

Chapter 21: Reviews in public health and health promotion

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Key Points

- Public health and health promotion interventions are broadly-defined activities that are evaluated using a wide variety of approaches and study designs, including cluster-randomized trials. For some questions, the best available evidence may be from non-randomized studies.
- Searching for public health and health promotion literature can be a very complex task, and requires authors to use methods other than database searching to retrieve studies.
- Systematic reviews of public health and health promotion interventions have the potential to investigate differential outcomes for groups with varying levels of disadvantage. However, addressing inequalities is complicated not only by limited collection of information about differences between groups, but also by the fact that there is limited participation of disadvantaged groups in research.
- A further problem in reviewing public health and health promotion interventions is how to disentangle intervention effects from the influence of the context in which the intervention is implemented.
- Information should be sought on contextual factors and on intervention characteristics that may explain the extent to which the intervention or outcomes are sustained.

21.1 Introduction

Guidelines specific to conducting reviews of public health and health promotion interventions were developed by the Cochrane Health Promotion and Public Health (HPPH) Field (now transitioned to the Cochrane Public Health Review Group) in 2005 and updated in 2007. This chapter provides an overview of issues specific to health promotion and public health not discussed elsewhere in the *Handbook*. The complete version of the *Guidelines for Health Promotion and Public Health Systematic Reviews* can be accessed at the Cochrane Public Health Review Group's web site: www.ph.cochrane.org.

21.2 Study designs to include

Public health and health promotion are broadly-defined activities that are evaluated using a wide variety of approaches and designs. No single method can be used to answer all relevant questions about all public health and health promotion problems and interventions. If the review question has been specified clearly then types of study designs needed to answer it should automatically follow (Petticrew 2003). A preliminary scoping search will also help to identify the types of study designs that may have been used to study the intervention. The criteria used to select studies should primarily reflect the question or questions being answered in the review, rather than any predetermined hierarchy (Glasziou 2004). The decisions about which type(s) of study design to include will influence subsequent phases of the review, particularly searching, assessment of risk of bias, and analysis (especially for meta-analyses).

Randomized trials provide a useful source of evidence of effectiveness, although their results may have limited generalizability (Black 1996). For many health promotion and public health interventions randomized trials may not be available, due to issues including feasibility and ethics. Cluster-randomized trials are increasingly adopted within the field of public health; some interventions require their application at the cluster level (Donner 2004). These trials can contribute valuable evidence if a sufficient number of units are randomized to ensure even distribution of potential confounders among groups: see Chapter 16 (Section 16.3).

For some questions, non-randomized studies may represent the best available evidence (of effectiveness). Reviewing non-randomized evidence can give an estimate of the nature, direction and size of effects. Demonstrating the patterns of evidence drawn from different study designs may lead to the development of subsequent study designs (including randomized trials) to test the intervention. Studies generating qualitative data may also be relevant to other kinds of questions beyond effectiveness questions. For example, data may be gathered on the preferences of the likely recipients of the interventions and the factors that constrain or facilitate the successful outcome of particular interventions. Research is ongoing into the differences between randomized and non-randomized studies of public health and health promotion interventions (for example the UK Methodology Programme). Chapter 13 discusses general issues on the inclusion of non-randomized studies in Cochrane reviews, and Chapter 20 addresses qualitative studies.

21.3 Searching

Finding studies on public health and health promotion interventions is much more complicated than retrieving medical studies due to literature being widely scattered (Peersman 2001). The multidisciplinary nature of public health and health promotion means that studies can be found in a

number of different areas and through a wide range of electronic databases (Beahler 2000, Grayson 2003). Difficulties also arise because terminology is imprecise and constantly changing (Grayson 2003). Therefore, searching for public health and health promotion literature can be a very complex task, and requires authors to use retrieval methods other than database searching to retrieve studies.

To overcome some of the difficulties in identifying qualitative research, current best practice requires the researcher to conduct comprehensive searches (e.g. sensitive searches of multiple sources). However, this approach, which attempts to maximize the number of relevant records identified, results in the retrieval of high numbers of records, many of which will not be relevant (Shaw 2004). Due to inadequate indexing terms for qualitative research in bibliographic databases, we do not currently recommend that study design filters be applied. We recognize that often pragmatic decisions may need to be taken when balancing the time and other resources required in conducting comprehensive searches against the ratio of relevant to non-relevant studies identified. Researchers may decide that they need to apply study design filters and, if so, they need to report this when describing their search strategies to make the potential limitations of the searches clear. [Table 21.3.a](#) lists some electronic databases relevant to a variety of public health and health promotion topics.

