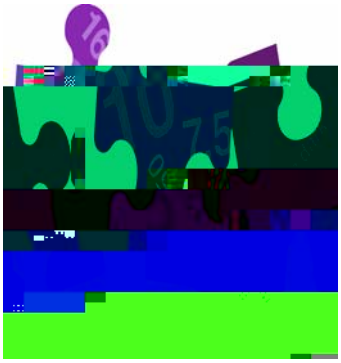

Guidance on the Conduct of Narrative Synthesis in Systematic Reviews

A Product from the ESRC Methods Programme

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CHAPTER 1: ABOUT THE GUIDANCE

Do domestic smoke alarms save lives? Can young offenders be 'scared straight' through tough penal measures? What factors should be considered when designing and implementing a multi-sectoral injury prevention programme in a local area? Making sense of large bodies of evidence drawn from research using a range of methods is a challenge. Ensuring that the product of this synthesis process

that produce economic and qualitative data may all need to be combined to inform judgements on the effectiveness, cost-effectiveness, appropriateness and feasibility of a wide range of interventions and policies. Evidence syntheses may also addresses many other types of questions including, for example, questions about the current state of knowledge on the causes of particular health or social problems. They are also undertaken in diverse fields from health services research and sociology to engineering and urban planning.

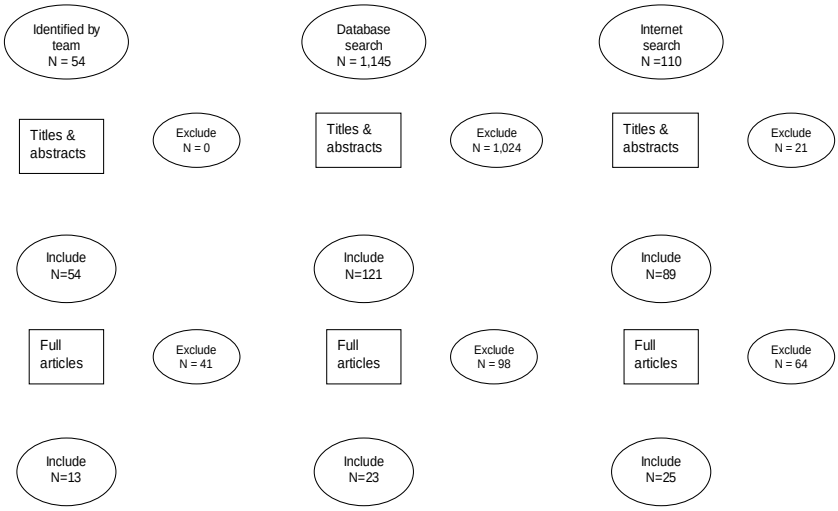
1.3 Why this guidance has been produced?

The Cochrane Collaboration, established in 1993, is an international non-profit and independent organisation, dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide. It produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other studies of interventions.

Since its inception, there have been major developments in methods for the systematic review of research evidence which have increased the reliability of the evidence about ***effectiveness*** available to decision makers by combining findings from good quality studies which evaluate policies, specific interventions or professional practices. However, even in reviews focusing on effectiveness, meta-analysis is often an inappropriate approach to synthesis. Additionally, there has been increasing recognition of the need for review and synthesis of evidence to answer questions other than those focusing on effectiveneen in oTD0ratese ail

reasonable level of research literacy and we would advise anybody without experience of systematic review work to collaborate with more experienced colleagues.

The phrase *evidence synthesis* can be used to mean many different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CHAPTER 2: THE SYSTEMATIC REVIEW PROCESS – AN OVERVIEW

The process of undertaking a systematic review has been well documented and there is broad agreement about the main elements involved. Six main elements are identified here including the process of synthesis, the focus of this guidance. The other five elements of a systematic review are not described in detail. References to detailed methodological advice on systematic reviewing are included in Appendix 2. This chapter provides a framework to aid understanding of where the synthesis occurs in the systematic review process.

