



Review 1: Community engagement for health via coalitions, collaborations and partnerships

A systematic review

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Glossary

Beneficial effect: An outcome that is statistically significant and in favour of the intervention group, i.e. in a positive direction of effect.

BMI: Body Mass Index is the calculation of weight-for-height normally used to classify people's weight as underweight, overweight or obese. It is calculated by taking a person's weight in kilograms and dividing it by the square of the person's height in metres (kg/m^2).

Coalitions, partnerships, collaborations: A group or alliance comprised of community members with a shared purpose to perform a combined action. These can be temporary or ongoing and can be a pre-existing group or a group assembled for a specific project. In addition to community members, other members can be researchers, service providers, government organisations, non-governmental organisations or charities.

Collaboration: An action whereby community members have shared responsibility and authority for design, intervention delivery or measurement tools and data collection with others or as part of a team.

Community: A group of people identified by themselves or by others as sharing common health, social, cultural or geographical characteristics.

Community-based participatory research (CBPR): Partnership approaches to research that provide equality to community members, organisational representatives and academic researchers by involving them in every aspect of the research process (Israel et al. 1998).

Community engagement: Community-level interventions or interventions that involve a group of people connected by geographies, interests or identities in the design, development, implementation or evaluation of an intervention. Participants must include members of the public or patients (more than health professionals, pharmacists, public health nurses, other health semi-professionals) that are involved in the design, delivery or evaluation of the intervention. The treatment administrator/provider is more important for determining community engagement than the intervention setting. Intervention types to be excluded are legislation, policy and pharmacological.

Community mobilisation: A capacity-building process that involves community members, groups, coalitions or other organisation to work in conjunction with researchers and/or organisations to address the community's specific needs.

Community organisations, or community-based organisations: Formal or informal groups of community members that are usually structured, non-profit making groups or associations that focus on developing new and existing services.

Community partnership, community coalitions, community task force: A group which forms to design, deliver and/or evaluate an intervention, and contains community members. This can also be described as a forum, committee or advisory group.

Consultation: Instances where community members have been asked for their opinions on or insight into a design, intervention or delivery, or measurement tools and data collection.

DoPHER: The Database of Promoting Health Effectiveness Reviews specialises in locating and coding current reviews in health promotion, and is maintained by the EPPI-Centre.

Informed: This describes situations where community members are told about interventions and/or what is going to happen to them, how the intervention works and/or what the evaluation will look like.

Leading: This is a situation where community members take responsibility, and decision-making authority rests with the community for the design. It also applies to situations where the community member has autonomy (doing it on their own), to make decisions about when and how aspects of the research are undertaken during the intervention delivery. Leading in evaluation means that community members have sole responsibility and authority for measurement tools and data collection.

Negative effect: An outcome that is statistically significant, and the effect is in favour of the control group.

Negative trend: An outcome that is not statistically significant but the effect is in favour of the control group.

No effect: The review team has inferred this to mean that no differences were observed in outcomes between intervention and control groups, or the difference is not statistically or clinically significant.

OECD: The Organisation for Economic Cooperation and Development consists of 34 democratic countries that support free-market economies and debate and develop economic and social policy.

Outcome evaluation (OE): A research method that measures changes that have occurred within a population as a result of an intervention, e.g., reduced body mass index, changed behaviours.

Peer: A person who shares the same age group or health risk/condition, or is similar in key aspects (e.g., ethnicity) to another.

Positive effect: An outcome that is statistically significant, and the effect is in favour of the intervention group.

Positive trend: The outcome is not statistically significant but the effect favours (i.e. there is a bigger effect size in) the intervention group.

Process evaluation (PE): A study that aims to understand the functioning of an intervention, by examining implementation, mechanisms of impact and contextual factors. Process evaluation is complementary to, but not a substitute for, high-quality outcome evaluation.

Randomised controlled trial (RCT): A study that randomly assigns like participants to two (or more) groups in order to examine a specific intervention. These groups consist of an experimental group that receives the intervention, and a control or comparison group that receives a different treatment, a dummy treatment (a placebo), or no treatment at all. Outcomes are evaluated after a predetermined time span and differences in outcomes for the groups are compared looking for statistical differences. (see also **Outcome evaluation** and **Trial**).

Stage of change model: An upward spiral process, involving progress through a series of stages until reaching the 'lasting exit'. Each loop of the spiral consists of the stages precontemplation, contemplation, preparation, action and maintenance (Department of Health, Australia 2004).

Trial: Any research or study that allocates participants or community members to one or more health-related interventions in order to evaluate the effects on various outcomes, e.g. on health, well-being, quality of life, attitudes etc. (see also **Outcome evaluation**).

TroPHI: The Trials Register of Promoting Health Interventions, a database maintained by the EPPI-Centre that focuses on randomised and non-randomised controlled trials of interventions in health promotion and public health worldwide.

Abbreviations

BMI	Body mass index
CBPR	Community-based participatory research
CE	Community engagement
CRD	Centre for Reviews and Dissemination, University of York
DARE	Database of Abstracts of Review Effects
DH	Department of Health, UK
DoPHER	Database of Public Health Effectiveness Reviews
EPPI-Centre	Evidence for Policy and Practice Information and Co-ordinating Centre
HBV	Hepatitis B virus
NICE	National Institute for Health and Care Excellence
OECD	Organisation for Economic Co-operation and Development
PE	Process evaluation
PHAC	Public Health Advisory Committee, UK
QCA	Qualitative comparative analysis
RCT	Randomised controlled trial
RQ1, RQ2, etc.	Research question
STI	Sexually transmitted infection
TRoPHI	Trials Register of Public Health Interventions

Executive summary

Background

Our understanding about the use and effectiveness of community engagement as a strategy to improve health is constantly changing. The review reported here is an update and expansion of an existing review published in 2013 (O'Mara-Eves et al. 2013). The current review assesses the effectiveness of community engagement involving disadvantaged communities in interventions to promote health outcomes. We defined community engagement as a 'direct or indirect process of involving communities in decision making and/or in the planning, design, governance, and delivery of services using methods of consultation, collaboration, and/or community control' (O'Mara-Eves, et al. 2013: p.6). While evidence suggests that community engagement in interventions is beneficial for their effectiveness, little is known about the active content or components of community engagement.

This project, commissioned by NICE, is split into three components. In Review One (reported herein), we updated the searches of our previous review to locate the most recent controlled trials in this research area and to address the research question: 'How effective are community engagement approaches at improving health and well-being and reducing health inequalities among disadvantaged groups?' In Review Two, additional process information on the community engagement aspect will be located and analysed to explore in more depth which particular elements of community engagement are related to effectiveness. Review 3 will synthesise data on the effectiveness and appropriateness of online community engagement via social media/social networking in improving health for disadvantaged populations.

Methods

Innovative 'meta-searching' (O'Mara-Eves et al. 2014) of six electronic review registers was conducted to locate trial citations on interventions that utilise community engagement. We also searched the Trials Register of Promoting Health Interventions (TRoPHI) for primary studies. Other searches included Website searches, backward and forward citation chasing and searching the references of the rapid review assessments conducted to support the existing NICE public health guidance in this area (National Institute for Health and Care Excellence 2008). The titles and abstracts of systematic reviews were screened for inclusion first and were included where they: 1) were systematic; 2) were conducted in an OECD country; 3) were published after the year 2000; 4) were in the English language and 5) assessed community engagement (either as a direct intervention or as a mechanism of an intervention). Next, the titles and abstracts of trial citations (obtained from the included systematic reviews and TRoPHI) were assessed. At this stage, studies reporting on primary outcome evaluations were included where the following applied: they were published in English since 2008; they were located in an OECD country; they used a control/comparison group intervention design; they targeted disadvantaged populations; they were evaluated using at least one health outcome; and they described community engagement using one or more of: coalitions, collaboration, stakeholder involvement, advisory groups, partnerships or community mobilisation. Interventions focused on peer delivery alone were excluded.

The full-text articles for the studies meeting these inclusion criteria were retrieved and screened for inclusion applying these same criteria. Duplicate studies,

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including those assessed in the earlier review (O'Mara-Eves et al. 2013) were excluded. Inter-rater agreement on a random 10% selection at each stage of screening was high ($\kappa = >0.90$). Two reviewers independently conducted data extraction and quality appraisal. Any disagreements were resolved by discussion or by consulting a third reviewer.

The data were synthesised narratively using framework synthesis methods (Thomas et al. 2012). The studies were stratified in several ways according to salient characteristics, including the extent of community engagement across the design, delivery and evaluation of interventions (high, moderate, low), the population target (children and young people, gender and low income) and the health topic (healthy eating and physical activity, mental health, sexually transmitted infections or substance use). These sub-sets of studies were then assessed on a number of elements (where relevant), including study quality, population characteristics (e.g., age, gender, socioeconomic indicators), target behaviour(s), outcome(s), level and extent of community engagement, direction of effect(s) and statistical significance. Differences in study characteristics between our previous review of community engagement and these new data were highlighted. The results were presented narratively in structured summaries and in evidence tables.

Findings

At the title and abstract stage, a total of 1,042 unique citations were identified as potentially relevant. Of these, 28 studies were included after full-text screening. The studies were mainly conducted in the USA ($n=22$) and 46% were published in 2013-2014 ($n=13$). Over half of the interventions targeted healthy eating/physical activity (57%); the rest targeted STI/substance use (12%), mental health (11%), cancer prevention (11%), child health (4%), injury prevention (4%) and organ donation (4%). In terms of study population, after ethnic minorities ($n=13$), low-income populations were most commonly targeted ($n=7$). Children and/or young people were the most common population targeted exclusively ($n=6$ studies), though to a lesser extent than in our previous review. A range of health outcomes were reported and categorised as clinical (e.g., mental health status), health/social (e.g., social support, depression, well-being), behaviour (e.g., condom use, healthy eating, physical activity), self-efficacy or knowledge (encompassing knowledge, beliefs attitudes and intentions). In terms of risk of bias, the majority of studies were rated as moderate ($n=14$) to high ($n=12$), and only two studies were rated to be at low risk of bias.

Across studies, behavioural and clinical health outcomes were most frequently reported. Overall, statistically significant beneficial effects or non-statistically significant positive trends were reported for all health outcomes across studies. Differences were observed in assessing the extent of community engagement across each study's design, delivery and/or evaluation of an intervention: four studies were identified as having a high extent of community engagement, 12 as medium and 12 as low. Some evidence suggests that high levels of community engagement are associated with greater beneficial effects of health interventions than either moderate or low levels.

Examination of population sub-sets showed that community engagement interventions for young people ($n=6$) typically involved them in a collaborative or leadership capacity, with beneficial effects for a range of outcomes, including beliefs, behaviours (relating to sexual health, substance use and healthy eating), social support, self-efficacy and communication skills. Interventions directed exclusively towards women ($n=6$) most often included collaborative or consultative community engagement roles, with beneficial effects or trends across a range of outcomes, including sexual health, healthy eating, mental health and cancer

prevention. For the very few (n=2) interventions that exclusively targeted men, low to moderate community engagement was reported with beneficial effects for HIV prevention and physical activity. In terms of low-income populations, communities had a low to moderate level of involvement (i.e. simple consultation or non-involvement) rather than leadership and collaboration. Despite this, beneficial effects or trends of effects were reported for a range of outcomes including health eating and physical activity, health care utilisation and screening, depressive symptoms, self-esteem, self-efficacy and general health and well-being.

Health topic clusters focused most often on healthy eating and physical activity, either in the context of health promotion, or for obesity and/or diabetes prevention or management (n=16). Ethnic minorities were the disadvantaged groups most often targeted, followed by those experiencing socioeconomic disadvantage or defined as having a low income. In general, there were beneficial effects or positive trends for clinical anthropometric measures, health behaviours and knowledge, but more mixed effects for some haematological measures, health or social status measures and self-efficacy measures. Five studies examined risk behaviour modification interventions, including sexually transmitted infections (STIs), substance misuse and injury prevention. In summary, the studies reported beneficial effects for self-efficacy/self-esteem, sexual health, substance use and seat belt use behaviours, and related beliefs, knowledge, attitudes and intentions. Three studies focused on mental health, directed to diverse populations with and without mental illness, using a low to moderate amount of community engagement. While outcomes were generally positive, mixed effects were noted for health behaviours, health and social measures and self-efficacy. Studies focused on cancer prevention amongst minority ethnic groups (n=3) suggest that interventions developed and delivered with a moderate to high extent of community engagement have beneficial effects, or at least a positive trend, towards screening behaviours and stage of change. One study focused on child health, reporting a beneficial effect in the need for emergency medical care in intervention group infants of low-income families at age 12 months. The authors reported no change in emergency department use between 6 and 12 months; and measures of emergency medical care, overnight hospital stays and emergency department visits from birth to six months for low-income families were not reported. Finally, one study evaluated the effectiveness of an intervention to promote organ donation amongst African American churchgoers. Reported outcomes indicated a positive trend for verified enrolment in an organ donation programme and self-reported organ donation status. Intentions and attitudes, although measured, were not reported. It is important to note that the moderate to low methodological quality of the studies across these health topics demands some caution in the interpretation and applicability of the findings.

Compared to the original review, more studies in the current review were found to be at low or moderate risk of bias. More studies in the current review targeted low-income populations, healthy eating/physical activity behaviours and mental health issues. However fewer studies in the current review targeted risk behaviours (such as STIs or substance use) or cancer prevention, or focused on children and young people.

Discussion

The findings from this analysis suggest that community engagement encompasses a wide range of health topics and populations, predominantly healthy eating/physical activity and low-income populations. The studies also suggest a primarily moderate to low overall extent of community engagement across all aspects of study design, delivery and evaluation. The majority of outcomes showed beneficial effects or

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positive trends for a range of health behaviours, clinical measures, health/social status, self-efficacy and knowledge, attitudes or intentions. However, the present findings do not demonstrate any clear trends in terms of effectiveness in the sub-groups examined. There did not appear to be a relationship between the strength and direction of the effects and the length of the intervention or final follow-up measure. While the synthesis of evidence seems to suggest that a higher extent of community engagement was linked to more beneficial effects and positive trends across outcomes, this must be tempered by the overall moderate to high risk of bias operating in this set of studies. These findings echo those reported in the original community engagement review (O'Mara-Eves et al. 2013).

A moderate to low overall extent of community engagement was noted across the studies; this was evidenced by a wide range of levels of community engagement within each aspect of the design and delivery of the interventions, and little evidence of community involvement in evaluations. The variation in the specific processes of community engagement thus merits further investigation.

Research focused on specific populations tended to be with: children/youth; women and a few with men; and low-income groups (and these also contained a high proportion focused on ethnic minorities). No research evaluating community engagement was located that specifically targeted older people.

This review used innovative 'meta-searching' methods, in effect locating research from existing systematic reviews and specialist trials registers, which have themselves searched comprehensively for literature. This enabled the location and assessment of a large number of trials involving community engagement and provided a comprehensive update of the research on community engagement effectiveness.

We have presented a transparent account of how decisions were made to focus the literature most usefully for updating the NICE guidance on this subject through consultations with the NICE management team and our Advisory Group.

The review has some limitations that should be considered. Not all systematic reviews were retrieved in the time available; however, the large number of identified duplicates and the large number of reviews and trials located suggest that the retrieved and assessed dataset is likely to be representative of the theoretical population of studies on the topic.

Due to time and resource constraints, the literature on community engagement in non-OECD countries and on evaluating community engagement strategies targeted at non-disadvantaged (i.e. 'general') populations was not evaluated. Community engagement strategies utilising peer delivery alone were not synthesised as they have been examined in detail elsewhere (Harris et al. in press). Those using online social networks/social media were not synthesised, but await future synthesis for NICE in 2015.

Some evidence gaps were identified. No evaluation studies were located that focused on older age groups. Similarly, evaluations of community engagement trials focused on different health topic areas, such as reproductive health, parenting or violence prevention were not located. Finally, this synthesis has provided an intriguing suggestion that there may be more impact across different outcome categories (e.g. clinical measures, behaviours, self-efficacy, knowledge) when higher amounts of community engagement are used. This suggests a need for more specific detail to be gathered and synthesised on the modifiable processes of community engagement that influence outcomes. Evidence statements can be found towards the end of Chapter 3.

Conclusions and recommendations

Community engagement utilising coalitions, collaborations or partnerships encompasses a wide range of health topics and populations, most commonly healthy eating, physical activity and low-income populations. Notably, however, no studies targeted older people: this reflects an important gap in the research literature.

Synthesis of the evidence suggests that higher levels of community engagement are linked to greater beneficial effects than lower community engagement for interventions that target health outcomes amongst disadvantaged groups. Patterns of effects for other sub-sets of studies based on salient characteristics were difficult to identify, due to the small number of included studies. Overall, the breadth of the range of interventions, populations and outcomes presents a challenge for analysis and interpretation, and this is compounded by the unavailability of studies with high-quality methodology. The results, therefore, are necessarily tentative.

In the absence of a shared, reliable tool for characterising community engagement, it is difficult to establish precisely what it involves, isolate the potentially active contents and compare results reliably across reviews. This is reflected in the poor descriptions of community engagement found across the included studies. These findings underpin the importance of this review's Review 2, which will involve the location and decoding of process evaluations (corresponding to the trials in Review 1 and the previous review, where available), to examine in greater detail the precise processes of community engagement and how these are linked to effectiveness. Outcome data from Review 1 and the existing review (O'Mara-Eves, et al. , 2013) will be combined for this purpose and quantitative (e.g., meta-regressions) and qualitative (e.g., qualitative comparative analysis) methodologies will be used to help illuminate which elements of community engagement are effective, for whom and in which context(s).

1. Background

1.1 Review context

Involving communities in decision making and in the planning, design, governance and delivery of services has become central to guidance and national strategy for promoting public health (Department of Health 2010, Public Health England 2014). The National Institute for Health and Care Excellence (NICE) plays a crucial role in providing guidance on best practice for community engagement. Since the publication of the NICE community engagement guidance (National Institute for Health and Care Excellence 2008), there has been considerable activity with a view to understanding the nature of community engagement, its benefits and challenges in its evaluation (for example, Jamal et al. 2013, Phillips et al. 2014, Sheridan and Tobi 2010, Sheridan et al. 2011). Community engagement can take many forms, including volunteering, peer delivery, community coalitions, and advocacy and social networks; and community members can be involved to varying degrees within a public health strategy, including leading, collaborating, consulting or being informed about the design, delivery or evaluation of an intervention (O'Mara-Eves et al. 2013).

Recent work has indicated that community engagement interventions are effective in improving health behaviours, health consequences, participant self-efficacy and perceived social support for disadvantaged groups (O'Mara-Eves et al. 2013). Their conceptual framework analysis identified several factors which influence community engagement: understanding motivations for seeking and participating in community engagement; conditions such as appropriateness and acceptability, and actions such as relationship building, processes of administration, community member training and other methods to engage and support communities; and the impacts for those who engage as well as the receiving community. This work identified some key issues in community engagement that merit further exploration, including a consideration of the pathways through which an effective outcome can be achieved and a need for more research on the economic and implementation aspects of community engagement. Moreover, although meta-analysis suggested that community engagement was an effective intervention approach, we still do not know which 'active ingredients' or components occur most often in successful and unsuccessful interventions. In order to update the NICE guidance on community engagement and gain an understanding of the 'active ingredients' of successful community engagement, current synthesised evidence on effectiveness and appropriateness is required.

Given the higher than expected number of studies retrieved following initial screening and the resource constraints for the work, a decision was made with NICE to focus efforts on two sub-sets from the included trials:

1. coalitions/partnerships/mobilisation (this review, Reviews 1 and 2)
2. social media and social networks (Review 3)

Other sub-sets ('peer involvement' and 'cultural adaptation') will not be covered by these three components.

This report represents the first (Component 1) in a series of three reports to examine the effectiveness of community engagement in health interventions. Review 2 will synthesise data on the effectiveness and appropriateness of coalitions, collaborations and partnerships in improving health for disadvantaged populations. Review 3 will synthesise data on the effectiveness and

appropriateness of online community engagement via social media/social networking in improving health for disadvantaged populations.

These three reviews represent one of three 'streams' of work commissioned by NICE to update public health guidance on community engagement. Stream 2, jointly led by the University of East London and Leeds Beckett University, is examining the barriers to and facilitators of community engagement; Stream 3 is led by Matrix Research Consultants and is concerned with a cost and resource evaluation of community engagement.

1.2 Aims and objectives of the review

The aim of this review is to update and extend the evidence base identified for the previous systematic review on community engagement undertaken by our team (O'Mara-Eves et al. 2013) and to examine it in relation to the review questions below, with a focus on both effective approaches (through synthesis of outcome evaluations) and appropriateness (through a synthesis of process evaluations).

1.3 Research questions

The review addressed the following research questions (RQ):

RQ1. How effective are community engagement approaches at improving health and well-being and reducing health inequalities?

RQ2. Across disadvantaged groups, how effective are community engagement approaches at encouraging people to participate in activities to improve their health and well-being and realise their capabilities?

RQ3. What processes and methods facilitate the realisation of community and individual capabilities and assets amongst disadvantaged groups?

RQ4. Are there unintended consequences from adopting community engagement approaches?

RQ5. What processes identified in the literature are more aligned with effective interventions, and which (if any) are more aligned with non-effective interventions?

1.4 Operational definitions

A community is defined as 'a group of people either self-identified or identified by others, who share one or more common characteristics that can include geographical neighbourhood, health status, ethnicity, or shared interests, values, experience or traditions' (Brenner and Manice 2011). We have defined community engagement as a 'direct or indirect process of involving communities in decision making and/or in the planning, design, governance and delivery of services, using methods of consultation, collaboration, and/or community control' (O'Mara-Eves et al. 2013). Coalitions, collaborations or partnerships is a broad term meant to encompass a wide variety of community involvement. Examples include authors' descriptions of:

- coalitions (also described as forums, committees, advisory groups)
- community collaboration/partnership/task force
- community mobilisation/partnership/involvement/engagement/action/support
- community organisations developing new and existing services.

Studies of coalitions, collaborations or partnerships must specify a coalition, collaboration or partnership (as defined above) or that the actions describe an alliance for combined action, and that members of the community are included as

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one of the partners. Community members can be partnered with any combination of service providers, academics, government members or industry.

1.5 Identification of possible equality and other equity issues

Due to the large body of literature identified, this review focuses on community engagement involving disadvantaged communities. While the review provides information on those experiencing health inequalities, it does not include information on non-disadvantaged communities.

1.6 Review team

The review team comprised researchers from the Evidence for Policy and Practice Information and Co-ordinating (EPPI-) Centre at the Institute of Education, University of London. The team has a history of undertaking innovative systematic reviews that incorporate the public's views during the review's design, conduct or evaluation (i.e. advisory groups and peer review of the report). In 2011, the EPPI-Centre team undertook a large-scale systematic review and meta-analysis examining the conceptual framework, processes, effectiveness and cost-effectiveness of community engagement strategies (O'Mara-Eves et al. 2013).

The team members and their roles for the current review were as follows. Ginny Brunton is a Research Officer, acting as principal investigator, lead and project manager for the review. James Thomas is a Professor of Social Policy who is a co-investigator, leading on the qualitative comparative analysis. Jenny Caird is a Research Officer who is a co-investigator performing literature searches, screening and coding, and acting as lead analyst on the meta-analysis modelling. Gillian Stokes is a Research Officer; her role includes performing the search strategy and undertaking the screening, coding and descriptive analysis of studies. Claire Stansfield is an information specialist who contributed to the review through the design, development and testing of the search strategy. Research Officers Dylan Kneale's and Michelle Richardson's roles included coding studies, data extraction and assessing the quality of studies. Each team member has declared no conflict of interest.

2. Methodology

2.1 Evidence identification

An update of the recent systematic review (O'Mara-Eves et al. 2013) was undertaken, using innovative methods of locating and screening the literature. Two methods were used to identify relevant studies:

1. We made use of systematic searches already carried out by using the studies identified by existing systematic reviews (see *Identifying systematic reviews* below).
2. We searched a database of studies in health promotion and public health (TRoPHI). The studies in this database are the product of systematic searches in core NICE databases and have already been systematically classified (see *Identifying primary research through TRoPHI* below). The search sources and search syntax used in the search process are presented in Appendix 1.

2.1.1 Identifying systematic reviews

We searched a range of registers, websites and databases for systematic reviews that discuss how some or all of their included studies contain interventions that utilise community engagement. The reviews were used to identify included primary studies that are relevant to the scope of this project; however the systematic reviews themselves were not included in the synthesis (see the section *Evidence selection* below).

The following systematic review registers, websites and databases were searched:

1. **Database of Promoting Health Effectiveness Reviews (DoPHER)**. DoPHER is developed and maintained by the EPPI-Centre and covers systematic and non-systematic reviews of effectiveness in health promotion and public health worldwide. It currently contains details of thousands of reviews, all of which have been assessed and coded for the specific characteristics of health focus, population group and quality. The database is updated by an information specialist, who conducts thorough hand searches of at least 19 databases and websites (CRD Database of Abstracts of Reviews of Effects (DARE), Cochrane Database of Systematic Reviews, The UK Health Technology Assessment Programme, NIH Community Guide to Preventive Services, NICE (National Institute for Health and Care Excellence), MRC Social and Public Health Sciences Unit, Research in Practice, Campbell Collaboration, Economic and Social Research Council, Effective Public Health Practice Project, WHO's Global Programme on Health Promotion Effectiveness, Health-Evidence.ca, BiblioMap, Joanna Briggs library, EPPI-Centre website, NICE monthly bulletins, Social Care Online and other ad hoc sources/websites).
2. **Cochrane Database of Systematic Reviews (CDSR)**. The CDSR includes all Cochrane Reviews (and protocols) prepared by Cochrane Review Groups in The Cochrane Collaboration.
3. **Database of Abstracts of Reviews of Effects (DARE)**. DARE is developed and maintained by the Centre for Reviews and Dissemination (CRD) at the University of York. It is focused primarily on systematic reviews that evaluate the effects of health care interventions and the delivery and organisation of health services. The database also includes reviews of the

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wider determinants of health, such as housing, transport and social care, where these impact directly on health or have the potential to impact on health.

4. **Campbell Library.** The Campbell Collaboration's library of systematic reviews includes reviews and protocols prepared by Campbell review groups under any of the six co-ordinating group themes: crime and justice, education, international development, methods, social welfare and review users.
5. **NIHR Health Technology Assessment (HTA) programme website/journals library.** The HTA programme produces research about the effectiveness of different healthcare treatments and tests for those who use, manage and provide care in the UK National Health Service. The HTA website houses all the reviews published through the HTA programme in the HTA journal series.
6. **Health Technology Assessment (HTA) database** hosted by the CRD. This database currently holds over 10,000 summaries of completed and ongoing health technology assessments from around the world. Database content is supplied by the 52 members of the International Network of Agencies for Health Technology Assessment (INAHTA) and 20 other HTA organisations worldwide.

2.1.2 Identifying primary research through TRoPHI

Searches of the systematic reviews resources were supplemented by searches of the **Trials Register of Promoting Health Interventions (TRoPHI) database**. TRoPHI covers trials of interventions in health promotion and public health worldwide, both randomised and non-randomised. It currently contains details of over 4,500 trials and is updated four times a year through thorough searches of PubMed, PsycINFO and CENTRAL (Cochrane Library trials) by an information specialist. This source was searched to ensure that relevant trials published outside the timeframe or scope of the reviews identified in the review databases listed above were detected.