Table 21.3.a: Electronic databases relevant to public health and health promotion (web sites listed for databases freely available via the internet)

Field	Resources
Psychology	PsycINFO/PscyLIT
Biomedical	CINAHL, LILACS (Latin American Caribbean Health Sciences Literature, www.bireme.br/bvs/l/ibd.htm), Web of Science, Medline, EMBASE, CENTRAL, SCOPUS
Sociology	Sociofile, Sociological Abstracts, Social Science Citation Index, Social Policy and Practice
Education	ERIC (Educational Resources Information Center), C2-SPECTR (Campbell Collaboration Social, Psychological, Educational and Criminological Trials Register, www.campbellcollaboration.org), REEL (Research Evidence in Education Library, EPPI-Centre, eppi.ioe.ac.uk)
Transport	NTIS (National Technical Information Service), TRIS (Transport Research Information Service, ntl.bts.gov/tris), IRRD (International Road Research Documentation), TRANSDOC (from ECMT (European Conference of Ministers of Transport)).
Physical activity	SportsDiscus
HP/PH	BiblioMap, TRoPHI (Trials Register of Promoting Health Interventions) and DoPHER (Database of Promoting Health Effectiveness Reviews) (EPPI-Centre, eppi.ioe.ac.uk), Public Health Electronic Library (National Institute for Health and Clinical Excellence, www.nice.org.uk/guidance) Database of abstracts of reviews of effectiveness (DARE)
Other	Popline (population health, family planning) db.jhuccp.org/popinform/basic.html , Enviroline (environmental health) – available on Dialog, Toxfile (toxicology) – available on Dialog, Econlit (economics), NGC (National Guideline Clearinghouse, www.guideline.gov)
Qualitative	ESRC Qualitative Data Archival Resource Centre (QUALIDATA, www.qualidata.essex.ac.uk), Database of Interviews on Patient Experience (DIPEX, www.dipex.org)

21.4 Assessment of study quality and risk of bias

Assessing the quality of public health and health promotion studies, and their resulting risk of bias, may be difficult, partly due to the wide variety of study designs used. Authors need to consider the criteria to be used to assess quality at the planning stage of the review. Appraisal criteria will depend on the type of study included in the review. Authors should be guided by the Cochrane Review Group (CRG) editing their review and the appraisal tools they use. However the following describes tools which may be useful for assessing studies of public health and health promotion interventions.

- The risk of bias in randomized trials should be assessed using the Collaboration's 'Risk of bias' tool described in Chapter 8 (Section 8.5).
- Issues for cluster-randomized trials are discussed in Chapter 16 (Section 16.3.2).
- For risk of bias in non-randomized studies, authors should consult Chapter 13 (Section 13.5).
- Authors may choose to use the Quality Assessment Tool for Quantitative Studies (Effective Public Health Practice Project 2007). This tool was developed by the Effective Public Health Practice Project, Canada, and covers any quantitative study design. The tool takes between 10-15 minutes to complete. A comprehensive dictionary for the assessment tool is also published on their web site (<http://www.myhamilton.ca/myhamilton/CityandGovernment/HealthandSocialServices/Research/EPHPP/>). This tool includes components of intervention integrity and was judged to be suitable to use in systematic reviews of effectiveness in the review by Deeks et al. (Deeks 2003).
- Guidance is available from the Cochrane Effective Practice and Organisation of Care Group on interrupted time series and controlled before-and-after studies (Cochrane EPOC Group 2008).
- The results of uncontrolled studies (also called before-and-after studies without a control group) should be treated with caution. The absence of a comparison group makes it impossible to know what would have happened without the intervention. Some of the particular problems with interpreting data from uncontrolled studies include susceptibility to problems with confounding (including seasonality) and regression to the mean.

21.5 Ethics and inequalities

Public health and health promotion interventions have the potential to improve the health of populations. Systematic reviews can determine the effectiveness of these interventions in achieving their desired outcomes. There are some specific ethical considerations that should be taken into account in reviewing the effectiveness of public health and health promotion interventions. Effectiveness is typically measured in terms of the total number (population) who benefit from the intervention. This consequentialist approach takes no account of the distribution of benefits (Hawe 1995), and therefore does not address issues of health equity. Overall improvements in health behaviours or health outcomes may actually mask the differences in health outcomes between groups (Macintyre 2003). Interventions that work for those in the middle and upper socio-economic positions may not be as effective for those who are disadvantaged. Even well-intentioned interventions may actually increase inequalities. Health differentials that exist between groups may be due to complex interactions between many of the factors relating to disadvantage (Jackson 2003).