2.1 Identifying the review focus, searching for and mapping the available evidence

Getting the question(s) 'right' is critical to the success of the systematic review process overall. The review question has to be both ***relevant*** to potential users of the review and in theory at least ***answerable***. In some instances the question is clearly formulated at an early stage. More often, however, whilst an initial focus for the review is identified, a '***mapping***' of the available relevant evidence needs to be carried out before the specific question(s) for the review can be clearly specified.[6]

The mapping exercise can be used to assess the need for a systematic review and/or to guide and refine the scope of the review. It is especially useful in situations where a broad question is of interest, such as "how effective are interventions to prevent unintentional injuries?" By mapping the available literature addressing this topic it is possible to:

- Describe the types of interventions that have been evaluated
- Describe the sorts of study designs used in these evaluations and
- Assess the volume of potentially relevant literature.

Based on this initial mapping the scope of the review can be refined, so that the questions to be addressed are both answerable and relevant. The search for studies should be comprehensive and appropriate to the question posed so a mapping exercise may also help to refine a search strategy.

2.2 Specifying the review question

It will take time to get the review question right. In the context of reviews of the effectiveness of interventions, there is general agreement that a well-formulated question involves three key components: the people (or participants) who are the focus of the interventions, the interventions, and the outcomes. Sometimes a fourth component that relates to type of study design is also included. If the review intends to focus on the factors shaping the implementation of an intervention then the question will also have to include components related to this, such as aspects of the context in which the intervention was implemented.

2.3 Identifying studies to include in the review

Once the precise review question has been agreed, the key components of the question form the basis of specific selection criteria, each of which any given study must meet in order to be included in the review. It is usually necessary to elaborate on the key components of the review question so as to aid process of identifying studies to include in the review and make sure that decisions made are transparent to users of the review. These might include, for example, being more precise about the age groups of participants to be included in the review or about aspects of the intervention design.

2.4 Data extraction and study quality appraisal

Once studies are selected for inclusion a process of study quality appraisal and data extraction takes place. Decisions about which data should be extracted from individual studies should also be guided by the review question. In the context of a systematic review addressing a question about the effect of a particular intervention, for example, the data to be extracted should include details of: the

CHAPTER 3: GUIDANCE ON NARRATIVE SYNTHESIS – AN OVERVIEW

As we have noted this guidance focuses on the conduct of narrative synthesis in systematic reviews of research-based evidence on:

- The ***effects*** of interventions and/or
- The factors shaping the ***implementation*** of interventions.

Although we have restricted our focus in this way, the guidance may also be helpful for people focusing on other types of review questions, for example, about the needs and/or preferences of par.6617 0 Tect

Main elements of synthesis	Effectiveness Reviews	Implementation Reviews
1. Developing a theoretical model of how the interventions work, why and for whom	***Purpose:*** • To inform decisions about the review question and what types of studies to review • To contribute to the interpretation of the review's findings • To assess how widely applicable those findings may be	***Purpose:*** • To inform decisions about the review question and what types of studies to review • To contribute to the interpretation of the review's findings • To assess how widely applicable those findings may be
2.Developing a preliminary synthesis	***Purpose:*** • To organise findings from included studies to describe patterns across the studies in terms of: o The direction of effects[1] o The size of effects	***Purpose*:** • To organise findings from included studies in order to: o Identify and list the facilitators and barriers to implementation reported o Explore the relationship between reported facilitators and barriers
3. Exploring relationships in the data	***Purpose:*** • To consider the factors that might explain any differences in direction and size of effect across the included studies	***Purpose:*** • To consider the factors that might explain any differences in the facilitators and/or barriers to successful implementation across included studies • To understand how and why interventions have an effect
4. Assessing the robustness of the synthesis product	***Purpose:*** • To provide an assessment of the strength of the evidence for: o Drawing conclusions about the likely size and direction of effect o Generalising conclusions on effect size to different population groups and/or contexts	***Purpose:*** • To provide an assessment of the strength of the evidence for drawing conclusions about the facilitators and/or barriers to implementation identified in the synthesis. Generalising the product of the synthesis to different population groups and/or contexts