2.1.3 Other search sources

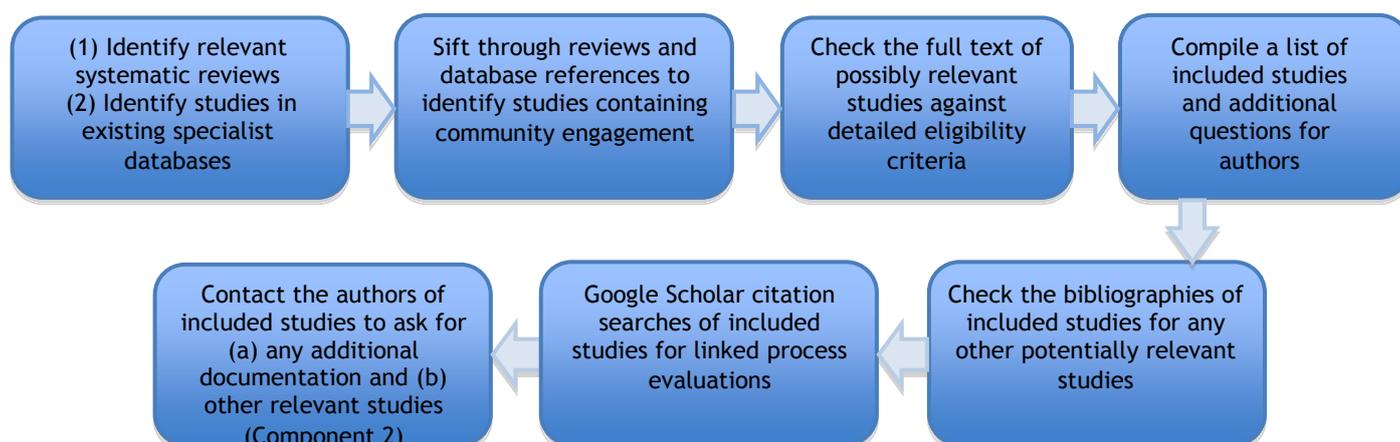
To further ensure wide coverage of the evidence base, we checked the bibliographies of the rapid evidence assessments conducted to support NICE's 2008 public health guidance *Community Engagement to Improve Health* (Popay et al. 2007; Swainston and Summerbell, 2007). Websites of references were searched, including: the UK government (gov.uk) portal; NICE Evidence Summaries (Working with and involving communities); Public Health Observatories; Open Grey; and healthevidence.org.

To locate linked studies, we undertook 'backward' and 'forward' citation chasing: we checked the bibliographies of included reviews and trials and conducted citation searches of all included high-quality trials using Google Scholar or Web of Science, in order to capture any linked process evaluations. As part of the methods for Review 2, we will also contact authors and intervention implementers to seek out additional information and references.

A call for evidence to the project stakeholders was made by NICE during June and July 2014. Additional relevant evidence was added to the review process through this route.

The search strategy is summarised in Figure 1.

Figure 1: Search strategy



2.2 Retrieval of data

Full-text reports of all included systematic reviews were obtained and screened for relevant trials. Full-text reports of all trials included on title and abstract were located, but due to the large literature and the limited time available for retrieval, only those that were immediately available electronically were obtained and further assessed.

2.3 Evidence selection

To facilitate rapid screening of citations in the most effective manner possible, we employed text-mining methods developed at the EPPI-Centre to prioritise those studies most likely to be included for screening. The aim was to ensure that the most relevant references were located and assessed first, so that the work could proceed quickly and be informed by the most relevant literature. However, all located references were screened.

Systematic reviews were screened for inclusion in the review first. To be eligible at the systematic review screening stage, citation titles and abstracts had to meet all of the following criteria:

- be published after 2000
- be a systematic review (i.e. described as a systematic review, or clearly describes search and inclusion criteria)
- contain at least one outcome and/or process evaluation
- contain community engagement either as a direct intervention or a mechanism of an intervention
- report at least one health outcome
- be published in English.

Review citations that met these criteria and those below were retrieved, and assessed again on the basis of the full report using the same criteria.

To trial the systematic review screening process, a pilot round of screening was conducted on a random selection of 30 document titles and abstracts. These documents were double-screened by two reviewers. A reconciliation meeting was held to discuss disagreements and suggest changes to the inclusion criteria. Inter-rater agreement (Cohen's kappa) was calculated at 0.94. Following pilot screening, reviewers independently screened all remaining titles and abstracts, with a second reviewer screening a 10% random selection of titles and abstracts. Any disagreements were discussed or, if necessary, resolved by the lead researcher.

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Trial citations from these systematic reviews were then obtained. Duplicates found within the systematic reviews and in the TRoPHI search results were removed, and the remaining trial citations were assessed for inclusion. Different reviewers each assessed separately trials from systematic reviews and trials located from TRoPHI. Located trials from both sources were screened on the basis of their titles and abstracts by applying inclusion and exclusion criteria. Studies were included if they met all of the following criteria:

- published since 2008
- English language
- primary research
- containing outcome and/or process evaluations
- explicit reference to community engagement
- study design included a control/comparison group
- reported at least one health outcome.

References were screened hierarchically: each citation had to meet a criterion before subsequent criteria were assessed. Where insufficient information was available in the title and abstract to make a decision, an attempt was made to retrieve the full-text article of the document for further inspection. All references that met the above criteria initially were retrieved for screening on the basis of the full report and cross-checked again for duplicates in the original community engagement review dataset (O'Mara-Eves et al. 2013).

Once titles and abstracts were screened and a set of studies was identified for inclusion in the review, it became clear that there would be more literature available than could be reasonably synthesised within the project timelines. Consultation was undertaken with the NICE project management team and confirmed with our Advisory Group, to determine how best to focus the literature in order to provide a coherent and informative set of studies for consideration by the Public Health Advisory Committee (PHAC). We considered that literature published within at least the past five years would be most current. This date was chosen for selecting studies of coalitions, collaboration and partnerships because of the detailed syntheses of these studies already undertaken to inform the previous NICE CE guidance (Popay et al. 2007, Swainston and Summerbell 2007); and the theoretical synthesis and meta-analysis undertaken in the previous review (O'Mara-Eves et al. 2013). Also, differences in health system funding and structures in non-OECD countries would make conclusions about the applicability to the UK context difficult. Further, the effectiveness of peer delivery in health interventions has been the subject of another recent review (Harris et al. in press). Finally, we noted that recommendations for populations experiencing health inequalities should be highest priority for synthesis. Thus, we decided to focus Review 1 on literature that explicitly focused on disadvantaged populations in OECD countries, using community engagement that explicitly described the use of coalitions, collaboration or partnerships with community members. This area of community engagement was considered to be most useful to inform the updating of the NICE community engagement guidance. Therefore, titles and abstracts of all included references were again screened, with the additional inclusion criteria:

- undertaken in an OECD country
- focused on disadvantaged populations
- not focused on peer delivery alone.

To be included in the current review, full reports of trials had to:

- be published since 2008 and

- have specifically described community engagement using one or more of: coalitions, collaborations, stakeholder involvement, advisory groups or partnerships. Community mobilisation was also included as it could contain similar aspects of community engagement.

A random selection of 10% of the full-text trial reports were double-screened by two reviewers and inter-rater agreement measures were calculated (Cohen's kappa) at 0.90. The lead researcher resolved any non-reconciled documents. Those documents that passed the inclusion criteria on the basis of full-text screening were included in the review.

Study selection also involved liaison across a consortium (i.e. with Leeds Metropolitan University and the University of East London) which is undertaking work for NICE's Stream 2 project synthesising UK qualitative evidence. This work focuses on UK-specific evaluations of process issues related to community engagement. To ensure that exchange of theoretical development and process issues were communicated between project streams, issues identified in Stream 2 that were potentially highly relevant to our consideration of process evaluations were passed on to Stream 1. Similarly, references for any economic or cost evaluations identified during screening were passed on to the team undertaking NICE Stream 3 work. Potentially relevant trials identified by Streams 2 and 3 were passed on to us, and theoretical developments from Stream 2 were discussed in cross-Stream meetings.

2.4 Quality appraisal

The relevant full-text studies were rated for their methodological rigour and quality based on the critical appraisal checklists provided in the manual *Methods for the Development of NICE Public Health Guidance* (NICE 2012, Appendices F and H). Studies which were deemed to have reported a majority of characteristics denoting good internal validity (i.e. study conduct) and external validity (i.e. generalisability) were rated with an overall ++. Studies rated an overall + if their internal validity scores were at least +. Studies rated an overall - if their internal validity score was rated as -. These rating decisions are fully described in Appendix 4.

One reviewer independently rated each study and a second reviewer checked the results. Where necessary, a third team member independently assessed the study in question and resolved disagreements on ratings. The review team collaboratively considered, calibrated and finalised the scores.

2.5 Data extraction

Data for each study were extracted according to the following characteristics:

- country
- age groups of participants (children/youth, adults, older people)
- gender of participants (male/female only, mixed sex)
- specific population group targeted
- main characteristic of disadvantage (e.g. ethnic minority, economic, disability)
- primary health issue being addressed
- whether or not community involvement in identifying need was explicitly stated
- the level of community engagement across each aspect of design, delivery, evaluation (i.e. leading, collaborating, consulting, informed, unclear/not involved)

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- measurement of health outcomes for community members involved in the design, delivery or evaluation
- type of outcome measurement undertaken
- direction, strength (i.e. statistical significance) and size of effect
- direct comparison of community engagement versus no community engagement.

To determine the level of community engagement, we assessed the extent to which community members were involved in the design, delivery and evaluation of each of the included intervention studies. Based on the descriptions provided by authors, involvement was graded on a continuum described as ‘leading’, ‘collaborating’, ‘consulted’, ‘informed’ and ‘not involved/unclear’. Studies were then judged according to the overall extent of community engagement. For each aspect of a study (design, delivery, and evaluation): those where community members led or collaborated scored 1; those that consulted, informed, did not involve or were unclear scored 0. A maximum score of 3 was therefore possible. Ratings for each aspect were then summed up: those with a score of 3 were judged to have a high extent of community engagement; those that scored 2 were rated moderate; and those that scored 1 or 0 were assessed as low.

The type of outcome measurement was further divided into five sub-categories to foster analysis for Review 2:

1. **Clinical:** physiological consequences and final physical health states (e.g. cardiovascular disease, hypertension, mental health, obesity/weight status, blood glucose or cholesterol levels, lung capacity)
2. **Health/social measures:** physical and mental health states and measures of social functioning that can lead to clinical outcomes (or may be desired outcomes in themselves); this includes well-being, depression, social phobia, feeling safe, self-rated health
3. **Health behaviours:** modifiable behaviours that lead to clinical or health measure outcomes, including alcohol abuse, antenatal (prenatal) care, breastfeeding, drug use, healthy eating, immunisation, safety (e.g. seat belts), parenting, physical activity, smoking cessation, alcohol consumption, diet
4. **Participant self-efficacy:** belief in ability to produce effects, complete tasks and reach goals (e.g. self-efficacy, self-esteem)
5. **Participant knowledge, attitudes and intentions:** any form of knowledge that is subject of intervention as well as attitudes and intentions that the intervention is aimed at influencing. including for example, diabetes knowledge, attitudes to drugs, intention to quit smoking.

The strength and direction of the effects on outcomes were also analysed. Where outcomes provided a statistically significant effect in favour of the intervention, this was reported as a ‘beneficial effect’.

Where the effect was statistically significant but in favour of the control group, this was reported as a ‘negative effect’.

Where studies showed a result in favour of the intervention or control group, but was not statistically significant, we reported a ‘positive trend’ or a ‘negative trend’ respectively.

Where authors described ‘no effect between groups’, this was presumed to be a non-statistically significant result and unclear direction of effect, and was reported as ‘no effect’.

2.6 Synthesis

For Review 1, results obtained from the data extraction and quality appraisal were analysed using a framework synthesis method (Thomas et al. 2012). Framework analysis allows the classifying of concepts into predefined categories, allowing for new categories to emerge. Categories are then compared and contrasted across consistently applied characteristics. After consultations with the NICE team and our external Advisory Group (comprised of academics and funders with expertise in community engagement; see Appendix 1), studies were grouped into a coherent framework according to key characteristics/themes that included extent of community engagement, population and health topic.

Themes within each characteristic were assessed for each study by research team members. These included aims, age groups, gender, socioeconomic indicators, health topic under study, level and extent of community engagement, outcome type, statistical significance and direction of effect. These were combined into structured summaries and evidence tables, the themes of which were then compared and contrasted across studies according to extent of community engagement, key populations and health topics. The findings from the review were grouped into sections that aimed to answer each review question, taking into account the key characteristics of interest.

Each characteristic (community engagement, population, health topic) was thematically synthesised across the studies by combining and contrasting similarities and differences between aims, populations, health topics, amount of engagement, outcomes and methodological quality to establish the extent of community engagement, different populations and different health issues.

Finally, any differences and similarities between our previous review of community engagement (O'Mara-Eves et al. 2013) and these newly identified studies were discussed.

2.7 Formulation of evidence statements

Evidence statements were developed for Review 1 for the extent of community engagement, population of interest and some health topic clusters, as determined to be most useful for Public Health Advisory Committee members through consultation with our Advisory Group. Where possible, issues relating to particular health inequalities that were identified in the data were summarised.

Evidence statements for findings from both Review 1 and the moderator and qualitative comparative analyses were derived, following structure and process as indicated in section 5.5 of the NICE methods guidance (NICE 2012). Evidence referred to the sources of evidence (study type and references) and their quality in brief descriptive terms. In addition, each statement included summary information about the:

- **content** of the intervention, where applicable (for example, what, how, where)
- **population(s)** and **setting(s)** (and country), where applicable
- **strength** of evidence (reflecting the appropriateness of the study design to answer the question and the quality, quantity and consistency of the evidence)
- **outcome(s)**, the **direction** of effect (or correlation) and the **size** of effect (or correlation) (where applicable)
- **applicability** to the question, target population and setting.

The overall strength (quality, quantity and consistency) of the evidence was summarised, while being clear about the sources and inclusion criteria, as:

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- **No evidence:** For example, ‘No evidence was found from English-language trials published since 2008...’.
- **Weak evidence** For example, ‘There was weak evidence from 1 (-) before-and-after study’.
- **Moderate evidence:** For example, ‘There was moderate evidence from 2 (+) case-control studies’.
- **Strong evidence:** For example, ‘There was strong evidence from 2 (++) and 1 (+) randomised controlled trials’.
- **Inconsistent evidence:** Where needed, further commentary was provided on the variability of the findings in different studies, for example, when the results of (++) or (+) quality studies did not agree. In such cases, the review team qualified an evidence statement with an explanatory sentence or section giving more detail.

‘Vote counting’ (merely reporting on the number of studies yielding significant effects) was not undertaken.

Where appropriate, the direction of effect (impact) or correlation was summarised using either positive, negative, mixed or none. Where appropriate, the size of effect (impact) or correlation and, when possible, the degree of uncertainty involved, was reported using the scale applied in the relevant study. (For example, an odds ratio (OR) or relative risk (RR) with confidence interval (CI), or a standardised effect size and its standard error, might be quoted.) Where an estimate could not be explained, every effort was made to relate it to interpretable criteria or conventional public health measures. Where it was not possible to provide figures for each study, or where there were too many studies to make this feasible, the size of effect or correlation was summarised using the following standardised terms: small, medium or large. In order to assist the PHAC in judging the extent to which the evidence reported in the reviews is applicable to the areas for which it is developing recommendations, we assessed each evidence statement to judge how similar the population(s), setting(s), intervention(s) and outcome(s) of the underpinning studies were to those outlined in the review question(s). The studies were assessed as a whole. Following this assessment, we categorised each evidence statement as directly applicable, partially applicable or not applicable. Statements detailing the category into which studies fell and the reasons were included at the end of the evidence statement.

2.8 Quality assurance

Two reviewers independently conducted data extraction and agreed upon the final version to maintain accuracy. Where necessary, a third team member arbitrated in disagreements. Evidence tables were completed using templates based on those provided in the NICE methods guidance (NICE 2012). Records of the research identified by searches were uploaded to the specialist systematic review software, EPPI-Reviewer 4, for duplicate stripping and screening (Thomas et al, 2010). This software was used to record the bibliographic details of each study considered by the review, where studies were found and how, and the reasons for their inclusion or exclusion. EPPI-Reviewer 4 was also used to conduct and record the data extraction and quality appraisal stages for the included studies, using the required data fields and appropriate quality checklists detailed in the methods manual (NICE, 2012).

3. Findings

3.1 Flow of studies through the review

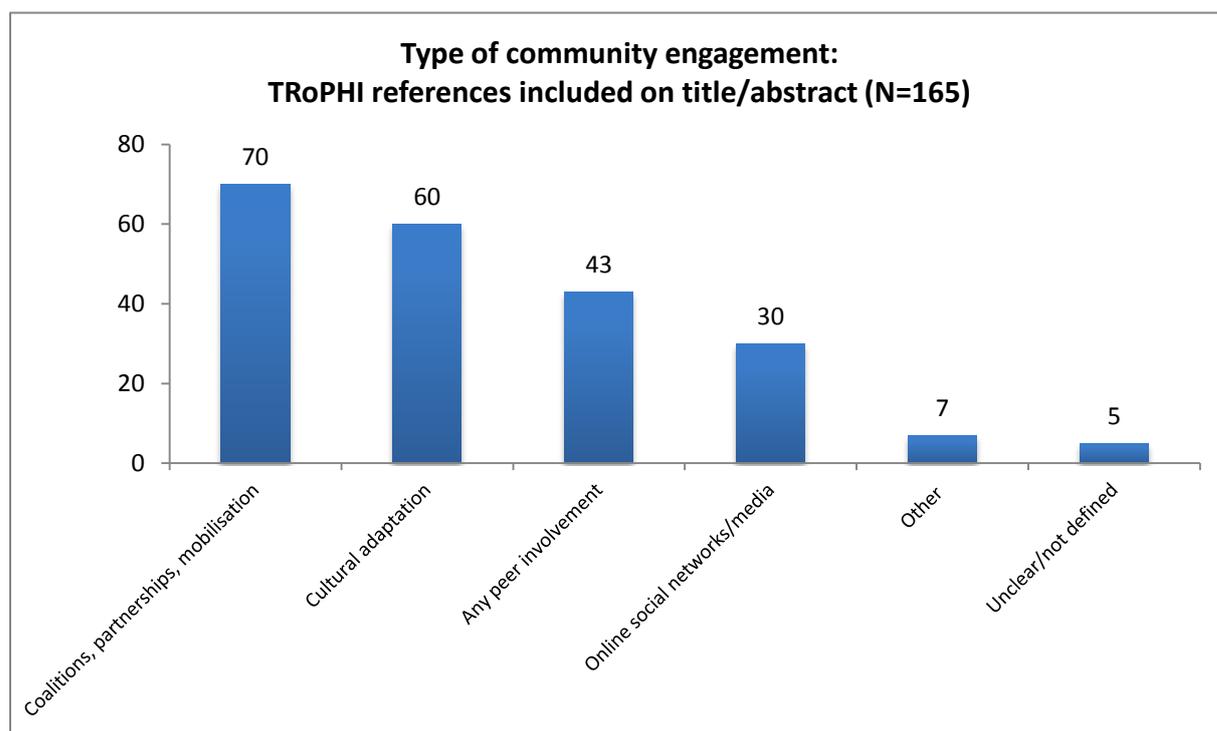
Searching elicited a large number of reviews and trials concerned with community engagement. The flow of studies through the screening process, including reasons for exclusion, is illustrated in Appendix 2.

A total of 4,609 review references were located, which were screened on title and abstract for their relevance to community engagement. These produced a total of 341 potentially relevant systematic reviews; full-text reports of a total of 295 (87%) of these were available electronically and screened for relevant trials within the time available. Once duplicate references were removed across included reviews, a total of 177 references of potentially relevant trials located from systematic reviews were included based on title and abstract screening.

Another 865 references of potential trials were located from searching the TRoPHI database; these were combined with the 177 potentially relevant trials identified from systematic reviews for a total of 1,042 references screened on the basis of title and abstract. Of these, a total of 222 were considered potentially relevant to community engagement, but this was considered too many to synthesise within the available time.

To inform consultations with NICE project management team on how to most usefully focus the review at the screening stage, we mapped the type of community engagement based on the titles and abstracts of the 165 included trial references identified through TRoPHI screening. The distribution of community engagement types is presented in Figure 2.

Figure 2: Type of community engagement: TRoPHI included references (title and abstract screening) (N=165)



*Note: numbers in each category add up to more than 165 as some studies used more than one type of community engagement strategy.

Studies categorised as ‘coalitions, partnerships, mobilisation’ described direct involvement of community members in design delivery and/or evaluation of an intervention. Where studies were categorised as ‘cultural adaptation’, members of a target community were involved in tailoring the intervention to make it more relevant. In studies categorised as ‘peer involvement’, members of the community delivered the intervention, alone or in collaboration with professionals. Studies described as ‘online social networks/media’ made use of web or phone technologies to design, develop and/or deliver intervention (see the Glossary for further details).

These results were presented to the NICE project management team and the advantages and disadvantages of synthesising different sub-sets were discussed. The decision to focus on studies of coalitions, partnerships or mobilisation was made and the 222 references included on the basis of titles and abstracts were again screened for inclusion of relevant studies. This resulted in a total of 135 potentially relevant trial references. Full reports of 101 (75%) of these were electronically available and retrieved within the timelines of the review and screened against the inclusion/exclusion criteria, with a total of 36 full reports of 28 trial studies being included in the review. These 28 studies were then assessed for risk of bias and coded according to key characteristics.

3.2 Advisory group consultation

To determine what aspects of studies would be descriptively analysed in Review 1 and further synthesised in Review 2, a meeting with our Advisory Group members in early September 2014 provided some helpful insights. Comprised of three academics with expertise in community engagement and one research commissioner with experience in working with communities using techniques of community engagement, they provided perspectives on the challenges to

evaluating this complex intervention and recommended priority areas for synthesis which would be of most help to the Public Health Advisory Committee in updating the NICE guidance. These priority areas included: specific aspects of community engagement; variations in community engagement delivered to different age groups; those delivered to men and women separately; and those focused on low-income groups. To facilitate the synthesis of Review 2, these priority areas were analysed descriptively and the results are presented below.

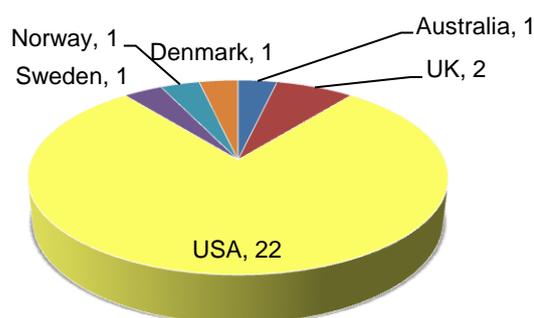
The included studies are described in terms of year of publication, country of study and methodological quality. They are then grouped according to specific populations and aspects, including level of community engagement, studies targeted at children/young people, women and men, and low-income groups, and by 'clusters' of health topics.

Complete details of individual studies can be found in the Evidence tables, available on request from NICE.

3.3 Country of study/year of publication

The majority of the studies we included took place in the USA (22/28; 79%) as illustrated in Figure 3.

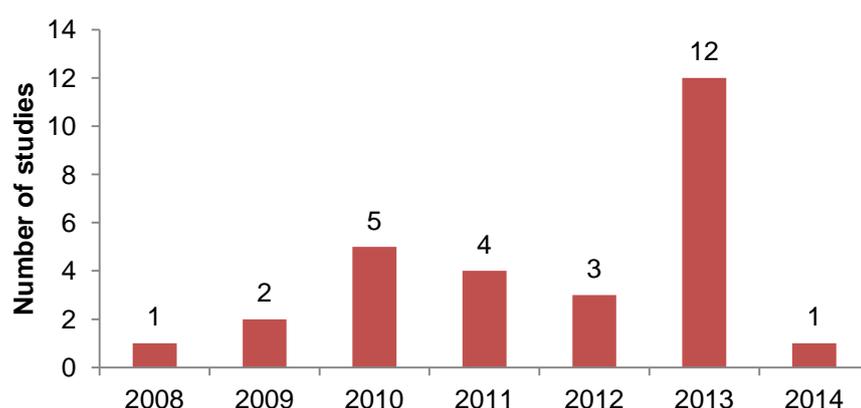
Figure 3: Country of study origin



Two studies were included from the UK (Bonell et al. 2010; Phillips et al. 2014) and one each from Australia (Eades et al. 2012), Denmark (Lassen et al. 2011), Sweden (Bergstrom et al. 2013) and Norway (Andersen et al. 2013). This is comparable to the previous review of community engagement to reduce inequalities in public health, where 84% of studies hailed from the USA and 8% were from the UK (of 319 studies; O'Mara-Eves, Brunton et al. 2013).

The distribution of studies by publication date is illustrated in Figure 4.

Figure 4: Included studies: Publication year (N=28)



The largest number of included studies (12/28; 43%) was published in 2013. The earliest study included in the review was published in 2008 (Plescia et al. 2008) while the latest was published in 2014 (Phillips et al. 2014). Further details of individual study characteristics are provided in the Evidence tables (available on request from NICE).

3.4 Methodological quality of studies

Overall, the studies were assessed to be at either moderate or high risk of bias; only two studies were rated to be at low risk of bias (Andersen et al. 2013; Bergstrom et al. 2013). Half of the studies (n=14) were rated to be at moderate risk of bias; the remaining 12 studies were at high risk of bias. The internal, external validity and overall risk of bias ratings for all included studies are shown in Appendix 4.

3.5 Specific aspects of included studies

3.5.1 Extent of community engagement

The level of community engagement across each aspect of design, delivery and evaluation was assessed across the studies. The ratings for each aspect and the overall ratings are shown in Appendix 5. Studies rating 'high', 'moderate' and 'low' extent of community engagement were grouped, and the narrative synthesis can be found in the following section. The number of outcomes and direction of effect were calculated for high, moderate and low extent of community engagement, and are provided in Appendix 6.

3.5.1.1 High community engagement

Only four studies were identified as having a 'high' extent of community engagement: Berg et al. 2009 (USA +,+); Cohen et al. 2013 (USA -,+) Islam et al. 2013 (USA +,+); Parikh et al. 2010 (USA +,+). Three of these studies were found to have an overall moderate risk of bias upon assessment, meaning that a majority of risks to internal validity were avoided; thus a reasonable level of confidence can be given to the findings from these studies.

All four studies focused on ethnic minorities, and there was some commonality of health topics and age ranges under study amongst this small set. Berg et al. (2009) aimed to reduce or delay the onset of drug and sexual risk behaviour in urban low-income minority ethnicity adolescents. Cohen et al. (2013) aimed to improve physical activity in parks located in low-income primarily Hispanic neighbourhoods. Islam et al. (2013) evaluated a pilot community health worker intervention to improve healthy eating and promote diabetes prevention amongst Korean American

adults. Parikh et al. (2010) aimed to prevent diabetes by promoting weight loss in overweight Black and Hispanic adults.

Community members led on design, delivery and evaluation in only one study (Berg et al. 2009). One study described collaboration with community members throughout the design delivery and evaluation (Islam et al. 2013). In the remaining two studies, community members led on delivery and collaborated on design and evaluation (Cohen et al. 2013) and led on design and delivery but collaborated on evaluation (Parikh et al. 2010). Community members in studies that rated 'high' extent of engagement were thus very involved across the design, delivery and evaluation of interventions.

Berg et al. (2009) used staff training, individual and group work, and youth social networks in two summer and after-school projects to empower youth participants to envision and enact social interventions and advocacy at the individual, group and community levels. The youth involved developed interventions to impact on other youth and the broader community.

Cohen et al. (2010) utilised park advisory boards made up of community stakeholders, who acted in an advisory capacity to the park director. They worked in conjunction with park directors to develop park-based interventions and advised on evaluative survey data collection instruments.

A community-based participatory research approach described by Islam et al. (2013) guided development of that intervention. A coalition of community partners, researchers, health providers and community health workers engaged as active and equal partners in the research process, providing unique community knowledge, critical input and guidance during all phases of the study.

Developed from a community-led initiative, Parikh et al. (2010) described a community-based participatory research project, in which a community action board of leaders, activists and residents developed and implemented a culturally appropriate diabetes intervention using peer leaders. They also collaborated in the development of data collection tools and methods.

Outcomes across this dataset (shown in Appendix 6) showed an overall positive direction of effect. This set of studies showed mostly positive results for effectiveness in terms of clinical measures. Waist circumference showed beneficial effects in one study (Parikh et al. 2010). Weight showed beneficial effects (Parikh et al. 2010) and positive trends (Islam et al. 2013). Blood pressure showed positive trends in one study (Islam et al. 2013) but no change in the other (Parikh et al. 2010). BMI showed beneficial effects (Parikh et al. 2010) and a positive trend of effectiveness (Islam et al. 2013). Blood glucose levels in two studies showed positive trends (Islam et al. 2013; Parikh et al. 2010), but fasting glucose and haemoglobin proportions showed no change in one study (Parikh et al. 2010).

Health status measures in 'high' extent of engagement studies showed a positive trend: Islam et al. (2013) reported a positive trend for mental health outcomes.

