tr> </tbody> </table> <p>Monounsaturated fats:saturated fats:</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>p value</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>0.86</td> <td>0.92</td> <td>0.022</td> </tr> <tr> <td>Ctrl (n=55)</td> <td>0.82</td> <td>0.83</td> <td>0.726</td> </tr> </tbody> </table> <p>Vitamin A (µg/day):</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>3 mth</th> <th>p value</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>1108</td> <td>1246</td> <td>0.101</td> </tr> <tr> <td>Ctrl (n= 5)</td> <td>94</td> <td>94</td> <td>0.929</td> </tr> </tbody> </table> <p>Vitamin C (µg/day):</p> <table border="1"> <thead> <tr> <th>Gr</th> <th>Pre</th> <th>3 mth</th> <th>P value</th> </tr> </thead> <tbody> <tr> <td>Int (n=75)</td> <td>94</td> <td>104</td> <td>0.081</td> </tr> </tbody> </table>	Grp	Pre	3 mth	p value	Int (n=75)	23.5	36	0.016	Ctrl (n=55)	21.5	23	0.84	Grp	Pre	3 mth	p value	Int (n=75)	0.86	0.92	0.022	Ctrl (n=55)	0.82	0.83	0.726	Grp	Pre	3 mth	p value	Int (n=75)	1108	1246	0.101	Ctrl (n= 5)	94	94	0.929	Gr	Pre	3 mth	P value	Int (n=75)	94	104	0.081	
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<p>Authors: Peerbhoy, Majumdar, Wightman, Brand</p> <p>Year: 2008</p> <p>Citation: Success and challenges of a community healthy lifestyles intervention in Merseyside (UK) to target families at risk from coronary heart disease. <i>Health Education Journal</i>, 67,</p>	<p>Source population/s: UK North-West urban deprived community. No socioeconomic details of source population provided.</p> <p>Eligible population: Families living in a deprived area of Liverpool with ≥1 CHD risk factor, aged 5-17 for young people (data not reviewed here) & 18-65 for adults were recruited to the 'Family Fit' programme by</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: 'Family fit' programme, a holistic approach: Aims to improve people's health through influencing dietary and physical activity (PA) habits PA increases were promoted through prescribed exercise programmes Guidance on increasing habitual PA & improved nutritional uptake Approach to change based on providing modifiable determinants (information-based, behavioural and social & environmental and policy) of PA & healthy eating, known to influence psychological &</p>	<p>Primary outcomes: Nutrition: Fruit & vegetable intake Wholemeal bread consumption Use of mono-unsaturated spreads & cooking oils Semi-skimmed milk use</p> <p>Alcohol: Units per week</p> <p>Physical activity: Amount of moderate & vigorous exercise self-reported Walking undertaken in & around work Maintenance of</p>	<p>Primary outcomes: Nutrition: Increased fruit & vegetable intake Increased wholemeal bread consumption Increased use of mono-unsaturated spreads & cooking oils Increased use of semi-skimmed milk</p> <p>Alcohol: Decrease in units per week reported by heavy drinkers</p> <p>Physical activity: Increase in amount of moderate & vigorous exercise self-reported Walking undertaken in & around work Maintenance of exercise beyond the course of the programme (i.e. at 6-month follow-up)</p> <p>Numerical data was not reported and likewise statistical comparison of data across time points was not reported.</p>	<p>Limitations identified by author: Community context meant that many methodological issues could not be controlled for Many questions may have resulted in inaccurate response due to the generalisations involved and categorical response options Data collected by those delivering the intervention Frequency analysis may not have been sensitive to each individual's change</p>																

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes
<p>134-147.</p> <p>Aim of study: To document the lifestyle health impacts (activity, diet, physiological) of a programme for families presenting ≥ 1 CHD risk factor.</p> <p>Study design: Non-comparative (case series?) with qualitative process evaluation</p> <p>Quality score: -</p>	<p>primary care health professionals. Families who had completed the programme at the time of evaluation.</p> <p>Selected population: No specific recruitment strategy reported from the eligible population. Data from all of those completing the programme were analysed.</p> <p>Excluded population/s: None specifically reported.</p> <p>Setting: Deprived area of Liverpool – community context</p> <p>Year: Conducted between September 2004 & January 2006</p>	<p>physiological outcomes Support & feedback incorporating fun and attainable goals are key to Family Fit Does not focus on one particular stage of change (no further details provided) Delivered by Family Fit Officers (FFOs) Programme elements include: Self-evaluation & physiological measurements Individualised agreed PA & diet advice & plan with constant review & feedback Emphasis on sustainable & fun gradual change, linked to participants' ability & preferences At least one family group activity (e.g. walk, cycle) & dual activity (child & adult) Support facilitated through National Healthy School Provision & Community Dieticians if referred client is a child Families given a pedometer each & water bottles (along with advice on the importance of fluid intake) Part of a local regeneration initiative aimed at increasing access to healthy food & exercise venues (aligns with Choosing Health policy priorities) Healthy eating activities</p>	<p>exercise beyond the course of the programme (i.e. at 6-month follow-up)</p> <p>Secondary outcomes: Physiological measurements (BMI, flexibility, blood pressure, resting heart rate, peak flow) were taken but were not reported on</p> <p>Follow-up periods: Baseline (week 1), 7 weeks, 14 weeks, 6 months</p> <p>Methods of analysis: Frequency data</p>	<p>Secondary outcomes: No data reported on physiological measurements taken</p> <p>Attrition details: 6/48 adults did not report lifestyle change follow-up data</p>	<p>Lack of comparative community (or individuals), therefore findings may be influenced by external factors Impact of one individual on the whole family or impact of family relationships on success could not be detected Relationships between data (e.g. on eating and physical activity) were not examined</p> <p>Limitations identified by review team: Numerical data were not reported Statistical analysis was not conducted Risk of selection bias in GP referrals Specific population information not reported</p> <p>Evidence gaps and/or recommendations for future research: Continued support after 6 months for sustained change</p> <p>Source of funding: The National Lottery</p>

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		<p>included cookery classes and supermarket tours Duration 14 weeks</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n=43 families comprising 90 individuals, 48 of whom were adults Intervention n=48 adults (see above) Control n=N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered? Insufficient detail reported</p>													
<p>Author: Step toe, Perkins-Porras, McKay, Rink, Hilton, Cappuccio</p> <p>Year: 2003</p> <p>Citation: Behavioural counselling to increase consumption of fruit and vegetables in low income adults:</p>	<p>Source population/s: UK deprived urban (inner city)</p> <p>Eligible population: Patients aged 18 to 70 years registered at one primary health centre in a deprived inner city area with a Jarman score of 40.3 were randomly recruited by letter (no further details). Only one person per</p>	<p>Method of allocation: Participants were randomly selected into one of the two counselling conditions using a minimisation procedure to ensure the groups were balanced in terms of age, sex, ethnicity and smoking (Treasure & MacRae, 1998) – no further detail reported.</p> <p>Intervention/s description: Behavioural dietary counselling - founded on social learning theory and the stage of change model, which posits that the most appropriate methods of encouraging change in</p>	<p>Primary outcomes: A two item frequency questionnaire that asked participants how many pieces of fruit and how many portions of vegetables they ate on a typical day (detailed information about portion sizes were given to participants). Potatoes were excluded, and one serving of fruit juice was allowed.</p>	<p>Primary outcomes: Both groups increased the number of portions consumed a day. After adjustment for covariates, the increase was greater in the behavioural counselling than in the nutrition counselling group (mean difference 0.62 portions, 95% confidence interval 0.09 to 1.13, $p=0.021$). The increase in the number eating five or more portions a day was also greater in the behavioural group (difference 15%, 3% to 28%).</p> <p>Effect of counselling on portions/day (SD / 95% CI)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Adj change</th> <th>Adj diff in change</th> <th>Sig (of diff)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>3.60 (1.81)</td> <td>1.49 (1.12-1.86)</td> <td>0.62 (0.09-1.13)</td> <td>0.021</td> </tr> </tbody> </table>	Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	Int	3.60 (1.81)	1.49 (1.12-1.86)	0.62 (0.09-1.13)	0.021	<p>Limitations identified by author: Although the study complied with the CONSORT recommendations for parallel group randomised trials, the authors were unable to blind researchers to group assignment. It would have been preferable if the nurses administering the intervention had not been involved in assessments, but lack of resources did not</p>
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<p>randomised trial. <i>BMJ</i>, 326, 855-860</p> <p>ID: 4737</p> <p>Aim of study: To measure the effect of brief behavioural counselling in general practice on patients' consumption of fruit and vegetables in adults from a low income population.</p> <p>Study design: A parallel group randomised controlled trial.</p> <p>Quality score: ++</p>	<p>household was eligible. 3858 letters were sent.</p> <p>Selected population: Of the 21% (775) who replied to the letter, 316 refused participation and 188 were excluded. 271 (35% of those who replied and 7% of those to whom letters were sent) were randomised.</p> <p>Excluded population/s: Individuals with serious illness and women who were pregnant or who planned to become pregnant within the next 12 months. After several months of recruitment, it became evident that many participants had relatively high incomes, suggesting that the study was attracting more affluent residents. Invitations were therefore modified to discourage people</p>	<p>behaviour vary with the motivational readiness of the individual. Delivered as two 15 minute individual consultations, two weeks apart.</p> <p>Control/comparison/s description: Brief nutritional counselling – education about the importance of increasing consumption of fruit and vegetables, emphasising beneficial nutritional constituents and the way these act biologically to maintain health. Delivered as two 15 minute individual consultations, two weeks apart.</p> <p>Sample sizes: Total n=271 Intervention n=136 Control n= 135</p> <p>Baseline comparisons: Yes</p> <p>Study sufficiently powered? Yes</p>	<p>Patients also completed the dietary instrument for nutrition education (DINE), a weighted food frequency questionnaire that accounts for most fat and fibre in the typical UK diet.</p> <p>Blood pressure was measured after the participant had been sitting for 10 minutes. The average of three consecutive readings with a digital sphygmomanometer was used.</p> <p>Changes in body weight, BMI and total plasma cortisol concentration was also assessed.</p> <p>Secondary outcomes: Biomarkers of fruit and vegetable intake were also assessed to determine whether counselling interventions had effects not only on reported consumption but also</p>	<table border="1"> <tr> <td>Ctrl</td> <td>3.67 (2.00)</td> <td>0.87 (0.50-1.25)</td> <td></td> <td></td> </tr> </table> <p>Effect of counselling on % attaining 5 portions a day (95% CI)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Adj change</th> <th>Adj diff in change</th> <th>Sig (of diff)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>21.3%</td> <td>42.2% (33.1-51.2)</td> <td rowspan="2">15.4% (2.52-28.3)</td> <td rowspan="2">0.019</td> </tr> <tr> <td>Ctrl</td> <td>26.7%</td> <td>26.8% (17.6-36.0)</td> </tr> </tbody> </table> <p>Effect of counselling on body weight (SD / 95% CI)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Adj change</th> <th>Adj diff in change</th> <th>Sig (of diff)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>71.3 (15.6)</td> <td>-0.03 (-0.56-0.50)</td> <td rowspan="2">0.24 (-0.51-1.00)</td> <td rowspan="2">0.53</td> </tr> <tr> <td>Ctrl</td> <td>73.0 (16.6)</td> <td>-0.27 (-0.81-0.26)</td> </tr> </tbody> </table> <p>Effect of counselling on BMI (SD / 95% CI)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>Pre</th> <th>Adj change</th> <th>Adj diff in change</th> <th>Sig (of diff)</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>25.5 (4.9)</td> <td>0.01 (-0.20-0.21)</td> <td rowspan="2">0.04 (-0.25-0.33)</td> <td rowspan="2">0.77</td> </tr> <tr> <td>Ctrl</td> <td>26.2 (5.8)</td> <td>-0.04 (-0.24-</td> </tr> </tbody> </table>	Ctrl	3.67 (2.00)	0.87 (0.50-1.25)			Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	Int	21.3%	42.2% (33.1-51.2)	15.4% (2.52-28.3)	0.019	Ctrl	26.7%	26.8% (17.6-36.0)	Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	Int	71.3 (15.6)	-0.03 (-0.56-0.50)	0.24 (-0.51-1.00)	0.53	Ctrl	73.0 (16.6)	-0.27 (-0.81-0.26)	Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	Int	25.5 (4.9)	0.01 (-0.20-0.21)	0.04 (-0.25-0.33)	0.77	Ctrl	26.2 (5.8)	-0.04 (-0.24-	<p>allow this. Lack of an inactive control condition</p> <p>Limitations identified by review team: Low (21%) response rate of potential participants expressing an interest may indicate possible selection bias</p> <p>Evidence gaps and/or recommendations for future research: These techniques would be feasible in primary care, and could be adapted for group administration. However, it is not known how effective they would be if applied by practice nurses outside the research setting.</p> <p>Source of funding: Department of Health/Medical Research Council Nutrition Programme.</p>
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							change		
				Int	0.90 (0.62)	1.20 (1.08-1.33)	0.16 (0.001-1.34)	0.05	
				Ctrl	0.92 (0.68)	1.04 (0.94-1.15)			
				Effect of counselling on a tocopherol (vitamin E) (SD / 95% CI)					
				Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	
				Int	25.6 (11.3)	8.81 (7.12-10.5)	1.52 (-0.91-1.80)	0.22	
				Ctrl	27.4 (10.9)	7.30 (5.58-9.02)			
				Effect of counselling on asorbic acid (vitamin C) (SD / 95% CI)					
				Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	
				Int	75.6 (33.3)	-4.06 (8.52-0.41)	-4.57 (-10.9-1.80)	0.16	
				Ctrl	78.0 (33.0)	0.51 (-4.00-5.01)			
				Effect of counselling on potassium excretion (SD / 95% CI)					
				Grp	Pre	Adj change	Adj diff in change	Sig (of diff)	

Preventing pre-diabetes in adults from a lower socioeconomic group

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<p>Authors: Wimbush, Macgregor & Fraser</p> <p>Year: 1998</p> <p>Citation: Impacts of a national mass media campaign on walking in Scotland. <i>Health Promotion International</i>, 13, 45-53.</p> <p>Ref ID:</p>	<p>Source population/s: Whole country (Scotland), urban and rural, community/mass media settings. The intervention was targeted towards men and women aged 30-55 who do not exercise on a regular basis, with a bias towards C2, D and E socio-economic groups.</p> <p>Eligible population: Questions about the campaign were added</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: Health Education Board for Scotland (HEBS) walking campaign – Scotland-wide mass media campaign to promote walking:</p> <ul style="list-style-type: none"> • Launched in September 1995, consisting of 2 bursts of TV advertisements and other associated mass media activities • Target group = men and women aged 30-55 who do not exercise on a regular basis, with a bias towards C2, D and E socio-economic groups • 3 stages of developmental and 	<p>Primary outcomes:</p> <p>Exercise intentions:</p> <ul style="list-style-type: none"> • Changes in exercise intentions with regard to walking among the adult population • Changes in exercise intentions among 'Fitline' callers at baseline and follow-up <p>Reported behaviour:</p> <ul style="list-style-type: none"> • Changes in walking behaviour among the adult population 	<p>Primary outcomes:</p> <p><u>Exercise intentions:</u></p> <p>No evidence of notable change in intention to walk more among the adult population: 55% in June 1995; 57% in June 1996. In the target group this was a slight drop from 66% to 62% (significance not tested).</p> <p>Fitline callers' exercise intentions increased from baseline (60%) to 1 year follow-up (82%) (no significance reported).</p> <p><u>Reported behaviour:</u></p> <p>No notable change in proportion of adults reporting spending ≥30min walking: mean number of days = 4.26</p>	<p>Limitations identified by author:</p> <ul style="list-style-type: none"> • 1/3 of Fitline callers were already active, with the call possibly driven by curiosity rather than an intention to be active, and were more likely to be disappointed by the materials sent • Difficult to disentangle the effect on behaviour change of the Fitline direct response service itself from the panel effect of follow-up 																									

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<p>Aim of study: Report on the impact of a national mass media campaign to promote walking as a form of exercise conducted by the Health Education Board for Scotland (HEBS).</p> <p>Study design: Case series?</p> <p>Quality score: -</p>	<p>to an existing frequently-administered survey, the Communications Tracking Survey (a monitoring survey carried out for HEBS by the Centre for Social Marketing at Strathclyde University every 4 months in October, February & June, involving personal interviews with ~800 people aged 10-74 years living in Scotland, sampled using multi-stage cluster random probability sampling methods). Five questions were also placed in System 3 Scotland's monthly omnibus survey in June 1995 (pre-campaign) and 1996 (post-campaign). Baseline and follow-up surveys were conducted with a random sample of 'Fitline' callers. No information provided on the similarity of the eligible population to the source population.</p> <p>Selected population: No information of percentages of eligible population responding</p>	<p>pre-testing research conducted with target population members took place between March and June 1995 to inform campaign and materials development</p> <ul style="list-style-type: none"> • Main aim = to reposition walking as a healthy form of exercise • Objectives = encourage the target group to re-assess their beliefs about walking as a form of exercise; reinforce their interest in walking; motivate them to increase the quantity and quality of their walking • Central element: 40-sec TV commercial where Gavin Hastings (recently retired Scotland rugby captain) revealed some 'surprising facts' about walking versus other forms of exercise: • Advert involves GH walking briskly along a city street while asking the viewers: <ul style="list-style-type: none"> • "Did you know that walking a mile uses exactly the same energy or calories as running a mile does? What's more, it's equivalent to swimming fifteen lengths of a 25 metre pool, or playing 8 min of this [squash] nonstop! So if you want to be fit and healthy you don't have to [shots of sweaty and energetic squash, rugby, weight-lifting], you can do this [cut to the relative serenity of walking briskly in a city park]." • End-frame shows the text 'Walking. Take exercise in your stride' together with the telephone number for a free 	<p>(number of days in last week in which they had spent at least 30 min walking)</p> <ul style="list-style-type: none"> • Self-assessed change in physical activity level among Fitline callers • Changes in stage of change (SOC) in exercise behaviour among Fitline callers (derived from variables measuring current exercise behaviour and future exercise intention) and mean shift in SOC <p>Secondary outcomes:</p> <p>Knowledge and beliefs:</p> <p>Level of agreement with four statements linked to the walking campaign:</p> <ol style="list-style-type: none"> Walking is a good form of exercise (% agree) Walking a mile uses up the same energy as running a mile (% agree) Exercise only does you good if it makes you sweaty and out of breath (% disagree) You need to get 30 min exercise a day 	<p>in June 1995 (baseline) and 4.13 in June 1996 (1 year follow-up).</p> <p>Self-assessed change in PA levels among Fitline callers (%):</p> <table border="1"> <thead> <tr> <th></th> <th>10 wks (n=490)</th> <th>1 year (n=282)</th> </tr> </thead> <tbody> <tr> <td>More physically active</td> <td>50%</td> <td>48%</td> </tr> <tr> <td>About the same</td> <td>46%</td> <td>46%</td> </tr> <tr> <td>Less physically active</td> <td>4%</td> <td>7%</td> </tr> </tbody> </table> <p>Stages of change (SOC) for Fitline callers followed up at 1 year (%):</p> <table border="1"> <thead> <tr> <th></th> <th>Baseline (n=239)</th> <th>10 wks (n=283)</th> <th>1 year (n=281)</th> </tr> </thead> <tbody> <tr> <td>Pre-contemplation</td> <td>5%</td> <td>4%</td> <td>5%</td> </tr> <tr> <td>Contemplation</td> <td>54%</td> <td>30%</td> <td>34%</td> </tr> <tr> <td>Preparation</td> <td>11%</td> <td>15%</td> <td>13%</td> </tr> <tr> <td>Action</td> <td>18%</td> <td>40%</td> <td>36%</td> </tr> <tr> <td>Maintenance</td> <td>11%</td> <td>12%</td> <td>112%</td> </tr> </tbody> </table> <p>Mean change in SOC for Fitline callers followed up at 1 year by self-reported exercise status:</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Baseline to 10 wks</th> <th colspan="2">10 wks to 1 year</th> </tr> <tr> <th>Mean</th> <th>No.</th> <th>Mean</th> <th>No.</th> </tr> </thead> <tbody> <tr> <td>Inactive</td> <td>0.8</td> <td>30</td> <td>0.1</td> <td>31</td> </tr> <tr> <td>Fairly active</td> <td>0.9</td> <td>143</td> <td>-0.1</td> <td>147</td> </tr> <tr> <td>Regular exerciser</td> <td>-0.4</td> <td>66</td> <td>-0.2</td> <td>74</td> </tr> <tr> <td>All respondents</td> <td>0.5</td> <td>239</td> <td>-0.1</td> <td>252</td> </tr> </tbody> </table> <p>When assessed in terms of individual shifts between the stages of change at baseline and 10 weeks, the mean change was 0.5 stages in a positive direction. However, for those who described themselves as inactive or</p>		10 wks (n=490)	1 year (n=282)	More physically active	50%	48%	About the same	46%	46%	Less physically active	4%	7%		Baseline (n=239)	10 wks (n=283)	1 year (n=281)	Pre-contemplation	5%	4%	5%	Contemplation	54%	30%	34%	Preparation	11%	15%	13%	Action	18%	40%	36%	Maintenance	11%	12%	112%		Baseline to 10 wks		10 wks to 1 year		Mean	No.	Mean	No.	Inactive	0.8	30	0.1	31	Fairly active	0.9	143	-0.1	147	Regular exerciser	-0.4	66	-0.2	74	All respondents	0.5	239	-0.1	252	<p>research on Fitline callers</p> <ul style="list-style-type: none"> • Take-up of the direct response service was higher among non-manual owner-occupied groups, i.e. not the target group <p>Limitations identified by review team:</p> <ul style="list-style-type: none"> • Population measure of walking behaviour may not have been sensitive enough • Self-reported change in walking is subject to recall bias • Precise numbers of participants moving through the evaluation were not reported, neither were attrition figures <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: Not reported; possibly Health Education Board for Scotland?</p>
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	<p>to the tracking survey or omnibus survey. For the baseline survey of Fitline callers, the response rate for individual questions varied between 62% and 86%. Response rates to the survey of Fitline callers were 70% at 10 weeks and 58% at one year. No information provided on the similarity of the selected population to the eligible population.</p> <p>Excluded population/s:</p> <p>Setting: Community/mass media</p> <p>Year: June 1995 to October 1996 (intervention ran 13 September 1996 to 21 April 1996)</p>	<p>direct response service ('Fitline'), which distributed a free information pack to callers (including data about the energy expenditure involved in walking a mile against other forms of exercise and sport, and two booklets providing exercise information and contact details for local walking groups)</p> <ul style="list-style-type: none"> • First burst of TV advertising ran from 12 September to 8 October 1995 (for 4 weeks) • Second burst of TV advertising ran from 26 March to 21 April 1996. • Local radio stations were encouraged to run programmes on walking, which highlighted local walking opportunities and interviews with local walkers and professionals • Prior to the first burst of TV advertising, the campaign was launched on Scottish Television's programme 'Scottish Action' <p>Control/comparison/s description: No control or comparison condition</p> <p>Sample sizes: Total n= Intervention n=4036 (baseline survey of Fitline callers) plus n=800 (Communications Tracking Survey, exact n not specified) Control n=N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered? Not</p>	<p>to benefit your health (% agree)</p> <p>Follow-up periods: Baseline (Omnibus survey), 4 months (Tracking survey), 8 months (Tracking survey), 12 months (both surveys), 1-year follow-up survey of Fitline callers a year after start of advertisements; baseline survey of Fitline callers at 4 months from baseline Omnibus survey (during 1st burst of advertisements) and 10-week survey of Fitline callers at 10 weeks from baseline Fitline caller survey (~8 months).</p> <p>Methods of analysis: Reporting of frequency data, means and change in means; no statistical analysis.</p>	<p>only fairly active, the mean shift was larger at 0.8 and 0.9 stages respectively. There was little change between the two follow-up surveys.</p> <p>The overall profile of Fitline callers showed a shift from contemplation/preparation to action at both 10 wk & 1 yr follow-up.</p> <p>Secondary outcomes:</p> <p>Knowledge and beliefs:</p> <p>The walking campaign seemed to have a positive impact on knowledge and beliefs, with the greatest shift related to the 'surprising fact' statement featured in the TV advertisement that "walking a mile uses up the same energy as running a mile", although no statistical analysis was undertaken.</p> <p>Responses among all adults:</p> <table border="1"> <thead> <tr> <th>Statement</th> <th>Pre-campaign (n=1066)</th> <th>Post-campaign (n=1085)</th> </tr> </thead> <tbody> <tr> <td>Walking a mile uses the same energy as running a mile (% agree)</td> <td>20% (1% strongly)</td> <td>56% (14% strongly)</td> </tr> <tr> <td>Walking is a good form of exercise (% agree)</td> <td>99% (38% strongly)</td> <td>99% (57% strongly)</td> </tr> <tr> <td>Exercise only does you good if it makes you sweaty and out of breath (% disagree)</td> <td>80% (13% strongly)</td> <td>80% (22% strongly)</td> </tr> <tr> <td>You need to get 30 min exercise a day to benefit your health (% agree)</td> <td>70% (9% strongly)</td> <td>66% (17% strongly)</td> </tr> </tbody> </table> <p>Responses among target group (35-54, low SES):</p>	Statement	Pre-campaign (n=1066)	Post-campaign (n=1085)	Walking a mile uses the same energy as running a mile (% agree)	20% (1% strongly)	56% (14% strongly)	Walking is a good form of exercise (% agree)	99% (38% strongly)	99% (57% strongly)	Exercise only does you good if it makes you sweaty and out of breath (% disagree)	80% (13% strongly)	80% (22% strongly)	You need to get 30 min exercise a day to benefit your health (% agree)	70% (9% strongly)	66% (17% strongly)	
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Walking a mile uses the same energy as running a mile (% agree)	57%*	67%*	65%																																	
Walking is a good form of exercise (% agree)	100%	99%	100%																																	
Exercise only does you good if it makes you sweaty and out of breath (% disagree)	87%	85%	91%																																	