Systematic reviews of public health and health promotion interventions have the potential to investigate differential outcomes for groups with varying levels of disadvantage. This is important as

identifying the effect of interventions on disadvantaged groups can inform strategies aimed at reducing health inequalities and health inequities. Health inequalities are “differences, variations, and disparities in the health achievements of individuals and groups” (Kawachi 2002). Health equity is an ethical concept referring to the fairness or unfairness of particular health inequalities. The International Society for Equity in Health defines equity in health as: “the absence of potentially remediable, systematic differences in one or more aspects of health status across socially, economically, demographically, or geographically defined populations or subgroups” (Macinko 2002). Turning this around, health inequities are those health inequalities that are unfair or unjust, or stem from some kind of injustice (Kawachi 2002). Reviews of effectiveness of public health and health promotion interventions can provide information about the effects of interventions on health inequalities. This information can then be used to address health inequities.

Disadvantage may be considered in terms of place of residence, race or ethnicity, occupation, gender, religion, education, socio-economic position (SES) and social capital, known by the PROGRESS acronym (Evans 2003). Authors should carefully consider which of these are relevant to their population of interest; data will then be extracted by these factors. The Cochrane Health Equity Field and Campbell Equity Methods Group are working on definitions of equity as relevant to Cochrane reviews: www.equity.cochrane.org.au/en/index.html.

Systematic reviews rely upon there being sufficient detail in study data to allow for identification of relevant subgroups for analysis in relation to health inequalities. This requires attention not only to levels of benefit or harm, but also to the distributions of these; who is benefiting, who is harmed, who is excluded?

Reviews of the effectiveness of interventions in relation to health inequalities require three components for calculation:

- a valid measure of health status (or change in health status);
- a measure of socio-economic position (or disadvantage); and
- a statistical method for summarizing the magnitude of health differences between people in different groups.

Review authors should decide which indicator(s) of disadvantage or status are relevant to the review topic. There are many factors that relate to disadvantage (acronym PROGRESS) and authors will need to collect data on any of the factors likely to be relevant to their population of interest (PROGRESS = residence, race or ethnicity, occupation, gender, religion, education, socio-economic position (SES) and social capital).

Conducting reviews addressing inequalities is complicated not only by limited collection of information about differences between groups, but also by the fact that there is limited participation of disadvantaged groups in research. Despite these barriers, systematic reviews can play an important role in raising awareness of health inequalities. The Cochrane Health Equity Field and Campbell Equity Methods Group have identified a number of equity-relevant reviews that may provide additional guidance for authors.

To locate studies that examine inequalities, review authors will need to cast the net broadly when performing searches and contact authors for further information regarding socio-economic data. This

latter task may be necessary because primary studies often fail to present information on the socio-economic composition of participants (Oakley 1998, Jackson 2003, Ogilvie 2004). Once studies have been appraised and data have been extracted, studies need to be classified as to whether they are effective for reducing health inequalities. An effective intervention to reduce inequity is generally one that is more effective for disadvantaged groups or individuals. A potentially effective intervention for reducing inequities is one that is equally effective across the socio-economic spectrum (may reduce health inequalities due to the prevalence of health problems among the disadvantaged being greater). The judgement becomes more difficult when the intervention is targeted only at disadvantaged individuals or groups. In a Cochrane review of school feeding problems, effective interventions aimed solely at disadvantaged children were labelled as ‘potentially’ effective in reducing socio-economic inequalities in health (Kristjansson 2007). It is impossible to determine differential effectiveness if studies comprise mixed levels of advantage and disadvantage but do not include results that can be broken down by socio-economic (or similar) grouping.