Health behaviours showed overall beneficial effects, which were reported for: healthy eating (Islam et al. 2013); number of park users and amount of energy expended during park use (Cohen et al. 2013); and reduced marijuana use (Berg et al. 2009). Positive trends were noted for improved healthy eating and reduced 'junk' food intake (Islam et al. 2013); sustained physical activity, meeting recommended physical activity targets and improved social interaction during physical activity (Islam et al. 2013); access to and utilisation of health insurance and care (Islam et al. 2013); and reduced sex partners and alcohol use (Berg et al.

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2009). However, one study noted no change between the intervention and control groups in terms of physical activity and food intake (Parikh et al. 2010).

Three studies with a high extent of engagement reported generally positive trends in self-efficacy. One study reported beneficial effects for community self-efficacy (Berg et al. 2009); one study reported positive trends for self-efficacy (Islam et al. 2013); and one study reported no change in self-efficacy (Parikh et al. 2010). Islam et al. also noted positive trends in effects for improved confidence in physical activity and nutritional intake, and in perception of reduced barriers to nutrition.

Lastly, knowledge outcomes in studies with a high extent of community engagement showed generally positive trends. Islam et al. (2013) found a beneficial effect for diabetes knowledge and also reported positive trends for knowledge of healthy eating and physical activity. However, one study found a mixture of positive trends, negative trends and no change in sub-components of healthy eating knowledge (Parikh et al. 2010).

In summary, and as noted in Appendix 6, across studies with a high extent of community engagement, there appears to be a majority of beneficial effects or positive trends for clinical measures, behaviours, self-efficacy, and knowledge, attitudes and intentions.

3.5.1.2 Moderate community engagement

A total of 12 studies were judged to have a moderate extent of community engagement (Andrews et al. 2012 (USA -,+); Bergstrom et al. 2013 (Sweden ++,+); Bonell et al. 2010 (UK ++,+); Chen et al. 2013 (USA +,+); Harper et al. 2009 (USA -,+); Kieffer et al. 2013 (USA +,+); Martin et al. 2013 (USA -,+); Phillips et al. 2014 (UK +,+); Plescia et al. 2008 (USA -,+); Rhodes et al. 2011 (USA +,+); Segal et al. 2011 (USA +,+); Wermert et al. 2012 (USA -,+)). Overall, this sub-set of studies with a moderate extent of community engagement was conducted fairly rigorously, meaning that readers can be cautiously confident in their findings. One study rated a low risk of bias (Bergstrom et al. (2013); five studies were assessed to have a high risk of bias (Andrews et al. 2012; Harper et al. 2009; Martin et al. 2013; Plescia et al. 2008; Wermert et al. 2012). The remaining six studies were judged to have a moderate risk of bias.

Studies focused on a wide range of health topics. Three focused on healthy eating and/or physical activity (Bergstrom et al. 2013; Martin et al. 2013; Plescia et al. 2008); another two studies looked at healthy eating, physical activity and mental health (Kieffer et al. 2013; Phillips et al. 2014). Two studies examined HIV/STI as a health issue (Harper et al. 2009; Rhodes et al. 2011); and one study each focused on substance use (Bonell et al. 2010, cancer prevention (Chen et al. 2013), mental health (Segal et al. 2011), injury prevention (Wermert et al. 2012) and organ donation (Andrews et al. 2012).

Each study targeted a specific population at risk of or experiencing disadvantage. Half of the moderate-extent engagement studies involved interventions focused on minority ethnicities (Andrews et al. 2012; Chen et al. 2013; Harper et al. 2009; Kieffer et al. 2013; Plescia et al. 2008; Rhodes et al. 2011). Three studies worked with low-income populations (Bonell et al. 2010; Martin et al. 2013; Phillips et al. 2014). Two studies focused on people living with intellectual disability (Bergstrom et al. 2013) or severe mental illness (Segal et al. 2011). The remaining study targeted young people at risk of road injury (Wermert et al. 2012).

Across studies, a high level of involvement in only some aspects was reported. For example, three studies led on design (Bonell et al. 2010; Segal et al. 2011; Wermert et al. 2012); the remaining nine studies collaborated with researchers

and service organisations. Similarly, eight of the studies collaborated on delivery, while the remaining four led on delivery (Kieffer et al. 2013; Plescia et al. 2008; Rhodes et al. 2011; Wermert et al. 2012). However, engagement was not consistently high across all aspects of the research studies. There was less reported involvement of communities in evaluation: a total of ten studies either reported that community members were simply informed of evaluation, or their involvement was not reported. Two studies described consultation about evaluation methods with their community members (Plescia et al. 2008; Rhodes et al. 2011). This lack of reported involvement by community members in evaluation was generally the reason why most studies in this sub-set rated 'moderate' for extent of engagement.

In terms of clinical measures, only Bergstrom et al. (2013) noted a positive trend for waist circumference; however, they also reported no change between groups in measures of BMI.

Beneficial effects were noted on health and social measures such as feelings of security at school (Bonell et al. 2010) and on very low food security as measured by the availability and ability to access nutritional and safe foods (Martin et al. 2013). Measures of life satisfaction in the study by Bergstrom et al. (2013) showed no change.

Health behaviours showed beneficial effects or positive trends overall but also mixed effects for some outcomes. Healthy eating showed beneficial effects (Kieffer et al. 2013; Martin et al. 2013; Phillips et al. 2014; Plescia et al. 2008) and positive trends (Bergstrom et al. 2013; Kieffer et al. 2013; Phillips et al. 2014) for components and sub-components of healthy eating measures. Bergstrom et al. (2013) also reported no change between groups on choosing participant-designed 'plate model meals'. Physical activity outcomes showed beneficial effects (Bergstrom et al. 2013), positive trends (Phillips et al. 2014) and negative trends (Plescia et al. 2008). In terms of sexual health outcomes, one study reported beneficial effects for reduced sexual encounters and carrying condoms (Harper et al. 2009); and one study reported beneficial effects for condom use and HIV testing (Rhodes et al. 2011). Chen et al. (2013) described beneficial effects on HBV testing status. Harper et al. (2009) also reported a positive trend for increased condom use. Bonell et al. (2010) reported positive trends for intervention group experience of being teased and teasing others less, and less likelihood that participants had hurt others or had been in a fight. Andrews et al. (2012) reported a positive trend for committing to future organ donation. Finally, Plescia et al. (2008) reported a negative effect for smoking status and Wermert et al. (2012) failed to report any outcomes related to seat belt use.

Four studies measured changes in self-esteem, self-efficacy, achievement and/or empowerment. Beneficial effects were reported in self-efficacy in one study (Harper et al. 2013); one other study reported beneficial effects for self-sufficiency (Martin et al. 2013). Bonell et al. (2010) noted a positive trend for a sense of achievement, students reporting that they got on well with their teachers and were less worried about doing their assigned work. Harper et al. (2009) noted that there was no change in sexual assertiveness or sexual decision making. And one study by Segal et al. (2011) reported negative effects for self-efficacy and personal empowerment.

Beneficial effects were reported for a variety of areas of knowledge, attitudes and intentions, including: perceived peer norms, attitudes to sexual communication, condom use, leading on and token refusal of sex, HIV, AIDS and STI knowledge and plans to use condoms (Harper et al. 2009). Knowledge of HBV testing showed beneficial effects and positive trends for sub-component measures (Chen et al.

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2013). Phillips et al. (2014) reported beneficial effects for a perception that the neighbourhood 'pulls together' more. Attitudes and intentions to donate organs in future were shown to be positive trends in one study (Andrews et al. 2012); and one study reported positive trends for perceptions of liking school, attitudes to truancy, expectations of going to university, and beliefs about trying drugs, alcohol and tobacco in future (Bonell et al. 2010). One study that reported measuring knowledge of seat belt use did not provide results (Wermert et al. 2012).

In summary, studies with a moderate extent of community engagement reported a majority of beneficial effects for a wide range of health behaviours, health and social measures, self-efficacy measures, and knowledge, attitudes and intentions across a diverse range of populations and health topics. The methodological quality of this set of studies was moderate, indicating that the results of the studies should be considered with caution.

3.5.1.3 Low community engagement

The methodological quality of the studies in this sub-set was mixed. Of the 12 studies judged as undertaking a low level of community engagement, half were judged to be at low (Andersen et al. 2013 (Norway ++,++)) or moderate risk of bias (Dodge et al. 2013 (USA +,++); Dzewaltowski et al. 2010 (USA +,+); Kong et al. 2013 (USA +,+); Lassen et al. 2011 (Denmark +,-); Wright et al. 2013 (USA +,+)). The remaining six studies were rated to be at high risk of bias (Eades et al. 2012 (Australia -,+); Hoelscher et al. 2010 (USA -,+); Kneipp et al. 2011 (USA -,+); Russell et al. 2010 (USA -,+); Woods et al. 2013 (USA -,+); Zoellner et al. 2013 (USA -,,-)).

A majority of the studies (n=8) with low community engagement focused on healthy eating/physical activity (Andersen et al. 2013; Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013; Lassen et al. 2011; Woods et al. 2013; Wright et al. 2013; Zoellner et al. 2013). Two studies focused on cancer prevention (Eades et al. 2012; Russell et al. 2010); and one study each targeted child health (Dodge et al. 2013) and health care access (Kneipp et al. 2011).

Most of the studies with low community engagement focused on either low-income populations (n=6) (Dodge et al. 2013; Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kneipp et al. 2011; Lassen et al. 2011; Zoellner et al. 2013), or ethnic minorities (n=5) (Andersen et al. 2013; Eades et al. 2012; Russell et al. 2010; Woods et al. 2013; Wright et al. 2013). One study (Kong et al. 2013) focused on obese youth.

The studies with low community engagement also targeted a wide range of ages and roles. Three studies focused on youth (Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013). One study focused on general populations (Zoellner et al. 2013) and one on adults (Woods et al. 2013). One study targeted blue-collar adult workers (Lassen et al. 2011). Three studies were aimed specifically toward women (Eades et al. 2009; Russell et al. 2010; Wright et al. 2013) and one toward men (Andersen et al. 2013).

As illustrated in Appendix 5, the studies in this sub-set were lower in community engagement most often because they merely consulted community members on design, rather than allowing members to take more collaborative or leading roles (n=6) (Dzewaltowski et al. 2010; Eades et al. 2012; Lassen et al. 2011; Russell et al. 2010; Wright et al. 2013; Zoellner et al. 2013); and/or consulted/informed/did not report on delivery (n=8) (Andersen et al. 2013; Dodge et al. 2013; Eades et al. 2012; Hoelscher et al. 2010; Kneipp et al. 2011; Kong et al. 2013; Woods et al. 2013; Zoellner et al. 2013). Three of the 12 studies reported consulting community members on the evaluation methods (Russell et al.

2010; Wright et al. 2013; Zoellner et al. 2013). The remaining nine studies either informed or did not otherwise describe involvement in the evaluation design.

A range of clinical measures, health/social measures and behaviours were assessed across the studies with low community engagement. These are summarised in Appendix 6. Overall, clinical and health/social measures showed beneficial effects or positive trends, while behavioural measures indicated a wider range of beneficial effects, positive trends or no change.

In summary, across all types of community engagement, there appeared to be a diverse range of health topics, populations under study and outcomes across studies that had a high, moderate and low extent of community engagement. While studies report mostly positive trends across all extents of community engagement, there is some evidence that more beneficial effects for health behaviours are reported where a high extent of community engagement is employed compared to moderate- or low-extents.

3.5.2 Children and young people

An analysis of different age groups identified that children and/or young people were the age group most often specifically targeted in this set of studies. Six studies focused specifically on community engagement strategies involving children and youth (Berg et al. 2009 (USA +,+); Bonell et al. 2010 (UK ++,+); Harper et al. 2009 (USA -,+); Hoelscher et al. 2010 (USA -,+); Wermert et al. 2012 (USA -,+); Wright et al. 2013 (USA +,+)). While the range of health topics and outcomes under study varied, the levels of community engagement in working with this age group were fairly similar.

Community engagement strategies were used to impact on a variety of health issues, including substance use/sexual health, obesity prevention and road traffic injury. Three of the six studies focused on sexual health and/or substance use. Bonell et al. (2010) aimed to impact on low-income and minority ethnic adolescents' substance abuse behaviours using a 'school ethos' approach designed to increase social inclusion and engagement. Berg et al. (2009) aimed to reduce or delay onset of drug and sexual risk behaviour in urban low-income minority ethnic adolescents. Harper et al. (2009) aimed to test the effectiveness of a community-based culturally and ecologically tailored HIV prevention intervention to Mexican-American female adolescents.

Two studies focused on obesity prevention. Hoelscher et al. (2010) evaluated an intervention to prevent childhood obesity with low-income adolescents. This was focused on building school and community partnerships and local decision making and capacity building related to physical activity and health promotion. Wright et al. (2013) aimed to promote physical activity and reduce body mass index amongst minority females aged 8 to 12 years in schools, utilising community stakeholder input to design and deliver physical activity, education, school policy and school environment changes.

One study by Wermert et al. (2012) aimed to impact on automobile injury rates by evaluating an intervention to promote teen safety belt use by employing peer-to-peer methodology in adolescents at high risk of car crashes.

The community engagement strategies employed in these studies generally assisted youth to become leaders within their communities, although the level of engagement across all stages of the projects varied. Berg et al. (2009) used staff training, individual and group work, and youth social networks in two summer and after-school projects to empower participants to envision and enact social interventions and advocacy at the individual, group and community levels. The

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youth involved developed interventions to impact on other youth and the broader community. Bonell et al. (2010) used combinations of strategies including external facilitators, manuals, needs surveys and staff training delivered over one year to enable schools to convene action teams which were locally flexible regarding actions to improve social inclusion. Harper et al. (2009) developed a culturally relevant HIV prevention intervention in collaboration with adolescent females from the local community using community-based participatory research (CBPR) and empowerment evaluation approaches. Hoelscher et al. (2010) employed evidence-based co-ordinated school health programme training, provision of materials and facilitator support visits plus the promotion of community partnerships that integrated community members and organisations into schools, local decision making and action, and best practices workshops; this was a direct comparison of community engagement versus none. Wright et al. (2013) used community-academic partnered participatory research, in which community stakeholders advised researchers on all aspects of research study design, recruitment, retention and dissemination of information. Wermert et al. (2012) trained student council members to be peer leaders of the project, in which they developed and implemented an ongoing peer-led safety belt campaign within the school.

A wide range of outcomes was examined across these studies. In terms of the impact on clinical measures, beneficial effects were noted for obesity reduction (Hoelscher et al. 2010) and for BMI in girls (Wright et al. 2013). There were also positive trends for waist circumference for girls and boys and for BMI in boys in the study by Wright et al. (2013). Only one study reported social status measures: Bonell et al. (2010) noted beneficial effects for feelings of security at school.

Several health behaviours were favourably changed across all studies focused on children and young people. Beneficial effects were shown for reduced marijuana use (Berg et al. 2009); safe sexual encounters, carrying condoms (Harper et al. 2009); and for daily physical activity, attending physical education classes and TV viewing in both girls and boys (Wright et al. 2013). Positive trends were reported for physical activity, food intake and sedentary activity (Hoelscher et al. 2010); reduced number of sexual partners and alcohol use (Berg et al. 2009); being teased or teasing others, or being in a fight or hurting others (Bonell et al. 2010). No change was noted for girls' or boys' participation in team sports (Wright et al. 2013).

Three studies measured self-efficacy, self-esteem or self-regard (Berg et al. 2009; Bonell et al. 2010; Harper et al. 2009). Berg et al. (2009) reported beneficial effects for community self-efficacy. Harper et al. (2009) reported beneficial effects for self-efficacy. Bonell et al. (2010) noted beneficial effects for a sense of achievement.

Knowledge, attitudes or intentions were also affected. Harper et al. (2009) noted beneficial effects for attitudes to condom use, positive peer norms and sexual communication, negative sexual beliefs and HIV/AIDS knowledge. Bonell et al. (2010) noted positive trends for liking school, expectations to attend university, and respondents' belief that they would try drugs, tobacco or alcohol in future.

The methodological quality varied across these studies. Three studies were at moderate risk of bias (Berg et al. 2009; Bonell et al. 2010; Wright et al. 2013). The remaining three studies were at high risk of bias ((Harper et al. 2009; Hoelscher et al. 2010; Wermert et al. 2012).

Overall, these studies indicate that interventions which incorporate community engagement, most often with young people acting in a collaborative or leadership capacity, leads to a positive direction of effect on attitudes,

intentions, knowledge and some behaviours relating to sexual health, substance use and healthy eating and physical activity. A beneficial or positive direction of effect was also described in self-efficacy. These findings should be considered in the light of the moderate to high risk of methodological bias operating across the studies, which may have influenced the studies' findings.

3.5.3 Gender-specific

3.5.3.1 Female-focused interventions

Five studies were targeted to women (Eades et al. 2012 (Australia -,+); Harper et al. 2009 (USA -,+); Kieffer et al. 2013 (USA +,++); Kneipp et al. 2011 (USA -,+); Russell et al. 2010 (USA -,+)). Studies focused on a range of health topics and were of moderate to low methodological quality; they tended to engage women in a collaborative or consultative role, resulting in an overall moderate level of community engagement.

The interventions provided specifically to women varied across a range of health topics. Two studies focused on cancer prevention. Eades et al. (2012) aimed to evaluate an intensive smoking cessation programme on smoking rates in Australian Aboriginal and Torres Strait Islander women. Russell et al. (2010) aimed to determine the effectiveness of interactive computer education and lay health advisor intervention on mammography screening in low-income African-American women. Harper et al. (2009) aimed to test the effectiveness of a community-based culturally and ecologically tailored HIV prevention intervention to Mexican-American female adolescents. Kieffer et al. (2013) aimed to develop a lay health worker intervention to promote a healthy lifestyle to increase healthy eating and prevent depression in pregnant Latinas in the US. Kneipp et al. (2011) aimed to evaluate the combination of public health nurse case management and Medicaid insurance knowledge skills training on increasing health care utilisation, improving ability to access the Medicaid system, and improving functional health status over time in low-income primarily African-American women with chronic health conditions.

The community engagement strategies involved women to a moderate extent, including both collaborative models, usually described as community-based participatory research (CBPR) methodology, and descriptions of consultation. For example, Harper et al. (2009) developed a culturally relevant HIV prevention intervention in collaboration with adolescent females from the local community using CBPR and empowerment evaluation approaches. Using CBPR principles, a community-based steering committee developed the study design, staffing plans and recruitment, retention, intervention and evaluation methods in the study by Kieffer et al. (2013). Also using CBPR principles, in the study reported by Kneipp et al. (2011), an advisory group was formed comprising academics, agency partners and community members. The advisory group was responsible for the design, recruitment, training, management and evaluation of the project, and intervention development and delivery. The remaining two studies were more consultative in nature. The intervention evaluated by Eades et al. (2012) was developed in consultation with members of the community, in addition to doctors and health care workers. Trained Aboriginal or Torres Strait Islander health care workers or midwives offered health education, social support and nicotine replacement therapy. The project described by Russell et al. (2010) employed a community advisory board of community members, representatives from government, faith-based and minority nursing organisations, and health and social services. The advisory board recommended some of the lay health advisors used to deliver the intervention, participated in a lay advisor recognition ceremony, identified sources

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for community resource referrals, participated in data analysis interpretation and communicated the study findings to their networks.

Sexual health, healthy eating, mental health and cancer prevention outcomes were favourably affected. Harper et al. (2009) noted statistically significant positive effects for sex related behaviours and carrying condoms for self-efficacy. Kieffer et al. (2013) demonstrated a beneficial effect for seven of ten health behaviour outcomes (vegetable intake, fibre intake, sugar intake, total fat, % calories from fat and sugar, % calories from saturated fat) and a non-significant but positive trend for the remaining three outcomes (calories, fruit intake and % calories from added sugar). Women were statistically significantly more likely to attend mammogram screening or to at least have made a forward stage change¹ within six months of the intervention studied by Russell et al. (2010). Finally, Eades et al. (2012) noted a positive trend for smoking cessation.

In terms of health or social measures, Kneipp et al. (2011) reported a beneficial effect on depressive symptoms over six months and a positive trend for functional status.

Harper et al. (2009) reported a beneficial effect for self-efficacy related to sexual health, but no change was noted for sexual assertiveness or sexual decision making. They also noted statistically significant positive effects for HIV/AIDS knowledge attitudes to condom use, peer norms and sexual communication, and negative sexual beliefs.

The methodological quality of the studies were judged to be at moderate (Harper et al. 2009; Kieffer et al. 2013) or high risk of bias (Eades et al. 2012; Kneipp et al. 2011; Russell et al. 2010).

In summary, interventions directed exclusively to women ranged across a variety of topics, but tended to involve women to a moderate extent in a collaborative or consultative role, and reported a majority of beneficial effects or positive trends for sexual health, healthy eating, mental health and cancer prevention outcomes. However, interpretation of these results should take into account the moderate to high risk of methodological bias in these studies.

3.5.3.2 Male-focused interventions

Two studies were directed toward men only: one study focused on strategies to promote condom use and HIV testing amongst heterosexual immigrant Latino men (Rhodes et al. 2011 (USA +,+)); the other study by Andersen et al. (2013) (Norway ++,++) evaluated a physical activity intervention to prevent diabetes in Pakistani immigrants living in Norway.

Both studies targeting males used a combination of formative research and collaborative development and delivery to tailor their interventions, although low and moderate levels of community engagement were described in these studies. Andersen et al. (2013) undertook formative research with focus groups of Pakistani immigrant men to understand their barriers to and facilitators of physical activity; the authors then developed an exercise intervention in collaboration with representatives from the target group. Rhodes et al. (2011) also started with formative research, and then used CBPR methods, working with community members to design, implement and evaluate an HIV/STI intervention.

¹ See 'stage change' in the Glossary.

In general, both studies demonstrated overall a majority of beneficial effects. Andersen et al. (2013) demonstrated beneficial effects for all anthropometric measures (weight, BMI and waist circumference). Three of four physical activity habits showed beneficial effects (total physical activity, moderate to vigorous physical activity, peak oxygen consumption), and the fourth (inactive time) showed a positive trend. Two of eight diabetes haematological risk factors showed beneficial effects (two-hour insulin resistance, two-hour C-peptide), and the remaining haematological outcomes showed positive trends. In the study by Rhodes and colleagues (2011), intervention participants were statistically more likely to undertake HIV testing and use condoms.

The methodological quality of the two studies focused on men were assessed to be at low (Andersen et al. 2013) and moderate risk of bias (Rhodes et al. 2011).

In summary, very few studies targeting men specifically were located. These studies employed fairly rigorous methods and described beneficial effects for HIV prevention and physical activity outcomes in ethnic minority men.

3.5.4 Low-income populations

In analysing specific aspects of disadvantage, we identified that 13 of the 28 included studies specifically focused on ethnic minorities, and seven studies focused on low-income or economically disadvantaged groups. Examining studies focused on minority ethnic groups was considered to be less useful for this review, for three reasons: (1) the ethnic groups under study were most often African-American or Hispanic, which are not relevant to the UK population; (2) three of the seven low-income studies also focused on ethnic minorities; and (3) ethnicity and poverty are potentially confounded. Thus we decided to analyse further only the seven studies focused on low-income populations (Berg et al. 2009 (USA +,+); Dodge et al. 2013 (USA +,++); Kneipp et al. 2011 (USA -,+); Lassen et al. 2011 (Denmark +,-); Martin et al. 2013 (USA -,++); Phillips et al. 2014 (UK +,+); and Russell et al. 2010 (USA -,+)). This set of studies targeted a wide range of health issues and participant ages, engaging the community on design delivery or evaluation in mostly collaboration or leadership roles. Four of the studies were at moderate and three at high risk of bias. Outcomes across the studies showed consistently positive trends, with a majority of outcomes reporting beneficial effects.

Three studies focused on healthy eating, directed at all ages. Lassen et al. (2011) evaluated the impact of a six-month participatory and empowerment-based intervention to improve blue-collar employees' dietary behaviours and changes in the workplace nutrition environment. Martin et al. (2013) aimed to evaluate the impact of a food pantry intervention to promote food security amongst low-income participants. The 'Well London' trial described by Phillips et al. (2014) aimed to use community engagement strategies to promote healthy eating in deprived neighbourhoods.

Two studies examined health care utilisation and resources access. The US study by Dodge et al. (2013) involved a brief parenting and health care resource access intervention intended to prevent the need for emergency medical visits for infants aged 12 months, with separate analyses for low-income families. Kneipp et al. (2011) aimed to evaluate the combination of public health nurse case management and Medicaid insurance knowledge skills training on increasing health care utilisation, improving ability to access Medicaid system, and improving functional health status over time in low-income women with chronic health conditions.

The remaining two studies focused on risk behaviour and screening adherence. Berg et al. (2009) aimed to reduce or delay the onset of drug and sexual risk behaviour

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in urban low-income minority ethnicity adolescents. Russell et al. (2010) aimed to determine the effectiveness of interactive computer education and a lay health advisor intervention on mammography screening in low-income women.

Across the set of studies focused on low-income groups, communities appeared to have a low to moderate level of involvement in projects - in effect, simple consultation or even no involvement rather than leadership and collaboration across design, delivery and evaluation. Interventions took place in school and community settings, and involved a range of community members and community organisations, which had a variety of roles.

Berg et al. (2009) used staff training, individual and group work, and youth social networks in two summer and after-school projects to empower participants to envision and enact social interventions and advocacy at the individual, group and community levels. The youth involved developed interventions to impact on other youth and the broader community.

Dodge et al. (2013) instigated two community advisory boards that monitored rates of family needs and experiences with services in an ongoing way to improve community service capacity. Service agencies also signed a memorandum of agreement requiring them to follow a preventive system of care. This necessitated collaboration across agencies, family-centred service delivery and joined-up care.

Using CBPR principles, in the study reported by Kneipp et al. (2011) an advisory group of academics, agency partners and community members was formed. The advisory group was responsible for the design, recruitment, training, management and evaluation of the project, and intervention development and delivery. In partnership with a trade union, the worksite intervention was guided by an ecological framework and targeted both individual and environmental levels. Employee and employer partners collaborated to design and implement strategies to promote healthy eating in the workplace.

In the Martin et al. (2013) study, three community agencies formed a collaboration with a university to help design and evaluate the 'Freshplace' food pantry intervention, which incorporated a client-centred motivational interviewing intervention.

In the study by Phillips et al. (2014), a collaboration of several community service and government organisations co-ordinated the local delivery of project components for promoting healthy eating. Local delivery was organised in collaboration with a local co-hosting statutory or voluntary sector organisation with knowledge about, and experience of working with, the community in that specific neighbourhood. The project described by Russell et al. (2010) employed a community advisory board of community members, representatives from government, faith-based and minority nursing organisations, and health and social services. The advisory board recommended some of the lay health advisors used to deliver the intervention, participated in a lay advisor recognition ceremony, identified sources for community resource referrals, participated in data analysis interpretation and communicated study findings to their networks.

A range of outcomes was measured across the seven studies focused on low-income groups. Three studies focused on healthy eating and physical activity outcomes, and found beneficial effects. Phillips et al. (2014) reported a beneficial effect for reducing unhealthy eating and physical activity and positive trends for fruit and vegetable intake. Martin et al. (2013) reported beneficial effects on fruit and vegetable consumption and food security. Lassen et al. (2011) noted beneficial effects on nutrient intake and a positive trend for improved healthy nutrients intake, basal metabolic rate and energy measures.

Health behaviours were positively influenced. Dodge et al. (2013) reported a beneficial effect for emergency medical care in intervention group infants at age 12 months. Women in the study described by Russell et al. (2010) were statistically significantly more likely to have made a forward stage change (according to the transtheoretical model of change) at six months and were also statistically more likely to attend mammogram screening within six months of the intervention.

Studies of self-efficacy and self-sufficiency reported beneficial effects. Berg et al. (2009) noted an increase in collective self-efficacy at the mid-point of the after-school intervention; this result was sustained at the end of the after-school intervention although it was not clear whether this result was also statistically significant. An evaluation of the 'Freshplace' food pantry intervention described a beneficial effect on self-sufficiency (Martin et al. 2013).

General health, well-being and functional status were measured in two studies. Phillips et al. (2014) noted a negative trend for general health and well-being measures. Kneipp et al. (2011) reported a beneficial effect on depressive symptoms over six months of the intervention; this positive trend continued to nine months but was not statistically significant. No changes in general health were noted.