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results	Notes																																										
				<p>Attrition details: Difficult to assess as numbers completing the tracking and omnibus surveys were not reported and only a small subsample of the baseline survey of Fitline callers was randomly selected for follow-up. Many numbers were not reported so it is difficult to keep track of participant numbers at each point in time.</p>																																											
<p>Author: Wrieden, Anderson, Longbottom, Valentine, Stead, Caraher, Gray, Dowler</p> <p>Year: 2006</p> <p>Citation: The impact of a community-based food skills intervention on cooking confidence, food preparation methods and dietary choices – an exploratory trial. <i>Public Health Nutrition</i>, 10, 203-211</p> <p>ID: 324</p> <p>Aim of study: The aim of the current study was to evaluate</p>	<p>Source population/s: Community-based settings in Scotland, UK, urban, deprived.</p> <p>Eligible population: Recruited by community worker at each site within eight community settings in areas of social deprivation that had kitchen/food preparation facilities for 10 people available, as well as community group leaders having the ability to timetable a two to three hour group session for 10 weeks. No detail reported on the representativeness of the eligible population to the source population.</p>	<p>Method of allocation: Not reported.</p> <p>Intervention/s description: Informal educational session covering food hygiene, nutrition and food tasting and a standardised two hour food skills intervention programme delivered over seven weeks. The aim of the programme was to increase cooking confidence and food preparation methods, and promote increases in consumption of fibre-rich starchy carbohydrates, fish, vegetables and fruit, and decreases in consumption of fat in adults living in areas of deprivation. A 'CookWell' manual was designed to enable facilitators to follow a standardised, but flexible, programme in each community. Delivered by CookWell project worker/facilitator.</p> <p>Weekly actions & activities: <u>Week 1:</u> Recruitment – allocation to intervention or comparison group</p>	<p>Primary outcomes: Quantitative evaluations using food diaries, shopping diaries and questionnaires were carried out in intervention and comparison groups.</p> <p>Frequency of consumption of key foods (fruit, vegetables and salads, fruit and vegetables, total fish, tuna, total bread, pasta and rice) and changes.</p> <p>Frequency of key food preparation and cooking methods as indicated by answers to questions on the kind of cooking carried out.</p> <p>Confidence in cooking selected items, following a</p>	<p>Primary outcomes: At T2, a mean change equivalent to one portion a week was seen in the intervention group for fruit (P= 0.047), but no other significant changes were seen. This change was not sustained and there was no significant difference between the intervention and comparison groups (T1–T3).</p> <p>Weekly frequency of consumption from completed 7-day diaries</p> <p>Fruit juice, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>0.1 (0.31)</td> <td>0.3 (0.86)</td> <td>0.2 (0.95)</td> <td rowspan="2">0.79</td> </tr> <tr> <td>Ctrl</td> <td>0.5 (1.03)</td> <td>0.8 (1.72)</td> <td>0.3 (1.43)</td> </tr> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> <tr> <td>Int</td> <td>0.1 (0.28)</td> <td>0.1 (0.28)</td> <td>0.0 (0.29)</td> <td rowspan="2">0.75</td> </tr> <tr> <td>Ctrl</td> <td>1.0 (1.78)</td> <td>1.0 (1.68)</td> <td>-0.2 (2.24)</td> </tr> </tbody> </table> <p>Fruit (excluding fruit juice), mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>1.7 (2.36)</td> <td>2.7 (3.28)</td> <td>1.0 (2.26)</td> <td rowspan="2">0.05</td> </tr> <tr> <td>Ctrl</td> <td>2.3</td> <td>2.0</td> <td>-0.2</td> </tr> </tbody> </table>	Grp	T1	T2	Mean diff	Sig	Int	0.1 (0.31)	0.3 (0.86)	0.2 (0.95)	0.79	Ctrl	0.5 (1.03)	0.8 (1.72)	0.3 (1.43)	Grp	T1	T3	Mean diff	Sig	Int	0.1 (0.28)	0.1 (0.28)	0.0 (0.29)	0.75	Ctrl	1.0 (1.78)	1.0 (1.68)	-0.2 (2.24)	Grp	T1	T2	Mean diff	Sig	Int	1.7 (2.36)	2.7 (3.28)	1.0 (2.26)	0.05	Ctrl	2.3	2.0	-0.2	<p>Limitations identified by author: Study failed to reach sample size required. Duration of intervention may have been inadequate Burden of assessment is likely to have contributed to low retention rates</p> <p>Limitations identified by review team: No baseline comparisons reported. Groups not randomised High attrition rates No intention to treat analysis Multiple univariate analysis increases chance of type I error</p> <p>Evidence gaps and/or recommendations for future research:</p> <p>Source of funding:</p>
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<p>the feasibility of undertaking a food skills intervention (CookWell) study aimed at altering cooking confidence, food preparation methods and dietary choices in areas of social deprivation.</p> <p>Study design: Non-randomised controlled trial</p> <p>Quality score: +</p>	<p>Selected population: 82% of eligible population (93/113) consented to participate. No detail on the representativeness of the selected population to the eligible population was reported.</p> <p>Excluded population/s: Not reported.</p> <p>Setting: Six communities were based in areas that are ranked in the most deprived 20% in Scotland and two were within the most deprived 40% of the population when scored by the Scottish Index of Multiple Deprivation. The settings within the communities included child and family projects, community education centres, community cafes and community schools.</p>	<p><u>Week 2:</u> Educational introductory session covering food hygiene, nutrition and food tasting</p> <p><u>Week 3:</u> Cheese sauce and pasta bake</p> <p><u>Week 4:</u> Soups and scones</p> <p><u>Week 5:</u> Mince-based dishes</p> <p><u>Week 6:</u> Rice-based dishes</p> <p><u>Week 7:</u> Pizza and salad</p> <p><u>Week 8:</u> Chicken curry/stew and potato wedges</p> <p><u>Week 9:</u> Carrot cake and healthy puddings</p> <p><u>Week 10:</u> End of session 'celebration' with snacks, presentation of CookWell certificates and cookery packs</p> <p>Control/comparison/s description: Informal educational session covering food hygiene, nutrition and food tasting, but no food skills programme.</p> <p>Weekly actions & activities:</p> <p><u>Week 1:</u> Recruitment – allocation to intervention or comparison group</p> <p><u>Week 2:</u> Educational introductory session covering food hygiene, nutrition and food tasting</p> <p><u>Week 3:</u> No contact</p> <p><u>Week 4:</u> No contact</p> <p><u>Week 5:</u> No contact</p> <p><u>Week 6:</u> No contact</p>	<p>recipe and using basic ingredients.</p> <p>Secondary outcomes: None reported.</p> <p>Measurement points: Baseline (T1), immediately after completion of the intervention 2 months later (T2) and at 6 months follow-up (T3).</p> <p>Methods of analysis: Not reported in any detail, other than using Student t-tests and χ^2 tests.</p>	<table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>1.9 (2.75)</td> <td>1.8 (2.58)</td> <td>-0.1 (2.45)</td> <td rowspan="3">0.32</td> </tr> <tr> <td>Ctrl</td> <td>2.1 (2.71)</td> <td>1.2 (1.52)</td> <td>-0.9 (2.29)</td> </tr> </tbody> </table> <p>Fruit and fruit juice, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>1.8 (2.34)</td> <td>3.1 (3.65)</td> <td>1.3 (2.55)</td> <td rowspan="2">0.11</td> </tr> <tr> <td>Ctrl</td> <td>2.8 (3.42)</td> <td>2.9 (4.05)</td> <td>0.1 (2.51)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>2.0 (2.73)</td> <td>1.8 (2.57)</td> <td>-0.1 (2.42)</td> <td rowspan="2">0.29</td> </tr> <tr> <td>Ctrl</td> <td>3.0 (3.25)</td> <td>2.0 (2.35)</td> <td>-1.1 (3.19)</td> </tr> </tbody> </table> <p>Vegetables and salads, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>6.0 (2.97)</td> <td>6.4 (4.79)</td> <td>0.4 (3.69)</td> <td rowspan="2">0.48</td> </tr> <tr> <td>Ctrl</td> <td>7.0 (3.57)</td> <td>6.6 (3.89)</td> <td>-0.4 (4.96)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>6.4 (3.31)</td> <td>7.2 (4.57)</td> <td>0.8 (3.12)</td> <td rowspan="2">0.49</td> </tr> <tr> <td>Ctrl</td> <td>6.3 (3.70)</td> <td>7.7 (5.67)</td> <td>1.4 (2.85)</td> </tr> </tbody> </table> <p>Fruit and vegetables, mean (SD)</p>	Grp	T1	T3	Mean diff	Sig	Int	1.9 (2.75)	1.8 (2.58)	-0.1 (2.45)	0.32	Ctrl	2.1 (2.71)	1.2 (1.52)	-0.9 (2.29)	Grp	T1	T2	Mean diff	Sig	Int	1.8 (2.34)	3.1 (3.65)	1.3 (2.55)	0.11	Ctrl	2.8 (3.42)	2.9 (4.05)	0.1 (2.51)	Grp	T1	T3	Mean diff	Sig	Int	2.0 (2.73)	1.8 (2.57)	-0.1 (2.42)	0.29	Ctrl	3.0 (3.25)	2.0 (2.35)	-1.1 (3.19)	Grp	T1	T2	Mean diff	Sig	Int	6.0 (2.97)	6.4 (4.79)	0.4 (3.69)	0.48	Ctrl	7.0 (3.57)	6.6 (3.89)	-0.4 (4.96)	Grp	T1	T3	Mean diff	Sig	Int	6.4 (3.31)	7.2 (4.57)	0.8 (3.12)	0.49	Ctrl	6.3 (3.70)	7.7 (5.67)	1.4 (2.85)	<p>Food Standards Agency.</p>
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Preventing pre-diabetes in adults from a lower socioeconomic group

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results					Notes																																																																												
	<p>Year: October 2000 to June 2001</p>	<p>Week 7: No contact Week 8: No contact Week 9: No contact Week 10: End of session 'celebration' with snacks, presentation of cookery packs</p> <p>Sample sizes: Total n= 93 Intervention n= 51 Control n= 42</p> <p>Baseline comparisons: Not reported.</p> <p>Study sufficiently powered? No requiring 50 subjects in each group.</p>		<table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>7.8 (4.26)</td> <td>9.5 (7.11)</td> <td>1.7 (4.71)</td> <td rowspan="2">0.18</td> </tr> <tr> <td>Ctrl</td> <td>9.8 (5.64)</td> <td>9.5 (5.11)</td> <td>-0.3 (6.00)</td> </tr> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> <tr> <td>Int</td> <td>8.4 (4.95)</td> <td>9.0 (5.46)</td> <td>0.6 (4.06)</td> <td rowspan="2">0.84</td> </tr> <tr> <td>Ctrl</td> <td>9.4 (5.41)</td> <td>9.7 (6.95)</td> <td>0.3 (4.61)</td> </tr> </tbody> </table> <p>Tuna, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>0.3 (0.85)</td> <td>0.4 (0.73)</td> <td>0.1 (1.07)</td> <td rowspan="2">0.93</td> </tr> <tr> <td>Ctrl</td> <td>0.4 (0.68)</td> <td>0.5 (0.87)</td> <td>0.1 (1.00)</td> </tr> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> <tr> <td>Int</td> <td>0.4 (0.92)</td> <td>0.3 (0.56)</td> <td>0.0 (0.91)</td> <td rowspan="2">0.10</td> </tr> <tr> <td>Ctrl</td> <td>0.4 (0.61)</td> <td>0.8 (1.03)</td> <td>0.4 (0.80)</td> </tr> </tbody> </table> <p>All fish, mean (SD)</p> <table border="1"> <thead> <tr> <th>Grp</th> <th>T1</th> <th>T2</th> <th>Mean diff</th> <th>Sig</th> </tr> </thead> <tbody> <tr> <td>Int</td> <td>1.0 (0.98)</td> <td>1.2 (1.36)</td> <td>0.2 (1.21)</td> <td rowspan="2">0.96</td> </tr> <tr> <td>Ctrl</td> <td>1.1 (1.00)</td> <td>1.3 (1.06)</td> <td>0.2 (1.17)</td> </tr> <tr> <th>Grp</th> <th>T1</th> <th>T3</th> <th>Mean diff</th> <th>Sig</th> </tr> <tr> <td>Int</td> <td>1.2</td> <td>1.3</td> <td>0.2</td> <td>0.78</td> </tr> </tbody> </table>	Grp	T1	T2	Mean diff	Sig	Int	7.8 (4.26)	9.5 (7.11)	1.7 (4.71)	0.18	Ctrl	9.8 (5.64)	9.5 (5.11)	-0.3 (6.00)	Grp	T1	T3	Mean diff	Sig	Int	8.4 (4.95)	9.0 (5.46)	0.6 (4.06)	0.84	Ctrl	9.4 (5.41)	9.7 (6.95)	0.3 (4.61)	Grp	T1	T2	Mean diff	Sig	Int	0.3 (0.85)	0.4 (0.73)	0.1 (1.07)	0.93	Ctrl	0.4 (0.68)	0.5 (0.87)	0.1 (1.00)	Grp	T1	T3	Mean diff	Sig	Int	0.4 (0.92)	0.3 (0.56)	0.0 (0.91)	0.10	Ctrl	0.4 (0.61)	0.8 (1.03)	0.4 (0.80)	Grp	T1	T2	Mean diff	Sig	Int	1.0 (0.98)	1.2 (1.36)	0.2 (1.21)	0.96	Ctrl	1.1 (1.00)	1.3 (1.06)	0.2 (1.17)	Grp	T1	T3	Mean diff	Sig	Int	1.2	1.3	0.2	0.78	
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					(1.05)	(1.13)	(0.92)		
				Ctrl	0.9 (1.09)	1.0 (1.06)	0.1 (1.48)		
				Total bread, mean (SD)					
				Grp	T1	T2	Mean diff	Sig	
				Int	10.2 (4.28)	9.3 (4.37)	-0.9 (4.53)	0.25	
				Ctrl	10.1 (3.60)	10.7 (4.70)	0.6 (4.73)		
				Grp	T1	T3	Mean diff	Sig	
				Int	10.0 (4.76)	9.8 (4.49)	-0.2 (3.71)	0.16	
				Ctrl	10.5 (3.64)	12.1 (3.51)	1.5 (3.91)		
				Pasta and rice, mean (SD)					
				Grp	T1	T2	Mean diff	Sig	
				Int	2.1 (1.41)	1.9 (1.75)	-0.2 (1.80)	0.12	
				Ctrl	2.0 (1.67)	2.7 (1.93)	0.7 (2.11)		
				Grp	T1	T3	Mean diff	Sig	
				Int	2.2 (1.53)	1.7 (1.43)	-0.5 (1.91)	0.12	
				Ctrl	1.9 (1.36)	2.4 (1.00)	0.5 (2.13)		
				All starchy foods, mean (SD)					
				Grp	T1	T2	Mean diff	Sig	
				Int	17.2 (5.59)	16.2 (6.35)	-1.0 (5.63)	0.10	

Study details	Population and setting	Method of allocation to intervention/control	Outcomes and methods of analysis	Results				Notes																				
				Ctrl	16.6 (5.90)	18.5 (5.85)	1.9 (6.49)																					
Grp	T1	T3	Mean diff	Sig																								
Int	17.0 (6.33)	17.1 (6.14)	0.0 (5.12)	0.20																								
Ctrl	16.8 (5.85)	18.9 (4.21)	2.1 (4.87)																									
<p>Secondary outcomes: not reported.</p> <p>Attrition details: 22 (43%) intervention group, 21 (50%) control group at T2 and 27 (53%) intervention group, 25 (60%) control group at T3.</p>																												
<p>Authors: Wrigley, Warm, Margetts</p> <p>Year: 2003</p> <p>Citation: Deprivation, diet, and food retail access: findings from the Leeds 'food deserts' study. <i>Environment and Planning A</i>, 35, 151-188.</p> <p>Aim of study: Investigate the impact of a sudden and significant</p>	<p>Source population/s: UK deprived urban community setting: Seacroft & Whinmoor, a local authority housing estate of around 15000 households (38000 population). Low income, compoundly deprived (in top 5% most deprived wards in England), mainly white, characterised by poor food retail provision.</p> <p>Eligible population: Initial</p>	<p>Method of allocation: N/A</p> <p>Intervention/s description: The opening of a new large-scale food retail outlet, opened in November 2000. Was on the site of a previous local shopping complex, which had become run-down with many shops closed.</p> <p>Control/comparison/s description: N/A</p> <p>Sample sizes: Total n=1009 Intervention n=1009 Control n=N/A</p> <p>Baseline comparisons: N/A</p> <p>Study sufficiently powered?</p>	<p>Primary outcomes: Respondent-completed (but interviewer placed and collected) 7-day food consumption Diary, which showed a significant high correlation (0.75) between wave 2 and a repeat administration following wave 2 data collection (n=140).</p> <p>Interviewer-administered household questionnaire exploring issues of: Attitudes to healthy</p>	<p>Primary outcomes:</p> <p>Fruit & vegetable consumption: Fruit & vegetable consumption (portions per day) significantly increased in those who switched to the new store (although it was higher to begin with in those who did not switch):</p> <table border="1"> <thead> <tr> <th></th> <th>Pre</th> <th>Post</th> <th>t-test</th> </tr> </thead> <tbody> <tr> <td>Switched (n=276)</td> <td>2.66</td> <td>2.89</td> <td>t=-2.14, p=0.034</td> </tr> <tr> <td>Did not switch (n=339)</td> <td>3.07</td> <td>2.94</td> <td>t=1.35 p=0.178</td> </tr> </tbody> </table> <p>Fruit and vegetable consumption was not significantly affected by distance to the new store, although the increase approached significance in those living 750m or less from the new store:</p> <table border="1"> <thead> <tr> <th>Distance to new store</th> <th>Pre</th> <th>Post</th> <th>t-test</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Pre	Post	t-test	Switched (n=276)	2.66	2.89	t=-2.14, p=0.034	Did not switch (n=339)	3.07	2.94	t=1.35 p=0.178	Distance to new store	Pre	Post	t-test					<p>Limitations identified by author: Respondents may have differed from non-respondents at both wave 1 and wave 2</p> <p>Limitations identified by review team: No comparison condition No intention to treat analysis Statistical analyses of many variables using paired t-tests may have produced spurious findings Reliance on self-report measures Attitudes to healthy</p>
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<p>change in food retail access on food consumption in a highly deprived area of a British city.</p> <p>Study design: Case series</p> <p>Quality score: -</p>	<p>contact was established with 3000 households within the boundary of the Seacroft ward and Whinmoor ward.</p> <p>Selected population: Approximately 1/3 of individuals from the eligible population agreed to participate, however precise figures are not reported.</p> <p>Excluded population/s: None reported</p> <p>Setting: Community</p> <p>Year: Wave 1 ('before') in summer 2000 & wave 2 ('after') in summer 2001.</p>	<p>Yes (powered for attrition of 400 respondents from an initial sample of 1000 at wave 1)</p>	<p>eating; Perceived constraints on choice of foods bought, etc. The diary and questionnaire were completed by the person primarily responsible for the domestic food arrangements of the household.</p> <p>Secondary outcomes: Interviewer-administered household questionnaire exploring issues of: Food-store choice; Mode of travel to stores; Car ownership or access;</p> <p>Follow-up periods: 1 year</p> <p>Methods of analysis: Frequency data analysis, paired samples <i>t</i>-tests to analyse pre-intervention to post-intervention changes in fruit and vegetable consumption,</p>	<table border="1"> <thead> <tr> <th>(m)</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>≤ 750 (n=176)</td> <td>2.56</td> <td>2.81</td> <td><i>t</i>=1.78 <i>p</i>=0.077</td> </tr> <tr> <td>> 750 ≤ 1000 (n=113)</td> <td>3.02</td> <td>3.05</td> <td><i>t</i>=0.20 <i>p</i>=0.839</td> </tr> <tr> <td>> 1000 (n=326)</td> <td>3.00</td> <td>2.93</td> <td><i>t</i>=76 <i>p</i>=0.450</td> </tr> <tr> <td>≤ 500 (n=65)</td> <td>2.60</td> <td>3.13</td> <td><i>t</i>=1.57 <i>p</i>=0.121</td> </tr> <tr> <td>> 500 ≤ 1000 (n=224)</td> <td>2.77</td> <td>2.84</td> <td><i>t</i>=0.65 <i>p</i>=0.517</td> </tr> </tbody> </table> <p>Comparisons in change of consumption (portions per day) were also made between those with lower (≤ 2 portions per day), intermediate (2-3 portions per day) and higher (>3 portions per day) pre-intervention consumption, in those who did and did not switch to the new store. Among those who switched:</p> <table border="1"> <thead> <tr> <th>Pre-int. F&V consump.</th> <th>Pre</th> <th>Post</th> <th><i>t</i>-test</th> </tr> </thead> <tbody> <tr> <td>Lower (n=124)</td> <td>1.25</td> <td>1.72</td> <td><i>t</i>=-5.78 <i>p</i><0.001</td> </tr> <tr> <td>Intermed. (n=52)</td> <td>2.44</td> <td>2.51</td> <td><i>t</i>=-0.41 <i>p</i>=0.687</td> </tr> <tr> <td>Higher (n=100)</td> <td>4.51</td> <td>4.52</td> <td><i>t</i>=-0.06 <i>p</i>=0.95</td> </tr> </tbody> </table> <p>Among those who did not switch to the new store:</p> <table border="1"> <thead> <tr> <th>Pre-int. F&V consump.</th> <th>Pre</th> <th>Post</th> <th><i>t</i>-test</th> </tr> </thead> <tbody> <tr> <td>Lower (n=115)</td> <td>1.37</td> <td>1.78</td> <td><i>t</i>=-4.24 <i>p</i><0.001</td> </tr> </tbody> </table>	(m)				≤ 750 (n=176)	2.56	2.81	<i>t</i> =1.78 <i>p</i> =0.077	> 750 ≤ 1000 (n=113)	3.02	3.05	<i>t</i> =0.20 <i>p</i> =0.839	> 1000 (n=326)	3.00	2.93	<i>t</i> =76 <i>p</i> =0.450	≤ 500 (n=65)	2.60	3.13	<i>t</i> =1.57 <i>p</i> =0.121	> 500 ≤ 1000 (n=224)	2.77	2.84	<i>t</i> =0.65 <i>p</i> =0.517	Pre-int. F&V consump.	Pre	Post	<i>t</i> -test	Lower (n=124)	1.25	1.72	<i>t</i> =-5.78 <i>p</i> <0.001	Intermed. (n=52)	2.44	2.51	<i>t</i> =-0.41 <i>p</i> =0.687	Higher (n=100)	4.51	4.52	<i>t</i> =-0.06 <i>p</i> =0.95	Pre-int. F&V consump.	Pre	Post	<i>t</i> -test	Lower (n=115)	1.37	1.78	<i>t</i> =-4.24 <i>p</i> <0.001	<p>eating not reported</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: BBSRC/ESRC/MAFF/DoH "Eating, Food & Health" LINK programme, funded by the ESRC & J. Sainsbury plc, 2000-2003.</p>
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				<p>Secondary outcomes:</p>															
				<p>Mode of travel to main food store: At pre-intervention, 12.3% and 6.5% reported walking to their main food store, compared with 30.8% and 22.8% respectively post-intervention (no statistical test reported).</p>															
				<p>Those living closer also appeared to increase the amount to which they walked to the main store from pre-post intervention:</p>															
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Preventing pre-diabetes in adults from a lower socioeconomic group