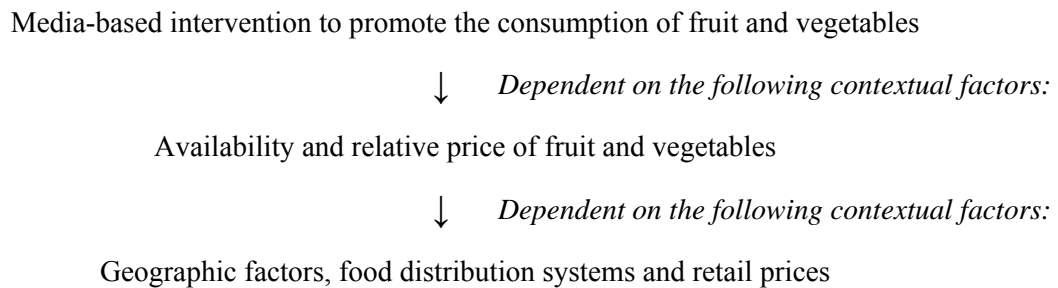
21.6 Context

The type of interventions implemented and their subsequent success or failure are highly dependent on the social, economic and political context in which they are developed and implemented (see example in Figure 21.6.a). A problem in reviewing public health and health promotion interventions is how to disentangle ‘intervention’ effects from effects that should be more appropriately called ‘program by context interactions’ (Hawe 2004). Traditionally, outcomes have been attributed to the intervention. However, the outcomes noted in studies may in fact be due to pre-existing factors of the context into which the intervention was introduced. Hence, context should be considered and measured as an effect modifier in studies (Eccles 2003, Hawe 2004). Such contextual factors might relate to aspects of the program’s ‘host organization’. Broader aspects of context might include aspects of the *system within which the host organization operates*. Some investigators would also argue that context factors also pertain to the *characteristics of the target group or population*. For many years these aspects have been acknowledged (but not clearly specified) when decision makers have argued that results of evidence reviews from other countries do not apply in their own country.

Use of the term ‘context evaluation’ became more prevalent in health promotion after the review by Israel and colleagues (Israel 1995). However the systematic investigation of context-level interactions as part of the design of randomized trials of community or organizational-level interventions is almost unknown (Eccles 2003, Hawe 2004). Instead, aspects of context have been explored as part of the more developed field of sustainability research or research on program institutionalization: see Section 21.7. A related and growing multidisciplinary research field is the implementation and integration sciences that are leading researchers more into the complexity of the change processes that interventions represent (Ottoson 1987, Bauman 1991, Scheirer 1994). At the present time, quantitative studies lag behind qualitative analyses of context.

Systematically disentangling context effects from intervention effects in anything other than a study set up for this purpose is extremely difficult. Whilst some programs have been transferred from one context to another and benefits have been observed (Resnicow 1993), others have not (Lumley 2004). Cluster-randomized designs may be expected (in theory) to even out important aspects of context, provided that the sample size is sufficient. However, few investigators at present measure or report on any aspect of context that might be important to our assessment. We also note recent calls for a greater focus on external validity (Glasgow 2006, Green 2006). Working together, journal editors and researchers are encouraging more examination of, and reporting on, aspects of intervention context (Armstrong 2008). This should be reflected in the content of future Cochrane reviews.

Figure 21.6.a: Example of intervention success as dependent on the context in which it is implemented (Frommer 2003)



21.7 Sustainability

Sustainability refers to the general phenomenon of the continuation of an intervention or its effects (Shediac-Rizkallah 1998, Swerissen 2004). Sustainability of interventions should be an important consideration in systematic reviews. Attention to the long-term viability of health interventions is likely to increase as policy makers, practitioners and funders become increasingly concerned with allocating scarce resources effectively and efficiently (Shediac-Rizkallah 1998). Users of reviews are interested in knowing whether the health benefits, such as reductions in specific diseases or improvements in health, are going to be sustained beyond the life of the interventions.

Unfortunately, collecting data on the extent to which the intervention and outcomes are sustained is often not carried out, which limits the extent to which long-term impacts can be assessed. Careful consideration in Cochrane reviews of how previous studies have (or have not) addressed issues of sustainability will increase our understanding in this area and hopefully also stimulate improved design for assessment of sustainability in future studies.

A sustained or sustainable program does not necessarily result in sustained outcomes and not all interventions need to be sustained in order to be useful or effective (Shediac-Rizkallah 1998). Also, review authors should consider whether the sustainability of the outcomes is relevant to the objectives of the intervention. If this is the case, authors should consider what outcomes have (or should have) been measured, over what period, and what the pattern of outcomes is over time.