The methodological quality of the studies ranged from moderate to high risk of bias. Four studies were judged to be at moderate risk of bias (Berg et al. 2009; Dodge et al. 2013; Lassen et al. 2011; Phillips et al. 2014); the remaining three studies were at high risk of bias (Kneipp et al. 2011; Martin et al. 2013; Russell et al. 2010).

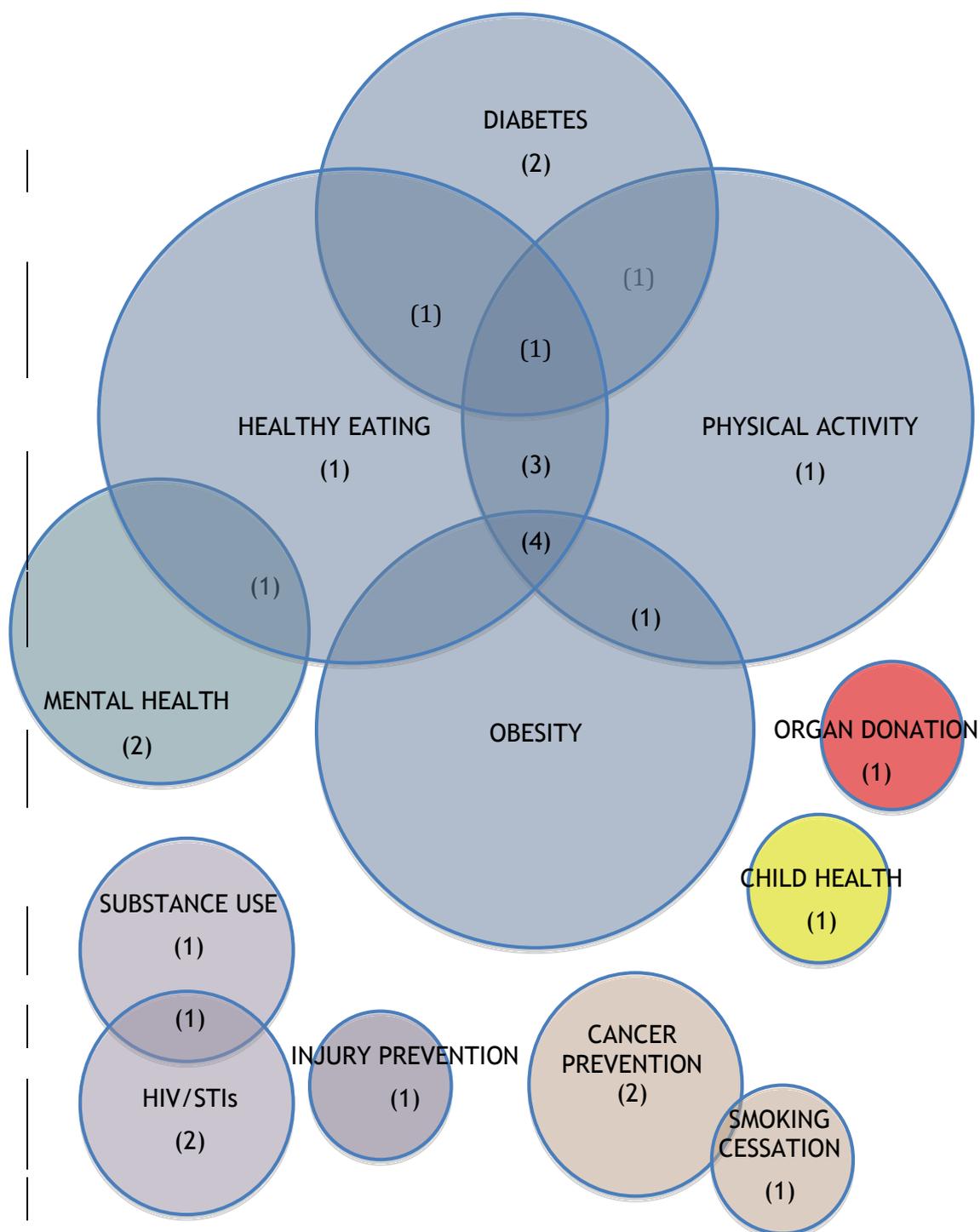
In summary, studies focused on low-income groups reported beneficial effects for a range of outcomes, including healthy eating/physical activity, health care utilisation/screening, depressive symptoms and self-esteem/self-efficacy; and mixed trends for general health and well-being. However these findings must be tempered by the methodological quality of the studies, the majority of which were at moderate or high risk of bias.

3.5.5 Health topic 'clusters'

The clustering of health topics by main area described by author and by intervention focus and/or outcomes indicated four main clusters and three standalone topics. This is illustrated in Figure 5.

The majority of studies clustered within healthy eating/physical activity, followed by smaller sets focused on mental health, risk behaviours such as STIs/substance abuse/injury prevention and cancer prevention. One study each focused on child health (Dodge et al. 2013) and organ donation (Andrews et al. 2012).

Figure 5: Health topic clusters



Studies are grouped according to these health topics and synthesised below.

3.5.5.1 Healthy eating/physical activity

The sixteen studies in this set were clustered together across four overlapping concepts. Four studies aimed to prevent diabetes (Andersen et al. 2013 (Norway

++,++); Islam et al. 2013 (USA +,+); Parikh et al. 2010 (USA +,+); Plescia et al. 2008 (USA -,+); four were concerned with obesity prevention or management (Dzewaltowski et al. 2010 (USA +,+); Hoelscher et al. 2010 (USA -,+); Kong et al. 2013 (USA +,+); Wright et al. 2013 (USA +,+)). A total of eleven studies either aimed to promote or evaluate healthy eating or provided it as an intervention component (Bergstrom et al. 2013 (Sweden ++,++); Dzewaltowski et al. 2010 (USA +,+); Islam et al. 2013 (USA +,+); Kieffer et al. 2013 (USA +,++); Kong et al. 2013 (USA +,+); Lassen et al. 2011 (Denmark +,-); Martin et al. 2013 (USA -,++); Phillips et al. 2014 (UK +,+); Plescia et al. 2008 (USA -,+); Woods et al. 2013 (USA -,+); Zoellner et al. 2013 (USA -, -)). Eleven studies aimed to promote or evaluate physical activity or utilised it as an intervention component (Andersen et al. 2013; Bergstrom et al. 2013; Cohen et al. 2013; Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013; Phillips et al. 2014; Plescia et al. 2008; Woods et al. 2013; Wright et al. 2013; Zoellner et al. 2013).

A wide range of disadvantaged groups were involved across this set of studies. Seven studies focused specifically on ethnic minorities, including Pakistani immigrants (Andersen et al. 2013), Korean Americans (Islam et al. 2013); American Latinas (Kieffer et al. 2013); Blacks and Hispanics (Parikh et al. 2010); African Americans (Plescia et al. 2008; Woods et al. 2013) and 'minority females' (Wright et al. 2013). Six studies described populations by socioeconomic disadvantage or low-income. Cohen et al. (2013) carried out a randomised controlled trial to determine whether using a community-based participatory approach with park directors and park advisory boards (PABs) could increase physical activity in local parks, and also assessed whether involving PABs would be more effective than working with park directors alone. Lassen et al. (2011) evaluated the impact of a six-month participatory and empowerment-based intervention to improve blue-collar employees' dietary behaviours and changes in the workplace nutrition environment. The 'Well London' trial described by Phillips et al. (2014) aimed to use community engagement strategies to promote healthy eating, physical activity and mental well-being in deprived neighbourhoods. Zoellner et al. (2013) carried out a randomised controlled pilot study, guided by CBPR principles, to determine the effectiveness of providing twice-weekly access to group fitness classes, with and without weekly nutrition and physical activity education sessions, in Caswell County, North Carolina, a rural region devoid of medical and physical activity resources. Hoelscher et al. (2010) evaluated an intervention to prevent childhood obesity with low-income adolescents. This focused on building school and community partnerships and local decision making and capacity building related to physical activity and health promotion. Martin et al. (2013) aimed to evaluate the impact of a food pantry intervention to promote food security amongst low-income participants.

Four studies directed interventions to children or adolescents (Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013; Wright et al. 2013); one study focused on people with intellectual disabilities (Bergstrom et al. 2013); the remainder focused on adult populations.

Across the set of studies focused on healthy eating and physical activity, only three were assessed to have a high extent of community engagement. Islam et al. (2013) reported a CBPR approach that guided development of the intervention. A coalition of community partners, researchers, health providers and community health workers engaged as active and equal partners in the research process, providing unique community knowledge, critical input and guidance during all phases of the study. Cohen et al. (2013) reported that park directors and park advisory boards were involved in survey adaptation, data collection and interpretation, and intervention design and implementation. Bilingual community health promoters

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(*promotoras*), were contracted through a minority health organisation, and other community members acted as data collectors. The *promotoras* helped refine data collection instruments, provided feedback throughout the data collection process and mentored local community data collectors. Parikh et al. (2010) described a community based participatory research project developed from a community-led initiative. In this project, a community action board of leaders, activists and residents developed and implemented a culturally appropriate diabetes intervention using peer leaders. They also collaborated in the development of data collection tools and methods.

A further five studies described a moderate extent of community engagement (Bergstrom et al. 2013; Kieffer et al. 2013; Martin et al. 2013; Phillips et al. 2014; Plescia et al. 2008). In the Bergström et al. (2013) study, communities were engaged in the design and the delivery of the intervention. To ensure appropriateness for a real-life setting, managers, caregivers and the Swedish National Association for Persons with Intellectual Disability co-operated with the development of the three intervention components. A health ambassador was appointed in each residence to provide health information to colleagues and to organise health-promoting activities for the residents; these health ambassadors were selected by the manager and caregivers themselves (Bergström et al. 2013). In the study by Kieffer et al. (2013), using CBPR principles, a community-based steering committee developed the study design, staffing plans and recruitment, retention, intervention and evaluation methods. In the Martin et al. (2013) study, three community agencies formed a collaboration with a university to help design and evaluate the 'Freshplace' food pantry intervention, which incorporated a client-centred motivational interviewing intervention. In the study by Phillips et al. (2014), a collaboration between several community service and government organisations co-ordinated the local delivery of project components for promoting healthy eating. Local delivery was organised in collaboration with a local co-hosting statutory or voluntary sector organisation with knowledge about, and experience of working with, the community in that specific neighbourhood. A community based participatory research model was applied to the Plescia et al. (2008) study. The community health centre was built by a regional health care system to serve the study population. A community-oriented primary care model was adopted to address the community's general health by involving participants in all steps of the process, including: defining the specific community of interest, assessing needs and assets, designing and implementing interventions, and evaluating and refining interventions. In the Plescia et al. (2008) study, an advisory committee was formed to participate in an extensive community assessment; it consisted of members from the board of a community-based substance abuse programme. This advisory committee grew into a coalition that also included the health care system, the county health department and other human service providers. The coalition later formed a partnership with a neighbourhood association, the members of which also became active in the coalition. Decisions were made by consensus and any conflicts were resolved via mediation with an external consultant. The consultant also provided recommendations to improve collaboration among the coalition members. Lay health advisors (LHAs) were selected by the leaders of 14 neighbourhood associations and three community-based organisations.

The remaining eight studies in this set described a low extent of community engagement. Andersen et al. (2013) undertook formative research with focus groups of Pakistani immigrant men to understand their barriers to and facilitators of physical activity; the authors then developed an exercise intervention in collaboration with representatives from the target group. Dzewaltowski et al. (2010) did not explicitly state that they employed a CBPR approach; however, the

investigators structured the intervention across three levels: (i) engagement with the community, government and the human service agency; (ii) engagement with after-school staff through training; (iii) (indirect) engagement at pupil level through designing or modifying existing after-school programmes (described as the after-school programme quality element). The engagement with the community, government and human service agency involved provision of technical assistance and contributions to salary costs for staff members; these staff members sat on various relevant committees (e.g. the district's Wellness council), co-ordinated the after-school staff training and worked with the schools' food service to improve the quality of snacks provided at after-school clubs. The programme quality element included a 30-minute session of physical activity, a healthy snack and a physical activity/nutrition educational experience. The programme quality element was delivered across 15 sessions in the autumn school term and 14 sessions in the spring term. In non-intervention schools, the usual after-school activities were delivered. The intervention ran over two school years and was delivered to the same year group (cross-sectional measurements were taken). Hoelscher et al. (2010) employed evidence-based co-ordinated school health programme training, provision of materials and facilitator support visits plus the promotion of community partnerships that integrated community members and organisations into schools, local decision making and action, and best-practices workshops; this is a direct comparison of community engagement versus none. In the study by Kong et al. (2013), parent and adolescent interviews on views and experiences about obesity were collected and a community advisory council (CAC) recruited from two participating urban New Mexico high schools. Thematic findings from the interviews were analysed with the CAC to develop culturally and developmentally appropriate intervention materials. In Lassen et al. (2011), in partnership with a trade union, the worksite intervention was guided by an ecological framework and targeted both individual and environmental levels. Employee and employer partners collaborated to design and implement strategies to promote healthy eating in the workplace. Woods et al. (2013) reported that, after selecting the type of intervention to implement, a community-university researcher working group reconvened at a further three summits to draft intervention concepts for review, refine intervention components and determine the research study design. Wright et al. (2013) used community-academic partnered participatory research, in which community stakeholders advised researchers in all aspects of research study design, recruitment, retention and dissemination of information. And finally, in the study by Zoellner et al. (2013), a 'partnership for a health community' committee was formed to allow community partners to provide feedback on the design of the study, the selection of the education curriculum, the logistics of providing group fitness and education classes, processes for randomisation and data assessment procedures.

A total of twelve of the sixteen studies reported clinical outcome measures; the majority were beneficial effects or positive trends. BMI was noted to have beneficial effects (Andersen et al. 2013; Hoelscher et al. 2010; Kong et al. 2013; Wright et al. 2013; Zoellner et al. 2013) and positive trends (Dzewaltowski et al. 2010; Islam et al. 2013; Bergstrom et al. 2013). Beneficial effects for weight reduction were also reported (Andersen et al. 2013; Parikh et al. 2010; Woods et al. 2013), as well as positive trends (Islam et al. 2013; Kong et al. 2013). One study noted a beneficial effect for percentage of body fat (Woods et al. 2013), and one study noted a positive trend for energy expended (Lassen et al. 2011). Studies measuring changes in waist circumference showed both beneficial effects (Andersen et al. 2013; Parikh et al. 2010) and no change (Bergstrom et al. 2013). Authors reported both positive trends (Islam et al. 2013; Woods et al. 2013) and

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no change between groups on measures of blood pressure (Parikh et al. 2010; Zoellner et al. 2013).

Measures of haematological values also reported overall positive trends. Andersen et al. (2013) reported positive trends for both fasting glucose and two-hour glucose. Similarly, Islam et al. (2013) reported a positive trend for glucose levels. Kong et al. (2013) and Parikh et al. (2010) reported conflicting results: the former reported a positive trend for glucose but a negative effect for fasting glucose, while the latter reported a positive trend for two-hour glucose but no change in fasting glucose. Andersen et al. (2013) also reported a positive trend for glycyated haemoglobin levels (measured by HbA1c). Parikh et al. (2010) reported no change between groups in glycyated haemoglobin levels. Kong et al. (2013) and Andersen et al. (2013) noted a positive trend for insulin levels; Andersen et al. (2013) also reported a beneficial effect for two-hour insulin levels. Andersen et al. (2013) and Kong et al. (2013) both reported a positive trend for insulin resistance. Andersen et al. (2013) noted a beneficial effect for two-hour C-peptide levels and a positive effect for fasting peptide levels. Kong et al. (2013) reported a positive trend for cholesterol and no change in triglycerides.

Andersen et al. (2013) described beneficial effects for moderate/vigorous physical activity measured by accelerometer and for peak V02 levels. Eades et al. (2012) reported a positive trend for cotinine-measures of smoking status. Self-reported physical activity, healthy eating, television/computer use and smoking were the health behaviours reported across 15 of the 16 studies in this set. One study noted a positive trend toward having health insurance coverage (Islam et al. 2013). In general, eleven separate beneficial effects for physical activity outcomes were reported in five studies (Andersen et al. 2013; Bergstrom et al. 2013; Cohen et al. 2013; Dzewaltowski et al. 2010; Wright et al. 2013). A total of 18 positive trends for physical activity were reported in seven studies (Andersen et al. 2013; Dzewaltowski et al. 2010; Hoelscher et al. 2010; Islam et al. 2013; Kong et al. 2013; Phillips et al. 2014; Zoellner et al. 2013). Two studies reported no change in three measures of physical activity (Parikh et al. 2010; Wright et al. 2013). Three negative trends were reported in two studies (Hoelscher et al. 2010; Plescia et al. 2008), and one study did not report findings for one physical activity measure (Dzewaltowski et al. 2010).

Five studies measured health and social outcomes, reporting mixed results (Bergstrom et al. 2013; Islam et al. 2013; Martin et al. 2013; Phillips et al. 2014; Zoellner et al. 2013). Bergstrom et al. (2013) reported no differences between groups in terms of life satisfaction. Three measures of mental health outcomes in the study by Islam et al. (2013) showed a positive trend. The study by Martin et al. (2013) noted a beneficial effect on food security. Phillips et al. (2014) reported a negative trend in general health and well-being measures. Zoellner et al. (2013) reported a negative trend for physical activity social support from both family and friends and a positive trend for nutrition social support from friends and no change in family social support. Health-related quality of life, although described as measured, was not reported.

Four studies reported mixed changes in self-efficacy or agency-related measures: Islam et al. (2013) reported a positive trend in self-efficacy between groups, as well as improved confidence in physical activity and nutrition, and reduced barriers to nutrition. Martin et al. 2013 noted a beneficial effect on self-sufficiency in relation to food security, and Parikh et al. (2010) described no change between groups on measures of self-efficacy. Zoellner et al. (2013) reported a decrease in physical activity self-efficacy, and no change in self-efficacy for nutrition.

Finally, measures of knowledge showed mixed effects. One study measured changes in diabetes knowledge, citing beneficial effects (Islam et al. 2013); positive trends were also noted for knowledge and practice related to healthy eating and physical activity in this study. Parikh et al. (2010) reported a positive trend for two healthy eating knowledge measures, one negative trend for healthy eating knowledge, and no change in four measures of healthy eating knowledge. Phillips et al. (2014) also reported a beneficial effect for participants' perception that the neighbourhood 'pulled together'.

The methodological quality of the studies varied across this set. Only two studies were judged to be at low risk of methodological bias (Andersen et al. 2013; Bergstrom et al. 2013). Six of the studies were moderate risk of bias (Islam et al. 2013; Kieffer et al. 2013; Kong et al. 2013; Parikh et al. 2010; Phillips et al. 2014; Wright et al. 2013). The remaining eight studies - half of the set - were assessed to be at high risk of bias. This calls for caution in the interpretation and application of the findings.

In summary, across the largest set of studies clustered around 'healthy eating/physical activity', some focused on diabetes or obesity prevention or management, but most focused on healthy eating or physical activity promotion. Ethnic minorities were the disadvantaged groups most often targeted, followed by those experiencing socioeconomic disadvantage or defined as low-income. In general, there were beneficial effects or positive trends for clinical anthropometric measures and health behaviours, but more mixed effects for some haematological measures, health or social status measures, self-efficacy and knowledge measures. The moderate to low methodological quality across this set of studies demands some caution in the interpretation and applicability of the findings.

3.5.5.2 Mental health

Three studies focused on mental health topics: two of the studies targeted economically deprived populations (Kneipp et al. 2011; Phillips et al. 2014), while the third was directed toward people with severe mental illness (Segal et al. 2011). Kneipp et al. (2011) (USA -,+) aimed to evaluate the combination of public health nurse case management and Medicaid insurance knowledge skills training to improve knowledge of and access to health care and Medicaid benefits. The 'Well London' trial described by Phillips et al. (2014) (UK +,+) aimed to use community engagement strategies to promote healthy eating, physical activity and mental well-being in deprived neighbourhoods. The study by Segal et al. (2011) (USA +,+) aimed to evaluate the effectiveness of consumer-operated service programmes for people with serious mental illness, provided in conjunction with community mental health agency services.

Two of the studies had a moderate extent of community engagement (Phillips et al. 2014; Segal et al. 2011), while the third study's community engagement was rated as low (Kneipp et al. 2011). Using CBPR principles, in the study reported by Kneipp et al. (2011) an advisory group comprised of academics, agency partners and community members was formed. The advisory group was responsible for the design, recruitment, training, management and evaluation of the project, and intervention development and delivery. In the study by Phillips et al. (2014), several community service and government organisations collaborated in order to co-ordinate the local delivery of project components. Local delivery was organised in collaboration with a local co-hosting statutory or voluntary sector organisation with knowledge about, and experience of working with the community in that specific neighbourhood. Two types of community engagement were evaluated in Segal et al. (2011): a board-and-staff-run consumer-operated service program

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(COSP) and a self-help agency (SHA). Both were compared with usual community mental health services. In the COSP structure, programme ideas were discussed and decided at member-attended community meetings. Staff, administrators and the organisation's governing board made all major organisational decisions, including those relating to budget and personnel actions. The board had a majority of consumers, and the COSP director was also a consumer. In the SHA structure, client participation in organisational decision making, peer networking and opportunities for involvement in local, state and national advocacy efforts was encouraged.

All three studies measured different health behaviour outcomes, showing mixed effects. Kneipp et al. (2011) reported beneficial effects for new healthcare visits and a positive trend for routine healthcare visits in the intervention group. The study by Phillips et al. (2014) showed beneficial effects for reducing unhealthy eating and positive trends for fruit and vegetable intake and physical activity. The study by Segal et al. (2011) noted a beneficial effect for social integration outcomes measured in the self-help agency intervention. However in the consumer-operated service provision condition, social integration measures showed a non-beneficial effect in the intervention group: in effect, the control condition of usual mental health service provision showed greater improvements. The authors speculate that the difference in these findings could be due to the 'top-down' approach of decision making in the intervention condition.

All three studies examined health or social measures. These showed generally positive trends, but in one case mixed effects. Kneipp et al. (2011) reported a statistically significant greater rate of decrease of depressive symptoms over 0-6 months in the intervention group ($p < 0.01$), and a non-significant but positive rate continuing to 9 months. No statistically significant between-group differences were noted in general health measures. And while a positive but non-significant change in functional status over the 9-month study period was noted in the intervention group, there was a statistically significant functional status change when results were averaged over the 9-month study period. The study by Phillips et al. (2014) showed negative trends for general health and well-being measures. The study by Segal et al. (2011) noted a negative effect for social integration in the intervention group of the consumer-operated intervention condition.

Only one study examined self-efficacy outcomes. As discussed above, the study by Segal et al. (2011) noted a beneficial effect for empowerment and self-efficacy in the self-help agency intervention, but a negative effect in the consumer-operated service provision condition.

Two of the studies were at moderate risk of bias (Phillips et al. 2014; Segal et al. 2011); the third was at high risk of bias. This suggests that some caution should be used in interpreting and applying the findings from these studies for use in mental health intervention development.

In summary, the studies focused on mental health were directed to diverse populations with and without mental illness, using a low to moderate amount of community engagement. While outcomes were generally positive, mixed effects were noted for health behaviours, health and social measures and self-efficacy. These studies were at high or moderate risk of methodological bias, which calls into question the robustness of their findings.

3.5.5.3 Risk behaviours: STIs, substance misuse, injury prevention

Five studies focused on influencing risk behaviours. Two studies focused exclusively on sexual risk behaviours (Harper et al. 2009 (USA -,+); Rhodes et al. 2011 (USA +,+)), one study examined substance use (Bonell et al. 2010 (UK ++,+)), and one

study addressed both sexual risk behaviour and substance use (Berg et al. 2009 (USA +,+)). One study focused on reducing traffic accidents by improving seat belt use (Wermert et al. 2012 (USA -,+)). Four studies focused on minority ethnic groups; the fifth was targeted at youth at risk of traffic accidents (Wermert et al. 2012). Two studies specified a focus on low-income populations (Berg et al. 2009; Bonell et al. 2010).

Berg et al. (2009) aimed to reduce or delay the onset of drug and sexual risk behaviour in urban low-income minority ethnicity adolescents. Bonell et al. (2010) aimed to affect low-income and minority ethnic adolescents' substance abuse behaviours using a 'school ethos' approach designed to increase social inclusion and engagement. Harper et al. (2009) aimed to test the effectiveness of a community-based culturally and ecologically tailored HIV prevention intervention to Mexican-American female adolescents. A study by Rhodes et al. (2011) focused on strategies to promote condom use and HIV testing amongst heterosexual immigrant Latino men. One study by Wermert et al. (2012) aimed to affect automobile injury rates by evaluating an intervention to promote teen safety belt use employing peer-to-peer methodology in adolescents at high risk of car crashes.

All five studies described a collaborative or leadership role for community members, indicating an overall moderately high level of community engagement. Berg et al. (2009) used staff training, individual and group work, and youth social networks in two summer and after-school projects to empower participants to envision and enact social interventions and advocacy at the individual, group and community levels. The youth involved developed interventions to affect other youth and the broader community. Bonell et al. (2010) used combinations of strategies including external facilitators, manuals, needs surveys and staff training delivered over one year to enable schools to convene action teams which were locally flexible regarding actions to improve social inclusion. Harper et al. (2009) developed a culturally relevant HIV prevention intervention in collaboration with adolescent females from the local community using CBPR and empowerment evaluation approaches. This may have reflected a more consultative role for community members; further evaluation of the processes involved will provide more detail. Rhodes et al. (2011) also started with formative research, and then used CBPR methods, working with community members to design, implement and evaluate an HIV/STI intervention. The study by Wermert et al. (2012) described researchers training student council members to be peer leaders of the project, in which they developed and implemented an ongoing peer-led safety belt campaign within the school.

Two studies reported beneficial effects on sex-related behaviours, including safe intercourse, condom use and carrying condoms (Rhodes et al. 2011; Harper et al. 2009); one study reported a beneficial effect on HIV testing (Rhodes et al. 2011). Berg et al. (2009) noted beneficial effects for reduced marijuana use. Wermert et al. (2012) described measuring seat belt use but did not report outcomes.

Three of the five studies measured and reported measures related to self-efficacy, citing positive results. Berg et al. (2009) reported a beneficial effect for community self-efficacy. Harper et al. (2009) described a beneficial effect for self-efficacy. Bonell et al. (2010) reported a positive trend in intervention participants' sense of achievement.

One study found beneficial effects for knowledge: Harper et al. (2009) reported beneficial effects for perceived peer norms, attitudes to sexual communication, condom use, HIV, AIDS and STI knowledge, and intentions to use condoms. One study reported positive trends for beliefs, attitudes and intentions: these included liking school, the intention to use substances, and expectations of attending

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university (Bonell et al. 2010). Outcome measures related to knowledge of proper safety belt use were not reported (Wermert et al. 2012).

The methodological quality of these five studies was fairly consistent: three studies rated as moderate risk of bias (Berg et al. 2009; Bonell et al. 2010; Rhodes et al. 2011); two studies rated as being at high risk of bias (Harper et al. 2009; Wermert et al. 2012).

In summary, studies focused on sexually transmitted infections and/or substance use in ethnic minorities, two of which were also identified as low-income groups. One study, which focused on injury prevention, targeted at-risk youth. Studies reported beneficial effects for self-efficacy/self-esteem, sexual health, substance use and seat belt use behaviours, and related beliefs, knowledge, attitudes and intentions. The studies were of moderate to high risk of bias, necessitating caution in the interpretation of these findings.

3.5.5.4 Cancer prevention

All three of the studies focused on cancer prevention were directed toward minority ethnic groups. The study by Chen et al. (2013) (USA +,+) aimed to evaluate a large-scale intervention to promote hepatitis B virus (HBV) testing among Hmong, Cambodian and Chinese American and Canadian adults. Eades et al. (2012) (Australia -,+) aimed to evaluate an intensive smoking cessation programme on smoking rates in Australian Aboriginal and Torres Strait Islander women. Russell et al. (2010) (USA -,+) aimed to determine the effectiveness of interactive computer education and lay health advisor intervention on mammography screening in low-income African-American women.