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Survey studies

Study details	Population and setting	Methods	Findings	Notes
<p>Author: Dibsdall (linked to Dibsdall 2002)</p> <p>Study design: Questionnaire survey based on IPA findings</p> <p>Year: 2003</p> <p>Funding: Biotechnology and Biological Sciences Research Council</p> <p>Area: East Anglia</p> <p>QUALITY: ++</p>	<p>Number of participants:</p> <p>3000 distributed to residents of homes owned by Broadland Housing association. 690 replies; 10 dropped due to missing data</p> <p>Mean Age: 46.5 (SD 20) Nearly 63% aged 17-50 66% live alone 33% Married with partner 18% work full time (mainly male) 11% jobseekers 21% looking after family (mainly female) 27% retired 7% sick leave</p> <p>Gender: 78% female</p> <p>Baseline comparability: Portions of F&V claimed to be eaten per day: 0-2 = 323 (49%) 3-4 = 216 (33%)</p>	<p>SURVEY: Research Question: To determine low-income consumer's attitudes and behaviour towards fruit and vegetables, particularly issues of access to, affordability of and motivation to eat fruit and vegetables.</p> <p>Methods used: Questionnaire survey based on IPA findings; carried out July/August 2001 Incentive: Entry to £100 home improvement vouchers prize draw</p> <p>Questionnaire: 30 items, Likert scale of agreement; issues of access, affordability and motivation to eat F&V (10 items for each). 2. Demographic information and number of F&V portions / helpings (not potatoes) claimed to eat per day (to elicit perceptions rather than actual consumption)</p> <p>Analysis: (SPSS) Varimax rotation MANOVA Pearsons ²</p>	<p>Outcomes: 23% response rate Six factors explained 59.4% of total variance (choice, health, affordability, change, organic, transport). These were used to test the relationship with demographic variables using MANOVA. All except transport had a high internal reliability (Chronbach alpha >0.78); transport = $\alpha = 0.55$</p> <p>Only 18% claimed to eat the recommended 5+ F&V per day 49% claimed to eat less than 2 portions per day 22% claimed to eat some organic foods 6% claimed to be vegetarian</p> <p>Main Themes relevant to research question: <i>Gender</i> Differences in men and women's attitudes toward healthy eating differed significantly ($P < 0.05$), but only for 'change'. Women therefore more willing to consider eating more F&V for health reasons and would consider cutting out other foods to do so. <i>Age</i> Participants in increasing age groups were more likely to believe they were eating healthily and enjoyed eating F&V than younger groups ($P < 0.001$). However, the eldest group (outside the scope at 71-100) were less likely to consider changing their diet and were most likely to use public transport. <i>Employment</i> Retired participants were more likely to strongly agree that they ate enough F&V for their health than any other group. Jobseekers believed they had greater difficulties buying more F&V than those employed full or part time ($P < 0.001$). <i>Marital status</i> Single participants perceived they had less choice in the F&V they could buy than those married or living with a partner. They were also less likely to believe they enjoyed or ate enough F&V</p>	

Study details	Population and setting	Methods	Findings	Notes
	5+ = 115 (18%)		<p>for their health. Widowed participants were more likely to agree they were eating healthily and found F&V more affordable, and were more likely to use public transport.</p> <p><i>Access to food:</i> 45% had no access to a car for shopping; 71% of these still thought supermarket shopping was easy to do. 20% of them did not think the bus was affordable; only 32% claimed to eat 5+ F&V per day yet 72% still believed they were healthy. 90% of sample used supermarkets; 79% shopped once or more than once a week. 23% regularly used the bus for access, 15% taxis, 10% had shopping delivered.</p> <p><i>Affordability:</i> 66% did not think that the cost of healthy foods would represent a large barrier to healthy eating, and 73% thought they ate healthily anyway. Less than half of those that did not think they ate healthily believed that lack of money was a factor. It was more of an issue for those on jobseekers or sick leave. 76.5% thought that F&V were affordable where they shopped and less than 5% complained about the price. Yet 53.5% thought that buying more F&V would be difficult on their budget (mainly jobseekers).</p> <p><i>Motivation to eat healthily:</i> Participants claiming to eat 0-2 portions of F&V perceived they had less choice than those claiming to eat 5+ (P<0.001). The greater the number of portions perceived eaten, the greater they agreed that they were eating healthily and that they would like to eat more organic food.</p> <p>Those claiming to eat 5+ portions tended to be aged 51-70, and mainly women and widowed, whilst those claiming to eat 0-2 tended to be young, single, male, smokers and jobseekers.</p>	
<p>Author: McPherson</p> <p>Study design: Longitudinal</p> <p>Location:</p>	<p>Number of participants: 55 Men of low SES (as job title)</p> <p>Participants in a larger longitudinal</p>	<p>SURVEY: Research Question: To consider the nature of the gaps in Scottish men's knowledge of dietary recommendations, knowledge of nutrient sources, and choosing</p>	<p>Outcomes: Questions answered wrongly by >60% of sample: 16 questions (18% of total questions on the three sub-scales)</p> <p><i>Topics:</i> Recommended eating less, more or same red meat 60% Recommended eating less, more or same starchy food 91%</p>	

Study details	Population and setting	Methods	Findings	Notes
<p>Scotland</p> <p>Year: 2004</p> <p>Funding: Not specified</p> <p>QUALITY: +</p>	<p>study considering psychological aspects of weight.</p> <p>Mean Age: 42.5 (SD = 10.5)</p> <p>Baseline comparability: Based on BMI, 58% were overweight or obese.</p>	<p>everyday foods in reference to the Scottish Executive's key dietary targets outlined in the Diet Action Plan for Scotland (1996), To explain the failure of current health promotion campaigns.</p> <p>Methods used: Nutritional Knowledge Questionnaire (Parmenter & Wardle 1999); designed to assess awareness of food/nutrient sources and choosing everyday foods. Total 90 questions with fixed-alternative response format.</p> <p>Analysis: SPSS Coded responses, either right or wrong. Frequency distributions examined; those questions that were answered wrongly by at least 60% of the sample were analysed.</p>	<p>Low fat spread – high or low in fat? 91%</p> <p>Polyunsaturated margarine– high or low in fat? 80%</p> <p>Nuts – in starchy food group? 60%</p> <p>Porridge – in starchy food group? 60%</p> <p>Red meat – high or low in salt? 64%</p> <p>Fruit - high or low in protein? 65.5%</p> <p>Cornflakes – high or low in fibre / roughage? 78.2%</p> <p>Some foods contain high fat but no cholesterol 65.5%</p> <p>Quiche – healthy alternative to meat? 63.6%</p> <p>Higher in calories – butter or regular margarine? 80%</p> <p>Type of oil that contains monounsaturated fat (coconut oil, sunflower, palm, olive oil) 71%</p> <p>Which has most calories for same weight? (sugar, starchy foods, fibre/roughage, fat) 72.7%</p> <p>Best choice for a low fat, high fibre snack? (diet strawberry yoghurt, raisins, muesli bar, wholemeal crackers, cheddar cheese) 72.7%</p> <p>Discussion of Main Themes relevant to research question:</p> <p>The majority of the questions answered incorrectly relate to two of the major problems in the Scottish diet (Scottish Office 1996): Low in cereals Contains an excess of saturated fat</p> <p>It appears that the Scottish men were misinformed about low-fat spreads and margarines. The men believed that those marketed as 'low in unsaturated fat' were low fat food that can be incorporated into their diet. They considered polyunsaturated margarine to be low in fat and contain less total fat than butter.</p> <p>Longitudinal research has already identified margarine intake as a contributing factor in the development of CHD (Gillman <i>et al.</i> 1997). Many margarines are also high in trans fatty acids.</p>	

Study details	Population and setting	Methods	Findings	Notes
			<p>One possible factor could be marketing of these products; the lay person may not be able to make the distinction between type of fat and total fat content.</p> <p>Despite increased consumption of complex carbohydrate being a key element of the government's recommendations, there was also confusion in this area; the men were not aware that they should be increasing the amount in their diet.</p>	
<p>Author: Ogilvie, Mitchell, Mutrie, Petticrew & Platt</p> <p>Study design: Survey (postal)</p> <p>Year: 2008</p> <p>Funding: Medical Research Council (MRC) special training fellowship in health of the public research.</p> <p>QUALITY: +</p>	<p>Number of participants: 1322</p> <p>Mean Age: 48 years (median; range 16-89)</p> <p>Other Sample Characteristics: 61% female, 47% employed, 52% owner occupied, 41% social rented, 48% had no car, 40% had one car, 25% reported difficulty walking for a quarter of a mile, 39% reported a long-term health problem or disability and 50% were overweight (median BMI 25.1 kg/m²).</p>	<p>SURVEY</p> <p>Research Question: To examine the contribution of putative personal and environmental correlates of active travel and overall physical activity in deprived urban neighbourhoods in Glasgow.</p> <p>Methods used: The questionnaire included items on demographic and socioeconomic characteristics, health and wellbeing (including the SF-8 scale), perceptions of the local environment, travel behaviour and the short form of the International Physical Activity Questionnaire (IPAQ). The authors developed a new 'neighbourhood scale' to assess perceptions of relevant characteristics of the local environment (aesthetics, green space, access to amenities, convenience of routes, traffic, road safety and personal safety). The development, principal components analysis and reliability of the items in this scale and the derivation and reliability of summary variables are reported elsewhere (Ogilvie, D., Mitchell, R., Mutrie, N., Petticrew, M. & Platt, S. (2008). Perceived</p>	<p>Outcomes</p> <p><i>Travel behaviour:</i> On average, respondents recorded about an hour's travel per day (mean 61.5 minutes, median 50.0 minutes), of which a minority was spent using active modes of transport (walking or cycling: mean 20.0 minutes, median 10.0 minutes). 304 respondents (28%) recorded at least 30 minutes of active travel, of whom 294 (97%) recorded at least 30 minutes of walking.</p> <p><i>Physical activity:</i> Respondents reported a mean of 318 minutes' walking per week and a mean estimated total physical activity energy expenditure of 3000 METminutes per week. Only 316 respondents (38%) were categorised as having achieved a 'high' (i.e. sufficient) level of physical activity.</p> <p><i>Correlates of active travel:</i> Active travel was significantly associated with being younger, living in owner-occupied accommodation, not having to travel more than four miles to work, having access to a bicycle, not having access to a car, and the absence of any difficulty walking. The final best model of the 'personal' correlates of active travel provided satisfactory goodness-of-fit (Hosmer and Lemeshow test: $\chi^2 = 13.04$, $df = 8$; $P = 0.11$) and explained nearly one-fifth of the total variance in active travel (Nagelkerke's $R^2 = 18.7\%$). Adding 'environmental' variables to the model showed an additional</p>	<p>Response rate of survey was 15.9%, so may not be a representative sample.</p>

Study details	Population and setting	Methods	Findings	Notes
		<p>characteristics of the environment associated with active travel: development and testing of a new scale. <i>International Journal of Behavioral Nutrition and Physical Activity</i>, 5:32).</p> <p>BMI was calculated from self-reported height and weight. Physical and mental health summary scores were calculated from the SF-8.</p> <p>Each record was linked to the unit postcode of residence and assigned a category of proximity to each type of road infrastructure (within 100m, 101-200m etc.).</p> <p>Travel diaries included in the questionnaire were analysed by summing the reported travel time for each mode of transport, calculating a total travel time by active modes (walking plus cycling) and by all modes combined and calculating the proportion of total travel time contributed by each mode of transport.</p> <p>IPAQ data was used to calculate total physical activity expenditure for each respondent (MET-min/week) and a combination of frequency, duration and total energy expenditure was used to assign each respondent to a 'high', 'moderate' or 'low' category of overall physical activity, in accordance with the prescribed IPAQ algorithm.</p>	<p>significant positive association between active travel and perceived proximity to shops, and an additional significant negative association between active travel and perceived road safety for cyclists. The final best model of the personal and environmental correlates of active travel also provided satisfactory goodness- of-fit (Hosmer and Lemeshow test: $\chi^2 = 10.61$, $df = 8$; $P = 0.23$) and explained slightly more of the total variance in active travel than did the personal model alone (Nagelkerke's $R^2 = 20.1\%$).</p> <p>In order to aid interpretation, the authors also partitioned the dataset into two strata ('No car available' and 'Car available') and refitted the final model separately to each stratum of the dataset. This showed that the subset of respondents with no access to a car accounted for the significant overall relationship between active travel and access to a bicycle, whereas those with access to a car accounted for the significant overall relationships with distance to place of work or study and perceptions of the local environment. The relationship with difficulty walking was also stronger in this group than in those without access to a car.</p> <p><i>Correlates of physical activity:</i> Physical activity was significantly associated with living in social-rented accommodation, not being overweight, and the absence of any difficulty walking. The final best model of the 'personal' correlates of physical activity provided satisfactory goodness-of-fit (Hosmer and Lemeshow test: $\chi^2 = 3.89$, $df = 7$; $P = 0.89$) and explained about one-sixth of the total variance in physical activity (Nagelkerke's $R^2 = 15.9\%$). Adding 'environmental' variables to the model showed an additional significant negative association between physical activity and perception of traffic volume (i.e. respondents who perceived there to be a higher volume of traffic were more likely to report physical activity). The final best model of the personal and environmental correlates of physical activity also provided satisfactory goodness-of-fit (Hosmer and Lemeshow</p>	

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		<p>In data analysis, 'active travel' was defined as a binary condition achieved by any respondent who had reported at least 30 minutes of travel by walking, cycling or both in their travel diary and 'physical activity' was defined as a binary condition achieved by any respondent whose overall physical activity was categorised as 'high' using IPAQ.</p> <p>Several multivariate models were then built for active travel, first including only 'personal' (individual or household) variables and then adding 'environmental' variables.</p>	<p>test: $\chi^2 = 3.86$, $df = 8$; $P = 0.87$) and explained slightly more of the total variance in physical activity than did the personal model alone (Nagelkerke's 16.6%).</p> <p>Main Themes relevant to research question: Subthemes: N/A (survey)</p>	
<p>Author: Parmenter</p> <p>Year: 2000</p> <p>Study design: Survey</p> <p>Location: England; UK</p> <p>Funding:</p> <p>QUALITY: ++</p>	<p>Number of participants: 500 selected randomly (cluster samples from 3 GP practices).</p> <p>Mean Age: 51.5 (range 18-75)</p> <p>Gender: 43.8% male</p> <p>Ethnicity: Majority white</p> <p>Married: 77.9% Single 9.8%</p> <p>Educational level: No qualifications 42.5% O level 27.7% A level 16.7%</p>	<p>SURVEY</p> <p>Research Question: To examine nutrition knowledge and demographic variations in knowledge in a wide cross-section of the adult population of England.</p> <p>Methods used: Nutrition Knowledge Questionnaire (Parmenter & Wardle 1999). Covers knowledge relating to current recommendations, sources of nutrients, everyday food choices and diet-disease links.</p>	<p>Outcomes: Response rate = 73.6% (n=1040)</p> <p>Main Themes relevant to research question:</p> <p><i>Nutrition Knowledge:</i> Dietary recommendations: mean score 8.1 out of max 11 More than 90% were aware of recommendations to decrease fat, sugar and salt intake and increase fibre, F&V. However, almost a quarter didn't know the recommendations to reduce saturated fat. 51% were not aware of advice to cut down on meat and almost 90% unaware of recommendations to eat more starchy carbohydrates. 70% did not know that the rec daily intake of F&V was 5-6 servings, with just over 50% believing 3 to be adequate.</p> <p><i>Food groups:</i> Mean score 45.6 out of possible 69 Grouping food into high/low sugar, fat, starch, salt, protein, fibre, saturates. Mistakes made by just under a third. 85%</p>	

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	Higher Ed 13.1%		<p>failed to realise that low-fat spread is actually high in fat, with the majority actually believing it to be a low-fat food. Just over 50% knew that nuts are low in starch and fewer than 50% believed cheese to be high in salt.</p> <p>The section on fibre was generally well answered, showing improvement from other studies.</p> <p>People were better at identifying foods high in saturated fat than those low in it and there was confusion about foods that could be high in fat but contain no cholesterol. Knowledge about monounsaturated fat was poor, with fewer than 25% knowing that olive oil is high in this. People were confused about which foods contain most energy. 33% thought fatty food, 32% sugary food, 22% unsure.</p> <p><i>Everyday food choices:</i> Mean score 7.4 out of possible 10. Most mistakes on choosing a low-fat, high fibre snack. Only 36% chose the correct item (raisins); more chose the distracter muesli bar. A third were unable to select the best choice for a low-fat cheese and 30% did not know that thick-cut chips are healthier than crinkle-cut.</p> <p><i>Diet-disease relationships:</i> Mean score 7.35 out of possible 20. Highest proportion knew about link between fat and disease. Of these, 90% knew link between saturated fat and HD. 41% were unaware of link between low fibre intake and health problems. Only 42% linked F&V consumption with reducing cancer risk; 47% that it could reduce risks of HD. Over 60% knew of link between high sugar and salt with disease.</p> <p>Specific diseases that were put forward: F&V Scurvy; bowel problems; varicose veins; ber-beri Fibre: insufficient link to bowel problems Majority thought that sugar could cause diabetes and obesity; only 25% mentioned tooth decay.</p>	

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			<p>Salt: High BP 57%; Heart disease 43% Fat:81% mentioned HD; overweight/obesity also mentioned.</p> <p>Subthemes: <i>Gender:</i> Women scored slightly but sig higher (P<0.001) as a whole and within each section. <i>Education level:</i> Linear relationship with scores lowest for those with no formal education; highest for those with a degree. <i>SES:</i> Linear pattern; lowest scores in Class V, rising progressively to Class I. There were a large number of missing values for SES (only 77% of scores could be classified). <i>Age:</i> Youngest age group scored lower than middle years; those over 65 scored lowest. <i>Marital status:</i> Married / co-habiting people scored significantly higher than single, divorced or widowed. Those with children scored higher than those without. Gender, level of education and SES sig at 0.01 level in multivariate regression; Marital status 0.05; together the 4 variables accounted for 22% of variance in knowledge scores. Age could not be entered due to its curvilinear character, but age will affect the patterns of education level, and there were different patterns of SES across age, with higher SES in middle ages.</p> <p>Discussion: Results partly encouraging, with many respondents aware of most of the guidelines on healthy eating. However, more effort needed in area of Carbs to raise awareness of importance of eating starchy foods. Confusion with low-fat spreads as they know they are lower in fat than butter. Marketing may confuse by selling say, muesli bars as a healthy option. Advertising may therefore supercede information on the food packaging.</p>	

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			<p>Whilst many more men are now living alone and cooking for themselves, there has not been a corresponding increase in nutritional knowledge. Those participants educated to a higher level may be more willing and capable in finding and assimilating complex information, since formal education does not include this particular information. SES also had an effect on scores, suggesting that aspects of the social and cultural milieu might modify exposure to nutritional advice.</p> <p>Some sources of information might then be inaccessible to certain groups; TV and journalism assume a certain level of knowledge already exists and this may not always be the case. In terms of age, older people were given messages in the first half of the 20th century that contradict today's recommendations, and therefore may be less receptive. Low scores in younger groups may reflect disinterest; as people get older they are affected more by disease, either personally or indirectly and this may raise awareness of risk. Parents may also seek out information to a larger extent to ensure the health of their children. There is more to dietary behaviour than receiving information or acquiring knowledge. Taste, freshness of food, price and family preferences are all influential (Lennernas <i>et al.</i> 1997). However, knowledge can influence even with other barriers present.</p>	

Views Studies

Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
<p>Author: Bremner</p> <p>Study design: Mixed methods Process Review and Case Study</p> <p>Location: UK</p> <p>Year: 2006</p> <p>Funding: Big Lottery Fund</p> <p>QUALITY SCORE +</p>	<p>Sample: 66 programme areas (PCTs)</p>	<p>Intervention: The 5 A DAY Programme</p> <p>Aims: Evaluation of the 5 a day programme</p> <p>Methods used/ Data analysis: The researcher compiled a written report for each activity to create a profile for the case study area. These reports were reviewed and themes identified.</p>	<p>Main Themes relevant to research question:</p> <p><i>Recruitment and attendance</i> Staff had varying degrees of success at recruiting participants for activities. Activities offering tangible and instant benefits tended to be the easiest to recruit. In particular, Cook & Eat sessions were popular and participants were easy to find. The opportunity to socialise and the free food was a motivating factor. A specific motivating factor for young mothers was the provision of a crèche facility or other planned entertainment for young children. Some staff successfully recruited participants by approaching existing groups such as parenting classes or weight loss clubs. The 5 A DAY activity was then 'tagged on' to the group's usual meeting. Likewise, attendees at 5 A DAY activities were often used to recruit for other local activities, either PCT run or community related. The idea being that once participants were recruited, they could be encouraged to attend other events. Attendance at activities was dominated by females. The exception to this was Sow & Grow activities, these activities manage to attract both men and women although largely from older and more experienced growers. Males appear reluctant to get involved in activities where they risk being the only man present. In general, they prefer to be part of an exclusively male group or one that appeals to both sexes such as family sessions or activities. Once recruited on to an activity there were rarely many 'drop outs' suggesting that participants appreciated and benefited from the activity. Many respondents were keen for activities to keep going beyond the funding period.</p> <p><i>Impact of activities</i> There was evidence from every key study area visited that benefits have been experienced by participants. The evidence</p>	

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			<p>was a general change in attitude towards healthy eating and it appeared that early claims of increased consumption of fruit and vegetables were being maintained.</p> <p>Participants were already aware of the 5 A DAY name and basic premise before they attended the activity. It was thought that most learned the 5 A DAY name and message via national campaigns. Most activities incorporated an educational element, in some cases this was deliberately subtle and this element is believed to have enhanced knowledge of what 5 A DAY represents.</p> <p>The most common change reported was to reduce unhealthy foods from the participant's diet and in turn, to increase consumption of fruit and vegetables.</p> <p>Participants described counting portions and some had bought equipment to facilitate making healthier food and drinks. Increases in consumption appeared to be related to participants' attitudes though it is difficult to accurately isolate the catalyst for change.</p> <p>Access to fruit and vegetables was enhanced and in particular, access and awareness of different types of fruit and vegetables was reported. Participants were generally more aware of the range of fruit and vegetables as a result of the activities and some continued to eat 'new' fruit and vegetables after attending the activity.</p> <p>In addition to the 5 A DAY benefits, many participants benefited socially from attending activities. The results from the case studies show the potential for 5 A DAY initiatives to be run alongside other projects in the health and social care field.</p> <p><i>5 Guiding principles</i></p> <ul style="list-style-type: none"> • Inspire - Staff enthusiasm must be maintained – Coordinators should keep in regular contact with project managers and other team members to keep enthusiasm levels high. Repeating one-off activities – this may help refresh knowledge and interest. It also 	

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			<p>offers an opportunity to check up on the progress of former participants. This could involve inviting former participants to refresher courses or inviting them to progress from a beginner-level event to an intermediate-level event.</p> <ul style="list-style-type: none"> • Give me a reason - It is important to explain why it is important to eat fruit and vegetables. Create opportunities to interact with participants such as Q&A sessions or run breakfast clubs to disseminate vouchers that would otherwise be simply handed out to recipients. Create opportunities to offer tangible benefits to participants – think about promotions, schemes, discounts and giveaways • Slowly but surely - Participants should be informed and empowered but not overwhelmed. Be realistic with aims and be practical with advice – e.g. stress that any increase will benefit them (does not have to be from zero portions to five portions immediately), make sure that recommended outlets are accessible and within the resource limits of participants. Plan for sustainability – help participants plan for the period after the activity e.g. help prepare them for organising a different, publicly available food delivery service. • Multi pronged attack -Objectives must be communicated to all relevant parties e.g. incorporate parents into work with school children. Opportunities to communicate and promote should be seized upon – distributing recipes, cookbooks, informative leaflets, access to equipment to facilitate healthy living and cross promotions are all examples where activities can extend beyond an activity. Seek to raise activity profile – increase exposure by 	

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			<p>incorporating local media and other local publicity opportunities when launching events or recruiting participants. Be inventive!</p> <ul style="list-style-type: none"> • Make it a habit - Encourage making fruit and vegetable consumption a habit – Encourage regular attendance at activities. Encourage participants to have fruit and vegetables in the home, have regular deliveries, and try different types of produce. 	
<p>Author: Cavill</p> <p>Study design: Focus Groups</p> <p>Location: Liverpool, UK</p> <p>Year: 2006</p> <p>Funding: Not specified</p> <p>QUALITY: ++</p>	<p>Number of participants: 23</p> <p>Age: 25-35: 4 (female) 50+ : 10 (young people involved but excluded from this review)</p> <p>Gender: 5 male, 9 female adults</p>	<p>QUALITATIVE:</p> <p>Research Question: To explore local people's views about cycling, and get feedback on the PCT's proposed cycling programme to provide incentives for increased cycle use.</p> <p>Methods used: Focus Groups Photographs (2) used to prompt discussion; 1 positive and 1 negative images of the Loop Line</p> <p>Analysis: NVivo</p>	<p>Main Themes relevant to research question:</p> <p><i>General PA:</i> Most had positive views about exercise and PA, and its role in life. No-one thought that PA was unnecessary; they related PA to favourite sport or type of exercise, which conformed to age stereotypes – 'gym' for young women, Tai Chi or barn dancing for older people. Difficult to think of specific barriers.</p> <p><i>Cycling:</i> Virtually all had tried cycling, usually in youth, but stopped for a wide variety of reasons. Played only a tiny part in their lives. Most could not think of cycling, or even of friends or relatives that cycled. Only one man who classed himself as a keen cyclist, having been competitive in his youth. One young mother continued to cycle. (see quote p.410).</p> <p>Subthemes:</p> <p><i>General cycling:</i> Motivations to cycle: Many of the older people could recount happy tales of former times spent cycling. Associated with joy, youth, freedom (see quote p. 410). For former competitor, more a way of life ('drug of speed'), need to compete drove him to cycle 40 miles before breakfast. For others, cycling was a practical mode of transport, enjoying fresh air or losing weight.</p> <p><i>Barriers:</i></p>	