Figure 2. The main elements in a narrative synthesis

Element 1: The role of theory in evidence synthesis

Although not all reviewers may choose to do this, it can be useful to develop a model of what Weiss refers to as an intervention's "theory of change" to inform a systematic review. The "theory of change" describes "*the chain of causal assumption that link programme resources, activities, intermediate outcomes and ultimate goals".*[7] It is concerned with how the intervention works, why, and for whom. Reviewers would normally develop their theory of change at an early stage of a review before the synthesis proper begins. If done early enough an understanding of the theory behind the intervention can inform decisions about the review question and the types of studies to include. In terms of the narrative synthesis, a "theory of change" can contribute to the interpretation of the review's findings and will be valuable in assessing how widely applicable those findings may be. Information on programme theory may come from explicit statements in study reports on the goals of the intervention (who it is intended to affect, in what way and how) and from other reviews. The theory can be presented in narrative form or as a diagram like the one reproduced below in Figure 3.

Theory building and theory testing is a neglected aspect of systematic reviews. Shadish (1996) has pointed out that meta-analysis for example has focused too much on descriptive causation (simply describing the size of an effect) and too little on the development of explanatory theories.[8] Yet systematic reviews - whether of qualitative or quantitative research - are likely to be much more powerful than single studies for these purposes. In turn systematic reviews can contribute to developing and testing the limits of theories, by examining how contextual or temporal variables moderate outcomes. Theories themselves can also be the subject of systematic reviews.[9-13]

[1] The notion of 'effects' should not be taken for granted. In some reviews the synthesis process will involve the reviewers in a process intended to help to understand what the effects of a particular interventions or programme are. This is particularly the case when the effects are presented in narrative form rather than in numerical form or derived from structured questionnaires/indicators.