The extent of community engagement varied across these three studies, but overall there was a moderate to high extent of engagement. Chen et al. (2013) engaged community leaders who collaborated in the design, conduct and evaluation of the intervention; this was provided by lay health workers who were managed by a health professional from the same community. The intervention evaluated by Eades et al. (2012) was developed in consultation with members of the community, in addition to doctors and health care workers. Trained Aboriginal or Torres Strait Islander health care workers or midwives offered health education, social support and nicotine replacement therapy. The project described by Russell et al. (2010) employed a community advisory board of community members, representatives from government, faith-based and minority nursing organisations, and health and social services. The advisory board recommended some of the lay health advisors used to deliver the intervention, participated in a lay advisor recognition ceremony, identified sources for community resource referrals, participated in data analysis interpretation and communicated study findings to their networks.

Two of the three studies reported beneficial effects for health behaviours. Among Hmong and Cambodian participants, a beneficial effect for HBV serological testing and knowledge of HBV risk factors was reported (Chen et al. 2013). Women were statistically significantly more likely to have made a forward stage change at six months and were also more likely to attend mammogram screening within six months of the intervention studied by Russell et al. (2010). Finally, Eades et al. (2012) reported a positive trend for smoking cessation in the intervention group; however the difference was not statistically significant.

The methodological quality of these studies should encourage caution in the interpretation and applicability of the results for this data set: two of the three of the studies focused on cancer prevention were at high risk of bias.

Studies focused on cancer prevention amongst minority ethnic groups suggest that interventions developed and delivered with a moderate to high extent of community engagement have beneficial effects, or at least a positive trend towards screening behaviours and stage of change. However, the high risk of internal bias suggests that caution should be employed when considering the applicability of these results.

3.5.5.5 Child health

The study by Dodge et al. (2013) (USA +,++) evaluated a brief parenting and health care resource access intervention on preventing emergency medical visits for infants aged 12 months, particularly for low-income families in the US. In this study, two community advisory boards monitored rates of family needs and experiences with services in an ongoing way to improve community service capacity. Service agencies also signed a memorandum of agreement requiring them to follow a preventive system of care. This necessitated collaboration across agencies, family-centred service delivery and joined-up care. The authors reported a beneficial effect for emergency medical care in intervention group infants of low-income families at age 12 months. The study was assessed to be at moderate risk of bias. The quality of the study, and its lone status within this health topic, indicate that some caution should be used in the interpretation of its findings.

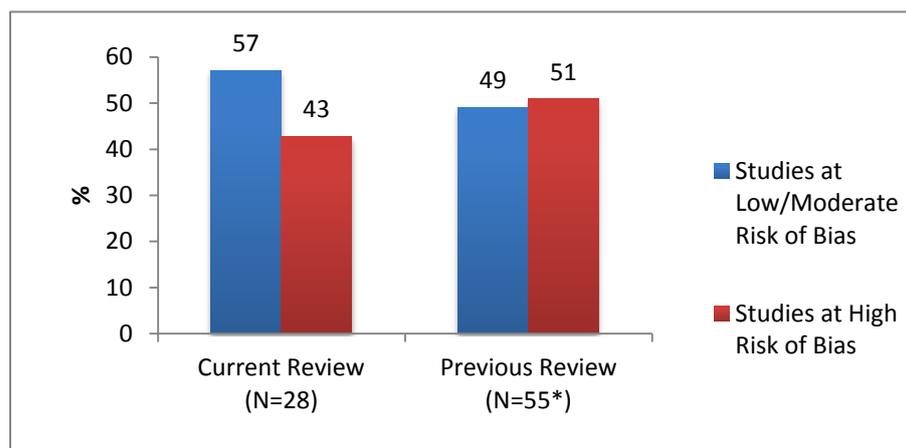
3.5.5.6 Organ donation

Andrews et al. (2012) (USA -,+) aimed to test the effectiveness of using lay health advisors to increase organ donation among African-American church members. Researchers involved the community by focusing on churches with which they had existing partnerships, engaging relevant community organisations, gaining commitment agreement with churches after consultation with church committees and pastors, and identifying a church co-ordinator who recruited peer leaders who were then trained to deliver the intervention. The reported outcomes indicated a positive trend for effectiveness, including verified enrolment in an organ donation programme and self-reported organ donation status. Positive trends for attitudes and intentions to donate were reported. The study was assessed to be at high risk of bias; this, and its status as the sole included study on the topic suggest that caution should be exercised in the interpretation and application of its findings.

3.6 Comparison of newly identified studies with similar studies in the previous review

A comparison between the studies of coalitions, collaborations and partnerships identified in this review to those identified in the original review of community engagement undertaken by O'Mara-Eves et al. (2013) was undertaken. An analysis of levels of community engagement between reviews, while informative, was not possible within the current review's timeframe. However, we compared the methodological study quality, populations, and health topics under study. In terms of methodological quality, analysis showed that slightly more studies in the current review rated low or moderate risk of bias, compared to those in the previous review, as illustrated in Figure 6 below.

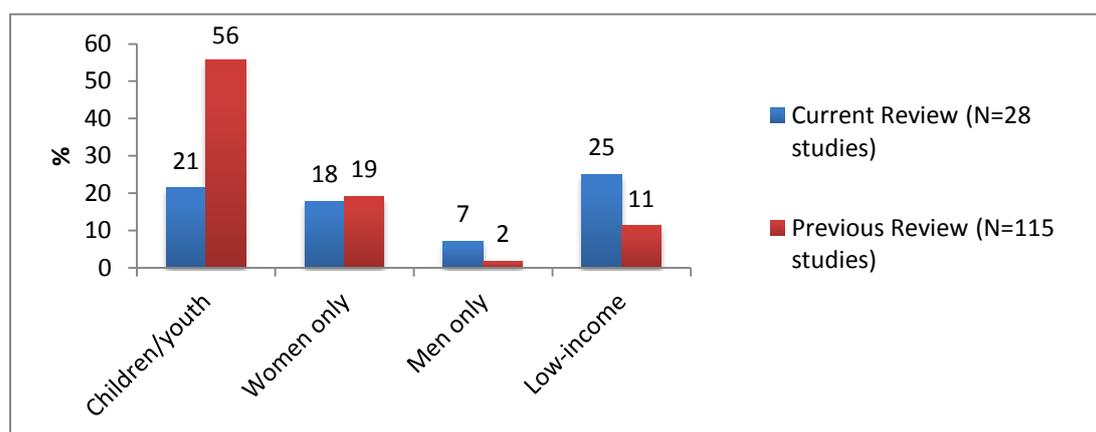
Figure 6: Risk of bias ratings: current versus previous review



*Note: The 55 studies with completed risk of bias assessment from the original review were those included in the meta-analysis.

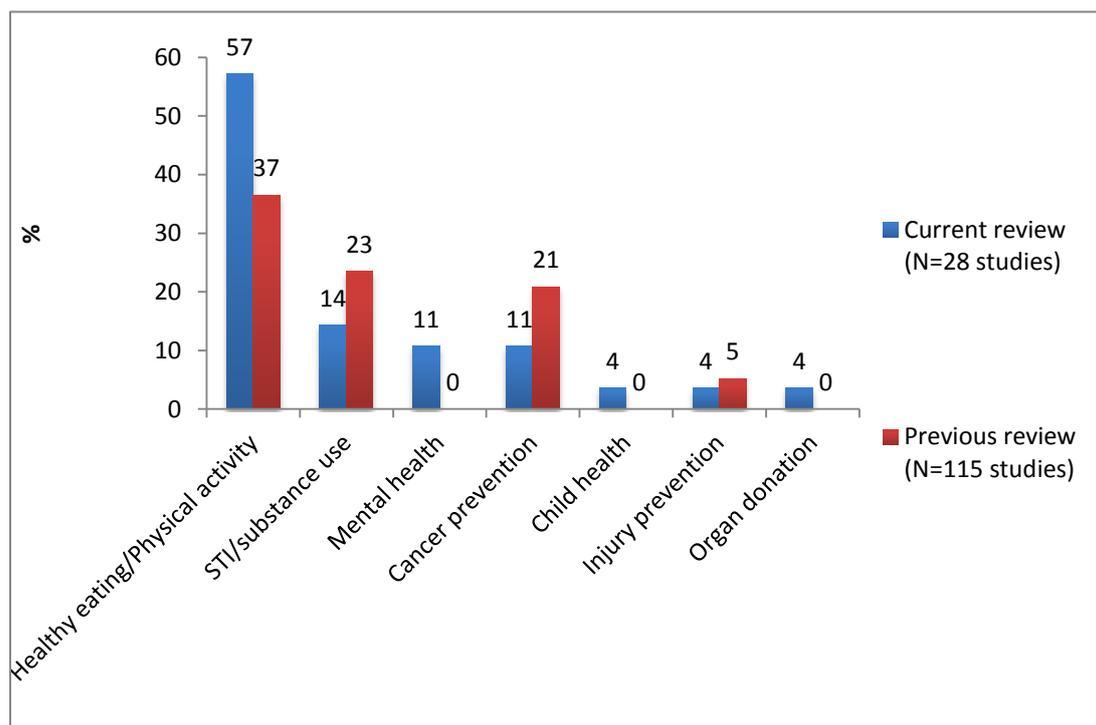
There were remarkable differences in some of the population characteristics studies, shown in Figure 7.

Figure 7: Population characteristics: current versus previous review



Only 21% of the studies in the current review focused on children and young people, compared to 56% in the original review. The proportion of studies focused on women only stayed the same (18% vs 19%). However, there appeared to be an increase in the number of studies focused on men only: 7% of the studies in the current review focused on men, compared to 2% in the previous review. Finally, studies focused on low-income populations appeared to account for a larger proportion of the dataset in the current review than in the previous review (25% v. 11%). It should be noted that these figures may differ so much because of differences in the way studies were coded; for example, the original review coded studies by the ages given and the current review coded on whether the study specifically targeted children and/or young people.

The proportions of health topics in the current review also changed, relative to the previous review. As illustrated in Figure 8, there was an increase in the proportions of studies focused on healthy eating/physical activity (57% vs 37%), mental health (11% vs 0%), and child health and organ donation (4% vs 0% for each, although these latter two topics are accounted for by only one study each in the current review). However, fewer studies were found in the current review related to sexually transmitted infections/substance use (14% vs 23%), cancer prevention (11% vs 21%), and injury prevention (4% vs 5%).

Figure 8: Health topics: current review versus previous review

In summary, a comparison of studies in the current review compared to those in the previous one indicates a slightly better overall methodological quality, and a higher proportion of studies focused on healthy eating/physical activity and mental health, but fewer studying sexually transmitted infections/substance use and cancer prevention.

3.7 Evidence statements for coalitions, collaborations or partnerships

RQ1. How effective are community engagement approaches at improving health and well-being and reducing health inequalities?

RQ2. Across disadvantaged groups, how effective are community engagement approaches at encouraging people to participate in activities to improve their health and well-being and realise their capabilities?

3.7.1 Evidence Statement 1: High community engagement

Evidence has been sourced from four health interventions that target disadvantaged American communities employing a 'high' extent of community engagement.¹⁻⁴

ES1.1 There is weak evidence from two studies for the beneficial effect of health interventions on clinical outcomes. One study reported evidence of beneficial trends for an intervention that targeted healthy eating and diabetes prevention, but the findings were not statistically significant (Islam et al. 2013). The other study on weight loss and diabetes prevention reported beneficial effects or trends for some outcomes (weight, waist circumference and blood glucose) but not for

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others (measures of systolic and diastolic blood pressure, fasting glucose and % haemoglobin) (Parikh et al. 2010).

ES1.2 One intervention study on healthy eating and diabetes prevention reported a positive trend on health/social measures but the findings did not reach statistical significance (Islam et al. 2013).

ES1.3 Overall, there was moderate evidence for the behavioural outcomes. Three studies reported beneficial effects and trends of beneficial effects for an interventions that targeted healthy eating (Cohen et al. 2013), diabetes prevention (Islam et al. 2013), and risky sexual behaviour (Berg et al. 2009). One study reported no change for a weight loss and diabetes prevention intervention (Parikh et al. 2010).

ES1.4 There was weak evidence for self-efficacy outcomes from three studies. Beneficial effects were reported in a intervention study on the reduction or delayed onset of drug and sexual risk behaviour (Berg et al. 2009) and beneficial trends in a study on weight loss and diabetes prevention (Islam et al. 2013). No change was reported in one study targeted healthy eating and diabetes prevention amongst Korean American adults (Parikh et al. 2010).

ES1.5 For the behavioural belief outcomes, there was weak evidence from two intervention studies that targeted healthy eating/weight loss and diabetes prevention. Islam et al. (2013) reported beneficial effects for one measure of diabetes knowledge and positive trends for five other measures (knowledge of portion control, knowledge of preparation/buying; knowledge of planning; attitude to how healthier foods taste). Parikh et al. (2010) reported positive trends for two measures (juice intake, soda intake), a negative trend for knowledge of benefits of lettuce salad and no change for four knowledge outcomes (physical activity, fat intake, fruit intake, diet sodium intake).

1. Berg et al. (2009) [+,+]
2. Cohen et al. (2013) [-,+]
3. Islam et al. (2013) [+,+]
4. Parikh et al. (2010) [+,+]

3.7.2 Evidence Statement 2: Moderate community engagement

Evidence has been sourced from 12 health interventions that target disadvantaged communities employing 'moderate' community engagement (9 US; 2 UK; 1 Sweden).¹⁻¹²

ES2.1 There was weak evidence for clinical outcomes from one intervention study on healthy eating/physical activity that reported a positive trend for waist circumference but not for BMI (Bergstrom et al. 2013).

ES2.2 Overall there was mixed evidence for health/social outcomes from five studies. Two studies reported beneficial effects for interventions that targeted food security and healthy eating (Martin et al. 2013) and substance use (Bonell et al. 2010). In the other studies, negative effects or trends of effects and no change were observed. In one study that examined a healthy eating, physical activity and mental health intervention, a negative trend was reported (Phillips et al. 2014). In another intervention that targeted mental health, a statistically significant negative effect was reported for social integration but there was no change for two assessments of mental well-being (Segal et al. 2011). One intervention study that targeted healthy eating and physical activity reported no change (Bergstrom et al. 2013).

ES2.3 Overall there was moderate evidence for behavioural outcomes. Eight studies reported beneficial effects or trends (intervention type reported in square brackets): Bonell et al. 2010 [substance use]; Chen et al. 2013 [cancer prevention]; Kieffer et al. 2013 [healthy eating, physical activity and mental health]; Rhodes et al. 2011 [HIV/STI]; Martin et al. 2013 [healthy eating and food security]; Phillips et al. 2014 [healthy eating, physical activity and mental health]; Andrews et al. 2012 [organ donation]; Harper et al. 2009 [HIV/STI]. Two studies reported mixed findings. Bergstrom et al. (2013) evaluated an intervention on healthy eating and physical activity and reported beneficial effects for physical activity, beneficial trends for food diversity and no change for plate model meals. Plescia et al. (2008) evaluated an intervention on diabetes prevention, physical activity and healthy eating and reported beneficial effects for fruit and vegetable consumption and negative effects or trends of effects for smoking and physical activity. In another study on seatbelt use, the data was measured but not reported (Wermert et al. 2012).

ES2.4 Overall, there was moderate evidence of beneficial effects on self-efficacy. Two studies reported beneficial effects or trends of beneficial effects (country, risk of bias and intervention type reported in square brackets): Bonell et al. 2010 [substance use]; Martin et al. 2013 [healthy eating and food security]. In Harper et al. (2009), beneficial effects for self-efficacy were reported but there was no difference between the intervention and control groups on sexual assertiveness and sexual decision making. In one study that targeted mental illness, a negative effect on self-efficacy outcomes was reported (Segal et al. 2011).

ES2.5 Overall, there was moderate evidence of beneficial effects for behavioural beliefs. Four studies reported beneficial effects or trends on behavioural beliefs (intervention type reported in square brackets): Bonell et al. 2010 [substance use]; Chen et al. 2013 [cancer prevention]; Harper et al. [HIV/STI] and Rhodes et al. 2011 [HIV/STI]. One study measured behavioural beliefs but did not report data for these outcomes: Wermert et al. 2012 [seatbelt use].

1. Andrews et al. 2012 [-,+]
2. Bergstrom et al. 2013 [++,++]
3. Bonell et al. 2010 [++,+]
4. Chen et al. 2013 (+,+)
5. Harper et al. 2009 [-,+]
6. Kieffer et al. 2013 [+,,+]
7. Martin et al. 2013 [-,,+]
8. Phillips et al. 2014 [+ ,+]
9. Plescia et al. 2008 [-,+]
10. Rhodes et al. 2011 [+ ,+]
11. Segal et al. 2011 [+ ,+]
12. Wermert et al. 2012 [-,+]

3.7.3 Evidence Statement 3: Low community engagement

Evidence has been sourced from 12 health interventions (9 US; 1 Australian; 1 Danish; 1 Norwegian) that targeted disadvantaged communities employing 'low' community engagement.¹⁻¹²

ES3.1 Overall there was strong evidence of beneficial effects for clinical outcomes. Seven studies reported beneficial effects or trends (intervention type reported in square brackets): Anderson et al. 2013 [diabetes prevention and physical activity]; Dziewaltowski et al. 2010 [obesity prevention/management]; Eades et al. 2012 [cancer prevention]; Hoelscher et al. 2010 [obesity prevention/management and physical activity]; Lassen et al. 2011 [healthy eating]; Woods et al. 2013 [healthy

eating and physical activity]; Zoellner et al. 2013 [healthy eating and physical activity]. In a study on obesity prevention/management and physical activity, Wright et al. (2013) reported beneficial effects or trends for BMI but there was no difference between the intervention and control groups on waist circumference for girls and boys.² Two measures were assessed but not reported (blood pressure changes in girls and boys). In a study on obesity prevention/management, healthy eating and physical activity, Kong et al. (2013) reported beneficial effects or trends for six measures (BMI; waist circumference; moderate or vigorous physical activity; good cholesterol; fasting insulin, insulin resistance index), and a negative effect for fasting glucose.

ES3.2 Overall, there is moderate evidence for the beneficial effects of health interventions on health/social measures. Two studies that targeted access to health care (Kneipp et al. 2011) and cancer prevention (Russell et al. 2010) reported beneficial effects or trends on health/social measures. Zoellner et al. (2013) reported positive trends for social support for physical activity and for nutrition. Quality of life was also assessed but the data for this outcome was not reported.

ES3.3 Overall there is mixed evidence for the beneficial effect of health interventions on behavioural outcomes. Six studies reported beneficial effects or trends on behavioural outcomes (intervention type reported in square brackets): Anderson et al. 2013 [diabetes prevention and physical activity]; Dodge et al. 2013 [child health], Cohen et al. 2013 [physical activity]; Kneipp et al. 2011 [healthcare utilisation]; Lassen et al. 2011 [healthy eating]; Russell et al. 2010 [cancer prevention]. Five studies reported mixed findings including a combination of positive and negative or no between-group intervention effects: Dzewaltowski et al. 2010 [obesity prevention or management]; Hoelscher et al. 2010 [obesity prevention/management and physical activity]; Kong et al. 2013 [obesity prevention/management, healthy eating and physical activity]; Wright et al. 2013 [obesity prevention/management and physical activity]; Zoellner et al. 2013 [healthy eating and physical activity].

ES3.4 Only one study assessed self-efficacy outcomes. In a study on healthy eating and physical activity, Zoellner et al. (2013) reported a negative trend for physical activity self-efficacy and no difference between groups on self-efficacy for nutrition.

ES3.5 No included studies assessed the impact of health interventions on behavioural beliefs.

1. Andersen et al. 2013 [++, ++]
2. Dodge et al. 2013 [+ ,++]
3. Dzewaltowski et al. 2010 [+ ,+]
4. Eades et al. 2012 [- ,+]
5. Hoelscher et al. 2010 [- ,+]
6. Kneipp et al. 2011 [- ,+]
7. Kong et al. 2013 [+ ,+]
8. Lassen et al. 2011 [+ , -]
9. Russell et al. 2010 [- ,+]
10. Woods et al. 2013 [- ,+]
11. Wright et al. 2013 [+ ,+]

² Wright et al. (2013) only report results stratified by gender. These are essentially 'double counted' in this report.

12. Zoellner et al. 2013 [-, -]

3.7.4 Evidence Statement 4: Community engagement with children and youth

Evidence has been sourced from six health interventions involving children and youth from disadvantaged communities.¹⁻⁶

ES4.1 Overall, there was weak evidence for clinical outcomes. One study that targeted childhood obesity and physical activity reported beneficial effects (Hoelscher et al. 2010). In another study on obesity prevention/management and physical activity, Wright et al. (2013) reported mixed findings, with beneficial effects or positive trends for BMI in girls and boys respectively, and no difference between groups on waist circumference in girls or boys.

ES4.2 One intervention study on substance misuse reported a beneficial effect for a health/social outcome (Bonell et al. 2010).

ES4.3 Overall, there is moderate evidence for behavioural outcomes. Three studies reported beneficial effects or trends on behavioural outcomes: Bonell et al. 2010; Harper et al. 2013; Berg et al. 2009. One study reported beneficial effects or trends of beneficial effects for some behavioural outcomes (had breakfast; number of fruit and vegetables; unhealthy food index; TV usage; computer usage; number of sugar-sweetened beverages; healthy food index; engagement in vigorous physical activity (days); played outdoors; played sports; played video games) and negative trends for others (had milk; engagement in at least 30 minutes of physical activity; organised physical activity). In an intervention on obesity prevention/management and physical activity, Wright et al. (2013) reported, for both girls and boys, positive effects for TV viewing, physical activity, attendance at PE class, and no change for four outcomes: computer use and participation in team sports.

ES4.4 Overall, there was moderate evidence for self-efficacy outcomes. Two studies reported beneficial effects or trends on self-efficacy outcomes for interventions that targeted risky sexual behaviour (Berg et al. 2009) and substance misuse (Bonell, 2010). In an HIV-prevention intervention, Harper et al. (2009) reported beneficial effects for self-efficacy and no difference between groups for sexual assertiveness and sexual decision making.

ES4.5. There was moderate evidence reported in two studies of beneficial effects on behavioural beliefs for interventions that targeted risky sexual behaviour (Bonell et al. 2010) and HIV prevention (Harper et al. 2009). A behavioural outcome was measured in one study that evaluated an intervention on seatbelt, use but data for this outcome was not reported (Wermert et al. 2012).

1. Berg et al. 2009 [+ , +]
2. Bonell et al. 2010 [++ , +]
3. Harper et al. 2009 [- , +]
4. Hoelscher et al. 2010 [- , +]
5. Wermert et al. 2012 [- , +]
6. Wright et al. 2013 [+ , +]

3.7.5 Evidence Statement 5: Community engagement with women

Evidence has been sourced from five health interventions (4 US, 1 Australian) that targeted women from disadvantaged communities exclusively.¹⁻⁵

ES5.1 There was weak evidence from one study for the beneficial effect of health interventions on clinical outcomes. Eades et al. (2012) reported a positive trend

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for the beneficial effect of a smoking cessation intervention on smoking (in Review 1, this was regarded as a clinical measure as it was validated through urine tests).

ES5.2 There was moderate evidence of beneficial effects for health/social outcomes reported in two studies: Kneipp et al. 2011 [nurse case management and skills training on increasing health care utilisation]; Russell et al. 2010 [mammography screening].

ES5.3 There was strong evidence of beneficial effects or trends for behavioural outcomes reported in four studies: Harper et al. 2009 [sexual risk behaviours]; Kieffer et al. 2013 [healthy eating, physical activity and mental health]; Kneipp et al. 2011 [nurse case management and skills training on increasing health care utilisation]; Russell et al. 2010 [mammography screening].

ES5.4 Only one included study assessed self-efficacy. In a study on sexual risk behaviours, beneficial effects were reported for self-efficacy but there were no differences between groups for sexual assertiveness and sexual decision making (Harper et al. 2009).

ES5.5 Only one included study assessed behavioural beliefs and reported beneficial effects for an intervention on sexual risk behaviours (Harper et al. , 2013 [sexual risk behaviours]).

1. Eades et al. 2012 (-,+)
2. Harper et al. 2009 (-,+)
3. Kieffer et al. 2013 (+,++)
4. Kneipp et al. 2011 (-,+)
5. Russell et al. 2010 (-,+)

3.7.6 Evidence Statement 6: Community engagement with men

Evidence has been sourced from two health interventions (1 US; 1 Norwegian) that targeted men from disadvantaged communities exclusively.¹⁻²

ES6.1 Only one included study assessed clinical outcomes and reported beneficial effects and trends for an intervention on diabetes prevention and physical activity (Andersen et al. 2013).

ES6.2 No included studies assessed the impact of health interventions on health/social measures.

ES6.3 Overall there was moderate evidence of beneficial effects on behavioural outcomes. Two studies reported beneficial effects or trends for interventions on risky sexual behaviours (Rhodes et al. 2011) and physical activity (Andersen et al. 2013).

ES6.4 No included studies assessed the impact of health interventions on self-efficacy outcomes.

ES6.5 No included studies assessed the impact of health interventions on behavioural beliefs.

1. Andersen et al. 2013 [++, ++]
2. Rhodes et al. 2011 [+ , +]

3.7.7 Evidence Statement 7: Community engagement with low-income populations

Evidence has been sourced from seven health interventions (5 US; 1 UK; 1 Danish) which focused on low-income or economically disadvantaged groups from disadvantaged communities.¹⁻⁷

ES7.1 There was weak evidence from one healthy eating intervention study that reported a beneficial trend on clinical outcomes (Lassen et al. 2011).

ES7.2 There was moderate evidence for the beneficial effects of health interventions on health/social outcomes. In three interventions on increasing health care utilisation (Kneipp et al. 2011), mammography screening (Russell et al. 2010) and food security (Martin et al. 2013), beneficial effects or trends were reported. In one study on healthy eating, physical activity and mental well-being, negative effects on health/social outcomes were reported (Phillips et al. 2014).

ES7.3 Overall, there was strong evidence for the beneficial effect of health interventions on behavioural outcomes. All of the studies included in this section reported beneficial effects or trends: Berg et al. 2009 [substance use prevention]; Dodge et al. 2013 [infant emergency care]; Kneipp et al. 2011 [mental health]; Lassen et al. 2011 [healthy eating]; Martin et al. 2013 [healthy eating/food security]; Phillips et al. 2014 [healthy eating and mental well-being]; and Russell et al. 2010 [mammography screening].

ES7.4 There was moderate evidence for the beneficial effects of health interventions on self-efficacy. Included interventions targeted substance misuse and risky sexual behaviours (Berg et al. 2009) and healthy eating and food security (Martin et al. 2013).

ES7.5 No included studies assessed the impact of health interventions on behavioural beliefs.

1. Berg et al. 2009 [+ , +]
2. Dodge et al. 2013 [+ , ++]
3. Kneipp et al. 2011 [- , +]
4. Lassen et al. 2011 [+ , -]
5. Martin et al. 2013 [- , ++]
6. Phillips et al. 2014 [+ , +]
7. Russell et al. 2010 [- , +]

3.7.8 Evidence Statement 8: community engagement and health topic clusters: healthy eating/physical activity

Sixteen studies (12 US; 1 UK; 1 Danish; 1 Swedish; 1 Norwegian) were categorised as interventions that targeted healthy eating/physical activity.¹⁻¹⁶ Four studies aimed to prevent diabetes (Andersen et al. 2013; Islam et al. 2013; Parikh et al. 2010; Plescia et al. 2008); four were concerned with obesity prevention or management (Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013; Wright et al. 2013); eleven studies either aimed to promote or evaluate healthy eating or provided it as an intervention component (Bergstrom et al. 2013; Dzewaltowski et al. 2010; Islam et al. 2013; Kieffer et al. 2013; Kong et al. 2013; Lassen et al. 2011; Martin et al. 2013; Phillips et al. 2014; Plescia et al. 2008; Woods et al. 2013; Zoellner et al. 2013); and eleven studies aimed to promote or evaluate physical activity or utilised it as an intervention component (Andersen et al. 2013; Bergstrom et al. 2013; Cohen et al. 2013; Dzewaltowski et al. 2010; Hoelscher et al. 2010; Kong et al. 2013; Phillips et al. 2014; Plescia et al. 2008; Woods et al. 2013; Wright et al. 2013; Zoellner et al. 2013).