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			<p>Fear of having the bike stolen (linked to living in the North of Liverpool) (quotes p.411). Bikes more likely to be stolen on the street by someone who knew the owner rather than from a bike rack by a stranger ('give us a go on your bike') (boys and girls).</p> <p>Image of cycling – not seen as appropriate for teenagers to be seen by their peers (could this barrier have consequences for the older people who have been / have teenagers?)</p> <p><i>Gender:</i></p> <p>More acceptable for young males; not the 'done thing' for females.</p> <p>Fear: of traffic, being knocked off whilst on road (see quotes p. 412). Of going out in particular areas, of anti-social and threatening behaviour (area going downhill).</p> <p>Cycling on the Loop Line</p> <p>Fear of the unknown: For outsiders, the prospect seems exciting, but this is very different for local people (see quote on 'horrible people'). Young people hang out under the former railway bridges, and people feel intimidated by them, especially at night. Simply a 'no-go area'. Whereas the publicity that portrays the Loop Line as a haven, away from threats of traffic. Locals fear the young people more than the cars and busses. Some would rather be on the Line as long as they know which areas to avoid.</p> <p>Parts of the Loop were seen as very pleasant places to visit, only a few used it regularly; it was better during the day when well used. The proximity to the countryside evoked positive responses from those who had not used the line (see photo). Some pointed out that the Loop was nice when first converted but had declined recently. Realisation that the fewer people using it, more likely to attract youths to congregate and take over.</p> <p>Suggestions for improvement – more visibility (cutting down bushes), and tightening security. Feeling of loss of ownership – it had fallen into the 'wrong hands'; could PCT organise regular patrols (Rangers, police on bikes, community service officers, hulky bouncers).</p>	

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			<p>Acceptability of led rides: universally popular with some provisos – has to be safe and within physical capabilities (older people). Suitable for families (young mothers). Conclusion: may need a community development approach to stress the importance of respect for each other and others' property. Another suggestion is community work to encourage young people to learn about bikes and repair etc. any work undertaken by the PCT would be risky as little evidence base and no guarantee of changes. Partnerships needed such as local authority to improve the physical environment.</p>	
<p>Author: Coleman</p> <p>Study design: Interviews</p> <p>Location: South East and west Midlands, UK</p> <p>Year: 2007</p> <p>Funding: Sport England.</p> <p>QUALITY: ++</p>	<p>Number of participants: 75 in total. 23 aged 18 or over. Varied sample chosen through a screening questionnaire</p> <p>Age: sample 15-19 (for the purpose of this review, only data regarding >18 year olds will be extracted).</p> <p>Ethnicity: 10 from BME groups</p>	<p>QUALITATIVE:</p> <p>Research Question: To explore the leading influences upon physical activity participation among young women.</p> <p>Methods used: Screening questionnaire; Interviews. Case studies of 10 interviews (5 pairs) NUD*IST software</p>	<p>Main Themes relevant to research question:</p> <p>Four psychological traits that characterise contrasting levels of engagement in PA:</p> <p>Those that always participate in PA held a very positive image of sport, with frequent comments regarding the impact the images had on their levels of activity ('...makes it seem like a very normal – and good, positive thing to be doing) The majority of the never participates also had a generally positive image of sport and PA and recognised the advantages of participation. However, uptake was affected by two factors; you have to 'look the part' and be a fit and healthy person, and also, there was a 'towny' image associated with particular styles of clothing worn when participating. These were particularly prevalent ideas among girls who took part in alternative activities (such as music). The majority of those who always participate held a positive image of their own abilities and recognised the detrimental impact that a negative image may have (if you're not as good at it, you don't do it). Very few of the never participates had sporting role models and had a poor perception of their own abilities.</p> <p>There was a striking contrast between perceptions of self-consciousness. Those that always participated reported very</p>	

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			<p>low levels of SC and rarely got embarrassed, but had supreme confidence strengthened by their regular participation. The never participates often cited anxieties about appearance and SC as main reasons.</p> <p>The importance of personal choice and motivation to participate. PA was rarely compulsory at this age. For low participates the level of PA activity drops after leaving school (at school they 'make you do it'). The transition from education to employment had a negative impact on participation, due to increase in workload, time limitations, a changing social environment, and decline in energy. For some, this transition is transitory, for others, more long lasting.</p> <p>Facilitators: Being part of a social group in which sport is seen to be an integral component to a person's life. If friends participate more, this would have an impact on own participation Living in an 'active' household (family participate) Family support (e.g. transport, financial)</p> <p>Barriers: Social life can hinder participation if it involves hanging out with friends, going to the cinema, etc. Living in an 'inactive' household Family being too 'pushy' in terms of encouragement toward sport</p>	
<p>Author: Daborn (linked to Dibsfall 2002 and Dibsfall 2003)</p> <p>Study design: Qualitative</p>	<p>Number of participants: 11 All male, tenants of Housing Association properties.</p> <p>Mean Age: 48.1 (SD</p>	<p>QUALITATIVE: Research Question: To explore the attitudes and experiences of a group of low-income males toward food and health.</p> <p>Methods: SS Interviews</p>	<p>Outcomes: 607 invitations sent, 54 replies (9%). 3 omitted due to criteria, 15 did not take part = 36 participants. This paper reports on the interviews with men = 11</p> <p>Main Themes relevant to research question: 1. <i>Personal experiences</i> Attitudes and beliefs largely coloured by life experiences</p>	

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<p>Location: Norfolk</p> <p>Year: 2005</p> <p>Funding:</p> <p>QUALITY: ++</p>	<p>4.3)</p> <p>All white</p> <p>All on some form of benefit.</p> <p>All lived alone except one who lived with one child.</p> <p>Marital status: 2 divorced 1 widow 7 single</p> <p>Occupation: 5 employed 5 unemployed 1 student</p> <p>Education: 2 higher education 1 NVQ 1 HND 2 A levels 3 O levels 2 None</p> <p>Weight: BMI < 20 20 25 normal 25-35 overweight 1 >30 obese</p> <p>Diet: 0 Vegetarian</p> <p>F&V intake: 0-3 portions 4-6 2 7-10</p>		<p>through childhood, family life and adult relationships. Personal experiences of particular illnesses, such as those leading to the loss of a loved one, had an impact on dietary beliefs and behaviour.</p> <p>Looking back, there was nostalgia for past diets seen as healthy compared with current practice. Strong influence of female views and practices on their own diet (“..I was brought up by my mother who was a very good cook..”).</p> <p><i>2. Public Information</i></p> <p>The existence of a large body of dietary and health information was recognised by all participants. The degree to which this was processed varied according to how personally relevant the information was. There was vagueness about specific details or sources. The sheer volume of information was regarded by some as justification for ignoring the content, and one saw it as a source of anxiety. Information from own social network was given more credence than that from scientific, medical and government sources. Some wanted to know more, whilst others felt that simpler messages were more effective.</p> <p><i>Beliefs</i></p> <p><i>Dietary</i></p> <p>There was a general acceptance of the benefits of a healthy diet, though definitions varied (‘proper’, ‘decent’ ‘balanced’). Foods seen as good for health were low fat, low salt, less sugar, grilled, fish, lean meat, fresh fruit and veg. All believed that frozen or fresh better than processed and ‘modern’ foods. Only 4 participants were aware of the 5 a day message. It was believed that in general the amount of F&V consumed was affected by various factors such as taste, habit, income, shelf-life and living alone.</p> <p><i>Environmental</i></p> <p>Strong concerns about environmental effects on food such as pollution, pesticides. There was some scepticism about the</p>	

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			<p>authenticity of organic food. Much blame was levelled at big companies or the government and there was little or no sense of personal control.</p> <p>Lifestyle influences on behaviour Close and complex relationship between lifestyle and diet (mental health, addictive behaviours, for example). Work and independence was seen as important to maintaining mental well being. [no link here between this and diet]. Fast food was associated with lack of time, being busy, and also with poor diet. Income levels affected the possession of cooking and food storage facilities which in turn affected the choices available, and the ability to cook and store fresh food.</p> <p>Motivation to change behaviour Most men were satisfied that their diets were healthy enough, so no need to change. There was a degree of apathy compounded by living alone and fatalistic attitudes. Those with fatalistic attitudes tended to eat much less F&V.</p> <p>In terms of effective health messages, some felt that fear might be a motivator. Others felt that information needed to be clearer and more radical.</p> <p>Discussion: There was no evidence to support the notion that the reason men eat less healthily is due to lack of nutritional knowledge, nor that access and affordability were major factors. Lack of motivation appears to be a strong factor (not having to cook for others, amount of personal effort required). Key drivers similar to those reported for women in the same population (see Dibsall 2002). There were however, 3 gender-specific issues:</p> <p>Risk taking. Men tend to be higher risk takers and judge risks to be smaller than do women. Reasons posited are the nurturing role of women, and the higher physical vulnerability of women that necessitates greater sensitivity to hazards.</p>	

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			<p>Work status. Work emphasised more in men and linked to self-esteem and financial independence. 'New-Ageism'. More influential in the female study; not linked with men in this study. Consistent with previous work (Caplan 1997).</p>	
<p>Author: Dibsdall (linked to Dibsdall 2003 survey)</p> <p>Study design: Qualitative</p> <p>Location: Norfolk, UK</p> <p>Year: 2002</p> <p>Funding:</p> <p>QUALITY: ++</p>	<p>Number of participants: 14 Housing association tenants All female</p> <p>Mean Age: 51.3 (SD 12)</p> <p>Marital status: 8 divorced (5 live alone) 2 married; 2 live with partner (2 of whom have children)</p> <p>Occupation: All had some form of occupation other than 'housewife', though 5 were unemployed (7 had full-time jobs all low paid)</p> <p>Education: 1 higher education 4 further education 5 GCSE / O level 2 High school leaving certificate (15 years) 2 No education</p> <p>Weight: <20 BMI Under 20-25 Normal</p>	<p>QUALITATIVE: Research Question: To provide an in-depth account of the beliefs and experiences pertaining to food and health from a specific group of low-income women in the United Kingdom</p> <p>Methods used: In-depth interviews July – Sept 2000 (before the 'Food Awareness week' in October which promoted 5-a-day message, but after 2 highly publicised news items regarding food and nutrition: US recommendations of daily nutrients, and caution against taking large doses of vit C and E supplements. UK Results of Diet and Nutrition survey by DH and FSA reported on children's eating habits, highlighting how few F&V they consume.</p> <p>Analysis: IPA</p>	<p>Outcomes: 600 request sent to tenants; 54 returned (9%); 3 omitted as did not meet age criteria; 15 dropped out = 36 males and females</p> <p>This paper presents findings from 14 of these interviews (with females)</p> <p>Main Themes relevant to research question: Attitudes and behaviours can be linked to either a person's inner world (thoughts, perceptions, cognitive processes) or outer world (physical world, including social structures and environmental pressures).</p> <p>3 main 'Drivers' 1. <i>Egocentric Systems</i> Despite demographic commonalities, even more common was that participants inhabited their own unique inner and social worlds. Their personal experiences, memories, life events, childhood, family and friends shaped their lives in different ways. Participants referred to and drew on these experiences during interviews to describe what nutrition and health meant for them. Diverse views and behaviours were described; the ability to look beyond their immediate system was limited.</p> <p>Worries about developing specific illnesses Influenced predominantly by personal or family experiences past and present (e.g. family history may imply own susceptibility).</p>	

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	<p>25-30 Overweight >30 Obese</p> <p>Reported F&V per day 0-3 4-6 3 7-10</p> <p>Inclusion Criteria: Age 18-65</p>		<p><i>Healthy Lifestyles</i></p> <p>A clear spectrum from 'health-conscious' to 'health-apatetic'. Typically, health conscious women had given up smoking, did not eat red meat, ate lots of F&V and were followers of 'New Age' thinking. These women actively sought out books and information promoting this particular lifestyle and their present social circles reflected and reinforced their beliefs.</p> <p>In contrast, some women displayed little interest in health issues and healthy lifestyles. They smoked and ate a poor diet (including 1 or less portions of F&V per day). Some had worked in the care sector; no single factor emerged to explain this choice. Living alone, feeling depressed, low self-worth were common features. They were aware of nutrition and tobacco recommendations but had little desire to change behaviours which fuelled feelings of helplessness and hopelessness ('it's so much easier on your own to just slam something in the microwave....It's not the money...')</p> <p>Other women strongly believed they were eating a healthful diet, when by their descriptions, they clearly were not. They drew on experiences within their egocentric system to justify health risk behaviour ("..I have known people who have never smoked a day in their lives that got cancer...")</p> <p>Life-course influences on diet</p> <p>Childhood experiences were an important feature in shaping current dietary behaviours. Some women saw a healthful diet as being 'traditional' fare; what their mother used to cook. Being born between 1940 -60, for most, food rationing in the UK was still in effect during their childhoods. Specific foods were still therefore seen as a 'treat'. The formation and breakdown of relationships and the arrival of children were other influential life stages. These centred on the impact of significant others on shopping and cooking practices ("...it was because I was looking after the children and the husband, making sure we all ate healthily..." woman now living alone).</p>	

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			<p>Habitual behaviours Habitual actions built up with respect to mealtimes and menus, shopping and lifestyle. Most tended to buy the same varieties of food items, including F&V, every week in the certain knowledge that they would be eaten, especially if they were cooking for others in the household. They also tended to do their shopping on the same day at the same supermarket, using local shops for perishable and forgotten items.</p> <p>Food as low priority Women were mostly preoccupied with the busyness of their own lives and had established routines. Food was only one aspect of their lives, and even for the health conscious, there was a sense that food was low priority. Many saw shopping and cooking as a chore and something that had to be fit in around more important demands. For those living alone, there was an even stronger reluctance to make an effort.</p> <p>2. Information Characteristics This driver describes what information about food (especially F&V) and health (especially cancer prevention) participants had been exposed to and how this information had been processed. There is a clear distinction between being aware of information and accepting it as useful.</p> <p>Information overload Participants felt bombarded with information on food and health, most of which they found complicated, confusing, and contradictory. The conflicting information from experts led to mistrust and scepticism of the content and sources. Information was like 'background noise', and women had hazy recollections of the information. Information was more actively assimilated if it was sought after (this was only evident among New Age women).</p> <p>Sources of information and trust Information obtained from TV/radio, magazines, newspapers.</p>	

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			<p>Info from hospitals and medical practitioners was trusted but there was limited trust in scientists which had mainly fuelled the conflicting messages. Most did not trust newspapers or politicians. Information from their egocentric system (family, friends) was mainly believed. Info was better assimilated if provided in an appropriate environment (e.g. GP surgery).</p> <p>Information on healthful eating Participants spoke with confidence, though at a quantitative level. They strongly believed that F,V and fresh and organic foods were healthful and that fat, sugar, salt, chemicals were unhealthful. The specific health benefits were not defined. Despite recent news coverage, only half of women were aware of the '5 a day' message.</p> <p>Suggestions to improve communication Contradictions were noted in the participant's responses. Despite feeling bombarded with information, they wanted even more, but of info that was definitive regarding healthy eating, yet they felt irritated when being told what to eat. TV seen as the best medium for presenting information; some felt that personalised information would be more effective.</p> <p><i>3. Issues of Control</i> This driver describes how participants experienced control of their inner and social worlds regarding illness and nutrition.</p> <p>Fatalism Developing illness was generally seen to be beyond own control.</p> <p>Ill health and loss of control Women viewed health as how well a person feels at a particular time and the ability to continue a normal daily life. Fear of becoming ill was underpinned by a deeper fear of losing control (e.g. loss of independence, mobility, sanity).</p>	

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			<p>Control of food supply The women were the main shoppers of their households and felt in control of access to healthful foods. Women without a car or with mobility problems had managed to overcome the barriers by using public transport or arrangements with others.</p> <p>Budgetary control Money was limited but the women had sound budgetary control, with money not an overriding influence on dietary habits. Some occasionally ate 'exotic' foods (mango, asparagus etc.). Two factors did fall outside budgetary control: Organic food seen as prohibitively expensive despite the desire to eat it. The notion of buying additional food (i.e. more F&V) was seen as too expensive irrespective of how many portions they currently ate.</p> <p>Control over what they eat Women wanted to be in control and generally resented being told what to eat ("...if you like them, you will eat it; if you don't, you won't. It's as simple as that"). Little motivation to change diet; changes in the past were linked to a desire to lose weight, as a consequence of relationship change or recommended as part of a treatment for illness. They were generally satisfied with the healthfulness of their diet, including F&V intake, even if this was significantly less than recommended ("I wouldn't know where to put it all...").</p> <p>Controlling dietary urges A common issue was controlling urges for sugary and fatty foods (pleasure). Some participants felt no confidence in their willpower to resist and felt guilty when giving in.</p> <p>Discussion: Creating diet and health campaigns built on scientific 'rational' thinking may not be effective for many of the public who do not relate easily to this 'world'. For example, many people do not know what a portion is, do not count how</p>	

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			<p>many portions they eat, and do not conceptualise risk factors especially when projected decades into the future. The public is not as highly engaged with health issues as are health professionals.</p> <p>Centrally processed information is more likely to be assimilated than peripherally processed info. The latter was how many of the women saw nutrition and health info.</p> <p>The problem for promoters is the gap between knowledge and behaviour; linking diet to feared diseases may be more engaging. However, a key construct is 'vulnerability', i.e. the person needs to feel a t personal risk from the threat before performing the behaviour. Most believe they already eat healthily (optimistic bias), so that health messages are targeted at those more vulnerable than themselves.</p> <p>People are generally less likely to worry about health hazards over which they have some control, and this includes healthy eating. More fearful is contamination of food.</p> <p>Contrary to some reports, access and affordability were not major barriers for these women, apart from the case of organic food and buying 'more' food. However, this could be an artefact of this sample.</p> <p>Women were in the 'noncontemplation' phase of the transtheoretical model (consistent with optimistic bias). Such individuals are difficult to reach.</p> <p>Stereotyping and treating all LIGs as one entity should be avoided.</p> <p>Need to be aware of egocentric systems of those being targeted for health promotion.</p>	
<p>Authors: Dobson, Kellard & Talbot</p> <p>Year: 2000</p> <p>Citation: A recipe</p>	<p>Source population/s: Urban/suburban low SES population in Leicester, UK.</p> <p>Sample sizes:</p>	<p>Intervention/s description: The Saffron Food and Health Project, a community food project</p> <p>Aim of study: To achieve an improvement in the eating behaviour of</p>	<p>Themes relevant to review question:</p> <p>Setting Up</p> <p>Although initiatives varied, there were commonalities in the processes involved in setting up:</p> <p><i>Finding suitable locations with appropriate facilities</i></p>	<p>Limitations identified by author:</p> <ul style="list-style-type: none"> • It is difficult to measure the effectiveness of this intervention, due to

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<p>for success? An evaluation of a community food project. Loughborough: Centre for Research in Social Policy, Loughborough University.</p> <p>Study design: Qualitative evaluation</p> <p>Setting: Community, UK</p> <p>Year: From April 1997, for 3 years</p> <p>QUALITY: +</p>	<p>Total n=86 (response rate) Intervention n=86 (response rate)</p> <p>Characteristics: Mean age = 33 Employed = 11 LA housing = 67 Own a phone = 76 Shop at supermarkets = local 59%, large 20%</p> <p>Eligible population: Questionnaires were administered to all those who attended the cook and eat sessions (almost 100 women) and the health and exercise classes as well as the Kingfisher group. No information provided on the similarity of the eligible population to the source population.</p> <p>Selected population: No information of percentages of eligible population completing the questionnaire, due to incomplete reporting of numbers distributed (86 women completed a questionnaire). No</p>	<p>people living on a low income in the Saffron Lane area of Leicester and to investigate processes by which knowledge is converted into behaviour change.</p> <p>Research Methods: <i>In-depth interviews</i> to explore perceptions of health eating and establish baseline experiences and understanding (before / after). <i>Focus groups</i> with participants and non-participants – similar objectives as interviews but additionally information about a particular cook and eat course that had been completed. <i>Participant</i> observation to observe and assess the impact, both perceived and measured, of the programme. <i>Self-completed diaries</i> to record food consumption of participants and their families to measure the extent of change during and after completion of the course. <i>Content analysis</i> of magazines, newspapers and other literature relating to food and health to put local information into context.</p>	<p>It was often difficult to find facilities with adequate kitchen facilities within the Estate. There were 2 industrial kitchens available in 1977; during the first year it was only possible to access each of these once a week. During year 2 more non-industrial kitchens were upgraded and became available. These were in different localities; the impact was increased access and opportunity for initiatives.</p> <p><i>Funding for food</i> Grant awarded by National Lottery Charities Board gave flexibility and autonomy.</p> <p><i>Transporting and storing food and equipment</i> Transport was no problem if nutrition worker owned a car but created problems for some volunteers. Storing food meant the project had to fund fridges, and storage cupboards.</p> <p><i>Compliance with health, hygiene and safety requirements</i> Those running activities had to hold a food handling certificate for which training was required. The funding for training came from the project budget.</p> <p><i>Timing and childcare</i> Sessions needed a minimum of 2 hours to allow time for cooking. Preferred times for mothers of young children were 9.30am to 12pm or 12.30pm to 2.30pm. A crèche was available at all the activities to which such mothers were invited.</p> <p><i>Publicity</i> A number of strategies were tried (leaflets, posters distributed around schools, GP surgeries, libraries, community centres and other public buildings. While this generated some interest, the best form of advertisement was word-of-mouth (“I came because my friend went to the last one and she loved it..”)</p> <p><i>Free access</i> There was no charge for any of the activities and childcare was free of charge. This was extremely important to encourage attendance, especially during the first year. There was no risk of wasting money; most of those asked after attendance stated that they would be willing to pay to attend other activities.</p>	<p>its nature as a community project with broader goals and ‘less tangible’ potential outcomes such as positive wellbeing, confidence and empowerment</p> <ul style="list-style-type: none"> • The definition of ‘outcome’ in community development projects can change and evolve as the project develops, thus measuring outcomes can be problematic (this was addressed using an action research approach) <p>Limitations identified by review team:</p> <ul style="list-style-type: none"> • No comparison group • No statistical analysis of changes over time, and only frequency data reported • Reliability and validity of measures

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	<p>information provided on the similarity of the selected population to the eligible population.</p> <p>Excluded population/s: Not reported</p>		<p><i>Other practical considerations</i> Each initiative worked with small groups of people, mainly determined by the size of the kitchen. Competence levels varied. Average cost of food per session was £20. All recipes used food available on the estate that were familiar to local people, Average meal consisted of main course and pudding for 4 at a cost of £2.20.</p> <p><i>General reasons for attendance</i></p> <ul style="list-style-type: none"> • <i>Free sessions</i> • <i>No charge for food</i> • <i>Could take meals home for family to try</i> • <i>Recipes and advice tailored to individuals and groups</i> • <i>Familiar foods used</i> • <i>Free childcare</i> • <i>Small groups and informal atmosphere</i> • <i>Activities useful and enjoyable</i> <p>It became clear that an holistic approach to healthier eating was needed – e.g. addressing HE from a family perspective (“<i>what I buy we all have to eat..</i>”). Constraints were also around confidence to try new foods and methods. An informal approach was used and the participants were asked what they would like to do and to know about. They were encouraged to ask questions and make suggestions.</p> <p><i>Cook and Eat groups</i> Almost 100 women attended 20 courses and groups over the 3 years. Agreement was made on what to cook the previous week and meetings were held in the kitchens. Halfway through sessions the groups stopped for coffee and a chat. This was used to discuss issues around feeding the family or other questions that were raised. Suggestions for recipe improvement were also discussed, as well as certain ingredients that were not liked by the women or their families. Groups were informal and friendly with lots of laughing. Those that were more accomplished cooks helped the others and all helped with washing and tidying up. At the end the women</p>	<p>not reported</p> <ul style="list-style-type: none"> • Little report of response rates or attrition rates <p>Evidence gaps and/or recommendations for future research: Some of the work of the SFHP to be continued using community food workers and also extended to two other communities</p> <p>Source of funding: The National Lottery Charities Board, under its health, disability and care programme.</p>

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			<p>had created a main course and pudding for 4 people that they could take home. They were also given a laminated copy of the recipe to put in their folder.</p> <p>At the first session there was a discussion with the Family Nutrition Worker. The aim and content of these were agreed and a researcher also attended. Questionnaires were administered to collect data on shopping and eating behaviour. This was used to tailor the course to particular needs of the group. The discussion was repeated at the end of each course; the FNW was not present at these discussions as one element was to evaluate the content and delivery of the course. They were also used to find out if the course met participant's needs, whether they were useful and enjoyable. Data on eating behaviour was collected again to measure any changes. There was discussion around why changes had or had not been made.</p> <p>Data from a postal questionnaire to attendees of the 'Family Food and fun Day' revealed that some women wanted help to lose weight. After discussions it was agreed to set up a Healthy Eating and Exercise course. Staff at the sports hall provided free use of facilities and an exercise tutor who ensured that the women were comfortable with the level of activity (most did not previously exercise regularly).</p> <p><i>"I'm not embarrassed because there isn't anyone there who is dead skinny and in a leotard. Everyone else is like me..."</i></p> <p>The format was 40 mins exercise followed by 40 mins discussion with FNW. Topics:</p> <ul style="list-style-type: none"> How to reduce fat intake What constitutes a healthy diet Why healthy eating is important Healthier cooking techniques How to modify recipes Tasting of new / different foods Understanding food labels Factors that make it difficult to change eating habits and suggestions of how barriers might be overcome 	