Information should be sought on both contextual factors and intervention characteristics that may explain the extent to which the interventions or outcomes are sustained. Where sustainability of outcomes has not been measured, authors should explore the *potential* of the intervention outcomes to be sustained. Four frameworks may be useful to assist in determining sustainability:

1. Bossert lists the following five factors influencing sustainability (Bossert 1990):

- the economic and political variables surrounding the implementation and evaluation of the intervention;
- the strength of the institution implementing the intervention;
- the full integration of activities into existing programs/services/curriculum/etc;
- whether the program includes a strong training component (capacity building); and

- community involvement/participation in the program.
2. The framework developed by Swerissen and Crisp (Swerissen 2004) guides decisions about the likely sustainability of interventions and effects at different levels of social organization. This framework outlines the relationships between intervention level, strategies and the likely sustainability of interventions and effects.
 3. Shediac-Rizkallah and Bone present a useful framework for conceptualizing sustainability (Shediac-Rizkallah 1998). In this framework key aspects of program sustainability are defined as 1) maintenance of health benefits from the program; 2) institutionalization of a program within an organization; and 3) capacity building in the recipient community. Key factors influencing sustainability are defined as 1) factors in the broader environment; 2) factors within the organizational setting; and 3) project design and implementation factors.
 4. The Centre for Health Promotion, University of Toronto, has also produced a document outlining four integrated components of sustainability (Health Communication Unit 2001).

21.8 Applicability and transferability

Applicability needs to be considered when deciding how to translate the findings of a given study or review to a specific population, intervention, or setting (see Chapter 12, Section 12.3). *Transferability* or the *potential for translation* are similar and appropriate terms. Applicability is closely related to integrity, context, and sustainability as discussed in previous sections of this chapter.

Systematic reviews of public health and health promotion interventions encompass several issues that make the process of determining applicability even more complex than in the clinical trials literature. First, a number of public health interventions do not involve randomization. Although not an inherent characteristic of non-randomized designs, these studies may have less well-defined eligibility criteria, settings, and interventions, making determinations of applicability more difficult. Then again, results from randomized trials may be less generalizable due to unrepresentative providers of the intervention or study participants not being typical of the target group (Black 1996). Second, public health and health promotion interventions tend to have multiple components. This makes it difficult to 1) determine what specific intervention component had the noted effect, and 2) assess the synergy between components. Third, in community interventions, implementation and adherence may be much more difficult to achieve and to measure. This also makes it harder to interpret and apply the findings. Fourth, in public health and health promotion interventions the underlying socio-cultural characteristics of communities are complex and difficult to measure. Thus it is difficult to define to whom and to what degree the intervention was applied, complicating determinations of applicability. On the other hand, this heterogeneity may increase applicability, as the original populations, settings, and interventions may be quite diverse, increasing the likelihood that the evidence can be applied broadly.

Review authors are ideally positioned to summarize the various aspects of the evidence that are relevant to potential users. This enables users to compare their situation or setting to that presented in the review and note the similarities and differences. Users can then be explicit about the relationship between the body of evidence and their specific situation.

The following questions may assist authors to consider issues of applicability and transferability relevant to public health and health promotion (Wang 2006).

Applicability

- Does the **political environment** of the local society allow this intervention to be implemented?
- Is there any political barrier to implementing this intervention?
- Would the general public and the targeted (sub) population accept this intervention? Does any aspect of the intervention go against local **social norms**? Is it ethically acceptable?
- Can the contents of the intervention be tailored to suit the local culture?
- Are the essential **resources** for implementing this intervention available in the local setting? (a list of essential resources may help to answer this question);
- Does the target population in the local setting have a sufficient **educational** level to comprehend the contents of the intervention?
- Which organization will be responsible for the provision of this intervention in the local setting?
- Is there any possible barrier to implementing this intervention due to the **structure of that organization**?
- Does the provider of the intervention in the local setting have the **skill** to deliver this intervention? If not, will training be available?

Transferability

- What is the **baseline prevalence** of the health problem of interest in the local setting? What is the difference in prevalence between the study setting and the local setting?
- Are the **characteristics of the target population** comparable between the study setting and the local setting? With regard to the particular aspects that will be addressed in the intervention is it possible that the characteristics of the target population, such as ethnicity, socio-economic status, educational level etc, will have an impact on the effectiveness of the intervention?
- Is the **capacity to implement** the intervention comparable between the study setting in such matters as political environment, social acceptability, resources, organizational structure and the skills of the local providers?

21.9 Chapter information

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