Three of these studies took place among identified low-income groups (Lassen et al. 2011; Martin et al. 2013; Phillips et al. 2014), while six studies had ethnicity as the prime characteristic of inequality (Andersen et al. 2013; Islam et al. 2013; Kieffer et al. 2013; Parikh et al. 2010; Plescia et al. 2008; Woods et al. 2013).

ES8.1 Moderately strong evidence exists from seven studies of significant beneficial effects on some clinical measures: Andersen et al. 2013 [diabetes prevention];

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Hoelscher et al. 2010 [obesity prevention/management and physical activity]; Kong et al. 2013 [obesity prevention/management, healthy eating and physical activity]; Parikh et al. 2010 [diabetes prevention]; Woods et al. 2013 [healthy eating and physical activity]; Wright et al. 2013 [obesity prevention/management and physical activity]; Zoellner et al. 2013 [healthy eating and physical activity]. However, with the exception of Hoelscher and colleagues' study, which only reported significant intervention impacts on clinical outcomes, these were reported alongside non-significant positive trends. Kong and colleagues' study (2013) provided a further exception, where significant positive intervention impacts in terms of BMI and waist circumference were reported alongside non-significant positive trends in terms of weight and blood glucose levels, and non-significant negative trends in terms of blood insulin levels. Four further studies reported positive non-significant trends in terms of clinical outcomes, but we noted mixed findings, with beneficial effects for some clinical outcomes but not others (Bergstrom et al. 2013; Dzewaltowski et al. 2010; Islam et al. 2013; Lassen et al. 2011).

ES8.2 There was weak evidence for beneficial effects and trends on health/social outcomes. Of the five studies that collected these measures (Bergstrom et al. 2013 [healthy eating and physical activity]; Islam et al. , 2013 [diabetes prevention and healthy eating]; Martin et al. 2013 [food security and healthy eating]; Phillips et al. 2014 [healthy eating, physical activity and mental well-being]; Zoellner et al. 2013 [healthy eating and physical activity]), only Martin and colleagues reported a significant positive intervention impact on health/social outcomes (food security). One study reported a negative trend (Phillips et al. 2014), another reported a positive trend (Islam et al. , 2013, another reported no change (Bergstrom et al. 2013) while Zoellner and colleagues (2013) reported mixed impacts.

ES8.3 Almost all 16 studies on healthy eating/physical activity included behavioural outcomes and overall there was strong evidence for beneficial effects and trends on behavioural outcomes (Woods et al. 2013 did not examine behavioural outcomes). Cohen and colleagues' study (2013 [physical activity]) was distinctive in reporting only significant beneficial intervention impacts on behaviour (park users and physical activity), while Dzewaltowski et al. (2010 [physical activity, healthy eating]) collected a greater number of measures than the three significant positive intervention impacts that were reported. A further seven studies reported positive impacts and trends on behavioural outcomes: Andersen et al. 2013 [obesity prevention/management and healthy eating and physical activity]; Bergstrom et al. 2013 [healthy eating and physical activity] Islam et al. 2013 [diabetes prevention and healthy eating]; Kieffer et al. 2013 [diabetes prevention]; Lassen et al. 2011 [healthy eating]; Phillips et al. 2014 [healthy eating, physical activity and mental well-being]; Wright et al. 2013 [obesity prevention/management and physical activity]. Four studies reported mixed effects, with some negative trends in behaviours (Hoelscher et al. 2010 [obesity prevention/management and physical activity]; Kong et al. 2013 [obesity prevention/management, healthy eating and physical activity]; Plescia et al. 2008 [diabetes prevention, physical activity and healthy eating]; Zoellner et al. 2013 [healthy eating and physical activity]), with negative trends for measures including physical activity, calories consumed and dietary quality and diversity. In addition, one study found a significant negative result in terms of smoking rates (Plescia et al. 2008). One study found no change in either of the two behavioural outcomes measured (Parikh et al. 2010).

ES8.4 The evidence on intervention impacts on self-efficacy outcomes was mixed. One study, Martin et al. 2013 [food security and healthy eating], reported a significant positive intervention effect; Islam and colleagues' study (2013) suggested positive trends that were not statistically significant; Parikh and

colleagues' study (2010) reported no change on self-efficacy outcomes; while Zoellner and colleagues' study (2013) presented a mixed picture including some negative results for selected domains of self-efficacy.

ES8.5 Two studies considered knowledge, attitudes and intentions in their outcomes, giving a mixed picture. In one study, there was evidence of statistically significant increases in diabetes knowledge (Islam et al. 2013, [diabetes prevention]) and some positive trends in other outcomes in this domain. The evidence presented in Parikh and colleagues' study (2010) presented an inconsistent pattern, with some positive and negative trends, as well as measures for which there was no measureable change.

1. Andersen et al. 2013 (++,++)
2. Bergstrom et al. 2013 (++,++)
3. Cohen et al. 2013 (-,+)
4. Dzewaltowski et al. 2010 (+,+)
5. Hoelscher et al. 2010 (-,+)
6. Islam et al. 2013 (+,+)
7. Kieffer et al. 2013 (+,++)
8. Kong et al. 2013 (+,+)
9. Lassen et al. 2011 (+,-)
10. Martin et al. 2011 (-,++)
11. Parikh et al. 2010 (+,+)
12. Phillips et al. 2014 (+,+)
13. Plescia et al. 2008 (-,+)
14. Woods et al. 2013 (-,+)
15. Wright et al. 2013 (+,+)
16. Zoellner et al. 2013 (-,-)

3.7.9 Evidence Statement 9: Community engagement and health topic clusters: mental health

Two of the studies (1 UK, 1 US) focused on mental health targeted economically deprived populations, while the third (US) was directed toward people with mental illness.¹⁻³ Kneipp et al. (2011) aimed to evaluate the combination of public health nurse case management and Medicaid insurance knowledge and skills training to improve knowledge of and levels of access to health care and Medicaid benefits (including access to mental health care). The Well-London trial described by Phillips et al. (2014) aimed to use community engagement strategies to promote healthy eating, physical activity and mental well-being in deprived neighbourhoods. The study by Segal et al. (2011) aimed to evaluate the effectiveness of consumer-operated service programmes for people with serious mental illness, provided in conjunction with community mental health agency services.

ES9.1 None of these studies with a focus on mental health assessed the impact of health interventions on clinical measures (measures of mental health are not considered clinical in Review 1).

ES9.2 There was mixed evidence in terms of intervention impacts on health/social measures. Kneipp and colleagues (2011) found significant positive intervention impacts on depressive symptoms, and non-significant improvements in general health and functional health. Phillips and colleagues (2014) found a small downward trend in terms of participant mental health using two measures. A third study reported moderately (non-significant) beneficial effects for some health/social outcomes (Brief Psychiatric Rating Scale and hopelessness) but negative effects for others (social integration) (Segal et al. 2011).

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ES9.3 Two studies examined behavioural outcomes, reporting moderately beneficial effects. Kneipp and colleagues (2011) found significant positive intervention impacts on the number of new mental health visits made, and a moderately beneficial (non-significant) impact on the number of routine visits made. Phillips and colleagues (2014) recorded a significant intervention effect in an unhealthy eating index, and a non-significant positive trend in terms of physical activity and a further measure of healthy eating.

ES9.4 Only one study examined self-efficacy, and this reported significant negative effects for two measures (Segal et al. 2011).

ES9.5 No studies assessed the impact of health interventions on behavioural beliefs.

1. Kneipp et al. 2011 (-,+)
2. Phillips et al. 2014 (+,+)
3. Segal et al. 2011 (+,+)

3.7.10 Evidence Statement 10: Community engagement for health topic clusters: risk behaviours

Five studies (4 US; 1 UK) focused on influencing risk behaviours.¹⁻⁵ Two studies focused exclusively on sexual risk behaviours (Harper et al. 2009; Rhodes et al. 2011), one study examined substance use (Bonell et al. 2010), and one study addressed both sexual risk behaviour and substance use (Berg et al. 2009). A fifth study focused on reducing traffic accidents by improving seat belt use (Wermert et al. 2012). Four studies focused on minority ethnic groups; the fifth was targeted at youth at risk of traffic accidents (Wermert et al. 2012). Two studies also specified a focus on low-income populations (Berg et al. 2009; Bonell et al. 2010).

ES10.1 None of the studies focusing on risk behaviours assessed the impact of health interventions on clinical measures of health.

ES10.2 Only one study examined health and social outcomes and reported beneficial effects (Bonell et al. , 2010). This study aimed at improving school ethos as a means for reducing substance use, and found a significant improvement in feeling safe at school among children in intervention schools.

ES10.3 There was moderate evidence of positive impact of health interventions on health behaviours. One study examined behavioural outcomes and reported marginally beneficial effects (Bonell et al. , 2010). Bonell and colleagues reported borderline statistically significant beneficial outcomes in behaviour around behavioural conduct in schools (teasing others; hurting others; being teased; been in a fight) in an intervention aimed at improving school ethos as a means of reducing substance use. One study measured behavioural outcomes but did not report the data in full (Wermert et al. , 2012). Two studies found strong evidence for beneficial effects on behavioural outcomes: one found significant impacts on the frequency of carrying condoms and number of partners (Harper et al. 2009) while a second found significant effects on HIV testing and condom usage (Rhodes et al. , 2011); Harper and colleagues also found a positive (non-significant) trend in terms of self-reported condom use. Berg and colleagues (2009) reported significant intervention impacts on marijuana use and non-significant trends in terms of reduced alcohol consumption and reduced number of sexual partners.

ES10.4 There was strong evidence from two studies that reported beneficial effects on self-efficacy outcomes (Berg et al. 2009; Harper et al. 2009) and positive (non-significant) trends in a third (Bonell et al. 2010). In Berg and colleagues' study, young people reported significant intervention impacts in terms of 'community self-efficacy', while in Harper and colleagues' study they found significant

intervention impacts on young women's self-efficacy, but found little change in terms of their decision-making capabilities or their assertiveness in terms of sex. Bonell and colleagues (2010) found positive trends in schoolchildren's worries around abilities to do work, sense of achievement and perceptions of getting on well with their teacher.

ES10.5 There was strong evidence from one study that reported beneficial effects on behavioural beliefs (Harper et al. 2009) and moderate evidence from a second (Bonell et al. 2010). In Harper's study positive intervention impacts were found across eight measures: perceived peer norms, sexual communication, condom attitudes, attitudes regarding whether leading on justifies force, attitudes regarding token refusal of sex, HIV/AIDS knowledge, STI knowledge and plans to use condoms (Harper et al. 2013). In the study by Bonell et al., there was moderate (non-significant) evidence of intervention impacts on six measures, not all of which were directly related to health: attitudes towards school, attitudes towards truanting, higher education expectations, expectation of whether they would try drugs, expectation of whether they would try smoking, expectation of whether they would get drunk before age 16. Wermert et al. (2012) also measured self-efficacy, although the results were not reported in full in the study.

1. Berg et al. 2009 (+,+)
2. Bonell et al. 2010 (++,+)
3. Harper et al. 2009 (-,+)
4. Rhodes et al. 2011 (+,+)
5. Wermert et al. 2012 (-,+)

3.7.11 Evidence Statement 11: Community engagement for health topic clusters: cancer prevention

All three of the studies (2 US; 1 Australian) focused on cancer prevention were directed toward minority ethnic groups.¹⁻³ The study by Chen et al. (2013) aimed to evaluate a large-scale intervention to promote hepatitis B virus (HBV) testing among Hmong Americans (hepatitis-B infection is a risk factor for liver cancer). Eades et al. (2012) aimed to evaluate an intensive smoking cessation programme on smoking rates in Australian Aboriginal and Torres Strait Islander women. Russell et al. (2010) aimed to determine the effectiveness of a lay health advisor intervention on improving mammography screening rates among low-income African-American women. One study was deemed to have moderate levels of community engagement (Chen et al. , 2013) and two were deemed to have low levels of community engagement (Russell et al. , 2010; Eades et al. 2012). Given the low number of studies and their variable risk of bias ratings, caution should be exercised in the interpretation and application of the findings around cancer prevention studies.

ES11.1 One of the three studies assessed the impact of health interventions on clinical measures: this study found a marginally positive impact on clinically verified smoking prevalence (Eades et al. 2012).

ES11.2 One study reported beneficial effects on health/social measures (Russell et al. 2010). The authors found that study participants were significantly more likely than control group participants to be willing or plan to have a mammography screening.

ES11.3 There was strong evidence of beneficial effects on behavioural outcomes from two of the studies (Chen et al. 2013; Russell et al. 2010). Russell and colleagues (2010) found positive statistically significant impacts on mammography screening and Chen and colleagues (2013) found a positive statistically significant impact on HBV testing rates.

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ES11.4 None of the cancer prevention studies assessed the impact of these health interventions on self-efficacy measures.

ES11.5 One study assessed the impact of health intervention on behavioural beliefs and found moderately beneficial effects (Chen et al. , 2013). The authors found that their intervention significantly raised levels of knowledge (about HBV), but not across all domains.

1. Chen et al. 2013 (+,+)
2. Eades et al. 2012 (-,+)
3. Russell et al. 2010 (-,+)

3.7.12 Evidence Statement 12: Community engagement for health topic: child health

One American study, Dodge et al. 2013 (+,++), evaluated a brief parenting and health care resource access intervention on preventing emergency medical visits at age 12 months, particularly aimed at low-income families in the US. In this study, two community advisory boards were formed that undertook ongoing monitoring of rates of family needs and experiences with services to improve community service capacity. Service agencies also signed a memorandum of agreement requiring them to follow a preventive system of care. This necessitated collaboration across agencies, family-centred service delivery and joined-up care. The authors reported a beneficial effect for emergency medical care in intervention group infants of low-income families at age 12 months. They also reported no change in emergency department use between 6 and 12 months, while measures of emergency medical care, overnight hospital stays and emergency department visits from birth to six months for low-income families were not reported. This study was assessed as having low levels of community engagement and to be at moderate risk of bias. The quality of the study, and its lone status within this health topic indicate that some caution should be used in the interpretation of its findings.

ES12.1 The one included study on child health did not assess the impact of health interventions on clinical measures.

ES12.2 The one included study on child health did not assess the impact of health interventions on health/social measures.

ES12.3 The one included study on child health assessed the impact of health interventions on behavioural outcomes, finding a significant positive impact of the intervention on infant emergency care.

ES12.4 The one included study on child health did not assess the impact of health interventions on self-efficacy.

ES12.5 The one included study on child health did not assess the impact of health interventions on behavioural beliefs.

3.7.13 Evidence Statement 13: Community engagement for health topic: organ donations

One US study, Andrews et al. (2012) (-,+), aimed to test the effectiveness of using lay health advisors to increase organ donation among African-American church members. Researchers involved the community by focusing on churches with which they had existing partnerships, engaging relevant community organisations, gaining commitment agreement with churches after consultation with church committees and pastors, and identifying a church co-ordinator who recruited peer leaders who were then trained to deliver intervention. Reported outcomes indicated a positive trend for effectiveness, including verified enrolment in an organ donation

programme and self-reported organ donation status. Intentions and attitudes, although measured, were not reported. This study was deemed to have moderate levels of community engagement. The study was assessed to be at high risk of bias; this and its status as the sole included study on the topic suggest that caution should be exercised in the interpretation and application of its findings.

ES13.1 The one included study on organ donation did not assess the impact of health interventions on clinical measures.

ES13.2 The one included study on organ donation did not assess the impact of health interventions on health/social measures.

ES13.3 The one included study on organ donation assessed the impact of health interventions on behavioural outcomes, and found beneficial effects on people's self-reported donation status, although these were not statistically significant.

ES13.4. The one included study on organ donation did not assess the impact of health interventions on self-efficacy.

ES13.5 The one included study on organ donation assessed a number of measures reflecting knowledge, attitudes and intentions, finding marginally positive impacts of health interventions on behavioural beliefs that were not statistically significant

4. Discussion

4.1 Main findings

The findings from this analysis suggest that community engagement encompasses a wide range of health topics and populations, predominantly healthy eating/physical activity and low-income populations. The studies also suggest a primarily moderate to low extent of community engagement across all aspects of study design, delivery and evaluation. The majority of outcomes showed beneficial effects or positive trends for a range of health behaviours, clinical measures, health/social status, self-efficacy, and knowledge, attitudes or intentions. However, the present findings do not demonstrate any clear trends in terms of effectiveness in the sub-groups examined. There did not appear to be a relationship between the strength and direction of the effects and the length of the intervention or final follow-up measure. While the synthesis of evidence seems to suggest that a higher extent of community engagement reports more beneficial effects and positive trends across outcomes, this must be tempered by the overall moderate to high risk of bias operating in this set of studies. These findings echo those reported in the original community engagement review (O'Mara-Eves et al. 2013).

Transferring these findings to the UK context is somewhat limited by the large proportion of US studies, almost half of which focused on minority ethnic populations such as African Americans and Hispanics. We chose not to focus on these latter groups as a population of interest because (a) there are potential cultural differences in ethnic groups between the US and UK contexts; (b) ethnicity is highly associated with poverty, which we chose to focus on; and (c) almost half of the studies focusing on low-income groups also targeted ethnic minorities. It is unclear whether cultural differences exist between these groups in the UK compared to the US, but differences in the health and social care systems between the two countries could limit the generalisability of the findings (Braveman et al. 2010; Smith 2000; Williams et al. 2010).

Across the studies, there was a wide range of level of community engagement in the design and delivery of the interventions, and little evidence of involvement in their evaluation. In a set of studies where the community is explicitly involved in a coalition, collaboration or partnership, this variation is perhaps surprising. Given that a high proportion (50%) mentioned using CBPR principles, community engagement where members lead or collaborate across all aspects of design, delivery or evaluation might be expected. The variation in the specific processes of community engagement thus merits further investigation.

Research focused on specific populations tended to be with children/youth, women and a few men, and low-income groups, although these also contained a high proportion focused on ethnic minorities. In terms of ages of populations, studies focused most often on children and young people; no research was located that specifically targeted older people.

Healthy eating/physical activity was the most frequently studied health issue, followed by sexually transmitted infection/substance use prevention.

4.2 Strengths of the review

This review used innovative 'meta-searching' methods, in effect locating research from existing systematic reviews and specialist trials registers, which have themselves searched comprehensively for literature. As such, this represents a

comprehensive update of the research on community engagement effectiveness. However, the large number of trials and systematic reviews published in the past three years meant that not all located literature was synthesised. The search for current literature on community engagement resulted in a larger set of studies than had been anticipated: we located three times the expected number of references. Since the same searches were used as with the original community engagement review, we can only conclude that the published literature on this topic has expanded considerably in the past three years. We have presented a transparent account of how decisions were made to focus the literature most usefully for updating the NICE guidance on this subject through consultations with the NICE management team and our Advisory Group. In addition, the double extraction and rating of risk of bias assessments and data extraction lend strength to the review's findings.

4.3 Limitations of the review

The review has some limitations that should be considered. First, not all systematic reviews were retrieved in the time available, meaning that some trials may have been missed. However, the large number of identified duplicates, and the large number of reviews and trials located, suggest that the retrieved and assessed dataset is likely to be representative of the theoretical population of studies on the topic.

Due to the time and resource constraints described above, we did not synthesise the literature on community engagement in non-OECD countries, or community engagement strategies targeted at non-disadvantaged (i.e. 'general') populations. Similarly, other types of community engagement such as those utilising peer delivery alone and those using online social networks/social media were not synthesised. However, we have grouped literature in these areas to await future synthesis.

Finally, the findings in this report reflect the data available to the research team at the time of writing. The rapid timelines required of this review meant that more studies, with additional data, may have informed this component of the work but could not be retrieved or synthesised in time to add to the findings.

4.4 Gaps in the evidence

No evaluation studies were located that focused on older age groups. Similarly, evaluations of community engagement trials focused on different health topic areas, such as reproductive health, parenting or violence prevention were not located.

This synthesis has provided an intriguing suggestion that there may be more impact across different outcome categories (clinical measures, behaviours, self-efficacy, knowledge etc.) when higher amounts of community engagement are used. This suggests a need for more specific detail to be gathered and synthesised on the modifiable processes of community engagement that influence outcomes.

5. Conclusions and recommendations

The current research evaluations of community engagement trials suggest that community engagement has beneficial effects and positive trends for a wide variety of outcomes, particularly in children and young people, in low-income groups, and when targeted at women or men only. The current review has thus far provided insights into the effectiveness of community engagement approaches at improving health and well-being (RQ1), specifically in disadvantaged groups (RQ2). A higher extent of community engagement may influence the effects of the intervention; however, further synthesis on the processes of community engagement will help to reveal which processes and methods facilitate the realisation of community and individual capabilities, and which are aligned with more effective and less effective interventions. Analysis of the studies in this component did not reveal whether there are any unintended consequences from adopting community engagement processes. However, synthesis within Review 2 may provide further information on this.

6. References

Included studies are marked with an asterisk.

*Andersen E, Høstmark AT, Holme I, Anderssen SA (2013) Intervention effects on physical activity and insulin levels in men of Pakistani origin living in Oslo: a randomised controlled trial. *Journal of Immigrant and Minority Health* 15: 101-110.

*Andrews AM, Zhang N, Magee JC, Chapman R, Langford AT, Resnicow K (2012) Increasing donor designation through black churches: results of a randomized trial. *Progress in Transplantation* 22: 161-167.

*Berg M, Coman E, Schensul JY (2009) Youth action research for prevention: a multi-level intervention designed to increase efficacy and empowerment among urban youth. *American Journal of Community Psychology* 43(3-4): 345-359.

*Bergstrom H, Hagstromer M, Hagberg J, Elinder LS (2013) A multi-component universal intervention to improve diet and physical activity among adults with intellectual disabilities in community residences: a cluster randomised controlled trial. *Research in Developmental Disabilities* 34: 3847-3857.

*Bonell C, Sorhaindo A, Allen ES, Strange VJ, Wiggins M, Fletcher A, Oakley AR, Bond LM, Flay BR, Patton GC, Rhodes T (2010) Pilot multimethod trial of a school-ethos intervention to reduce substance use: building hypotheses about upstream pathways to prevention. *Journal of Adolescent Health* 47(6): 555-563.

Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E (2010) Socioeconomic disparities in health in the United States: what the patterns tell us. *American Journal of Public Health* 100(S1): S186-S196.

Brenner BL, Manice MP (2011) Community engagement in children's environmental health research. *Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine* 78(1): 85-97.

*Chen MS, Fang DM, Stewart SL, Ly MY, Lee S, Dang JH, Nguyen TT, Maxwell AE, Bowlus CL, Bastani R (2013) Increasing hepatitis B screening for Hmong adults: results from a randomized controlled community-based study. *Cancer Epidemiology, Biomarkers and Prevention* 22: 782-791.

*Cohen DA, Han B, Derose KP, Williamson S, Marsh T, McKenzie TL (2013) Physical activity in parks: a randomized controlled trial using community engagement. *American Journal of Preventive Medicine* 45(5): 590-597.

Department of Health (2010) Health Inequalities National Support Team. http://www.institute.nhs.uk/commissioning/general/health_inequalities_national_support_team_resources.html (accessed 16 November 2014).

Department of Health, Australia (2004) *The stages-of-change model*. <http://www.health.gov.au/internet/publications/publishing.nsf/Content/drugtreat-pubs-front9-wk-toc-drugtreat-pubs-front9-wk-secb-drugtreat-pubs-front9-wk-secb-3-drugtreat-pubs-front9-wk-secb-3-3> (accessed 19 November 2014).

*Dodge KA, Goodman WB, Murphy RA, O'Donnell K, Sato J (2013) Randomized controlled trial of universal postnatal nurse home visiting: impact on emergency care. *Pediatrics* 132(Suppl. 2): S140-146.

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- *Dzewaltowski D, Rosenkranz R, Geller K, Coleman KJ, Welk GJ, Hastmann TJ, Milliken GA (2010) HOP N after-school project: an obesity prevention randomized controlled trial. *International Journal of Behavioral Nutrition and Physical Activity* 7: 90. <http://www.ijbnpa.org/content/7/1/90> (accessed 11 November 2014).
- *Eades SJ, Sanson-Fisher RW, Wenitong M, Panaretto K, D'Este C, Gilligan C, Stewart J (2012) An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial. *Medical Journal of Australia* 197(1): 42-46.
- *Harper GW, Bangi AK, Sanchez B, Doll M, Pedraza A (2009) A quasi-experimental evaluation of a community-based HIV prevention intervention for Mexican American female adolescents: the SHERO's program. *AIDS Education and Prevention* 21(5 Suppl.): 109-123.
- Harris J, Springett J, Croot L, Booth A, Campbell F, Thompson J, Goyder E, van Cleemput P, Wilkins E, Yang Y (in press) *Community-based peer support: developing a model for promoting health literacy (COPES)*. Sheffield: University of Sheffield.
- *Hoelscher D, Springer A, Ranjit J, Perry CL, Evans AE, Stigler M, Kelder SH (2010) Reductions in child obesity among disadvantaged school children with community involvement: the Travis County CATCH trial. *Obesity* 18(Suppl. 1): S36-44.
- *Islam NS, Zanowiak JM, Wyatt LC, Chun K, Lee L, Kwon SC, Trinh-Shevrin C (2013) A randomized-controlled, pilot intervention on diabetes prevention and healthy lifestyles in the New York City Korean community. *Journal of Community Health* 38: 1030-1041.
- Israel BA, Schulz AJ, Parker EA, Becker AB (1998) Review of community-based research: assessing partnership approaches to improve public health. *Annual Review of Public Health* 19: 173-202.
- Jamal F, Bertotti M, Lorenc T, Harden A (2013) Reviewing conceptualisations of community: reflections on a meta-narrative approach. *Qualitative Research*, Online first. <http://qrj.sagepub.com/content/early/2013/11/06/1468794113509262.abstract>.
- *Kieffer EC, Welmerink DB, Sinco BR, Welch KB, Rees Clayton EM, Schumann CY, Uhley VE (2013) Dietary outcomes in a Spanish-language randomized controlled diabetes prevention trial with pregnant Latinas. *American Journal of Public Health* 104: 526-533.
- *Kneipp SM, Kairalla JA, Lutz BJ, Pereira D, Hall AG, Flocks J, Beeber L, Schwartz T (2011) Public health nursing case management for women receiving temporary assistance for needy families: a randomized controlled trial using community-based participatory research. *American Journal of Public Health* 101(9): 1759-1768.
- *Kong AS, Sussman AL, Yahne C, Skipper BJ, Burge MR, Davis SM (2013) School-based health center intervention improves body mass index in overweight and obese adolescents. *Journal of Obesity* <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3622307/> (accessed 10 November 2014).
- *Lassen AD, Thorsen AV, Sommer HM, Fagt S, Trolle E, Biloft-Jensen A, Tetens I (2011) Improving the diet of employees at blue-collar worksites: results from the 'Food at Work' intervention study. *Public Health Nutrition* 14(6): 965-974.
- *Martin KS, Wu R, Wolff M, Colantonio AG, Grady J (2013) A novel food pantry program: food security, self-sufficiency, and diet-quality outcomes. *American Journal of Preventive Medicine* 45: 569-575.