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			<p><i>“...being able to ask questions and getting an answer you understand is what I like. She [FNW] explains things and isn't telling you not to eat this or that...”</i></p> <p>The group of 7 women met weekly for 10 weeks. The women asked to be weighed each week to monitor their own progress. Most kept a record of what they had eaten the previous week and this diet sheet was discussed with the FNW. Over the 10 weeks people did make changes in their own and their families' diet. They also reported improved sense of well being. Half experienced weight loss and none gained weight. The exercise tutor left after the first 10 week course to go to a full-time job elsewhere. It was difficult to find a replacement and the format had to be changed in that women were offered sports such as badminton, short tennis and netball. Participants enjoyed this as it gave them a chance to try new sports and a few women joined clubs and gyms to continue exercising. However despite advertising the groups remained small. Some who had expressed an interest were unable to attend because of timing of the classes.</p> <p><i>Work with mothers of babies and young children</i></p> <p>There was concern by HPs that some young mothers living on the estate were very isolated and would appreciate having somewhere to meet and ask about feeding themselves and their babies. A group was set up in 2 Community Centres. The format was informal though those at the Kingfisher Centre developed a more defined structure at the request of the women. Women attended weekly between 10am and 12.30. There was a play period for the children and the mothers would look after the remaining children whilst a group went into the kitchen following which the groups would swap over. A crèche worker attended the sessions at Kingfisher to supervise and help. However, crèche facilities were not available as some of the babies were only weeks old, and the Kingfisher Centre was not registered.</p> <p>The group was also used by other project workers and health</p>	

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			<p>professionals as a way of accessing 'difficult to reach' people. The group at Kingfisher ran for almost a year. It ended because the group became too large and there were difficulties with regulations.</p> <p>The group at the Magpie Centre differed as women wanted specific information about feeding young children.</p> <p>(Groups run with youths and children also described – no data on how this might have affected the eating behaviour of adults).</p> <p>The Family Club As well as activities such as pottery and arts and crafts, some cooking sessions were run weekly by the SFHP for parents and children. During the early weeks the FNW and one of the researchers worked together, doing the shopping and preparing an evening meal for approx. 50-60 adults and children. Meals were health and ingredients locally sourced. They were popular and recipe booklets were distributed to parents. Parents commented on how nice it was not to have to cook once during the week. A cook is now employed. The cost was £22.70 average, not including staff costs which were considerable.</p> <p>Family Food and Fun Day Questionnaires were sent to those who attended asking them about the event as well as suggestions for future initiatives. Most people wanted a wide range of information including feeding children, losing weight and feeding the family on a budget. In response, the SFHP set up exercise and healthy eating classes, extended the cook and eat courses and provided a range of information about healthy eating to local residents.</p> <p>Non-attendance 6 focus groups with people (2 groups of mothers with children</p>	

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			<p>under 5; 2 groups with mothers of school age children; 2 groups of grandmothers) who lived on the estate but did not use the SFHP. The groups were chosen to represent people with different routines and pressures.</p> <p>Findings: The parents of older children and the grandmothers were the best informed. However more information would be useful about understanding the information on food labels. If they had a specific question on healthy eating they would ask their GP.</p> <p><i>Action:</i> sessions on food labels were incorporated; GPs were informed about the project.</p> <p>Women in the groups said they were too busy to attend.</p> <p><i>Action:</i> Drop-in sessions were organised at a number of locations across the estate.</p> <p>Approx. half of the women had heard about the course, mainly through the fun day. Word of mouth seemed the most important form of advertising – the majority stated that hearing good things about the course from friends would encourage attendance.</p> <p>Younger mothers were the least confident cooks and were most enthusiastic about 'cook and eat' courses. These were the most dissatisfied and bored with the foods they cooked.</p> <p><i>Action:</i> These women were invited to cook and eat courses at Kingfisher.</p> <p>The more experienced cooks were on the whole satisfied with the foods they cooked and ate. They were interested in some new ideas and in losing weight.</p> <p><i>Action:</i> The healthy eating and exercise classes were set up.</p> <p><u>Findings from the Saffron Food and Health project</u> Many of the women who attended identified the school holidays as a problem, either due to lack of childcare or because feeding children an extra meal whilst not at school was hard to fund. Children at home eat far more and some families did run out of food and / or money. Shopping locally was more expensive but saved on bus fares.</p>	

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			<p>The women spent 30% less than the amount required (according to the Family Budget Unit 1998) to feed a family of 2 adults and 2 children per week an acceptable diet. All wished they had more money to spend on food.</p> <p>Almost 75% of those asked why they decided to attend said they wanted new ideas for feeding the family as well as some suggestions on how to make ends meet. Almost 2/3 wanted to be able to prepare quick and healthy meals. Almost 50% said they wanted advice and information about eating more healthily; their concern was for their children. Many of the women did not own kitchen equipment such as scales or oven dishes. To overcome this, the SFHP provided dishes to take home, and sold equipment at cost price.</p> <p>Nutritional outcomes were collected via questionnaire as a three-day diary was difficult for some women to complete.</p> <p><i>Meal patterns</i> Prior to attending, many women skipped meals because they didn't have time or didn't feel like eating. After attendance, more women were eating healthy meals. Before, 20% did not eat breakfast but this was reduced to 8%, and more women ate breakfast more often. The participants were also eating lunch and dinner more often for a variety of reasons. Many attributed changes to 'being more interested in cooking' and having different ideas for what to cook. They used recipes that they had cooked or were given during the project. Some mentioned that they were no longer cooking separate meals for individual members of the family, as children would now eat a wider range of foods.</p> <p><i>Patterns of food consumption</i> One aim was to increase the intake of fruit and vegetables. These aims were achieved, with almost 2/3 eating fruit and 3/4 eating vegetables at least once a day. One participant commented that she now thought about meals and eating fruit and vegetables differently. (."Before it was meat on this bit of your plate and your potatoes over there. Now what I do is has the veg in with it so you can eat them without really thinking")</p>	

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			<p><i>Making dietary changes</i> Over half of attendees were interested in finding out about healthy eating. Most were on the whole, happy with their diets, though interested in new ideas. Stages of change model – prior to the project 30% had not made and did not intend to make any changes to their eating behaviour, and a further 18% hoped to make some changes but had not attempted to do so as yet (“<i>I’ve enough to do just keeping going and getting them fed..</i>”) After the project more of the women had tried and succeeded to make changes to their own and their families’ eating behaviour. Over 2/3 were currently trying to change what they ate and no-one who wanted to make changes was unable to do so. Many of the women were surprised that meals they were cooking were healthier. Some assumed that healthy foods were ‘all salads and boring’ and that eating healthily increases the cost. They were pleasantly surprised that the recipes they used in sessions incorporated healthy eating guidelines.</p> <p>Reasons for change:</p> <ul style="list-style-type: none"> • The approach used – Practical and informal • Enjoyment and confidence • Experimenting – being able to try meals before having to buy them. This minimised waste and encouraged experimentation. • Familiarity – use of familiar, locally produced foods. • Appropriate foods – some guidelines used foods that the women said they could not afford (“<i>..I can’t afford salmon..</i>”). • Opportunity for discussion – ability to discuss recipes and other issues with the FNW who would make suggestions for changes to reflect likes and dislikes (“<i>..they won’t eat garlic so what we came up with was adding more herbs to give it some flavour and not bothering with garlic..</i>”) <p>Participants described most changes they had made as ‘small’. This included eating less fried foods and processed</p>	

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			<p>meat products, eating more bread, rice and pasta, fruit and vegetables. On average participants had made 9 changes to their diets; main changes were increased fruit and vegetable consumption, eating more starchy foods and pulses and eating fewer fried foods, processed meats and sweets. Though small, the cumulative effect of these changes was substantial (see quantitative data).</p> <p><i>Other outcomes</i> Many looked forward to attending particular activities and commented on the social aspect of the project. For some women they were an opportunity to talk with adults without children being around. They were able to exchange ideas, as well as pass on advice an information to each other. A noticeable feature was the friendly and helpful atmosphere. For some women the project represented the first step in deciding to take other courses and acquire new skills and gave the confidence to move on.</p> <p><u>Characteristics of Community Development and possible constraints</u></p> <ul style="list-style-type: none"> • Area or community based vs professionals working with individuals or groups and are locally based. • Encourages community participation vs patients or clients referred to or from a service • Meets local needs and has an open agenda vs must achieve specified targets and outcomes • Enhances community capacity vs work as task / patient driven and geared to working with individuals • Open ended in terms of time and outcomes vs restricted time-wise - professionals work within appointment or session system • Boundaries extend beyond single issues such as eating behaviour vs funding and professional boundaries restricting workers to single issues • Involves local residents, workers and professionals 	

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			<p>vs difficulties associated with cross-disciplinary and multi-agency working.</p> <p>The reality is that many professionals find themselves trying to implement a hybrid version of community development which has the same time and resource implications but also imposes strict targets and specifies particular outcomes. In so many instances the organisational and structural frameworks remain the same and do not allow flexibility or resources they require to fully incorporate a community development approach into their working practice. These difficulties are compounded when funding agencies fail to acknowledge the importance of wider social outcomes.</p>	
<p>Author: Gough & Conner</p> <p>Study design: Interviews analysed using open-ended thematic analysis with techniques from grounded theory methods, from a 'social constructionist' stance.</p> <p>Year: 2006</p> <p>Funding: Interviews (conducted 10 years previously) were funded by ESRC.</p>	<p>Number of participants: 24 men of both white and blue collar profession – number of blue collar workers not reported</p> <p>Mean Age: NR – In both social class groups, 8 participants were aged <35, 8 were aged 35-54, 8 were aged 55+ (no breakdown of age by social class group was reported).</p> <p>Baseline comparability: N/A</p> <p>Inclusion Criteria: Male and within one of the age groups specified. Participants</p>	<p>Intervention: None</p> <p>Aims: N/A</p> <p>Control: N/A</p> <p>QUALITATIVE:</p> <p>Research Question: To provide an analysis of men's accounts of food and health using concepts pertaining to masculinity</p> <p>Methods used: Semi-structured interviews, conducted in a previous study (Povey et al., 1998), focused on definitions of healthy eating and motivation to change diet. The main questions of relevance to the current analysis were:</p> <ul style="list-style-type: none"> • How would you describe your diet? • Do you think that ideas about healthy eating have changed during your lifetime? 	<p>Outcomes</p> <p>Main Themes relevant to research question:</p> <p>Themes were relevant to white and blue collar workers. Only the data relating to blue collar (BC) workers has been extracted for review.</p> <p>Three core themes were identified:</p> <ul style="list-style-type: none"> • Practical constraints • An intrusive health lobby—prompting resistance and reclaiming eating as personal choice • Healthy eating as monotonous and insubstantial—but necessary when physically vulnerable <p><u>Practical constraints</u></p> <p>Time and expense were cited as obstacles to a more healthy diet, with time constrained by work commitments and lifestyle choices. The authors felt that this theme did not require close attention due to already being prevalent in the literature.</p>	

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<p>QUALITY: ++</p>	<p>were recruited in Yorkshire, mainly from manufacturing companies.</p> <p>Exclusion Criteria: Not reported</p>	<ul style="list-style-type: none"> • What do you think would be the advantages of healthy eating for you? • Imagine you decided to make changes to your current diet to make it healthier—what changes would you make? • Can you think of any health problems, which might be related to what people eat? <p>Data analysis was conducted as follows:</p> <ul style="list-style-type: none"> • Data were analysed using open-ended thematic analysis with techniques from grounded theory methods. The author’s use of grounded theory draws on a ‘social constructionist’ stance, wherein participant accounts are treated as performances in context. The authors were interested in how masculinity is enacted and especially how healthy eating is decried through the accounts of eating and health provided by the men interviewed. • Line by line coding was conducted, using a constant comparison method. Coding reliability was checked by giving two experienced colleagues a list of quotations and asking them to allocate them to the core themes, with a high level of correspondence (83% and 92% respectively). • Analysis was complete when it was clear that three categories could 	<p><u>An intrusive health lobby—prompting resistance and reclaiming eating as personal choice</u></p> <p>Two interconnected subthemes: ‘The perception of government and media messages as intrusive’ ‘Reclaiming eating as personal choice’.</p> <p><u>The perception of government and media messages as intrusive:</u> Scepticism about media claims was common and in some cases produced levels of uncertainty: <i>“Erm, sometimes they [media] build it up and then on they other times they knock it, you know, so it’s fifty fifty really, you never know what to believe—or what to read”</i> [age 29, BC]</p> <p>Media messages were also critiqued from a more thoroughgoing political perspective: <i>“I think they [media] ram it down us throats quite honestly and it’s all sort of like government doctors and whatnot, or rather people that are in the pay of governments and I think they have a vested interest really—they want to cut down on public spending, especially on health service, so if they can stop people going to hospital in the first place, it’s money saved, but I think there’s a lot of hypocrisy about it, because I think what’s behind it really is economics rather than healthy eating, or supposedly healthy eating”</i> [age 47, BC]</p> <p>Participants also ridiculed the perceived excessive nature of government campaigns, seeking to pathologise government health officials: <i>“...I think you can sort of start too young trying to brainwash them [children], because I think if it were up to some’t loonies that are in charge of certain areas of your life, you know, health and all that, I think you’d have a nation of vegetarians within about 20 year, because</i></p>	

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		<p>account for most of the data (approximately 80% of the data analysed). 'Focused coding' was conducted on the remaining transcripts and the three categories could largely explain this data.</p>	<p><i>they tell you straight up "Never mind meat, you want to get on muesli", we'd all be mueslians [sic], and things like that I think they can go too far"</i> [age 24, BC]</p> <p><u>Reclaiming eating as personal choice</u>: Personal preference and pleasure were valued over government advice, and the right to eat food deemed unhealthy by government advisors but viewed as appealing by participants was upheld. More generally, the consumption of 'treats' and the occasional 'binge' were normalised: <i>"I still eat chocolate now. I shouldn't do but I do but you've got to have some vices erm, wine as well"</i> [age 34, BC]</p> <p>The authors comment that conventionally masculine virtues of reason, autonomy and control prevailed: irrational forces from external sources must be contained and individual agency preserved.</p> <p><u>Healthy eating as monotonous and insubstantial—but necessary when physically vulnerable</u></p> <p>Two interrelated subthemes were identified: 'Health foods fail to satisfy'. 'Physical vulnerability prompting healthier eating'.</p> <p><u>Health foods fail to satisfy</u>: The men also objected to health foods on the basis of taste and satiation. A preference for 'bad' foods was often expressed, and there was some resistance to altering diets—except on medical grounds. Indeed, many participants defended unhealthy aspects of their current diets based on their present good health status. The critique of healthy eating on taste grounds also meant that other forms of health protection were favoured, principally sport and exercise. Overall, the perception of particular health foods, or healthy eating in general, as 'boring' constituted a major barrier to changing current diets.</p>	

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			<p>The world of heavy industry is structured by ‘masculine’ ideals such as physical toughness and prowess and does not offer ready opportunities to pursue healthy eating plans. This does not mean that within this context unhealthy eating is inevitable; indeed, one participant openly criticized his co-workers’ diet and extolled the virtues of healthy eating (age 42, BC). When healthy eating was presented as a positive, however, it tended to be in the context of threats to health, regardless of occupational status.</p> <p>In general, food that was enjoyed by participants is that which was perceived to be denounced in a health conscious climate: <i>“It seems to be now all the things that you enjoy eating are bad for you, that’s my overall impression. Whereas maybe like not long ago, maybe fifteen, twenty year ago it’s er... you could basically eat anything you fancied and nothing was said about it”</i> [age 47, BC]</p> <p><u>Physical vulnerability prompting healthier eating:</u> The main legitimate context for switching to a healthier diet was the intervention of medical authority. Some participants had altered their diets to conform to medical advice, especially when this advice was delivered in an individualized, direct manner: <i>“[Interviewer: When did you start trying to change your diet?] I’d say it were about 6 months ago when they found out like, I was diagnosed diabetic and they said “the only way to keep it at a level is to get your cholesterol down, and to do that you have to go on a diet” So...”</i> [age 45, BC]</p> <p>Yet, in the absence of medical intervention or anxieties about ill health (and indeed weight), the relative insouciance of men regarding food consumed is noteworthy: <i>“My friends all go out when it’s end of night, they are all in for the kill... I don’t think they’ve really thought about it [diet] unless something happens to them like me, you know what I</i></p>	

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			<p><i>mean? If somebody had turned round and said “look, you’ve gotta cut down otherwise you’re heading for trouble, then probably they’d cut them out, but most of them are just happy to go along. They won’t go into a shop and say “Oh, I can’t have that, that’s no good to me”, you know what I mean? If they want it, they’ll eat it. They won’t sit down and study or owt like that” [age 42, BC].</i></p> <p>Conversely, and somewhat ironically perhaps, aspects of current diets that could be described as unhealthy are defended with reference to positive health status: <i>“[Interviewer: Would you say your diet is healthy or unhealthy?] It’s reasonably healthy. [Interviewer: Why is that?] No problems. I never suffer from anything. Quite well. I’ve had six days off sick in 13 years” [age 49, BC].</i></p> <p>For a number of participants, mainly younger men from a range of occupational backgrounds, healthy eating was rejected in favour of other more appealing routes to maintaining health, namely sport and exercise: <i>“I’ll do quite a lot of sport, erm, I don’t know, I’m sure I could eat healthier if I wanted to, but it’s just the, as I said, just the pain really [age 23, BC] ‘At the moment I’m trying to er, keep fit in other ways by going to the gym and things like that rather than starving myself...” [age 45, WC]</i></p> <p>Again, healthy eating is associated with hassle (‘pain’) and rendered somewhat redundant in light of other healthy pursuits. These remarks perhaps reinforce both the positive positioning of men within the realm of sport and the association between healthy eating and the feminine. To do both—eat healthily and exercise—is an option which is not seriously entertained by these participants.</p> <p>Subthemes: Reported within themes listed above.</p>	

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<p>Author: Gray</p> <p>Study design: Qualitative evaluation</p> <p>Year: 2009</p> <p>Location: Scotland</p> <p>Funding: Not specified</p> <p>QUALITY: ++</p>	<p>Number of participants: 16 participants and 8 participant's wives.</p> <p>Mean Age: 50.9 (23-74)</p> <p>Married = 73.5% Single = 18.1% Divorced = 7.2% Widowed = 1.2% Employed = 73.5% Unemployed = 12.0% Retired = 14.5%</p> <p>47.9% lived in an area within second most deprived quintile.</p> <p>4.8% had diabetes; 26.5% had family history of diabetes</p> <p>24.1% exercised rarely 43.4% exercised <30 mins 5 times per week 30.1% exercised >30 mins 5 times per week</p> <p>Baseline comparability: BP, height, weight, waist circumference, cholesterol, glucose, thyroid.</p>	<p>Intervention: Camelon Model – men's weight management: Men's Health Clinic – weekly and monthly at 2 centres. 40 minutes discussion of lifestyle and health with nurse. BMI – told if overweight / obese. B Given opportunity to discuss with nurse, obtain leaflets, and join programme. Assessment. Description of 12 week programme baseline measurements. Programme: weekly over 3 months – 60 mins. Based on NICE guidance and NHS Forth Valley dieticians initiative. Behavioural modification to achieve balanced healthy diet, increased PA and moderate weight loss, ideally in group setting.</p> <p>Aims: To evaluate the Camelon model during its first 4 years. To consider the extent to which the model has reached its target population, the characteristics of the participants, weight loss outcomes and views of the programme. Control:</p> <p>QUALITATIVE: Research Question:</p> <p>Methods used: Local Men's Health Clinics –weight management using Camelon Model. 2 Focus Groups with participants and their wives.</p>	<p>Outcomes: Quantitative: Of the 1855 men who attended the Clinics between Nov 2002 and May 2007, 527 (28.4%) had a BMI of >30 and 691 (37.2%) had a waist circumference of >102cm. 770 (41.5%) men met criteria of having either and so could be invited on the programme. 88 men subsequently enrolled on the programme; the percentage of those eligible that joined = 11.4%.</p> <p>Weight loss mean = 4.98 kg (-17.20 to +2.60) Waist reduction mean = 7.53 BMI reduction mean = 1.29 Men with BMI > 35 were more likely to enrol than those under 30.</p> <p>6.3% completers gained weight 5.1% remained stable 44.3% achieved <5% loss 35.4% achieved = or >5% loss 8.9% achieved = or >10% loss</p> <p>Main Themes relevant to research question: <i>Reasons for joining</i> Motivated because of health concerns (heart problems, BP, diabetes, bowel depression, cancer) and being diagnosed as obese at the Clinic. "It's a bad word, especially if it fits" It was important that groups were men-only: "I wasn't going to go, with all due respect, with the women" Other reasons were knowing the programme wasn't a diet, and also pressure from family members.</p> <p><i>What men liked about the programme</i> Men were pleased that the programme didn't focus on weight</p>	

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		£20 voucher as incentive.	<p>loss and appreciated being able to choose a programme suited to them. The use of humour was also welcomed. "There was quite a good crack going on all the time, so the following week you kinda felt you wanted to come back and hear how the guys were getting on"</p> <p>Many men found the use of sandbags (to represent mid-way weight loss) and support from other members motivational. Advice men found useful</p> <p>Men considered the positive actions about food choices (e.g. reducing portion sizes, grilling, etc.) had helped weight management both short and long-term. Learning to understand nutrition labels on food packets was also useful. Both participants and wives stated that increasing PA levels had been effective for losing and maintaining weight. However, the men didn't want to become too thin; most agreed that their ideal weight would be in the overweight range: "...if I get too low down, I'll probably just look ill"</p> <p><i>Why men kept attending</i> The main reason for adhering to the programme was because they enjoyed it. Men also found the programme educational and valued the rapport with the community nurse leader. Suggested reasons for dropping out included holidays, work commitments, health problems, not losing enough weight, boredom, and feeling out of place.</p> <p><i>Involvement of other family members</i> A number of wives stated that the men's involvement had influenced other family members (including themselves). Some women had followed the programme alongside their husbands. In some households children had snacked less and the whole family had started to eat more F&V or take more exercise.</p>	
Author: Kennedy	Number of	Intervention: 'Friends with Food'	Main Themes relevant to research question:	

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<p>Study design: Mixed Method</p> <p>Location: N. England</p> <p>Year: 1998</p> <p>Funding: HEA Look After Your Heart programme; University of Huddersfield; Huddersfield Health Promotion Unit</p> <p>QUALITY: ++</p>	<p>participants: 26</p> <p>Gender: All female Mean Age: 27.2</p> <p>Other: Mainly low-income, lone parents.</p>	<p>nutritional educational programme. 10 weeks; 2 hour sessions</p> <p>Control: Pre-programme scores; scores of women outside intervention area</p> <p>QUALITATIVE: Research Question: To investigate how and to what extent social and economic constraints were important in determining the response to nutritional education.</p> <p>Methods used: Interviews and MINITAB (for nutritional scores)</p>	<p><i>Nutrition knowledge:</i> Practical knowledge was perceived as being the most useful for translating abstract messages (e.g. about fats).</p> <p><i>Dietary change:</i> Approximately half in groups 1-4 reported change in food-related practice. The greatest impact was changing the amount of fat in manageable ways.</p> <p><i>Factors facilitating change in the home:</i> The course allowed 'free' experimentation with unfamiliar foods, preparation, cooking methods. Confidence to use, for example, rice rather than chips. Introduction of healthier foods was easier for those whose families were receptive to change, particularly if partners were interested in health.</p> <p><i>Barriers to change:</i> Half did not change their practices; half of these had contemplated doing so but identified barriers such as social norms and food habits, socio-cultural influences on consumption patterns. if the two were in conflict, family preferences overruled the women's concern for nutrition or health. ("will they eat it or is it a waste of time"). Traditional food tastes limited the range of acceptable foods for the family. Men were generally more conservative and less flexible toward change. Unfamiliar foods were considered 'foreign' ("he says you can eat all this concoction food if you want but don't give it to me").</p> <p><i>Financial factors:</i> Cost, rather than access to food, or availability, was perceived as a major factor. Estimated household expenditure was below the national average and for some, the largest item in the household budget. It was not practical or affordable to cook different meals for family members, thus inhibiting the trial of new recipes. instead, subtle changes were seen as more realistic ("I learned...how to drain it [fat] all off so it's not so bad for you").</p> <p>Discussion: programmes such as FWF are relatively labour-intensive and low-income groups hard to reach. However,</p>	

Preventing pre-diabetes in adults from a lower socioeconomic group

Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
			<p>some success is possible and practical courses are necessary in order to translate complex nutritional messages. The problem is multi-factorial and the sum of these factors and their inter-relationships are more powerful than any single factor. Nutrition education targeted at solely women was inappropriate. Success is more likely if the family, especially male partners, are receptive to change.</p> <p>Cost was pivotal, with change being seen as a financial risk (cost of initial food and potential waste). Common-sense advice to 'buy in bulk' is inappropriate - do not enjoy the same purchasing power. One of the leaders was relatively unsuccessful in delivering the FWF programme compared to the nutritional expert who was seen as more 'down to earth' and understanding of the women's situation, approachable, interactive and responsive to questions and comments.</p>	
<p>Author: Kennedy</p> <p>Study design: Evaluation</p> <p>Location: Bolton UK</p> <p>Year: 1999</p> <p>Funding: NW Regional Health Authority & Community Healthcare Bolton NHS Trust</p> <p>QUALITY SCORE +</p>	<p>Number of participants: 49 members of the community</p>	<p>Intervention: CNAs</p> <p>Research Question: To explore the role of 'Community Nutrition Assistants' (CNAs) in helping to increase coverage within low income areas of Bolton.</p> <p>Methods used: Interviews with a sample of contacts from the community</p>	<p>Qualitative Themes:</p> <p>All had good knowledge of their neighbourhoods, about the groups that already existed and the type of food and health issues locally. This was useful in helping the CNAs understand their clients and to shape their approach. CNAs showed an ability to persevere with difficult groups and to use an informal approach.</p>	
<p>Author: Lawrence, Skinner, Haslam,</p>	<p>Number of participants: 42 women of lower</p>	<p>Intervention: None</p> <p>Aims: N/A</p>	<p>Outcomes</p> <p>Main Themes relevant to research question:</p>	