- National Institute for Health and Care Excellence (2008) *Community engagement*. NICE Public Health Guidance 9. London: National Institute for Health and Care Excellence. <http://www.nice.org.uk/guidance/ph9/resources/guidance-community-engagement-pdf> (accessed 10 November 2014).
- National Institute for Health and Care Excellence (2012) *Methods for the development of NICE public health guidance*. 3rd ed. London: National Institute for Health and Care Excellence. <http://www.nice.org.uk/article/pmg4/resources/non-guidance-methods-for-the-development-of-nice-public-health-guidance-third-edition-pdf> (accessed 10 November 2014).
- O'Mara-Eves A, Brunton G, McDaid D, Oliver S, Kavanagh J, Jamal F, Matosevic T, Harden A, Thomas J (2013) Community engagement to reduce inequalities in health: a systematic review, meta-analysis and economic analysis. *Public Health Research* 1(4). http://www.journalslibrary.nihr.ac.uk/_data/assets/pdf_file/0006/94281/FullReport-phr01040.pdf (accessed 10 November 2014).
- O'Mara-Eves A, Brunton G, McDaid D, Kavanagh J, Oliver S, Thomas J (2014) Techniques for identifying cross-disciplinary and 'hard-to-detect' evidence for systematic review. *Research Synthesis Methods* 5(1): 50-59.
- Organisation for Economic Co-operation and Development (OECD) (2014) *OECD members and partners*. <http://www.oecd.org/about/membersandpartners/> (accessed 15 May 2014).
- *Parikh P, Simon E, Fei K, Looker H, Goytia C, Horowitz CR (2010) Results of a pilot diabetes prevention intervention in East Harlem, New York City: Project HEED. *American Journal of Public Health* 100(Suppl. 1): S232-239.
- *Phillips G, Bottomley C, Schmidt E, Tobi P, Lais S, Yu G, Lynch R, Lock K, Draper A, Moore D, Clow A, Petticrew M, Hayes R, Renton A (2014) Well London Phase-1: results among adults of a cluster-randomised trial of a community engagement approach to improving health behaviours and mental well-being in deprived inner-city neighbourhoods. *Journal of Epidemiology and Community Health* 68: 606-614. <http://jech.bmj.com/content/68/7/606.full.pdf+html> (accessed 14 November 2014).
- *Plescia M, Herrick H, Chavis L (2008) Improving health behaviors in an African American community: the Charlotte Racial and Ethnic Approaches to Community Health project. *American Journal of Public Health* 98(9): 1678-1684.
- Popay J, Attree P, Hornby D, Milton B, Whitehead M, French B, Kowarzik U, Simpson N, Povall S (2007) *Community engagement in initiatives addressing the wider social determinants of health: a rapid review of evidence on impact, experience and process*. Lancaster: University of Lancaster. <http://www.nice.org.uk/guidance/ph9/documents/social-determinants-evidence-review-final2> (accessed 11 November 2014).
- Public Health England (2014) *Local action on health inequalities: introduction to a series of evidence papers*. London: Public Health England.
- *Rhodes SD, McCoy TP, Vissman AT, DiClemente RJ, Duck S, Hergenrather KC, Foley KL, Alonzo J, Bloom FR, Eng E (2011) A randomized controlled trial of a culturally congruent intervention to increase condom use and HIV testing among heterosexually active immigrant Latino men. *AIDS and Behavior* 15(8): 1764-1775.
- *Russell KM, Champion VL, Monahan PO, Millon-Underwood S, Zhao Q, Spacey N, Rush NL, Paskett ED (2010) Randomized trial of a lay health advisor and computer

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intervention to increase mammography screening in African American women. *Cancer Epidemiology, Biomarkers and Prevention* 19(1): 201-210.

*Segal SP, Silverman CJ, Temkin TL (2011) Outcomes from consumer-operated and community mental health services: a randomized controlled trial. *Psychiatric Services* 62(8): 915-921.

Sheridan K, Tobi P (2010) Towards a community engagement strategy: some practical notes. *British Journal of Healthcare Management* 16: 123-128.

Sheridan K, Adams-Eaton F, Trimble A, Renton A, Bertotti M (2011) Community engagement using World Café: The Well London experience. *Groupwork* 20(3): 32-50.

Smith GD (2000) Learning to live with complexity: ethnicity, socioeconomic position, and health in Britain and the United States. *American Journal of Public Health* 90(11): 1694-1698.

Swainston K, Summerbell C (2007) *The effectiveness of community engagement approaches and methods for health promotion interventions*. Teesside: University of Teesside.

Thomas J, Brunton J, Graziosi S (2010) *EPPI-Reviewer 4.0: software for research synthesis*. EPPI-Centre Software. London: Social Science Research Unit, Institute of Education, University of London.

Thomas J, Harden A, Newman M (2012) Synthesis: combining results systematically and appropriately. In: Gough D, Oliver S, Thomas J (eds) *An introduction to systematic reviews*. London: Sage.

*Wermert AM, Mehl A, Opalek JM, Shaffer LE (2012) Implementation and early outcomes of a peer-led traffic safety initiative for high school students. *Journal of Trauma Nursing* 19(2): 94-101.

Williams DR, Mohammed SA, Leavell J, Collins C (2010) Race, socioeconomic status, and health: complexities, ongoing challenges, and research opportunities. *Annals of the New York Academy of Sciences* 1186(1): 69-101.

*Woods G, Levinson AH, Jones G, Kennedy RL, Johnson LC, Tran ZV, Gonzalez T, Marcus AC (2013) The Living Well by Faith health and wellness program for African Americans: an exemplar of community-based participatory research. *Ethnicity and Disease* 23(2): 223-229.

*Wright K, Giger JN, Norris K, Suro Z (2013) Impact of a nurse-directed, co-ordinated school health program to enhance physical activity behaviors and reduce body mass index among minority children: a parallel-group, randomized control trial. *International Journal of Nursing Studies* 50: 727-737.

*Zoellner J, Hill JL, Grier K, Chau C, Kopec D, Price B, Dunn C (2013) Randomized controlled trial targeting obesity-related behaviors: Better Together Healthy Caswell County. *Preventing Chronic Disease* 10: E96.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3684353/pdf/PCD-10-E96.pdf> (accessed 11 November 2014).

Appendices

Appendix 1: Sample search strategies

Search strategy: Database of Promoting Health Effectiveness Reviews

Scan the title and abstracts of all items published since 2011.

Search strategy: Trials Register of Promoting Health Interventions

The search is based on broad terms for Population AND Intervention

Free text search of titles and abstracts, 2011 onwards:

“change agent*” OR “citizen*” OR “communit*” OR “champion*” OR
“collaborator*” OR “disadvantaged” OR “lay worker” or lay health” OR “lay
people” OR “lay person” OR “member*” OR “minorit*” OR “participant*” OR
“patient*” OR “peer*” OR “public” OR “representative*” OR “resident*” OR
“stakeholder*” OR “user*” OR “volunteer*” OR “vulnerable”

AND

“capacity building” OR “coalition*” OR “collaboration*” OR “committee*” OR
“compact” OR “co-production” OR “council*” OR “delegated power*” OR
“democratic renewal” OR “development” OR “empower*” OR “engag*” OR
“forum*” OR “governance” OR “initiative*” OR “intervention guidance” OR
“involve*” OR “juries” OR “jury” OR “local area agreement” OR “local governance”
OR “mobilisation” OR “mobilization “ OR “neighbourhood committee*” OR
“neighbourhood manager*” OR “neighbourhood renewal” OR “neighbourhood
warden*” OR “neighborhood committee*” OR “neighborhood manager*” OR
“neighborhood renewal” OR “neighborhood warden*” OR “network*” OR
“organisation*” OR “organization*” OR “panel*” OR “participation” OR
“participatory action” OR “partnership*” OR “pathway*” OR “priority setting*” OR
“public engagement” OR “public health” OR “rapid participatory assessment*” OR
“regeneration” OR “relations” OR “support”

Search strategy: Cochrane/Centre for Reviews and Dissemination databases

Cochrane Database of Systematic Reviews (Cochrane Library); DARE (CRD); HTA
database (CRD); NHS EED (CRD).

The search is based on broad terms for Topic AND Population AND Intervention.
Search 2011 onwards. Search all fields:

“disadvantage*” OR “disparities” OR “disparity” OR “equalit*” OR “equit*” OR
“gap” OR “gaps” OR “gradient” OR “gradients” OR “health determinant” OR
“health determinants” OR “health education” OR “health inequalities” OR “health
promotion” OR “healthy people program*” OR “inequalities” OR “inequality” OR
“inequit*” OR “preventive health service*” OR “preventive medicine” OR “primary
prevention” OR “public health” OR “social medicine” OR “unequal” OR “variation*”

AND

“change agent*” OR “citizen*” OR “communit*” OR “champion*” OR
“collaborator*” OR “disadvantaged” OR “lay communit*” OR “lay people” OR “lay
person” OR “member*” OR “minorit*” OR “participant*” OR “patient*” OR “peer*”
OR “public” OR “representative*” OR “resident*” OR “service user*” OR

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“stakeholder*” OR “user*” OR “volunteer*” OR “vulnerable” OR “lay worker” OR “lay health”

AND

“capacity building” OR “coalition*” OR “collaboration*” OR “committee*” OR “compact” OR “control” OR “co-production” OR “council*” OR “delegated power*” OR “democratic renewal” OR “development” OR “empowerment” OR “engagement” OR “forum*” OR “governance” OR “health promotion” OR “initiative*” OR “intervention guidance” OR “involvement” OR “juries” OR “jury” OR “local area agreement” OR “mobilisation” OR “mobilization” OR “neighborhood committee*” OR “neighborhood manager*” OR “neighborhood renewal” OR “neighborhood warden*” OR “neighbourhood committee*” OR “neighbourhood manager*” OR “neighbourhood renewal” OR “neighbourhood warden*” OR “networks” OR “network” OR “organisation*” OR “organization*” OR “panel*” OR “participation” OR “participatory action” OR “partnership*” OR “pathway*” OR “priority setting*” OR “public engagement” OR “public health” OR “rapid participatory assessment” OR “regeneration” OR “relations” OR “support”

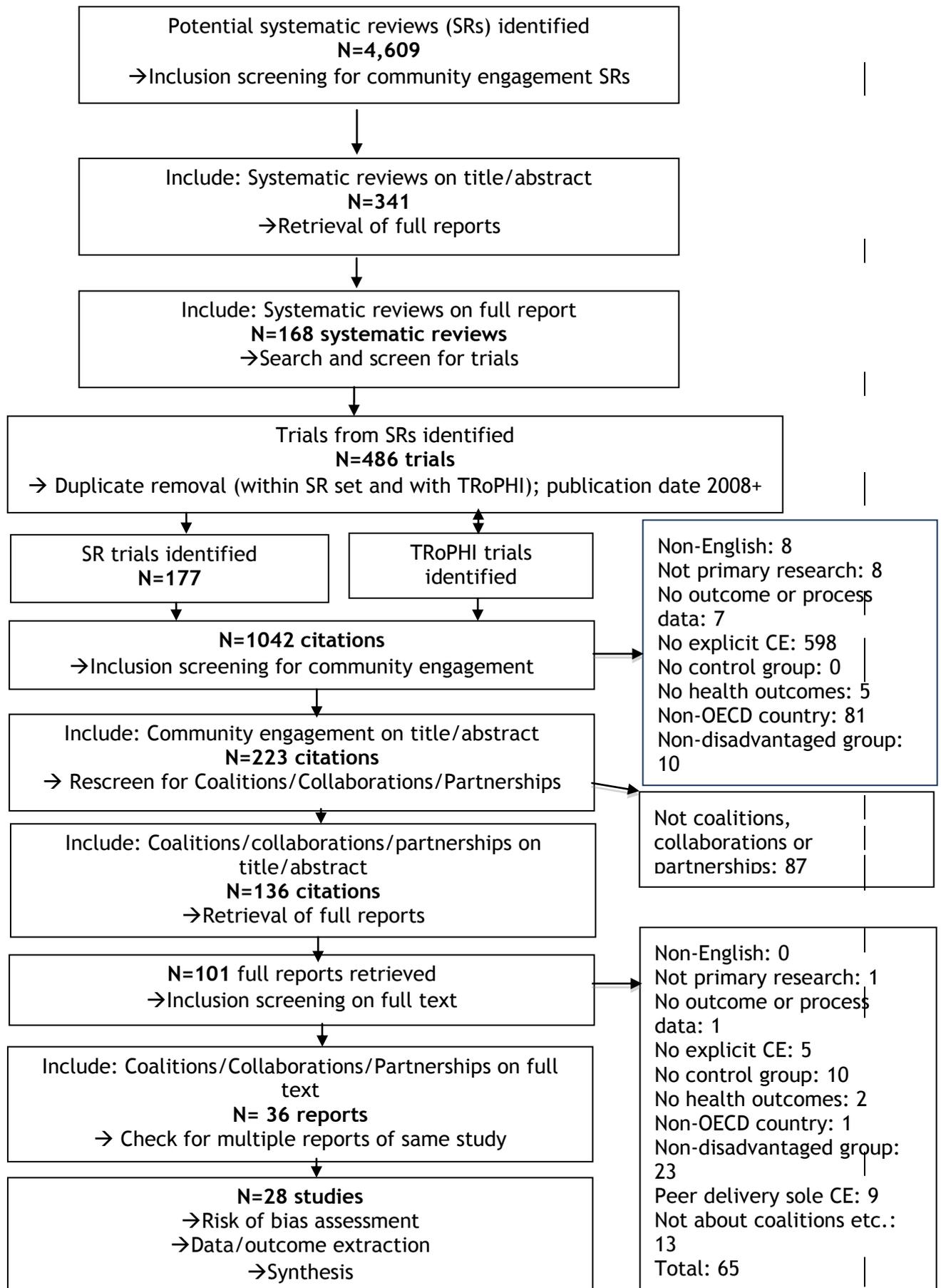
Search strategy: Campbell Collaboration Library

All reviews published since 2011 scanned by title, and then by title and abstract.

Search strategy: NIHR Health Technology Assessment (HTA) programme website/journals library.

All reviews published since 2011 scanned by title, and then title and abstract.

Appendix 2: Flow of studies through the review process



Appendix 3: Evidence tables

Supplied as separate document by NICE upon request.

Appendix 4: Completed quality appraisal checklist

Study	Internal validity	External validity	Overall validity
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Low risk of bias

Andersen (2013)	++	++	++
Bergstrom (2013)	++	++	++

Moderate risk of bias

Berg (2009)	+	+	+
Bonell (2010)	++	+	+
Chen (2013)	+	+	+
Dodge (2013)	+	++	+
Dzewaltowski (2010)	+	+	+
Islam (2013)	+	+	+
Kieffer (2013)	+	++	+
Kong (2013)	+	+	+
Lassen (2011)	+	-	+
Parikh (2010)	+	+	+
Phillips (2014)	+	+	+
Rhodes (2011)	+	+	+
Segal (2011)	+	+	+
Wright (2013)	+	+	+

High risk of bias

Andrews (2012)	-	+	-
Cohen (2013)	-	+	-
Eades (2012)	-	+	-
Harper (2009)	-	+	-
Hoelscher (2010)	-	+	-
Kneipp (2011)	-	+	-
Martin (2013)	-	++	-
Plescia (2008)	-	+	-
Russell (2010)	-	+	-
Wermert (2012)	-	+	-
Woods (2013)	-	+	-
Zoellner (2013)	-	-	-

Rating criteria:

Internal validity

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++ = a majority of criteria scoring ++ and no - ratings

+ = a majority of criteria scoring + and no - ratings

- = any significant selection, attrition or selective reporting biases, and/or a significant number of other biases

External validity

++ = sufficient details given (participants, interventions/comparisons, outcomes, resource and policy implications) to be generalisable to the population

+ = unclear or somewhat generalisable to the population

- = not generalisable to the population as described in the aims/introduction

Overall validity

++ = where both rating for internal validity and external validity score ++

+ = where internal validity scores at least +

- = where internal validity scores -

Appendix 5: Level and extent of community engagement: included studies (N=28)

Author (Year)	CE Design	CE Delivery	CE Evaluation	Design Rating	Delivery Rating	Evaluation Rating	CE Extent*
HIGH ENGAGEMENT							
Berg 2009	LEADING	LEADING	LEADING	1	1	1	3 of 3
Cohen 2013	COLLABORATED	LEADING	COLLABORATED	0	1	0	3 of 3
Islam 2013	COLLABORATED	COLLABORATED	COLLABORATED	1	1	1	3 of 3
Parikh 2010	LEADING	LEADING	COLLABORATED	1	1	1	3 of 3
MODERATE ENGAGEMENT							
Andrews 2012	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Bergstrom 2013	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Bonell 2010	LEADING	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Chen 2013	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Harper 2009	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Kieffer 2013	COLLABORATED	LEADING	NOT INVOLVED	1	1	0	2 of 3
Martin 2013	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Phillips 2014	COLLABORATED	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Plescia 2008	COLLABORATED	LEADING	CONSULTED	1	1	0	2 of 3
Rhodes 2011	COLLABORATED	LEADING	CONSULTED	1	1	0	2 of 3
Segal 2011	LEADING	COLLABORATED	NOT INVOLVED	1	1	0	2 of 3
Wermert 2012	LEADING	LEADING	NOT INVOLVED	1	1	0	2 of 3
LOW ENGAGEMENT							
Andersen 2013	COLLABORATED	NOT INVOLVED	NOT INVOLVED	1	0	0	1 of 3
Dodge 2013	COLLABORATED	NOT INVOLVED	NOT INVOLVED	1	0	0	1 of 3
Dzewaltowski 2010	CONSULTED	COLLABORATED	NOT INVOLVED	0	1	0	1 of 3
Eades 2012	CONSULTED	INFORMED	NOT INVOLVED	0	0	0	0 of 3
Hoelscher 2010	COLLABORATED	INFORMED	NOT INVOLVED	1	0	0	1 of 3
Kneipp 2011	COLLABORATED	CONSULTED	NOT INVOLVED	1	0	0	1 of 3

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Author (Year)	CE Design	CE Delivery	CE Evaluation	Design Rating	Delivery Rating	Evaluation Rating	CE Extent*
Kong 2013	COLLABORATED	CONSULTED	NOT INVOLVED	1	0	0	1 of 3
Lassen 2011	CONSULTED	LEADING	NOT INVOLVED	0	1	0	1 of 3
Russell 2010	CONSULTED	LEADING	CONSULTED	0	1	0	1 of 3
Woods 2013	COLLABORATED	CONSULTED	NOT INVOLVED	1	0	0	1 of 3
Wright 2013	CONSULTED	COLLABORATED	CONSULTED	0	1	0	1 of 3
Zoellner 2013	CONSULTED	NOT INVOLVED	CONSULTED	0	0	0	0 of 3

*For each aspect of the study (design, delivery and evaluation), the level of community engagement was rated as follows:

- Leading or collaborating=1
- Consulted, informed or not involved=0

To determine the extent of community engagement, the level of engagement across all aspects of the study was summed up and the extent determined as follows:

- High extent of community engagement=3
- Moderate extent of community engagement=2
- Low extent of community engagement =1 or 0

Appendix 6: Outcome categories, direction of effect and number of outcomes: Included studies (N=28)

Study author/year	Sample size (N)	Length of follow-up	Clinical measures	Health/social measures	Behaviours	Self-efficacy	Knowledge attitudes intentions
High Community Engagement							
Berg 2009 (+,+)	316	Post-intervention summer school (2 months); and midpoint; and end of school year (6, 10 months)			↑↑ (1) ↑ (2)	↑↑ (1)	
Cohen 2013 (-,+)	50 parks	24 months			↑↑ (2)		
Islam 2013 (+,+)	48	Post-intervention (6 months)	↑ (6)	↑ (3)	↑↑ (1) ↑ (6)	↑ (4)	↑↑ (1) ↑ (5)
Parikh 2010 (+,+)	99	3 and 6 months Post-intervention (12 months)	↑↑ (2) ↑ (2) nc (4)		nc (2)	nc (1)	↑ (2) ↓ (1) nc (4)
Overall impact: High CE			↑	↑	↑↑↑	↑	↑
Moderate Community Engagement							
Andrews 2012 (-,+)	1,254	Post-intervention (12 months)			↑ (1)		↑ (4)
Bergstrom 2013 (++,++)	130	Post-intervention (12-16 months)	↑ (1) nc (1)	nc (1)	↑↑ (1) ↑ (2) nc (1)		
Bonell 2010 (++,+)	614	Post-intervention 9 months		↑↑ (1)	↑ (4)	↑ (3)	↑ (6)

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Study author/year	Sample size (N)	Length of follow-up	Clinical measures	Health/social measures	Behaviours	Self-efficacy	Knowledge attitudes intentions
Chen 2013 (+,+)	260	6 months			↑↑ (1)		↑↑ (1) ↑ (1)
Harper 2009 (-,+)	378	Post-intervention and 2 months			↑↑ (2) ↑ (1)	↑↑ (1) nc (2)	↑↑ (8)
Kieffer 2013 (+,++)	278	Post-intervention (2.75 months)			↑↑ (7) ↑ (3)		
Martin 2013 (-,++)	228	3, 6, 9, 12 months		↑↑ (1)	↑↑ (1)	↑↑ (1)	
Phillips 2014 (+,+)	40 neighbourhoods (4,107 in survey)	Post-intervention (48 months)		↓ (2)	↑↑ (1) ↑ (2)		
Plescia 2008 (-,+)	14,544	12, 24, 36 months and Post-intervention (48 months)			↑↑ (1) ↓ (1) ↓↓ (1)		
Rhodes 2011 (+,+)	139	Post-intervention (3 months)			↑↑ (2)		
Segal 2011 (+,+)	139	Post-intervention (6 months)		nr (2) ↓ ↓ (1)		↓↓ (2)	
Wermert 2012 (-,+)	'Approximately 3,100'	Post-intervention (5 months)			nr (2)		nr (4)
Overall impact: Moderate CE			↑	↑	↑	↑	↑
Low Community Engagement							
Andersen 2013 (++,++)	150	Post-intervention (5 months)	↑↑ (6) ↑ (5)		↑↑ (2) ↑ (1)		
Dodge 2013 (+,++)	531	12 months			↑↑ (1)		
Dzewaltowski 2010	961	5 months and	↑ (1)		↑↑ (3)		

Appendix 6: Outcome categories, direction of effect and number of outcomes: Included studies (N=28)

Study author/year	Sample size (N)	Length of follow-up	Clinical measures	Health/social measures	Behaviours	Self-efficacy	Knowledge attitudes intentions
(+,+)		Post-intervention (10 months) each year			↑ (6) nr (1)		
Eades 2012 (-,+)	263	36-42 weeks' gestation	↑ (1)				
Hoelscher 2010 (-,+)	1,107	12 months	↑↑ (1)		↑↑ (3) ↑ (7) ↓ (4)		
Kneipp 2011 (-,+)	432	3, 6, 9 months		↑↑ (1) ↑ (2)	↑↑(1) ↑ (1)		
Kong 2013 (+,+)	51	Post-intervention (10 months)	↑↑ (2) ↑ (4) nc (3) ↓↓ (1) nr (1)		↑↑ (1) ↑ (3) ↓ (2)		
Lassen 2011 (+,-)	229	Post-intervention (6 months)	↑ (2)		↑↑ (3) ↑ (4)		
Russell 2010 (-,+)	181	Post-intervention (6 months)		↑↑ (1)	↑↑ (1)		
Woods 2013 (-,+)	106	Post-intervention (2 months)	↑↑ (4) ↑ (2)				
Wright 2013 (+,+)	251	Post-intervention (4 months); 16 months	↑↑ (1) ↑ (1) nc (2) nr (2)		↑↑ (6) nc (4)		
Zoellner 2013 (-,-)	91	Post-intervention (3.5 months)	↑↑ (3) ↑ (1)	↑ (2) nc (1) ↓ (1) nr (1)	↑ (4) ↓ (3) nc (1)	↓ (1) nc (1)	
Overall impact: Low CE			↑	↑	↑	↑	

Outcome interpretation:

↑↑ = beneficial effect (i.e. statistically significant positive effect)

↓↓ = negative effect (i.e. statistically significant negative effect)

↑ = positive trend (i.e. non-statistically significant positive effect)

↓ = negative trend (i.e. non-statistically significant negative effect)

nc = no change (i.e. no effect reported so significance and/or direction not reported)

nr = measured but data not reported

(#) = number of outcomes in category

Overall impact rating within outcome categories:

↑↑ = majority of outcomes within the category rate ↑↑ and no ratings of ↓↓ or ↓

↑ = majority of outcomes within the category ↑ and minority of ratings of ↓↓ or ↓

↓ = majority of outcomes in the category rate ↓↓ or ↓

Note: where studies reported component outcome measures and related sub-components separately, sub-component values only were used to populate the table. (Please refer to the Evidence Tables for the Dodge et al. (2013) study for an example of this type of report)

Appendix 7: List of excluded studies at full-text stage

- Ayala GX, Baquero B, Laraia BA, Ji M, Linnan L (2013) Efficacy of a store-based environmental change intervention compared with a delayed treatment control condition on store customers' intake of fruits and vegetables. *Public Health Nutrition* 16(11): 1953-1960.
- Bagnardi V, Sorini E, Disalvatore D, Assi V, Corrao G, De Stefani R (2011) 'Alcohol, less is better' project: outcomes of an Italian community-based prevention programme on reducing per-capita alcohol consumption. *Addiction* 106(1): 102-110.
- Barnidge EK, Hipp PR, Estlund A, Duggan K, Barnhart KJ, Brownson RC (2013) Association between community garden participation and fruit and vegetable consumption in rural Missouri. *International Journal of Behavioral Nutrition and Physical Activity* 10: 128. <http://www.ijbnpa.org/content/pdf/1479-5868-10-128.pdf> (accessed 11 November 2014).
- Bazzano AT, Zeldin AS, Shihady IR, Diab IR, Garro NM, Allevato NA, Lehrer D (2009) The Healthy Lifestyle Change Program: a pilot of a community-based health promotion intervention for adults with developmental disabilities. *American Journal of Preventive Medicine* 37(6 Suppl. 1): S201-S208.
- Bogart L, Elliott M, Uyeda K, Hawes-Dawson J, Klein DJ, Schuster MA (2011) Preliminary healthy eating outcomes of SNaX, a pilot community-based intervention for adolescents. *Journal of Adolescent Health* 48(2): 196-202.
- Caramlau I, Barlow J, Sembi S, McKenzie-McHarg K, McCabe C (2011) Mums 4 Mums: structured telephone peer support for women experiencing postnatal depression: pilot and exploratory RCT of its clinical and cost effectiveness. *Trials* 12: 88. <http://www.trialsjournal.com/content/pdf/1745-6215-12-88.pdf> (accessed 11 November 2014).
- Chang DI, Gertel-Rosenberg A, Drayton VL, Schmidt S, Angalet GB (2010) A statewide strategy to battle child obesity in Delaware. *Health Affairs* 29(3): 481-490.
- Chomitz VR, McGowan RJ, Wendel JM, Williams SA, Cabral HJ, King SE, Olcott DB, Cappello M, Breen S, Hacker KA (2010) Healthy Living Cambridge Kids: a community-based participatory effort to promote healthy weight and fitness. *Obesity* 18(Suppl. 1): S45-S53.
- De Bock F, Genser B, Raat H, Fischer JE, Renz-Polster H (2013) A participatory physical activity intervention in preschools: a cluster randomized controlled trial. *American Journal of Preventive Medicine* 45: 64-74.
- de Silva-Sanigorski AM, Boak R, Kremer P, Swinburn B (2009) *Outcome and impact evaluation of Romp & Chomp: preliminary findings: summary report*. Melbourne: WHO Collaborating Centre for Obesity Research, Deakin University.
- DeBar LL, Dickerson J, Clarke G (2009) Using a website to build community and enhance outcomes in a group, multi-component intervention promoting healthy diet and exercise in adolescents. *Journal of Pediatric Psychology* 34(5): 539-550.
- Drake B, Shelton R, Gilligan T, Allen J (2010) A church-based intervention to promote informed decision making for prostate cancer screening among African American men. *Journal of the National Medical Association* 102(3): 164-171.
- Drummond RL, Staten LK, Sanford MR, Davidson CL, Magda Ciocazan M, Khor KN, Kaplan F (2009) A pebble in the pond: the ripple effect of an obesity prevention intervention targeting the child care environment. *Health Promotion and Practice* 10(2, Suppl.): 156S-167S.
- Dubuy V, De Cocker K, De Bourdeaudhuij I, Maes L, Seghers J, Lefevre J, De Martelaer K, Cardon G (2013) Evaluation of a workplace intervention to promote commuter cycling: a RE-AIM analysis. *BMC Public Health* 13: 587.

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Economos CD, Hyatt RR, Must A, Goldberg JP, Kuder J, Naumova EN, Collins JJ, Nelson ME (2013) Shape Up Somerville two-year results: a community-based environmental change intervention sustains weight reduction in children. *Preventive Medicine* 57: 322-327.

Gala S, Pesek F, Murray J, Kavanagh C, Graham S, Walsh M (2008) Design and pilot evaluation of an Internet spit tobacco cessation program. *Journal of Dental Hygiene* 82(1): 11.

Goldfinger JZ, Kronish IM, Fei K, Graciani A, Rosenfeld P, Lorig K, Horowitz CR (2012) Peer education for secondary stroke prevention in inner-city minorities: design and methods of the prevent recurrence of all inner-city strokes through education randomized controlled trial. *Contemporary Clinical Trials* 33(5): 1065-1073.

Goodman A, Panter J, Sharp SJ, Ogilvie D (2013) Effectiveness and equity impacts of town-wide cycling initiatives in England: a longitudinal, controlled natural experimental study. *Social Science and Medicine* 97: 228-237.

Han HR, Lee H, Kim MT, Kim KB (2009) Tailored lay health worker intervention improves breast cancer screening outcomes in non-adherent Korean-American women. *Health Education Research* 24(2): 318-329.

Hanberger L, Ludvigsson J, Nordfeldt S (2013) Use of a web 2.0 portal to improve education and communication in young patients with families: randomized controlled trial. *Journal of Medical Internet Research* 15: e175.

Hawkins JD, Oesterle S, Brown EC, Monahan KC, Abbott RD, Arthur MW, Catalano RF (2011) Sustained Decreases in risk exposure and youth problem behaviors after installation of the Communities That Care prevention system in a randomized trial. *Archives of Pediatrics and Adolescent Medicine* 166(2): 141-148.

Hayashi K, Wood E, Wiebe L, Qi J, Kerr T (2010) An external evaluation of a peer-run outreach-based syringe exchange in Vancouver, Canada. *International Journal of Drug Policy* 21(5): 418-421.

Herrera C, Grossman J, Kauh T, McMaken J (2011) Mentoring in schools: an impact study of Big Brothers Big Sisters school-based mentoring. *Child Development* 82: 346-361.

Hightow-Weidman LB, Smith JC, Valera E, Matthews DD, Lyons P (2011) Keeping them in 'STYLE': finding, linking, and retaining young HIV-positive black and Latino men who have sex with men in care. *AIDS Patient Care and STDs* 25(1): 37-45.

Hoddinott P, Britten J, Prescott GJ, Tappin D, Ludbrook A, Godden DJ (2009) Effectiveness of policy to provide breastfeeding groups (BIG) for pregnant and breastfeeding mothers in primary care: cluster randomised controlled trial. *BMJ* 338: a3026.

Holt C, Wynn T, Litaker M, Southward P, Jeames S, Schulz E (2009) A comparison of a spiritually based and non-spiritually based educational intervention for informed decision making for prostate cancer screening among church-attending African-American men. *Urologic Nursing* 29(4): 249-258.

Irwin C, Irwin R, Richey P, Miller M, Boddie J, Dickerson T (2012) Get fit with the Grizzlies: a community-school-home initiative to fight childhood obesity led by a professional sports organization. *Studies in Health Technology and Informatics* 172: 163-167.

Kaczorowski J, Chambers LW, Dolovich L, Paterson JM, Karwalajtys T, Gierman T, Farrell B, McDonough B, Thabane L, Tu K, Zagorski B, Goeree R, Levitt CA, Hogg W, Laryea S, Carter MA, Cross D, Sabaldt RJ (2011) Improving cardiovascular health at population level: 39 community cluster randomised trial of Cardiovascular Health Awareness Program (CHAP). *BMJ (Clinical research ed.)* 342: d442.

Karcher M (2008) The study of mentoring in the learning environment (SMILE): a randomized evaluation of the effectiveness of school-based mentoring. *Prevention Science* 9: 99-113.

Keene Woods NC (2012) *Examining the effects of a training and technical assistance intervention on the functioning of eight community coalitions to prevent substance abuse*. PhD Dissertation. Kansas: University of Kansas.

King AC, Bickmore TW, Campero MI, Pruitt LA, Yin JL (2013) Employing virtual advisors in preventive care for underserved communities: results from the COMPASS study. *Journal of Health Communication* 18: 1449-1464.

Kremer P, Waqa G, Vanualailai N, Schultz JT, Roberts G, Moodie M, Mavoa H, Malakellis M, McCabe MP, Swinburn BA (2011) Reducing unhealthy weight gain in Fijian adolescents: results of the Healthy Youth Healthy Communities Study. *Obesity Review* 12(Suppl. 2): 19-40.

Krieger J, Rabkin J, Sharify D, Song L (2009) High point walking for health: creating built and social environments that support walking in a public housing community. *American Journal of Public Health* 99 (Suppl. 3): S593-S599.

Lemon SC, Wang ML, Wedick NM, Estabrook B, Druker S, Schneider KL, Li W, Pbert L (2014) Weight gain prevention in the school worksite setting: results of a multi-level cluster randomized trial. *Preventive Medicine* 60: 41-47.

Lyons RA, Kendrick D, Towner EML, Coupland C, Hayes M, Christie N, Slaney J, Jones S, Kimberlee R, Rodgers SE, Turner S, Brussoni M, Vinogradova Y, Sarvotham T, Macey S (2013) The Advocacy for Pedestrian Safety study: cluster randomised trial evaluating a political advocacy approach to reduce pedestrian injuries in deprived communities. *PLoS One* 8(4): e60158.

Madsen K, Thompson H, Adkins A, Crawford Y (2013) School-community partnerships: a cluster-randomized trial of an after-school soccer program. *JAMA Pediatrics* 167(4): 321-326.

Makosky DC, Cowan P, Nollen NL, Greiner KA, Choi WS (2009) Assessing the scientific accuracy, readability, and cultural appropriateness of a culturally targeted smoking cessation program for American Indians. *Health Promotion and Practice* 10: 386-393.

McClain AD, Hekler EB, Gardner CD (2013) Incorporating prototyping and iteration into intervention development: a case study of a dining hall-based intervention. *Journal of American College Health* 61: 122-131.

McLoughlin CS (2009) Positive peer group interventions: an alternative to individualized interventions for promoting prosocial behavior in potentially disaffected youth. *Electronic Journal of Research in Educational Psychology* 7: 1131-1156.

Michael YL, Carlson NE (2009) Analysis of individual social-ecological mediators and moderators and their ability to explain effect of a randomized neighbourhood walking intervention. *International Journal of Behavioral Nutrition and Physical Activity* 30(6): 49.

Moore SM, Borawski EA, Cuttler L, Ievers-Landis CE, Love TE (2013) IMPACT: a multi-level family and school intervention targeting obesity in urban youth. *Contemporary Clinical Trials* 36: 574-586.

Mummery WK, Brown WJ (2009) Whole of community physical activity interventions: easier said than done. *British Journal of Sports Medicine* 43(1): 39-43.

Murayama H, Yamaguchi T, Nagata S, Murashima S (2012) The effects of an intervention program for promoting interorganizational network building between multidisciplinary agencies and community-based organizations: a cluster trial in Japan. *BMC Public Health* 12: 178.

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Nelson A, Lewy R, Ricardo F, Dovydaitis T, Hunter A, Mitchell A, Loe C, Kugel C (2010) Eliciting behavior change in a US sexual violence and intimate partner violence prevention program through utilization of Freire and discussion facilitation. *Health Promotion International* 25: 299-308.

Penalvo JL, Sotos-Prieto M, Santos-Beneit G, Pocock S, Redondo J, Fuster V (2013) The Program SI! intervention for enhancing a healthy lifestyle in preschoolers: first results from a cluster randomized trial. *BMC Public Health* 13: 1208.

Pinto-Foltz MD, Logsdon MC, Myers JA (2011) Feasibility, acceptability, and initial efficacy of a knowledge-contact program to reduce mental illness stigma and improve mental health literacy in adolescents. *Social Science and Medicine* 72(12): 2011-2019.

Prestwich A, Conner MT, Lawton RJ, Ward JK, Ayres K, McEachan RC (2014) Partner- and planning-based interventions to reduce fat consumption: randomized controlled trial. *British Journal of Health Psychology* 19: 132-148.

Rabius V, Pike KJ, Wiatrek D, McAlister AL (2008) Comparing internet assistance for smoking cessation: 13-month followup of a six-arm randomized controlled trial. *Journal of Medical Internet Research* 10(5): e45.

Radcliffe J, Schwarz D, Zhao H (2013) The MOM Program: home visiting in partnership with pediatric care. *Pediatrics* 132(Suppl. 2): S153-159.

Reed KE, Warburton DE, Macdonald HM, Naylor PJ, McKay HA (2008) Action Schools! BC: a school-based physical activity intervention designed to decrease cardiovascular disease risk factors in children. *Preventive Medicine* 46(6): 525-531.

Safren SA, O'Cleirigh C, Skeer MR, Driskell J, Goshe BM, Covahey C, Mayer KH (2010) Demonstration and evaluation of a peer-delivered, individually-tailored, HIV prevention intervention for HIV-Infected MSM in their primary care setting. *AIDS and Behavior* 15: 949-958.

Scanlon DP, Alexander JA, Beich J, Christianson JB, Hasnain-Wynia R, McHugh MC, Mittler JN, Shi Y, Bodenschatz LJ (2012) Evaluating a community-based program to improve healthcare quality: research design for the Aligning Forces for Quality initiative. *The American Journal of Managed Care* 18: S165-176.

Shapiro VB, Hawkins JD, Oesterle S, Monahan KC, Brown EC, Arthur MW (2013) Variation in the effect of Communities That Care on community adoption of a scientific approach to prevention. *Journal of the Society for Social Work and Research* 4(3): 154-164.

Small W, Wood E, Tobin D, Rikley J, Lapushinsky D, Kerr T (2012) The injection support team: a peer-driven program to address unsafe injecting in a Canadian setting. *Substance Use and Misuse* 47(5): 491-501.

Taft AJ, Small R, Hegarty KL, Lumley J, Watson LF, Gold L (2009) MOSAIC (MOtherS' Advocates In the Community): protocol and sample description of a cluster randomised trial of mentor mother support to reduce intimate partner violence among pregnant or recent mothers. *BMC Public Health* 9: 159.

Taft AJ, Small R, Hegarty KL, Watson LF, Gold L, Lumley JA (2011) MOtherS' Advocates In the Community (MOSAIC): non-professional mentor support to reduce intimate partner violence and depression in mothers: a cluster randomised trial in primary care. *BMC Public Health* 11: 178.

Watson-Thompson J, Woods NK, Schober DJ, Schultz JA (2013) Enhancing the capacity of substance abuse prevention coalitions through training and technical assistance. *Journal of Prevention and Intervention in the Community* 41: 176-187.

Appendix 7: List of excluded studies at full-text stage

Williams JM, Dwyer M, Verna M, Zimmermann MH, Gandhi KK, Galazyn M, Szkodny N, Molnar M, Kley R, Steinberg ML (2011) Evaluation of the CHOICES program of peer-to-peer tobacco education and advocacy. *Community Mental Health Journal* 47(3): 243-251.

Wilson DB, Jones RM, McClish D, Westerberg AL, Danish S (2012) Fruit and vegetable intake among rural youth following a school-based randomized controlled trial. *Preventive Medicine* 54: 150-156.

Wolfson M, Champion H, McCoy TP, Rhodes SD, Ip EH, Blocker JN, Martin BA, Wagoner KG, O'Brien MC, Sutfin EL, Mitra A, Durant RH (2012) Impact of a randomized campus/community trial to prevent high-risk drinking among college students. *Alcoholism, Clinical and Experimental Research* 36(10): 1767-1778.

Zoellner JM, Connell CC, Madson MB, Wang B, Reed VB, Molaison EF, Yadrack K (2011) H.U.B city steps: methods and early findings from a community-based participatory research trial to reduce blood pressure among African Americans. *The International Journal of Behavioral Nutrition and Physical Activity* 8: 5.

Protocol for Review 2

Moving from Review 1 (Map) to Review 2 (In-depth synthesis)

The original community engagement review suggested that, while peer-delivered interventions appeared to have higher effect sizes on health outcomes than interventions with community members leading, collaborating or consulting on design, there is insufficient evidence that one particular model of community engagement (i.e. combination of engagement across design, delivery and evaluation) is likely to be more effective for health outcomes than any other; and no clear model of community engagement was identified that works best across all contexts, populations and health issues (O'Mara-Eves et al. 2013). A synthesis of process evaluations from the previous review also suggested that implementation issues and consultative process may influence the success of an intervention (O'Mara-Eves et al. 2013). The findings from Review 1 suggested that both the modifiable processes and the extent of community engagement may be linked to effects on people's health. Additionally, subsequent analyses of specific community engagement processes in a smaller sub-set of breastfeeding interventions suggested that some processes, such as provider training, intervention feasibility and intensity, may be more aligned with effective outcomes (Thomas et al. 2014).

Our Advisory Group highlighted firstly the need to focus on the specific processes of community engagement (rather than motivations, mediators or conditions of community engagement), in order to inform PHAC members about the components of a successful community engagement initiative; and secondly, a need to further understand variations in the extent of community engagement across the design, delivery and evaluation of an intervention. The Advisory Group also identified a need to examine differences across age groups, health topics and type of disadvantage where possible.

Therefore the aim of the in-depth synthesis undertaken in Review 2 will be to examine and evaluate the processes and extent of community engagement across all stages of a research project. This is done for the purpose of informing NICE PHAC members about the likely components and processes of successful community engagement. Where the data permits, this will also reveal the components and processes less likely to lead to successful community engagement.

Methods

To understand the processes and extent of community engagement associated with effective health outcomes, we will undertake a synthesis comprised of three interconnected parts:

1. A framework analysis of process data based on our conceptual framework of community engagement (O'Mara-Eves et al. 2013)
2. A statistical moderator analysis, which will seek to test identified sub-groups for differential effectiveness, based on Review 1 findings
3. A synthesis using qualitative comparative analysis (QCA), which aims to generate theory about *necessary* and *sufficient* intervention components that are associated with effective interventions.

Details of each of these methods follow.

Identification of the dataset for analysis

The dataset for Review 2 will consist of:

- all trials that describe the type of community engagement as coalitions, collaborations, partnerships, community organisation service development or community action/support/mobilisation
- any process evaluations linked to them ('integral' process evaluations)
- all trials included in the original community engagement review plus those identified in the current review (N=28).

Risk of bias assessment

All outcome evaluations have been assessed for risk of bias in Review 1. Linked process evaluations will have a quality assessment undertaken using a tool developed from the original community engagement review. This is illustrated in Appendix 3.

Framework synthesis of process data

The processes of community engagement described under the 'Actions' column of the conceptual framework developed in the previous review of community engagement (see Appendix 2) are most likely to be modifiable; these will be used as the basis for the present analysis.. Studies will be coded with respect to whether there was evidence of the following modifiable processes:

- collective decision making
- bi-directional communication
- training support (i.e. for community members to learn how to take part in the coalition/collaboration/partnership)
- administrative support (i.e. paid staff to organise meetings, take and circulate minutes, etc.)
- sustainable funding processes
- frequency of coalition meetings
- duration of coalition meetings
- timing of coalition meetings
- adequacy of time allowed for relationships to develop
- other *modifiable* processes not described above (to capture any newly emerging processes).

We will extract Yes/No data (or amounts stated by authors) from all process evaluations for potentially modifiable processes of community engagement.

Consultation with NICE Stream 2 colleagues about emerging processes of community engagement in the literature may identify additional processes beyond those in the conceptual framework. We will add these as they are identified.

The resulting data extracted from this set of process evaluations will undergo a framework synthesis, where we 'populate' the framework above with studies that describe each process; and then thematically compare and contrast aspects of each process looking at differences in age groups, gender or socioeconomic disadvantage using an adaptation of previously developed methods (Oliver et al. 2008; Ritchie and Spence 1994; Thomas et al. 2012).

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Statistical moderator analysis

Tests of interaction will be performed using meta-regression to examine whether there is evidence that pooled intervention effects differ across processes of community engagement (identified in the process synthesis) and selected study characteristics previously identified from the original review and in Review 1, including comparator type and participant characteristics. Four research questions will be addressed:

1. Are potentially modifiable processes of community engagement associated with health outcome effects?
2. What is the relationship between the extent of community engagement (high, moderate or low) and health outcome effects?
3. Do direct comparisons of community engagement (i.e. studies that test community engagement alone versus no community engagement) differ in health outcome effects from indirect comparisons of community engagement (e.g. those that test community engagement plus an intervention versus usual care)? This will provide evidence on the effectiveness of community engagement in and of itself, as potential effectiveness from other components of an intervention will not influence the results.
4. Do health outcome effects differ for:
 - a) different age groups
 - b) studies targeting men only versus those targeting women only
 - c) studies specifically developed for low-income groups versus those that are not
 - d) 'distal' (e.g. self-efficacy), 'intermediate' (e.g. health behaviour), or 'proximal' (clinical measure) outcomes? This analysis aims to establish whether changes in distal and intermediate outcomes lead to changes in proximal outcomes.

Primary outcomes from each included study will be grouped according to common measures, and appropriate effect size estimates (or statistics used to derive these) will be extracted.

Meta-regression models will be fitted (where data permits) using the *metareg* command in Stata v.12.1 (Statacorp, College Station, TX). While there are no hard and fast rules, a minimum of 10 studies is often cited as sufficient for undertaking meta-regression analyses, and for the dichotomised constructs, at least three studies in each category. For each potential moderator, we will report the pooled effect size and corresponding 95% confidence intervals (CIs), the proportion of between-cluster variability (Adjusted R^2) accounted for by the moderator variable and I^2 , the proportion of residual between-study variation due to heterogeneity (Borenstein 2009).

Qualitative comparative analysis

Using the processes identified in the process synthesis, we will conduct qualitative comparative analysis (QCA) to identify factors that were, and were not, associated with intervention success. The studies included in the QCA will either be those that tested a direct comparison of community engagement versus indirect community engagement (if this data set is sufficiently large and coherent); OR a sub-set of studies from the moderator analysis which enables us to explore issues which this

analysis was unable to resolve. This approach will be used to develop theory on the *necessary* and *sufficient* intervention characteristics that are associated with effectiveness.

We will then use the outcome of our moderator analyses to initiate a ‘dialogue’ between the data and the analysis, resulting in additional study characteristics being captured. The output from this process will be the development of new theory to explain why particular outcomes have been observed - based on an iterative examination of study characteristics and their outcomes (Thomas et al. 2014).

Timelines

Timelines are not anticipated to change from the initial protocol. The main deliverables will consist of:

- Draft report to NICE (23 October 2014)
- Revised draft report to NICE (23 November 2014)
- Draft PHAC presentation to NICE (4 December 2014)
- Presentation of Review 2 findings to PHAC (11 December 2014)
- Final report to NICE (23 December 2014).

References

- Borenstein M (2009) Effect sizes for continuous data. In: Harris MC, Hedges LV, Valentine JC (eds) *The handbook of research synthesis and meta-analysis*. New York, NY: Russell Sage Foundation, pages 221-235.
- Oliver SR, Rees RW, Clarke-Jones L, Milne R, Oakley AR, Gabbay J, Stein K, Buchanan P, Gyte G (2008). A multidimensional conceptual framework for analysing public involvement in health services research. *Health Expectations* 11(1): 72-84.
- O’Mara-Eves A, Brunton G, McDaid D, Oliver S, Kavanagh J, Jamal F, Matosevic T, Harden A, Thomas J (2013) Community engagement to reduce inequalities in health: a systematic review, meta-analysis and economic analysis. *Public Health Research* 1(4).
http://www.journalslibrary.nihr.ac.uk/_data/assets/pdf_file/0006/94281/FullReport-phr01040.pdf (accessed 10 November 2014).
- Ritchie J, Spence L (1994) Qualitative data analysis for applied policy research. In: Bryman A, Burgess RG (eds) *Analyzing qualitative data*. London: Routledge, pages 173-194.
- Thomas J, Harden A, Newman M (2012) Synthesis: combining results statistically and appropriately. In: Gough D, Oliver S, Thomas J (eds) *An introduction to systematic reviews*. London: Sage.
- Thomas J, O’Mara-Eves A, Brunton G (2014) Using qualitative comparative analysis (QCA) in systematic reviews of complex interventions: a worked example. *Systematic Reviews*, 3:67.
<http://www.systematicreviewsjournal.com/content/pdf/2046-4053-3-67.pdf> (accessed 11 November 2014).

Appendices to protocol

Appendix P1: Advisory Group members

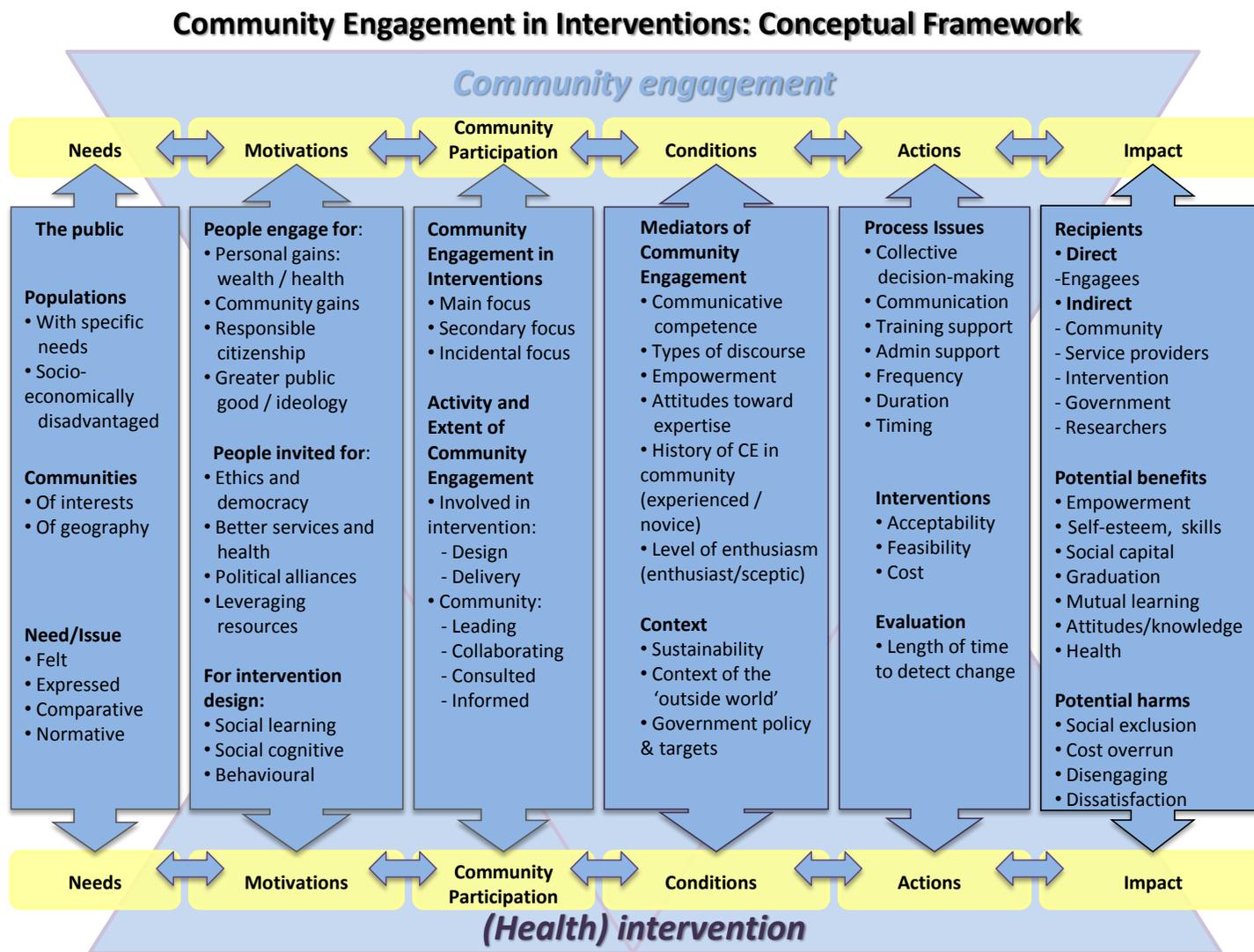
Professor Angela Harden, Professor of Community and Family Health, University of East London

Dr Janet Harris, Senior Lecturer, University of Sheffield

Professor Jane South, Professor of Healthy Communities, Leeds Beckett University

Dr Phil Taverner, Assistant Director, Public Health Research Programme, National Institute for Health Research

Appendix P2: Conceptual framework of community engagement in health interventions (O'Mara-Eves et al. 2013)



Appendix P3: Processes of community engagement and process evaluations quality assessment tool

1. Evidence of collective decision making

Was collective decision making described/evaluated? Please make a note of whether this was described or evaluated.

Collective decision making = Decisions are made by people acting as a group. Does not include decisions made by one person representing a group of people. Does include groups making decisions which include representatives or advocates among their members.

YES

NO

2. Evidence of bi-directional communication

Was bi-directional communication described/evaluated?

Please make a note of whether this was described or evaluated.

Bi-directional communication= A process is in place to allow two-way communication or dialogue between engagees and engagers.

Method of communication allows both engagees and engagers to express and receive the opinions of the other party.

YES

NO

3. Training support

Was training support described/evaluated?

Please make a note of whether this was described or evaluated.

Training support=i.e. for community members to learn how to take part in the coalition/collaboration/partnership.

PLEASE RECORD WHO IS BEING TRAINED e.g. lay health workers, health professionals, teachers, community members AND PURPOSE OF TRAINING e.g. to improve communication skills, to deliver intervention.

YES

NO

4. Adequate administrative support

Was administrative support described/evaluated?

Please make a note of whether this was described or evaluated.

Admin support= Staff/resources to organise meetings, take and circulate minutes, etc.

YES

NO

5. Frequency of coalition meetings

Please describe

Not reported

6. Duration of coalition meetings

Please describe whether or not meetings took place during design, delivery and evaluation phases of a project (and indicate meeting period i.e. how many weeks, months, years). NOT how many minutes meetings went on for!

Please describe

Not reported

7. Adequate time for relationship development

Considering the answers to Questions 5, and 6, do you think there was adequate time for relationship development? OR Do the authors clearly describe that there was adequate time for relationship development? Please mark 'Yes' or 'No' with text justifying your answer in the Info box.

YES

NO/NOT REPORTED

Please include here if not described

8. Other modifiable processes

Were there any other modifiable processes of community engagement described or evaluated by the authors?

Use this code to capture any newly emerging processes.

Please describe

9. Quality assessment (QA) When did process evaluation (PE) take place in relation to intervention?

Concurrently

Post-intervention

Not reported/unclear

10. (QA) Steps taken to increase rigour in sampling?

Characteristics of the sample critical to the understanding of the study context and findings were presented (i.e. do we know who the participants are in terms of, for example, role in the intervention/evaluation, basic sociodemographics).

Adequate steps taken

Inadequate steps taken

No/not reported

11. (QA) Steps taken to increase rigour in data collection?

Consider whether:

- data collection tools were piloted/validated (if quantitative)*
- data collection was comprehensive, flexible and/or sensitive enough to provide a complete and/or vivid and rich description/evaluation of the processes involved in the intervention*

(e.g. did the researcher's spend sufficient time at the site/with participants?

Did they keep following up?

Were steps taken to ensure that all participants were able and willing to contribute? (e.g. confidentiality, language barriers, power relations between adults and young people)

Was more than one method of data collection used?

Was there a balance between closed and open-ended data collection methods?)

Adequate steps taken

Community engagement via coalitions, collaborations and partnerships: a systematic review

Inadequate steps taken

No/not reported

12. (QA) Steps taken to increase rigour in data analysis?

Consider whether:

- *data analysis methods were systematic (e.g. was a method described/can a method be discerned?)*
- *the analysis was balanced in the extent to which it was guided by preconceptions or by the data (i.e. participants views, researcher observations, etc.)*
- *the analysis sought to rule out alternative explanations for findings (in qualitative research this could be done by, for example, searching for negative cases/exceptions, feeding back preliminary results to participants, asking a colleague to review the data, or reflexivity; in quantitative research this may be done by, for example, significance testing)*

Adequate steps taken

Inadequate steps taken

No/not reported

13. (QA) Rate PE for breadth and depth

Broad and deep

PE covers many processes in depth.

Broad and shallow

PE covers many processes but gives little detail on each process.

Narrow and deep

PE covers one or a few processes in depth.

Narrow and shallow

PE covers only one or a few processes, giving little detail for process(es).

14. (QA) Rate PE in terms of internal validity

Can you trust the results of the PE? Is this PE reliable?

High

Medium

Low

15. (QA) Rate PE in terms of usefulness

Is this PE useful for answering the review question?

High

Was the study broad and deep?

Medium

Low

Was the study narrow and shallow?

16. (QA) Overall quality rating

HIGH

Internal validity must be high and usefulness at least medium (or high)

Appendix P3: Processes of community engagement and process evaluations quality assessment tool

MEDIUM

Internal validity must be at least medium and usefulness must be at least medium (or high).

Studies with medium internal validity and low usefulness = low.

LOW

Internal validity is low, OR internal validity medium and usefulness low.

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