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<p>Robinson, Inskip, Barker, Cooper, Jackson & Barker</p> <p>Study design: Focus groups analysed using thematic analysis incorporating line by line coding and the constant comparative method</p> <p>Year: 2009 Funding: Not reported</p> <p>QUALITY: +</p>	<p>educational attainment (plus 14 women of higher educational attainment – not reported on in the current review)</p> <p>Mean Age: Not reported</p> <p>Baseline comparability: N/A Inclusion Criteria: Females with lower educational attainment (i.e., up to GCSE) Exclusion Criteria: Not reported</p>	<p>Control: N/A</p> <p>QUALITATIVE: Research Question: To identify and provide an insight into factors that influence the food choices of women with lower educational attainment</p> <p>Methods used: Focus groups lasting two hours of 3-8 participants Eight groups were held with women of lower educational attainment. The discussion guide focused on the following broad factors, chosen to provide a comprehensive picture of macro and micro-environmental, as well as individual, variables influencing food choice:</p> <ul style="list-style-type: none"> • Environmental (e.g. What shopping/preparation/cooking do you do? Are there any difficulties with any of these areas?) • Social (e.g. How do you think your friends, colleagues, family eat? Different or similar to yourself?) • Historical (e.g. What memories do you have of food shopping, preparation & cooking in childhood, adolescence, first time away from home?) • Psychological (e.g. How much control do you have over what you/your family eat? Do you think much about your own & family's health when you plan/prepare/eat 	<p>Thematic analysis of the transcripts supported the existence of a priori categories of influences on food choice and thus the findings are presented using these as headings, which are:</p> <ul style="list-style-type: none"> • Environmental factors <ul style="list-style-type: none"> ○ Cost ○ Time/access • Social factors • Historical factors • Psychological factors <ul style="list-style-type: none"> ○ Perceived control ○ Affect ○ Self-efficacy ○ Health beliefs <p>Only data relating to women of lower educational attainment have been extracted.</p> <p><u>Environmental factors</u></p> <p><u>Cost:</u> The cost of food in relation to other financial priorities was seen as an impediment to healthy eating: <i>"It is a real big money factor because every week I've got to pay a big bill. If I spend all that I've got left on shopping then... I'm going to be without everything else. I've got petrol to put in my car, electric to put on..."</i> [Group 3]</p> <p>Marketing strategies led women to perceive that healthier foods are more expensive: <i>"It's all these buy-one-get-one-free on big bars of chocolate and big cakes... but you never see buy-one-get-one-free by big bags of fruit."</i> [Group 9]</p> <p>The waste generated by buying food that their families would not want to eat was also seen as contributing towards the cost of healthier foods:</p>	

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		<p>food? Do you sometimes eat when you're not really hungry, to cheer yourself up, as a treat or reward?)</p> <p>Thematic data analysis was conducted using line by line coding and the constant comparative method, as follows:</p> <ol style="list-style-type: none"> 1. Focus group transcripts were reviewed by the research team 2. Regular meetings were held to discuss the transcripts 3. The preliminary coding scheme was amended to account for emerging themes 4. Focus groups were coded thematically 5. The coding scheme underwent a further iterative revision as additional focus groups were conducted and analysed 6. Four transcripts were compared by two coders to ensure similar interpretation of codes (agreement was 96%) 7. The coding frame was further revised to collapse, expand and define categories as indicated by the inter-coder reliability exercise, and finally interpretation of the findings in a context of empirical research 	<p><i>"I'll go shopping with the best of intentions & buy loads of vegetables and most of them I end up chucking away anyway, as I just don't get round to cooking them."</i> [Group 7]</p> <p><u>Time/access:</u> Two issues arose concerning time: being at home all day and being bored led to snacking and difficulty controlling eating habits; but conversely not having the time to cook healthier foods.</p> <p>Related to the first issue, boredom and control over access to food were thought to contribute to snacking: <i>"I eat a lot on a Monday night 'cos my husband goes out. You know, I'm at home on my own and it's just so boring."</i> [Group 10] <i>"Because I'm at home, you are always by the fridge. There's more opportunities to snack. Then when you're at work you're not even thinking about it 'cos you're doing other stuff... You're thinking about different kinds of things, so you're not thinking about food as much as I think about food now. Food is something I think about a lot."</i> [Group 4]</p> <p>Time pressures were given as a reason for not always cooking as they might have wished, and in particular the pressure to feed hungry children: <i>"I'd just chuck something in the fryer, sausage and chips or something. I'd just quickly do it, so it's done."</i> [Group 5]</p> <p>Many stated a preference to cook from fresh ingredients when they had time, although those who also reported boredom were aware of the contradiction: <i>"I don't know why, sitting here now... I don't work and (I say) that I haven't got the time to cook. I don't know why I haven't."</i> [Group 6]</p> <p>In terms of access, shopping for food with small children was found to be stressful, in particular navigating round shops with pushchairs and coping with bored and demanding children:</p>	

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			<p><i>"I don't drive, I have to rely on another person to take me shopping and... it's always a hectic time... I've got two kids and it's "I want this, I want that" and I'm like "MY GOD, we're trying to shop alright!" [Group 3]</i></p> <p>Other access issues included having to get to supermarkets with small children in pushchairs that often broke whilst being manoeuvred onto buses or bearing the weight of the shopping and getting small children, pushchairs and shopping to the top of high rise flats when lifts were out of action.</p> <p>These environmental issues meant women were less likely to buy items such as fresh fruit and vegetables, perceiving them to be more expensive, wasteful and heavy.</p> <p><u>Social factors</u></p> <p>The women of lower education attainment did not appear to receive much support from their families in their attempts to feed them a healthier diet. The position adopted by family members on what they would and would not eat limited the variety of foods the women felt they could provide. Often women gave up the struggle to get their families to eat more healthily, and thus ate less well themselves: <i>"Well my family just blatantly refuse to eat the whole meal... I'd do roast dinners, I stopped doing them... he wouldn't eat the chicken, he wouldn't eat the potatoes."</i> [Group 5]</p> <p><u>Historical factors</u></p> <p>Women lower educational attainment reported that they were not taught to cook at home: <i>"I wasn't allowed to go in the kitchen. It was my Mum's kitchen and I wasn't allowed... she had to cook for six people and it was just obviously easier and quicker if she just did it herself."</i> [Group 10]</p>	

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			<p>Often their first opportunity to learn to cook was when they left home and there was generally a lack of opportunities to observe healthy eating practices, meaning that they were exposed to a more limited range of foods when they were growing up: <i>"My mum had the same things each day so you knew the week before what you was having next week. Mondays we used to have chips, Tuesdays mash, Wednesday chips... then Sundays would be a roast. It was mash, chips and roast."</i> [Group 9]</p> <p>The range of foods the women were introduced to in their childhood appeared to be a strong influence on their current food choices.</p> <p><u>Psychological factors</u></p> <p><u>Perceived control:</u> Women of lower educational attainment did not appear to have much perceived control over food they provided to the household, reporting that family members determined what food they would or would not eat: <i>"They're more like their Dad and, like their Dad, he wouldn't touch vegetables."</i> [Group 5]</p> <p>Even very young children (such as this participant's 3.5-year-old son) exercised control over what was eaten: <i>"You give him a bruised apple and he's like "no thanks. I won't eat it, no thanks it's got a bruise on it". Or I'll give him a broken biscuit and he'll say "no thanks, it's broken, I don't want that one"... (laughter). It isn't funny you know. I've been to the shop and bought them cakes, and as we've got them out of the bag they've snapped in half and he's been like "I want another one. Buy me another one. I will not eat it." So I have to buy about three or four cakes."</i> [Group 3]</p> <p>Sometimes it was easier to meet such demands, even</p>	

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			<p>unreasonable and costly ones, rather than face a daily battle. Amongst those women of lower educational attainment who attempted to exercise control over their family's eating habits, there was a sense that they did not always feel positive about it, which frequently undermined their motivation to feed their families, and therefore themselves, a healthy diet:</p> <p><i>"Woman 1: ...I cooks for the kids. If they don't eat it, they don't eat it. I know they normally eat it... if I done them pasta, I know they love pasta. If they don't eat it, I'm not gonna do them nothing else. It's their fault. If they're hungry at 10 o'clock at night, then that's their problem.</i></p> <p><i>[Laughter]</i></p> <p><i>Woman 2: You're nasty.</i></p> <p><i>Woman 1: I'm evil, I am. I'm an evil mum."</i> [Group 9]</p> <p>Women of lower educational attainment were likely to concede the control to others within the house, giving up on attempts to provide healthier food. This impacted on their own diets:</p> <p><i>"I won't ever cook a chicken because it would only be me eating it, because Liam doesn't eat it and you couldn't really get him to try it."</i> [Group 10]</p> <p>It is clear that when other family members controlled the food choices, the women's dietary quality also suffered as they were generally not prepared to cook a separate healthier option just for themselves.</p> <p><u>Affect:</u> Negative affect was prevalent in the dialogue of women of lower educational attainment, in the sense that the woman does not value herself and hence is not interested in her own health and well-being, and some did not value themselves highly enough to cook, choosing to snack or eat nothing:</p> <p><i>"It all comes back to how you feel about yourself in the end, because if you feel important, then you'll cook yourself a meal, whereas your children are important to you, friends, family, whatever are important to you. That's why you cook... I don't</i></p>	

Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
			<p><i>feel that way about myself, so I don't bother...</i>" [Group 7] <i>"Yeah, "I've not had nothing to eat", and then instead of cooking something nice, you just go pick at stuff."</i> [Group 10]</p> <p>They also appeared to have quite a negative body image and were conscious of being overweight: <i>"I'm trying to get her into healthy eating at the start of her life rather than being like me, overweight and then having to diet."</i> [Group 5]</p> <p>These beliefs were reinforced by partners' perceptions of healthy foods as being associated with a weight-loss diet and thus were unwilling to try such foods: <i>"He says, "I ain't fat, you are. I don't need to diet"."</i> [Group 7]</p> <p>The authors speculate that the women's issues with their weight may be related to the diet they were consuming.</p> <p><u>Self-efficacy:</u> Many of the women of lower educational attainment lacked confidence in cooking: <i>"I don't think we're taught it to be honest. 'Cos I wouldn't know how to start from scratch."</i> [Group 5]</p> <p>However some women were more confident about their skills and knowledge, for example, one woman enjoyed experimenting with food, regardless of the outcome: <i>"And they're like "whoa what did you do to this" and I was like "I put a bit of this in and a bit of that" and I do and it turns out alright and other times it's "ooh we'll put that in the bin then"! But you've just got to, and it's like then that's the way you explore and you find new meals and think "oh that was alright actually"."</i> [Group 3]</p> <p>Many women also lacked confidence in being able to meet the recommended healthy eating guidelines for fruit and vegetable intake, and sometimes misinterpreted them as eating five portions of fruit a day, which they believed was futile:</p>	

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			<p><i>“Woman 1: ...we’ll usually have at least a piece of fruit a day, but we never eat five. Woman 2: No, that would be masses.”</i> [Group 3]</p> <p>Health beliefs: ‘Good’ and ‘bad’ food and their consequences for health were discussed, however women of lower educational attainment were not very explicit about the link between good nutrition and long-term health outcomes. Eating patterns were more often described in terms of losing weight rather than aiming for health improvement: <i>“...once a week we’d clean out the back of his car... we’d find all these packets and Paul would say, “the amount of crap you eat is disgusting”, and we didn’t think about it ‘cos we weren’t dieting.”</i> [Group 5]</p> <p>Healthy eating was generally not seen as a high priority, and women were often more concerned about providing their children rather than themselves with a diet to ensure good long-term health: <i>“Woman 1: I think there’s a certain limit to it... it’s good to be healthy, but I don’t push it. Woman 2: You can be too healthy. Woman 3: Yeah, I think you can be.”</i> [Group 3] <i>“I think it just depends on if your motherly instinct towards your child is to grow up and be healthy even if you’re not, so you wouldn’t necessarily think about what you’re eating, you’d think about your child first. As long as your child is growing up healthy it wouldn’t matter, and that’s just a motherly instinct to do that.”</i> [Group 5]</p> <p>Subthemes: Reported within themes listed above.</p> <p>Discussion: Women of lower educational attainment appeared to value weight loss over health and thus equated healthy eating with dieting. They valued health outcomes for their children but were inhibited in their attempts to make better food choices for</p>	

Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
			<p>them by their lack of perceived control. This may itself be related to a lack of social support, few positive role models to provide essential experiences related to the provision, preparation and eating of healthy foods, the perceived cost and potential waste of healthy food, and the conflict that existed for them between managing relationships and providing healthier meals.</p> <p>An intervention will need to increase women's sense of control, improve her affective state, raise the level of social support from within her family, and highlight the important consequences for herself and her family of eating a healthy diet.</p>	
<p>Author: Lindsay</p> <p>Study design: RCT with qualitative evaluation</p> <p>Location: Salford UK</p> <p>Year: 2008</p> <p>Funding: Not stated</p> <p>QUALITY SCORE +</p>	<p>Number of participants: 108</p> <p>Mean Age: 62.9</p> <p>Baseline comparability:</p> <p>Inclusion Criteria:</p> <p>Exclusion Criteria:</p>	<p>Intervention: The intervention group received new computers and a one-year broadband subscription along with training and access to the project's portal. Drop-in sessions were available as was phone-in support for any technical difficulties, however the intervention group were better informed about drop-in sessions as these were promoted by the portal.</p> <p>Control/comparison/s description: The control group received new computers and a one-year broadband subscription along with training but no access to the project's portal. Drop-in sessions were available as was phone-in support for any technical difficulties</p> <p>QUALITATIVE: Research Question: Why might there have been an improvement in the diet of the</p>	<p>Outcomes (from RCT): Only one significant difference was found, which was a change in diet. Here a higher score indicates eating 'bad' foods more frequently. The experimental group improved their diet over time by eating such foods less often compared to the controls (p= 0.014).</p> <p>Qualitative: Reflection of CHD causation and the part that diet may have played. Discussion of different diets they had been on, difficulties adhering to diets and the importance of diet in managing their condition. Recognition that diets used to be much better (fresh food; less prepared foods) in their childhood compared to the fast-paced lifestyle now. Reminiscing about what things used to be like in the area when they were growing up ("we had fat in our diet but meat was a luxury...how did we come to eat all this packaged ready meal trash?") Reference to how lifestyle has changed (cars, TV, materialism, not sitting together at the table). Others said they did not realise the impact that food had on their health until they were diagnosed with CHD ("I had never heard of cholesterol..."); shift working was a factor in poor eating habits.</p>	

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		<p>experimental group?</p> <p>Methods used: Data collected from discussion forums on the facilitated website. Analysis: NVivo used to condense data and identify relationships between central themes around informal learning and peer support.</p>	<p>The information provided on the portal reminded one man how easily it is to fall back into bad habits if not regularly reminded. An advertisement that warned how much fat is in crisps using imagery (bottles of oil) provoked a lot of discussion.</p> <p>Main Themes relevant to research question: Reminiscence of 'better' food when growing up Lack of awareness of the impact of a poor diet until diagnosed Need for reinforcement of health messages Using imagery can reinforce a simple message Mental health worsened slightly for controls but not for cases. Limitations: Six month follow up is limited in its ability to show changes Some people were having to familiarise themselves with using a computer (about half hadn't owned one before) Discussion: May have provided people with better understanding of their eating habits. There was no evidence of an increase in healthy eating, but there was a reduction in eating 'bad foods'. Having home access to the portal influenced eating behaviours. Social support can be a barrier to eating healthily due to habitus, and bonding capital. However if the source of support is from 'bridging' capital as in this study, participants may be more susceptible to change. Being male was a predictor of eating bad foods more often. Remains to be seen whether this type of communication can strengthen, at least partly, social ties.</p>	
<p>Author: Nic Gabhainn, Kelleher, Naughton, Carter, Flanagan & McGrath</p> <p>Study design:</p>	<p>Number of participants: 74</p> <p>Mean Age: 38</p> <p>Other Sample Characteristics: 32 males (59% married,</p>	<p>Intervention: N/A</p> <p>Aims: To assess knowledge of and attitudes to CHD and associated risk factors, reflecting the perspectives of employed people across the socioeconomic spectrum.</p>	<p>Outcomes Data were collected for both blue-collar (i.e. lower SES) workers and white collar workers. We have extracted data that was specifically reported as being related to the blue collar workers.</p> <p>Main Themes relevant to research question:</p>	<p>In the discussion, the authors note that:</p> <ul style="list-style-type: none"> • There were differences consistent with the observed quantitative evidence that

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Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
<p>Focus groups</p> <p>Year: 1999</p> <p>Funding: Health promotion unit, Department of Health</p> <p>QUALITY: +</p>	<p>56% 'rural' dwellers, 59% smoke, 81% exercise at least 3 times a week, 40% eat fried food 4-6 times a week); 42 females (36% married, 74% 'rural' dwellers, 40% smoke, 69% exercise at least 3 times a week, 36% eat fried food 4-6 times a week)</p>	<p>Control: N/A</p> <p>QUALITATIVE:</p> <p>Research Question: To assess knowledge of and attitudes to CHD and associated risk factors, reflecting the perspectives of employed people across the socioeconomic spectrum.</p> <p>Methods used: Focus groups – 16 groups in total, group size ranged from 5 to 14. Participants were sampled from a local government authority and a local health authority (using the Personnel list).</p> <p>Focus group questions were derived from group deconstructions of constructs from the Health Belief Model, Theory of Planned Behaviour, Protection Motivation Theory and Social Learning Theory.</p> <p>Audio-recorded and transcribed sessions were analysed using content analysis (not referenced or described in detail), with pairs of researchers identifying examples and suggestions of the pre-defined constructs, although participants did not always allude to the specific constructs within the questions designed to tap them. Each construct was sub-divided according to its different perspectives apparent in the data. Thus the broad analysis categories were theoretically-driven and the refinements data-driven.</p>	<p>Knowledge: Lack of exercise as a risk factor was not emphasised by blue collar groups generally, particularly among the younger participants, although it was mentioned in passing (e.g. '<i>lack of exercise</i>').</p> <p>Change: Older blue collar women identified the widest variety of barriers to change (e.g. '<i>A [water] filter is expensive</i>', '<i>It's habit</i>', '<i>Fruit coming from foreign countries [is dangerous]</i>', '<i>Time</i>', '<i>You're tired when you're finished work</i>').</p> <p>Younger blue collar groups were least specific about these likely benefits (e.g. '<i>longer life</i>', '<i>feel better after it</i>').</p>	<p>shows a clear class gradient in risk of heart disease</p> <ul style="list-style-type: none"> • However there were no substantial differences in attitudes detected • In blue collar workers, there was evidence of less debate and discussion about the issues generally and less apparent internalisation of methods of preventing coronary heart disease – which the authors suggest highlights the need for lifeskills programmes to focus more on this issue at school level

Preventing pre-diabetes in adults from a lower socioeconomic group

Study Details	Participant characteristics	Intervention Characteristics Methods	Results	Notes
		Results were reported stratified by SES, gender and age band (older, younger) where there were differences.		
<p>Author: Parry</p> <p>Study design: F/Gs</p> <p>Location: Birmingham; Black Country; UK</p> <p>Year: 2007</p> <p>Funding: Not specified but ? NDC as evaluation of the programme</p> <p>QUALITY SCORE +</p>	<p>Number of participants: Not specified</p> <p>Mean Age: Two groups 16-20s and over 60s</p> <p>Setting: Community groups</p>	<p>QUALITATIVE:</p> <p>Research Question: How residents in deprived areas believe that where they live influences their health</p> <p>Methods used: Focus Groups (2 with each participant; the second to validate points raised in the first and discussion of photos) photographs of relevant features in area (participants view)</p> <p>NB: No mention of methods used to analyse data</p>	<p>Outcomes</p> <p>One group (BBCentral Young) were hostile initially, thinking the research was about gun crime and violence.</p> <p>Main Themes relevant to research question: Place has an influence on individual behaviour and lifestyle through social practices and lack of local resources</p> <p>Barriers to carrying out optimal PA and diet behaviours:</p> <p>Lack of shops and affordable goods within the local area (local shops more expensive for fresh food) Problems with the provision of public transport (and cost of this negated savings made in high street; carrying heavy shopping on buses) Local cafes are not frequented - difficulty engaging people Perception that the council personnel do not understand how they have to live Perception that other areas are 'better' and the unfairness of this Fear to walk to shops or use public transport at certain times of the day because of intimidation by others Recognition of the importance of physical exercise, but few would walk in the park or beside a canal for fear of attack.</p>	
<p>Author: Peerbhoy</p> <p>Study design: Mixed method evaluation</p> <p>Location: Liverpool UK</p>	<p>Number of participants: 5 families</p> <p>Mean Age: Not stated</p>	<p>Intervention: 'Family fit' healthy lifestyle programme for in deprived area (PA and diet)</p> <p>Control: None</p> <p>QUALITATIVE:</p> <p>Research Question: Evaluation of the</p>	<p>Main Themes relevant to research question:</p> <p>Most families took part in the healthy eating activities such as cooking classes and supermarket tours. the response was positive from all participants. One dad was apprehensive at start of programme; this diminished over 2-3 weeks.</p> <p>Health behaviours: Mainly focused on dietary and eating habits; for example, good intentions and becoming more</p>	

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<p>Year: 2008 Funding: Government</p> <p>QUALITY SCORE +</p>		<p>impact of a 14-week community-based initiative which attempts to tackle unhealthy / over eating and lack of exercise.</p> <p>Methods used: Focus groups with families</p>	<p>conscious of patterns and food shopping ("I shop with my head not my heart now") Participants seemed to perceive that PA came from scheduled classes, though one participant was "trying to go a little faster and a bit further" when walking the dog. Exercise was maintained beyond the course of the programme (6 months), and there was an attempt to walk more in and around work. There was positive feedback on the mix of participants, and the importance of other people on the project. The staff were seen as giving social and motivational support during circuit training. Challenges: shift work, lack of time; poor level of fitness at baseline was inhibiting physically and psychologically. Changing prior health behaviours and children's behaviours in regard to diet. Poor weather, lack of daytime light during winter was a barrier to PA for 3 families. Practical hassles such as washing and drying the children's hair after swimming. Suggestions: Women only sessions, more dance classes and more weekend activities to fit in with busy schedule. All families indicated that the programme should last longer than 14 weeks, and be promoted to more people.</p>	
<p>Author: Price Study design: interviews</p> <p>Year: 2004 Funding: Not specified</p> <p>QUALITY SCORE +</p>	<p>Number of participants: 30 mothers of a child aged 3 or under Mean Age: Not stated</p>	<p>Intervention: Control: QUALITATIVE: Research Question: To understand how mothers who live in a socio-economically deprived ward use their resources and overcome constraints to protect and promote their families' health, in particular that of their children.</p>	<p>Main Themes relevant to research question: Only small section relating to diet and exercise</p> <p>Whilst all the mothers were aware of healthy eating messages, for some, food choices were restricted by financial considerations. This created feelings of guilt and anxiety. It was essential that food bought was eaten and was filling so that there was no waste. To reduce waste the mothers dismissed their own taste and prioritised that of their children. Mothers didn't cook for themselves and only ate if their children needed to eat.</p> <p>Similarly, messages regarding the health benefits of PA were</p>	

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		<p>Methods used: SS interviews: Framework analysis</p>	<p>absorbed Several of the mothers were concerned about being overweight. They took their children's exercise for granted and related their own to performing housework, walking, and running around after their children.</p>	
<p>Author: Rankin Study design: Evaluation Location: Scotland Year: 2006 Funding: Projects – BLF (Big Lottery funding) QUALITY SCORE: ++</p>	<p>Number of participants: 6 sites, variation in urbanity. Mean Age: Not reported</p>	<p>Intervention: HLC (Healthy Living Centre) food project. Aims: To enhance skills To promote social inclusion To influence food accessibility Control: QUALITATIVE: Research Question: To improve the understanding of the implementation of health-focused ABIs (Area-based Initiatives) in order to contribute to learning and to inform best practice. Methods used: Interviews (single and group) with project managers, project workers, partners, volunteers, service users. Observation of activities, services, meetings and daily interactions. Telephone contact with key contacts to maintain recording of developments.</p>	<p>Main Themes relevant to research question: Multiple overlapping and site-specific themes: Food, food related work and the way food used in HLC services to address inequalities and improve health. Food initiatives comprised a high proportion of Scottish HLC bids for funding (80% compared to 48% UK mean). Each HLC case study in Scotland sought to devise or support an initiative according to the needs of local areas and users. However, the aims, objectives and ethos of food initiatives were different. Subthemes: 1. Using food as a tool to promote social inclusion Expectation that HLCs work with people or groups that are socially excluded or at the risk of becoming so. The relationship is that people on lower incomes often have to pay more while having limited access to a poorer quality range of foods. Promotion of HLC often at weekly services such as parenting classes in order to attract attendance. Food (e.g. bacon / sausage butties – not particularly healthy but attractive to the target population and possibly not much available to them elsewhere) was provided as a further incentive ('free scan'). Food also helped to increase the uptake of non-food services ('more going on'). In additions, staff provided healthy eating messages and instruction on how to cook meals using recipe cards. Other activities (more going on) included line dancing, aromatherapy classes. Food co- ops: social inclusion was encouraged by social events where</p>	

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			<p>people could meet over a cup of tea after shopping. Food stocks tailored to community needs and local infrastructure. Services also provided a forum to obtain advice such as housing. Affordable produce was also available, with plans to open market gardens for people to participate on the land as well as access fresh local fruit and vegetables.</p> <p>School breakfast clubs: child care as well as food provided.</p> <p>2. Influencing the accessibility of quality food choices</p> <p>Food is both private (stored and consumed in the home) and also social or communal. Target users often have limited access to a range of shops and 'healthy foods' can be expensive. Services seek to improve food retailing and provision options through developing "...food activities that impact on peoples poverty..." (partner), and occasionally, through targeting local retailing structures. In terms of individuals, services seek to enhance access by bringing together "...healthy food and affordable costs in an accessible way..." (project worker). These include food co-ops and virtual food co-ops where food is delivered across a wide geographical area. Enhanced purchasing power of HLC organisations allows 'Fruit barras' to be developed on two sites to enable projects to reduce costs of supplying quality choices. Fruit here is subsidised (arrives at 'drop off sites and is then distributed to the groups).</p> <p>Local growing initiatives also developed to enhance access (market gardens in 3 sites also seek to engage people in awareness of the origins of food "...to try and reconnect the growing of the food with the eating of food..." (project worker)). Informed healthy choices are encouraged in homes and local shops,</p> <p>2 sites seek to enhance access through the provision of free food. Large businesses are encouraged to donate unused and date-limited food to charities to be distributed to groups on low incomes. Another site provides free unprepared food as well as the facilities to cook.</p> <p>Two sites are involved with retail structures; meetings with local businesses, shops, suppliers and restaurants to</p>	

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			<p>encourage them to promote healthy food at taster sessions (this includes information such as advice, leaflets e.g. in a local supermarket). Negotiating such access took time however.</p> <p>Barriers: Negative associations drawn by local people between work of HLC and government 'healthy living' campaign (unwanted interference in private life). Confusion over names of some HLCs, especially those using 'healthy living' in title. Staff had been criticised by local people whilst in supermarkets over their own personal food choices even before the delivery of any food-related programmes.</p> <p>3. Using food as a method to enhance knowledge and develop skills Food used to provide education about how to source food and prepare a healthy meal, and on topics such as obesity and nutrition. Food is used to train users in food hygiene and food handling techniques. Courses run to instruct on buying affordable healthy foods and provide recipes and directions to other sources of information. It was hoped that messages would be taken home and passed on to family members. Skills had enabled several users to gain employment and further training.</p> <p>Discussion: Could be argued that HLCs are activating the policies of the time (1999) which were more about changing individual behaviour than attending to structural and planning issues. This limits the HLC sites abilities to widen the reforms beyond local measures.</p>	
<p>Author: Rankin</p> <p>Study design: Qualitative</p> <p>Location:</p>	<p>Sample: 6 HLC sites</p> <p>Site 1 Multi-site, multi-focus, mainly rural HLC, delivering services using a</p>	<p>Intervention: Evaluation of the Healthy Living Centre (HLC) programme</p> <p>Aims: To explore in depth how HLC practitioners conceptualised 'health inequalities' and applied the construct</p>	<p>Main Themes relevant to research question: <i>Practitioners' perspectives on health inequalities: putting explanations into practice</i></p> <p>Across all HLCs, services addressing clusters of inequalities were often justified in terms of the many ways in which they might benefit users. For instance, the incorporation of food</p>	

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<p>HLC Programme in Scotland</p> <p>Year: 2009</p> <p>Funding: Not stated</p> <p>QUALITY: ++</p>	<p>centre-base and through outreach across a very large geographic area.</p> <p>Site 2 Multi-focus, predominantly urban HLC, delivering services through networks of established organisations across a major city.</p> <p>Site 3 Multi-focus, urban HLC, delivering some services from a centre-base but mainly by outreach to a defined geographic population</p> <p>Site 4 Multi-focus, urban HLC, delivering outreach services to pockets of population, operating peripatetically across a large geographic area.</p> <p>Site 5 Multi-focus, centre-based, rural HLC, delivering services to an island-dwelling population, from its centre base and by using outreach services.</p>	<p>to legitimate their public health and health improvement work.</p> <p>Methods used: A range of qualitative methods was used, with the researcher spending time, including residential visits, at HLCs during discrete periods of fieldwork. Methods included: taped semi-structured and individually tailored interviews; discussion groups; documentary analysis; formal and informal observation of activities, meetings, events and interactions; telephone interviews; and ongoing email and telephone contact. Over time, the customisation of instruments for each site took into account previous findings and documentation (e.g. minutes and reports) sent by HLCs to the research team on a regular basis. Two rounds of fieldwork were conducted during phase one, with one further round during phase two.</p> <p>Data analysis: Data analysis was informed by the principles of grounded theory and constant comparative methodology.</p>	<p>and eating activities, while originally intended to improve physical health, were increasingly delivered by practitioners in a format that was perceived to improve social contacts. Practitioners talked about “raising awareness” (for clients and providers), “breaking down barriers”, “creating feelings of well-being” or “increasing social contact”. These intentions resonate with the relational and interactional elements of everyday ‘classed practices’ identified by class analysts:</p> <p><i>“a lot of that stuff [food provision] cements social circles and social networks. So to be able to think. it’s not a conscious kind of thinking but that, those social networks will then create a feeling of, of wellbeing.”</i> (Chair of the board, Site 6)</p> <p>In Site 3, a centre-based and outreach HLC, multiple approaches were used to bring about a holistic improvement in health in the target population, including those which tackled barriers to access, appropriateness of services, lifestyles, social exclusion/capital and poverty. For example, the affordability of access to services was a barrier that was believed to limit the amount of exercise being taken. In contrast to the effects of lifestyle, which affected engagement with primary care health professionals in Site 6 (see above), practitioners in Site 3 related how poverty-related inequalities were linked to lifestyle priorities and accessibility. At the same time, class-related issues, such as the avoidance of stigma, were considered to be important for ensuring uptake.</p> <p><i>“It disnae [doesn’t] matter, you know, whether or no you’ve got a pair of training shoes or no got a pair of training shoes, you know, it disnae matter tae [to] me whether you’ve got the gear. You come as you are. Everybody’s welcome.”</i> (Project worker, Site 3)</p> <p><u>Promoting health improvement while avoiding stigmatisation</u></p>	

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	<p>Site 6 Single-focus, centre-based, urban HLC, targeting a geographically disparate target group living within a large city.</p> <p>Numbers of participants varied between HLCs, with approximately twelve stakeholders interviewed at each site during each round of fieldwork. Practitioners included: people who delivered HLC services directly related to health (e.g. project workers); people whose community roles were linked to addressing health in HLC target groups (e.g. community workers and project staff from local partner organisations); and people with managerial roles, who often had direct contact with participants and sometimes overlapping service delivery roles (e.g. project managers/coordinators,</p>		<p>Several HLCs highlighted the difficulty of marketing their activities as 'health improvement'. In part this was a consequence of adopting a social model of health but there were also problems in being explicit about a health focus with certain target groups:</p> <p><i>"If . the [HLC] had been set up and started in a way that was so health focused . that there was just end of phase health we wouldn't have got them through the door . or we might have got them through the door to begin with but it would have been short lived..it's because it's sort of taken as part of everything to do with your life that the word is out that it's a good place to be."</i> (Chair, Site 6).</p> <p>Through engaging with different cultural or 'classed' outlooks, most HLC practitioners worked more indirectly to effect health relevant changes and avoid appearing to sit in judgement on existing practices. Just being identified as a target group could be seen as stigmatising. For example, with empowerment approaches widespread in HLCs, the manager of Site 3 highlighted that this aim was not necessarily articulated publicly. Instead, 'personal empowerment' was quickly seen as an important part of promoting services focused on lifestyle change. This was the preferred way of enhancing the HLC's appeal to the target community, since addressing other features of inequality might be counterproductive:</p> <p><i>" . every single one of our programmes, be it a walking group or a keep fit class or, or some kind of training, is a personal empowerment, right. . [T]he challenge we have when we speak to our Board [which included local people] is that they don't necessarily see themselves as excluded communities. . they don't necessarily sort of say that . their lifestyles are necessarily, I think, negative."</i> (Manager, Site 3).</p>	

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	<p>chairs of boards). Service users at each site were also interviewed.</p>		<p>All HLCs faced the challenge of avoiding the generation of feelings of stigma that might be associated with, and prevent uptake of, services. This could be seen as conflicting with notions of targeting particularly disadvantaged and hard to reach groups.</p> <p><u>Allowing time to develop rapport with target groups</u> All HLCs highlighted the challenge of the length of time taken to become familiar with, and accepted by, communities and groups. This was evident in rural communities, such as Site 1 and 5, where coordinators were seen to be the “glue” (Manager, Site 5) that engaged the community in services. Co-ordinators in several sites discussed the time pressures of their roles but emphasised the increasing importance of relationship building when working with disadvantaged clients:</p> <p><i>“first of all you need to find out what’s going on, you need to get to know people, you need to find out whether it’s working.”</i> (Co-ordinator, Site 1).</p> <p>In Site 4, practitioners found that an increase in time spent ‘getting to know’ clients helped overcome initial reticence:</p> <p><i>“So, often the first six appointments. are just about getting to know what’s going on for people and it’s quite surface and, after that start to get to know the person more . and they’re more trusting so, they open more . It’s just taking them a long time to get to the point and to deal with it. ”</i> (Project Officer, Site 4)</p> <p><u>The challenge of measuring ‘success’</u> The challenge of quantifying the impact of HLC interventions was universally recognised. Often only ‘anecdotal’ information could be collected. For instance, practitioners felt that asking participants for information about themselves, in order to provide relevant statistics, could be experienced as intrusive, stigmatising or offensive:</p>	

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			<p><i>“For me the quantitative stuff seems a frightener to most people . they think we’re the Spanish Inquisition. So, oh why bother.”</i> (Project worker, Site 4).</p> <p>Once again, practitioners were responding to their own roles in the everyday interactional aspects of class and feeling uncomfortable about the behaviours expected of them. The need to account for success conflicted with the imperatives to avoid surveillance or pressure on beneficiaries and to respect their privacy. Moreover, most HLCs felt that quantitative measures of ‘success’ did not adequately capture the social outcomes or “bigger picture” (Partner, Site 4). Many also grappled with the difficulty of providing evidence that they had made a ‘measurable’ difference to clients’ lives. For practitioners working with social disadvantage, small successes could be perceived as major achievements. In Site 2, a project worker illustrated how information sought by NHS health professionals often focused on quantitative outcomes, disregarding some of the holistic and social benefits of food provision because these were difficult to record:</p> <p><i>“ . I think it’s a multi-faceted thing in terms of health, that’s partly how I view it. It doesn’t always go down well with health professionals ’cause they tend to talk as if the food stuff was the important bit. hellip; they’ll always say “No, no, I would never say you couldn’t eat chocolate and I would never underestimate the value of the social contact that goes along with it.” But, in fact, when you look at the initiatives, they tend to be going on about how many pieces of fruit you should eat and what kind of fruit and vegetables you should eat . rather than about the bigger picture.”</i> (Project worker, Site 2)</p> <p>Health inequalities as moving targets: insider knowledge and outsider influences During the five year evaluation, it became apparent that responses to tackling health inequalities were</p>	

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			<p>variable across time and between HLCs. This variability resulted from uneven learning about target groups and their changing needs, a changing policy agenda and different routes to achieving sustainability. Addressing unmet needs and responding to new health policies</p> <p><u>Adopting more focused approaches to targeting specific needs.</u> Criticising the initial broad community-wide approach, the manager in Site 5 indicated that future refinements would ensure that greater attention is given to specific disadvantaged groups, maximising the impact of developed relationships and working skills:</p> <p><i>“ like I’ve said, cooking classes, is it going to make a difference? So, we focus right down because the people who are being referred . what is coming, via the [primary care] health professionals . it’s the neediest people and that is what we need to try and get over to future funding.”</i> (Manager, Site 5)</p> <p>Similarly, Site 6 had proposed changes to its services in response to learning how inequalities experienced by its target group might be better addressed. Following consultation with their client group, and branching out from a focus on access to primary care, attention was given to poverty/low income through more directly addressing employability issues. Seeking to improve the chances of interview success for clients, the HLC employed a hairdresser. Site 6 also planned radical changes to their building to incorporate showers, laundry facilities and a training cafe’. This was intended to provide volunteering opportunities which would help users develop skills and increase opportunities for paid employment. Drawing links between employment and well-being, it was explained that helping users become productive would increase their ‘status’ within society.</p>	

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			<p>Discussion</p> <p>There was constant evolution in definitions, local structures and wider policies of the most salient manifestations of health inequalities and/or their underlying causes. Practitioners' accounts above show that it was not solely a matter of refining and adapting services to take account of developing 'experientially-based' knowledge. Rather, practice was also subject to outside influences on health inequalities, which, in turn, affected how significant health issues were addressed.</p> <p>HLC practitioners also used different explanations of health inequalities in combination with one another which both justified and influenced how services were delivered. These interpretations often led to an enhanced emphasis on the value of social contact and the socialisation role of HLC services.</p> <p>Service users were frequently approached and work undertaken in a manner which sought to normalise social contact before seeking to achieve defined service delivery outputs. This required time intensive practitioner engagement and close contact to aid rapport building.</p> <p>Future initiatives established to work with socially disadvantaged groups might consider broader forms of service delivery and normalising of social contact, which foreground more traditional health improvement work such as promoting healthy eating messages. In addition, a greater focus on social elements should be considered, in particular when local and programme evaluations to determine effectiveness are being designed.</p>	
<p>Author: Spence</p> <p>Study design: Semi-Structured Interviews over 6</p>	<p>Number of participants: 6</p> <p>Mean Age: Not stated</p>	<p>Intervention: 'Now you're Cooking'; a community based 'cook and eat' project covering basic cookery skills, budgeting and food hygiene. Led by health promotions assistant for 8 weeks.</p>	<p>Main Themes relevant to research question:</p> <p><i>Motivation</i></p> <p>Some were motivated to make specific changes to their cooking. One wanted to learn to cook.</p>	

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<p>months after participation</p> <p>Location: Northeast Scotland</p> <p>Year: 2005</p> <p>Funding:</p> <p>QUALITY: +</p>		<p>Aim: To change eating habits of entire families, as well as providing the opportunity to socialise and make new friends.</p> <p>QUALITATIVE: Research Question: To establish participants' motivation and expectation of the NYC project, and the effect of the project on cooking, eating and food budgeting behaviour / skills. Methods used:</p>	<p><i>Course satisfaction</i> All enjoyed the course, especially the recipes, which they could take home. One found the course to be less complex than expected ('exotic dishes') Many were complimentary about the HPA who ran the course ('I learnt a lot')</p> <p><i>Skills</i> Majority had learned new cooking skills that they continued to use regularly, though one claimed not to have learned much ('it was just stuff I could mak already') Enthusiasm for different recipes and foods they had learned to cook. As a consequence they were more experimental with fresh ingredients such as fish. Some learned to be economical whilst maintaining a healthy diet. Food hygiene instructions were seen as useful, and some went on to complete a further health and hygiene course on the same premises.</p> <p><i>Dietary change</i> For 2, there was an effect on personal diet, (though 1 diagnosed with diabetes). One reported eating more fruit and vegetables. Most reported that their children's diet had altered due to the course (this seems to have been a motivator for completing the course).</p> <p>Subthemes: Funding and community involvement necessary for success.</p>	
<p>Author: Stead, Caraher, Wrieden, Longbootom, Valentine, Anderson</p>	<p>Number of participants: 16</p> <p>Mean Age: Not specified</p>	<p>QUALITATIVE: Research Question: To inform the content of an intervention designed to address low food skills among low-income communities (CookWell).</p>	<p>Outcomes: Females appeared to have sole / primary responsibility for shopping and cooking, sometimes for large and extended families. The 2 men appeared to have all their meals cooked for them, but clamed to cook on occasions.</p>	

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<p>Study design: Focus Groups</p> <p>Location: Scotland, UK (2 areas Greenock and Alloa, both having high unemployment rates and deprivation indices)</p> <p>Year: 2004</p> <p>Funding: Food Standards Agency</p> <p>QUALITY: ++</p>	<p>Mainly female, many with young children (no figures supplied); 2 men. Around half unemployed, the rest in part or full time employment.</p>	<p>Methods used: Focus Groups that lasted average 90 minutes. Discussion around experiences of food shopping and preparation, food preferences, feelings about and experiences of cooking.</p>	<p>Main Themes relevant to research question: <i>Typology of approaches to cooking</i> Varied enthusiasm for, confidence about and claimed ability in cooking; 3 broad approaches: Confident Respondents liked the experience of cooking and expressed confidence in their ability to cook a range of dishes. Wider repertoire than other two groups; familiar with a range of techniques, though felt in need of advice and encouragement to help them be more adventurous.</p> <p><i>Basic but fearful</i> Respondents perceived their cooking as basic and in need of improvement. Despite expressing feelings of competence in some aspects of cooking, they found it a chore and basically lacked confidence. They felt that their repertoire was boring and unadventurous. There was anxiety about venturing beyond familiar dishes, and reluctance to experiment on even a small scale: ("cause you only have to put one different thing in it and it tastes different..."). Concerns were also with the broader planning and organisation of family meals.</p> <p><i>'Useless' and 'hopeless'</i> Reported lacking many basic cooking skills and felt disempowered by the process, describing themselves variously as 'useless', 'hopeless, and 'crap' at cooking. They relied heavily on frozen and pre-prepared foods and a microwave, or on others to cook for them – both men were in this group. They found it difficult to identify specific areas for potential improvement beyond a general wish to be better ("<i>I just do basic things that come out of a tin and into a pot</i>"). There was uncertainty about even the basic language and concepts of cooking. Age did not seem to be related to any increase in confidence or feelings about cooking; older respondents appeared more likely to be able to cook more traditional dishes such as roasts and casseroles, and were</p>	

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			<p>sometimes less familiar with pasta, rice and curry.</p> <p>In general, both the 'basic' and 'hopeless' respondents tended to be pessimistic in their assessments of their cooking ability and skills. Several questioned their own knowledge or practice, appealing to more confident members of the group ("...am I right?.."). related to this was a tendency to react defensively ("yes but") to arguments from other members of the group (one case where another member had attempted to show another how to make cheese sauce from scratch, and argued that it was cheaper but they actually preferred cheese sauce from a packet).</p> <p>For the least confident group (useless/hopeless), cooking from scratch was daunting. The terms 'cooking from scratch' and 'home cooking' were used to refer to what were seen as 'proper' methods of cooking. They relied heavily on the microwave and had little experience in using the oven, preparing a dish 'all in a big pot', or techniques such as steaming.</p> <p>Attempts to cook from scratch which ended in apparent failure had the effect of reinforcing respondents' poor ratings of their abilities and encouraging them to turn to convenience and 'easy cook' products such as packet sauces and boil-in-the-bag rice. Because these 'worked' more often and did not result in wasted food, many came to rely on them despite being less economical. The anxiety of not knowing whether a dish would turn out properly discouraged from trying new techniques ("<i>see if I could do it I'd make the time...</i>")</p> <p>Another problematic area was following a recipe. Only 1 found it easy, the rest described themselves as unable to follow recipes, with some having tried and 'failed' and others believing it was beyond them ("<i>...I think I'm better watching somebody and remembering it</i>").</p>	

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			<p>For some, the problem seemed to be understanding measurements, while others seemed put off by the need to follow a sequence of instructions, claiming that they got 'lost' or confused. The language of recipes was difficult, with some claiming they 'hadn't a clue' what instructions such as 'dice' or 'sauté' meant. Several found it difficult to articulate what they found so difficult about following recipes, other than to say that they 'just knew they couldn't'. It is possible that numeracy and literacy problems underpinned some apparent difficulties, though it was not possible to explore this in the groups.</p> <p><i>Favourite and regular dish</i> For those tending toward 'basic but fearful', the repertoire most regularly cooked included: frozen ready meals, e.g. curries and lasagne (usually microwave) frozen burgers / nuggets / fish fingers pasta-based meals mince ('mince 'n' totties [potatoes]' "our national dish" in Greenock link and slice sausage (usually fried) potatoes (usually boiled, sometimes roast or chipped) fry-ups chicken based meals</p> <p>Older respondents and those in the more confident group also described occasionally making 'home cooked' meals such as casseroles and stews, soups, roast joints. Younger respondents tended to prefer what older ones described as less traditional dishes, such as curry and pasta. For those with young children, the repertoire was strongly influenced by what the children would eat, with personal preferences coming second. The problem of finding a dish that fussy children and other family members would eat reinforced the tendency to stick to a core of basic dishes. The most adventurous respondent who described reading cookbooks for pleasure, had no children and lived on her own.</p>	

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			<p><i>Response to potential course topics</i> These varied. Some potential topics aroused a lot of interest while others generated an indifferent or negative response: <i>Sauces</i> were a popular topic among all groups. Nearly all liked a sauce with pasta but many didn't know how to make a cheese sauce other than by using a packet mix (.."I've tried to make it like with flour and milk, an' it goes all lumpy.") Some even found packet mixes difficult, sticking instead to branded products in which pasta and sauce granules are cooked together.</p> <p><i>Budget cooking</i> was another popular topic, defined by respondents as that which used everyday ingredients as opposed to one-off and unfamiliar ones, and which avoided pretentious presentation. They were interested in learning about how to reduce their reliance on expensive processed and frozen goods by making meals with cheap ingredients. Several expressed difficulty knowing how to organise and plan a meal in the most efficient and cost-effective way (e.g. buying food reduced on sell buy date and putting in the freezer). <i>Soup</i> was another popular topic; older and more confident respondents who were able to make soup were interested in new recipes, while those less confident said they had either failed in previous attempts or would not know where to start. For all groups, recipes had to fall within the range of 'ordinary soup' and not include ingredients that were seen as too exotic or strong tasting.</p> <p>The basics of cooking pasta and rice without using a microwave were of interest; younger and less confident respondents were interested in learning to cook casseroles and cakes, both seen as daunting examples of 'proper' cooking.</p> <p>Cooking for children was frustrating in two ways: Finding food that fussy eaters would like Catering for arrivals at different times rather than a fixed meal time.</p> <p>One of the most unpopular proposed topics was fish. This</p>	

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			<p>stemmed from 2 factors: A strong dislike of fish A deeply held feeling even among those that ate fish that it was only acceptable when prepared in certain pre-defined ways (typically white fish in batter / breadcrumbs 'like in the chippie'). Tinned tuna with mayo in sandwiches or with pasta, and frozen fish products such as scampi and fish fingers were also acceptable, though they felt these were not real fish. There was a feeling that it was 'wrong' to cook fish in stews or pies, and the prospect of cooking a whole fish was met with squeamish shudders.</p> <p>The idea of learning about 'healthy cooking' on the course was met with mixed responses. Some perceived it as boring, not filling, and expensive. Others were more open to the idea, and perceived that advice on healthy cooking would include healthier ways to prepare food and healthier ingredients. There were mixed views about whether healthy cooking was more expensive with some equating it with organic vegetables and 'healthy option' frozen meals, others suggested it was not necessarily more expensive and could even be cheaper. The mixed response suggested that the topic should be addressed in a low key way on the CookWell course and that explicit labelling of the intervention as a 'health' course should be avoided. The idea of learning more on the course about cooking vegetables was largely received with indifference, as was the topic of vegetarian meals. A few expressed a tentative interest in trying a vegetarian dish such as pasta, for the novelty value but thought it unlikely to become a staple part of their diet (...we'd always have something with it"). Topics such as food labelling, food hygiene and safety, buying cuts of meat and microwave cooking generated a small amount of interest.</p> <p>Discussion: Changes in eating habits over last 20 years or so has confirmed that recipes and cookbooks are most useful to those in higher SES groups. The implication for interventions</p>	

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			<p>is that they need to employ a range of teaching methods (learning by doing as well as information). 'Responsibility' for preparing food is distinct from 'control of cooking food (i.e. other family members likes and dislikes have an influence and teaching in a classroom may not overcome these barriers). Smells of certain foods may also deter. Health agencies advocate consumption of the very food that the respondents claimed not to be interested in learning about (pasta, oily fish, green vegetables, 'healthy food'). This raises the issue of how to address these within an intervention – teaching to cook vegetables as part of a 'proper meal' may have more resonance than cooking them separately. Need to engage with healthy food in a way that is integral with everyday lives. Budget cooking and use of everyday ingredients and materials were identified as important, and provide an indirect way in to the concept of healthy cooking.</p> <p>CookWell was therefore designed to be standardised but flexible to the needs of each community. Emphasis on using basic foods in simple but innovative ways to achieve dietary balance; variety was introduced through the addition of herbs and spices. Advice on budget and healthy cooking was introduced 'naturalistically' rather than topics in their own right. For example, whilst learning to cook spaghetti Bolognese, participants could be encouraged to talk about how they could reduce fat content by using leaner cuts of meat, draining fat from browned meat, and incorporating vegetables into mince dishes. Fish was included as part of more popular topics, (i.e. pasta and rice, as in recipes such as tuna bake and kedgeree). All recipes were tested and evaluated and revised as necessary before inclusion in recipe book, which included attractive colour photographs. All sessions were kept small and run in familiar settings (e.g. community centre). Conclude by saying that cooking classes are only part of the healthy eating jigsaw, but that an exploratory study can give information with which to shape interventions sensitive and responsive to needs.</p>	

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<p>Author: Thomson</p> <p>Study design: Retrospective qualitative</p> <p>Year: 2003</p> <p>Funding: DH Scottish executive</p> <p>QUALITY SCORE +</p>	<p>Number of participants: 81 11 male; 70 female</p> <p>Mean Age:</p> <p>Baseline comparability: The two case study areas are socio-demographically similar and classified deprived. Riverside has been part of an £80m housing led regeneration programme and the area has Social Inclusion Partnership status. There has been no similar investment in Parkview.</p> <p>Inclusion Criteria: Individuals residing in the area >4 years.</p>	<p>Intervention: Modern swimming pool and leisure complex opened in Jan 2000 in one case area (Riverside). In Dec 1999 the other case area (Parkview) pool was closed.</p> <p>Aims: To gather a collective community narrative of health, neighbourhood, local amenities, and contextual change.</p> <p>QUALITATIVE: Research Question: To assess the health impacts of neighbourhood swimming pool and leisure facilities.</p> <p>Methods used: Comparison of experiences of a change in two different areas. Specifically, situated nature of the psycho-social and perceived health impacts of a local public amenity (swimming pool).</p> <p>14 focus groups (average 6 per group, lasting app1 hour) 14-18months after opening of one pool and closure of the other. £10 incentive.</p> <p>Analysis: Examination of the place of the swimming pools in the local context. Nvivo software.</p>	<p>Main Themes relevant to research question:</p> <p>Reports of neighbourhood and local context Changes in key features (people, location, length of residence, public space, amenities, private space, housing) were reported, reflecting the contrasting levels of area investment and suggesting there was a perceived change in the fundamental nature of the neighbourhood in both areas. People or other residents were the most prominent area influence and change. The dynamics of the area changes were complex in both areas. Change influenced a chain of secondary changes in seemingly unrelated areas.</p> <p>Links were made between health and PA facilitated by the pool and associated leisure facilities; however there were few reports of regular use for this purpose. It was reported to be important for facilitating social contact with friends and was directly linked to mental health. The health benefits of social contact were reported to be stress relief and reducing isolation. ("...we used to go to the keep-fit every Tuesday night ...so that was keeping us healthy. I mean although we smoke and everything else but we were still going there, keeping healthy, keeping fit, going for a swim and then going home.")</p> <p>The lack of a swimming pool compounded other stresses associated with personal and area disadvantage (such as somewhere to take children). To walk to the Riverside pool was not an option at night (whereas more affluent residents could take the car). In Riverside, the new pool was reported to have similar benefits for locals (social, stress relief) that the Parkview pool had given. There were links made between mental health and older men living alone – having somewhere to go as they are out of work. Facilities provide spaces for social interaction and prevent depression.</p>	

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			<p>Discussion: Structural conditions such as amenities have been proposed as a forerunner of social ties and networks which in turn have been well documented as linked to health.</p>	
<p>Author: Wardle</p> <p>Study design: Evaluation</p> <p>Year: 2001</p> <p>Location: National; UK</p> <p>Funding: British Heart Foundation; Weight Concern.</p> <p>QUALITY SCORE: +</p>	<p>Number of participants: 956 women 938 men</p> <p>Social class: 3M and under: 34.9% of women 47.8% of men</p>	<p>Intervention: BBC 'Fighting Fat, Fighting Fit' campaign.</p> <p>Research Question: To evaluate the campaign's success in achieving public awareness of the need for obesity prevention.</p> <p>Methods used: ONS Omnibus survey 1999</p>	<p>Findings: 57% said they had heard of the campaign. 29% recalled watching one of the programmes and about the same number remembered that it involved either healthy eating or being more active.</p>	
<p>Author: Whelan, Wrigley, Warm & Cannings</p> <p>Study design: Focus groups analysed using a descriptive comparative approach</p>	<p>Number of participants: 23 participants aged <65 from around the Seacroft/Whinmoor housing estates, including mothers with younger children and mothers with school-aged children. Elderly participants (n=13)</p>	<p>Intervention: Opening of a new food retail outlet (after the focus group study)</p> <p>Aims: N/A</p> <p>Control: N/A</p> <p>QUALITATIVE: Research Question: To develop a deeper understanding of the qualitative</p>	<p>Outcomes</p> <p>Main Themes relevant to research question:</p> <p>Only the data relating to participants under the age of 65 has been extracted.</p> <p><u>Women with younger children</u></p> <p>When asked what influenced the foods they bought, mothers with younger children were more influenced by financial</p>	

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<p>Year: 2002 Funding: ESRC QUALITY: +</p>	<p>were also involved in focus groups, however the data from these focus groups has not been extracted or reported on as this falls outside the inclusion criteria of the review.</p> <p>Mean Age: Not reported. Participants were aged 18-38 years (mothers with younger children) and 26-40 years (mothers with older children).</p> <p>Baseline comparability: N/A Inclusion Criteria: Opportunistic sample of local residents, living in a housing estate in the Seacroft/Whinmoor area of Leeds – cohesive groups who knew each other were recruited</p> <p>Exclusion Criteria: Not reported</p>	<p>nature of 'life in a food desert' using insights that can be obtained from focus group research methods. Specifically, research questions were:</p> <ul style="list-style-type: none"> •What factors affected food shopping and purchasing patterns in the pre-intervention period? •What factors affected food consumption patterns in the pre-intervention period? •Was healthy eating an issue? <p>Methods used: Five focus groups (three of which are reported on here – the other two covered participants aged 65+ years) of 7, 5 and 10 participants were held.</p> <p>The group transcripts were analysed using a descriptive comparative approach:</p> <ol style="list-style-type: none"> 1. Chunks of information were identified that reflected similar issues; these were coded by attaching keywords to segments of the text to reflect issues and common themes 2. The codes were compared and clustered to form a category, which was similarly labelled 3. Finally, the codes were compared across focus groups 	<p>constraints, special offers and what the family would eat, as well as convenient foods to cook. Money was the main controlling factor set within the broader constraints of what each family member would eat: <i>“Lee: What I know the kids’ll eat. Jill: Special offers or the money. Jane: Yeah, yeah. Anne: Special offers. Caz: Special offers, definitely, cos there’s summat going cheaper than what it normally is I’ll pick it up. Anne: I like it if it’s a buy one get one free.”</i></p> <p>Thus, the women preferred to buy cheaper foods such as frozen beef burgers and sausages rather than more expensive pieces of fresh meat. Potatoes were also very popular, especially frozen chips. Several mothers complained that their children were ‘fussy eaters’ and that if they bought anything different they would not eat it, so it was viewed as a waste of money (and energy). Consequently, the women tended to buy the same types of food every week. The main exception to this was to buy whatever Jack Fulton had on offer that day or week.</p> <p>Very few of the participants mentioned eating pasta or rice, and meals seemed to consist of a processed meat product with potatoes and vegetables. Foods such as pies, beef burgers, sausages, pizzas, baked beans and chips were staples. One mother had made a conscious decision not to give her children chips every day and so had tried to introduce stews and corned beef hash as a cheap healthy alternative, while others were less motivated and seem content to give the children what they wanted. A few women with toddlers bought bananas and yoghurts but those with slightly older children (primary school age) seemed to have stopped doing so.</p> <p><u>Women with older school-aged children</u></p>	

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			<p>Quality was perceived to be important, thus slightly more expensive food choices were made that reflected a healthier eating style. For example, although processed meat with potatoes/chips and vegetables were still popular, this group of participants also claimed regularly to eat pasta and rice dishes. As being relatively healthy, these foods were also perceived to be cheap and easy to prepare and cook.</p> <p>Convenience was also perceived as being important, especially as these women were in paid employment and older children often had activities in the early evening to attend:</p> <p><i>"A big bag of rice—it doesn't cost anything, and it goes forever and pasta, and that. We didn't used to cook pasta at one time, but now, we eat lots."</i></p> <p><i>"When you've got kids and you've got to work, and you've got that many things to do, you need something quick. It takes hours to prepare a decent meal, a healthy decent, home-cooked meal."</i></p> <p>A wide range of factors influenced the food consumption patterns of these participants including: financial considerations; healthy eating considerations; quality issues; and convenience (both in terms of shopping patterns and ease of food preparation). However, emphasis placed upon these factors varied between individuals and according to fluctuating individual circumstances:</p> <p><i>"Karen: It depends on money a lot of the time, if you've had times in your life where you haven't been able to afford to eat properly, then healthy doesn't matter, if you can just eat, then you eat. You just want to stop that hunger, so you eat. But then if you get more affluent or you get better off, then you start eating healthier. You're concerned about this more."</i></p> <p><i>Mags: I think if you're sensible, though, even when there's not a lot of money ... you can eat healthily!</i></p> <p><i>Jo: Yes.</i></p> <p><i>Mags: You can. 'Cos I know we've got hardly any money at the moment, but fruit and and veg is quite cheap."</i></p>	

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			<p>Subthemes: Reported within themes listed above.</p> <p>Discussion:</p> <p>There was some indication that mothers of older school-aged children were beginning to adopt increasingly healthy eating practices and that their food consumption priorities had changed with age. Some mothers found that, contrary to what they previously believed, they were able to afford and enjoy a healthy and varied diet. It is unclear why reported patterns of eating might change in this way and it cannot be assumed that it was because these residents of the 'food desert' had more disposable income or access to a wider range of stores. But it is clear that these participants in our focus groups appeared to be genuinely interested in obtaining good quality food at a reasonable price and in creating a healthy diet for themselves and their families. Perhaps this was only possible when their children reached a certain age where they become less fussy about what they ate, or maybe it was because these women were more likely to be in stable relationships. Another reason could be that many of the mothers with older children were attending a community college and so may have been disposed towards 'self-improvement' including healthier eating and lifestyle.</p>	
<p>Author: Withall</p> <p>Study design: Qualitative</p> <p>Location: UK</p> <p>Year: 2009</p>	<p>Sample: From families with at least one child under 11 years old. Residents in a UK Neighbourhood Renewal area (population >11,000 comprising large social housing estates with an</p>	<p>Intervention:</p> <p>Aims: To examine reported barriers to consuming a healthy diet and engaging in regular physical activity among low-income families with existing issues of overweight or obesity.</p> <p>Methods used: SSI Interviews with health workers and</p>	<p>Main Themes relevant to research question:</p> <p><i>Availability:</i> Lack of a public sports centre and swimming pool within the area was discussed, as was a local private health club and its inaccessibility to local residents. Other common themes were the unavailability of open spaces due to safety issues, the lack of activities available and their short-livedness.</p>	

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<p>Funding: Not stated</p> <p>QUALITY SCORE +</p>	<p>Index of Multiple Deprivation of 69.60) Ranks as 265th of 32,482 Super Output Areas (SOAs) in terms of deprivation.</p> <p>Focus groups: 27 Residents</p> <p>HP interviews: 4 GPs 2 Health Visitors, 1 Practice Nurse, 1 dietitian.</p>	<p>focus groups with local residents in a UK Neighbourhood Renewal area.</p> <p>Data analysis: Inductive thematic analysis</p>	<p>Some professionals felt that a wider variety of activities were required if more people were to be attracted to exercising.</p> <p>Food availability in the locality was an issue for residents and professionals: healthy foods especially fruit and vegetables, unhealthy foods such as takeaways and convenience foods. The recent closure of the only local fruit and vegetable shop and the subsequent negative impact on availability was discussed, though some felt that availability was reasonable. The selling of pre-packaged fruit and vegetables in the local deep discounting stores was an issue for some parents on grounds of cost and spoiling. The availability of a variety of convenience foods was discussed in terms of their negative impact on the diet of some in the community.</p> <p><i>“there’s one thing I notice that children do which I’ve never seen when I was younger, but they go to Greggs to get their breakfast...they’re walking to the school with a sausage roll “(female 35-44 years).</i></p> <p>Cost Cost was universally regarded as a major barrier to both exercising and eating healthily and comprised the costs of exercise facilities and transport; the relative costs of healthy and unhealthy foods and of energy costs for cooking; and free support offered by exercise and slimming on referral schemes and Healthy Food vouchers.</p> <p>Even relatively low cost activities were seen as difficult to afford with so many competing priorities:</p> <p><i>“If you’re living on benefit... you’ve got two pound, what do you do, get some exercise or get some bread and milk for the kids” (female, overweight 35-44 years)</i></p> <p>Professionals also felt that exercise opportunities had to be free or very low cost in order to have an impact:</p>	

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			<p><i>"I think we need lots of options. They largely need to be free and they need to be local"</i> (GP).</p> <p>There was a sense that food outlets did not often support healthy eating habits with their pricing strategies. Professionals concurred in this view but there was some support for a healthy diet being affordable if other food purchases were re-thought.</p> <p><i>"if they weren't buying some of those other fatty, high salt expensive ready meals then they could afford ...things like fruit and veg"</i> (dietitian).</p> <p>Professionals were very supportive of exercise on referral schemes and were happy to have something to 'prescribe'. These schemes were often mentioned with enthusiasm, with some parents currently participating. Although the free nature of such schemes was popular, what was not clear was the relative importance of cost compared with the process of being referred and so supported in the change.</p> <p><i>Perceived helplessness</i> Perceived helplessness was a consistent theme incorporating issues that participants felt impacted on their weight status., but that they were unable to change. These were:</p> <ul style="list-style-type: none"> • Metabolism – this was raised in every focus group in response to questions about why people put on weight. Examples were given of people who ate badly and exercised little, while remaining slim, counter-pointed by a participant's own 'metabolism which led them to gain weight very easily. • Genetics and family shape – 'taking after' seemed to imply a pre-ordained outcome making sustained change unlikely. 	

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			<p><i>"if you are going to be big, you will be big...my nan was very big and I'm taking after her"</i> (female, obese, 44-54 years)</p> <p>Some participants rejected dieting with the sense that the status quo would always prevail:</p> <p><i>"I'm big and she's slim, but she's on a constant diet"</i> (female, obese, 44-54 years)</p> <ul style="list-style-type: none"> Lack of time: particularly if employed, improving diet or increasing exercise levels was not currently viable. <p><i>"I tend to watch what the children eat but I'm always in such a rush that I just grab something to stick in my mouth as I'm driving down the road"</i> (female 35-44 years)</p> <p>A small number of parents felt this was a time management and prioritisation issue, but most participants with young children felt that they were particularly restricted in terms of exercising.</p> <p><i>"As soon as I get on it (cross trainer), either the baby's crying or the door goes or the phone goes"</i> (female, obese, 35-44 years).</p> <ul style="list-style-type: none"> Childcare and time management - many parents were unable to afford childcare, crèche facilities or were without family in the area, further generating a perceived helplessness and inability to change. <p><i>High optimistic bias:</i> Participants demonstrated a high optimistic bias in terms of diet and exercise in favour of their own behaviours. They reported broadly healthy diets, active lifestyles and the positive impact of having small children on their activity levels:</p>	

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			<p>“Running around after the kids, that’s enough exercise” (female, overweight. 25-34 years).</p> <p>53% of those that responded to the questionnaire thought they met UK government exercise targets; substantially above the national average. This reduced motivation to exercise further. 43% reported that they ate 5 fruit and vegetables a day, again substantially above the UK average, particularly for this SES group.</p> <p>Despite such statements, parents also claimed that having young children restricted their ability to exercise:</p> <p><i>“I can hardly get onto housework let alone exercising. (female obese,44-54 years)</i></p> <p><i>“And toys everywhere and...loads of ironing to be done and the washing to be done” (female, normal weight, 25-34 years).</i></p> <p>Cost and availability impacted on their ability to reach the 5-a-day target:</p> <p><i>“You don’t see fruit on buy one get one free very often do you” (female, overweight. 35-44 years).</i></p> <p><i>Networks and communication channels:</i></p> <p>Family histories of eating habits were widely referenced:</p> <p><i>“mum never cooked at home at all...she was never like a hands on cook. So I never really learnt to cook anything” (female obese, 35-44 years).</i></p> <p><i>“when my mum was younger she didn’t educate me in eating fruit and veg., not at all...I can never remember a bowl of fruit being on show in our house” (female obese,44-54 years)</i></p> <p><i>“My mum cooked, I knew how to cook” (female, overweight. 35-44 years).</i></p> <p>Where suggestions for activities were made they were often</p>	

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			<p>based on existing social networks i.e. within the nurseries and toddler groups.</p> <p>In interviews with health professionals family networks and influences were largely seen as negative in terms of activity and eating habits.</p> <p><i>"I think it's a habit, they never have eaten 5 portions of fruit and vegetables a day. The patterns of buying, cooking, eating get deeply entrenched."</i> (GP)</p> <p><i>"It's not an established pattern of behaviour for some families to go out and take exercise...there aren't traditions of people doing lots of active events"</i> (GP)</p> <p>While many parents stated they were keen for more local activities (variety of exercise activities, advice sessions, cooking skills etc.), professionals felt their efforts to launch these were marred by low turn-out and high drop-out rates.</p> <p><i>"we come up with healthy things to do. I don't know, sometimes people just won't turn up for it, you know, they think it's a good idea, you set it all up and then people don't come"</i> (Health Visitor)</p> <p>Many parents felt there wasn't enough publicity around to say "look this is on, come on, get in" and were aware of a failure of communication in the broader community.</p> <p><i>"this is absolutely perfect for people to learn anything but I don't think it attracts the people it's aiming for...it just has to be more advertising (female obese,44-54 years)</i> <i>"it's only been by word of mouth really we've heard of it"</i> (female, overweight. 44-54 years).</p> <p>Education was viewed as a valuable information source and enabler of awareness and behaviour change. Topics suggested included cooking skills, nutritional advice,</p>	

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			<p>government guidelines and labelling. However, education did not automatically impact behaviour.</p> <p>“<i>You know it, but you don’t do it</i>” (female, normal weight)</p> <p><i>Emotional status:</i> There was substantial divergence between professionals and parents, with professionals mentioning the prevalence of mental health issues, particularly depression in the area, and its impact on health behaviours. Parents never mentioned depression or other mental health problems but rather issues of ‘boredom’, ‘stress’, and ‘comfort eating’ leading to weight gain, and ‘being stuck in a rut’ or ‘embarrassed’ as reasons for not exercising.</p> <p><u>Authors comments:</u> Resigned rationalisation – little point in trying to change Positive rationalisation – no need for change Kamphuis Model:</p> <ul style="list-style-type: none"> • Environmental setting (accessibility, availability, material, cultural and psychosocial conditions) • Individual conditions (health benefits, enjoyment, habit, time, health constraints) <p>The authors use these as framework for the findings. Changing norms in the acceptability of being obese was also put forward as a reason for the contagion of obesity (after Christakis & Fowler 2007).</p> <p>Social marketing skills appeared to be needed to increase intervention participation ; health and health promotion professionals have few skills in this area. There is also a need for strategies that provide increased motivation to prioritise shopping for and preparing healthy, quick, inexpensive meals and time – efficient physical activities, crèche facilities, etc.</p>	
Author: Wormald	Number of	Intervention:	Main Themes relevant to research question:	

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<p>Study design: Qualitative evaluation</p> <p>Year: 2006</p> <p>Location: Kingston-upon-Hull</p> <p>Funding: Hull and East Riding Specialist Health Promotion Service / Eastern and West Hull PCT.</p>	<p>participants: 5 Focus Groups 16 participants (11 females / 5 males)</p> <p>Mean Age: 53 (15-73) Hull is ranked as 9th most deprived LA region in the UK.</p> <p>Inclusion Criteria: Over 12 years Sedentary lifestyle or a range of mild to moderate physical / mental health problems such as overweight, obesity, hypertension, anxiety, depression.</p>	<p>Active Lifestyles (AL); PA based Behavioural change theory.</p> <p>Aims: To explore participants' perceptions of the operation and effectiveness of the AL service.</p> <p>QUALITATIVE: Research Question: To explore participants' perceptions of the operation and effectiveness of the AL service</p> <p>Methods used: 5 Focus Groups with 1-7 participants in each (duration 45-65 mins). £10 gift voucher incentive</p> <p>Analysis: Framework</p>	<p><i>The referral process</i> Reason for referral – wide variety including arthritis, depression, Crohn's disease, asthma, diabetes, heart disease, back pain. Participants mentioned weight loss or management as a reason. A few said they had put weight on following smoking cessation and this programme had been signposted from the cessation classes.</p> <p>Certain life events had motivated participants to seek help, such as a milestone birthday or retirement. "...I didn't just want to get bigger and bigger..." It was apparent that many had personal and social problems; one participant found he could talk at AL about his depression, suicidal thoughts, unemployment and illnesses of close family members. This member gained a positive attitude to life through AL. A GP or nurse had referred most of the participants to the scheme, the rest by a dietician.</p> <p><i>Access</i> General public awareness of AL seemed to be low. There were differing views regarding the extent to which health professionals seemed aware of the service. Most felt that they did not appear to be well informed and some were disappointed that their HP had not shown much interest in their progress. Some had not been given an information leaflet and so were not aware of what to expect. This in turn led to anxiety. The reality was less authoritative than expected (maybe expectations were based on past experiences).</p> <p>Suggestions on how to promote the service included posters and leaflets in GP surgeries, hospitals, libraries, supermarkets, community and shopping centres, Pos, shop windows and schools. Media sources such as local radio or the BBC bus were suggested. It was felt that older, unfit or unhealthy people should be targeted as they may not be</p>	

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			<p>aware of the service or that it is suitable for them.</p> <p><i>Operational aspects</i></p> <p>Service provision- 6 monthly sessions are on offer, though most had only taken up 2-4 and then continued unaided. Monthly sessions were thought to be about right (long enough to make changes, but not long enough to lose motivation). "...I felt as though you wasn't being watched and that you got a chance to do everything you wanted..."</p> <p>Telephone appointments were offered as support and as a way of keeping motivation going. The option to have this support was appreciated, rather than having calls regardless of need, which to some was perceived as intrusive. One groups discussed ongoing support and they appreciated it, though this was a potential drain on resources. Some felt that regular health checks and keeping PA diaries kept them motivated. The diaries include goal-setting and achievements; only one participant found that she stopped completing them after an initial period.</p> <p>Some participants would have appreciated a greater range of options in terms of venue as they found it difficult to access on public transport. One source of satisfaction was the perceived time that was spent discussing health issues, compared to the stretched capacity of health professionals (though resources were also stretched in the AL service and users were aware of this). A key role of the service was its signposting on to other activities. Overall the participants were happy with the service and were more concerned that it would cease if funding was no longer available.</p> <p>The most important element was the AL advisor – the personality and approach was likely to determine success or failure of the service. This reiterates the value of a counselling approach involving cognitive-behavioural strategies. Users noted how caring, supportive, sincere, knowledgeable the leader was, as well as being a good communicator and</p>	

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			<p>listener. She was reported to be genuinely interested in them as people, providing a personal service. This helped to boost confidence and give participants the feeling of being cared about. Rather than telling users what to do, the leader encouraged them to discover answers themselves.</p> <p>By encouraging gradual progress, the advisor helped dispel myths about PA, and showed that low to moderate levels of activity can be very beneficial, and that it is not necessary to go to the gym or engage in vigorous exercise to benefit. If there was anything she didn't know she would find out for them, and was very reliable.</p> <p><i>Perceived benefits of the service</i> Improving PA levels Most felt that they were more active as a result of the AL service and had been helped to make small but significant, gradual changes to their activity level. The advisor had helped them to think differently and be creative in finding ways to build PA into their lifestyle. Those who had already been relatively active had built up their activity or confidence. And progressed onto other activities. Many of the participants commented that they had influenced family or friends to be more active or healthy and many took part in the activities together. Some slipped back into old habits, particularly in colder weather, but the majority had not only changed their behaviour but also their way of thinking. Many felt they would be able to continue in the long term. They reported having learned a lot about PA and healthy lifestyles, and changed preconceived ideas.</p> <p><i>Improved health and fitness</i> Participants had noticed a range of benefits including improved health and fitness, feeling less stiff and having greater mobility, finding exercises easier and having stronger, more toned muscles. Many mentioned weight loss, or maintaining weight.</p>	

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			<p><i>Healthier lifestyles</i> The service also provides support for other lifestyle behaviours such as food, smoking and stress. Some had completed food diaries to help raise awareness of where they could make changes. As a result of advice, some had changed eating habits and had started buying different foods.</p> <p><i>Self Confidence</i> One of the most apparent benefits was the development of self-confidence and having a more positive outlook.</p> <p><i>Other benefits</i> A few had just wanted information on Pas that were available and the service had been able to put them in touch with other services or opportunities. One was new to the area and wanted to meet new people and another was retired and wanted something to do. The service 'filled a gap' in their lives; attending classes 'breaks up the day' and gives something to look forward to.</p> <p>The benefits reflect a personalised approach taken, and the varied needs of the participants.</p> <p><u>Recommendations:</u> Sufficient number of staff t with enough time to meet demands Advisors to have appropriate skills and qualities and have an empowering approach Ensure sufficient promotion through posters, leaflets, and media Target those in need Provide information as to what can be expected Ensure enough venues Encourage a slow build up of activity Provide support for other healthy behaviours Ensure links to other services Seek to secure ongoing funding</p>	

Preventing pre-diabetes in adults from a lower socioeconomic group