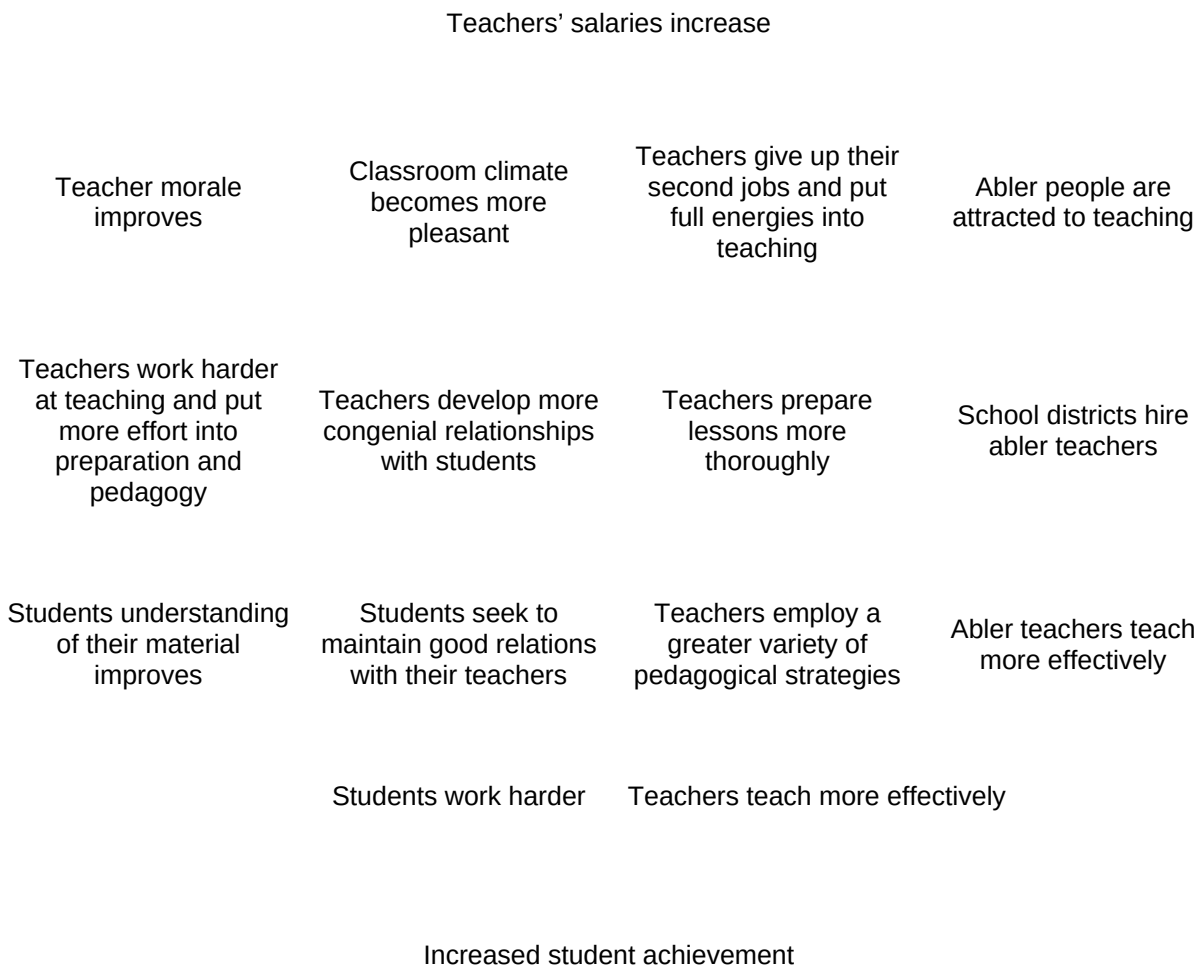


Figure 3. Example of a Programme Theory model: mechanisms by whicm4g TD-0.aT,cT7 TD

Element 3: Exploring relationships within and between studies

As patterns across study results begin to emerge from preliminary attempts at a synthesis reviewers should begin to subject these to rigorous interrogation in order to:

- Identify any factors that might explain differences in direction and size of effect across the included studies or in the type of facilitators and/or barriers to successful implementation
- To understand how and why interventions have or do not have an effect or why particular barriers and/or enablers to implementation operate

At this point in the synthesis the reviewers move beyond identifying, listing, tabulating and/or counting results to exploring relationships within and across the included studies. The relationships of interest are of two broad types:

- Those between characteristics of individual studies and their reported findings
- Those between the findings of different studies eeeps of differ6(rep1(0.dc-0.0d5.3(ath)4.4c-0.w)7.1(a)may

groups. For many social and public health interventions, theories about mechanisms and interactions may be under-developed and the exploration and interpretation of heterogeneity complex. It may therefore be difficult to anticipate the main sources of heterogeneity *a priori*.

Variability in study populations, interventions and settings
The content of complex social interventions may vary between specific settings or populations. Some of the variability may be intentional as interventions are tailored to local needs (including characteristics which may influence the outcomes of interest such as race, gender, and socio-economic position).

As noted earlier an understanding of the interventions 'theory of change' will be particularly valuable when exploring the influence of heterogeneity especially when interpreting differences between subgroups of studies (post-hoc sub group analyses). The findings of individual studies will vary with study characteristics such as intervention type, quality and extent of implementation, and the study setting, and may vary between different subgroups of participants. Developing plausible explanations for these differences (some of which will be due to chance) is difficult but sub-group findings that are supported by an *a priori* rationale (that is, which have been described in the programme theory) are more plausible than those which are not.

The extent to which reviewers are able to consider the impact of context in systematic reviews evaluating the effects of interventions or factors impacting on implementation will depend on the availability of relevant information in the included studies. Typically, reviews focusing on effects do not consider the context in which an intervention is implemented in great depth. Given that implementation studies are focusing specifically on how dimensions of context (alongside other factors) impinge on implementation, the data available in these studies should be much richer. However, research has suggested that there may be a particular problem with inadequate reporting of research methods in these studies.[21] The dimensions of context which might be relevant to exploring differences in the reported results of included studies will depend on the nature of the intervention with which the review is concerned.

Other factors to be considered in this exploration of factors mediating the impact of an intervention, or explanations of how or why it has a particular impact, may not be able to be extracted from studies as 'data'. These include information about the general approach taken by the researchers both in terms of theory and methods.

Element 4: Assessing the robustness of the synthesis

The notion of robustness in relation to evidence synthesis is complex. Most straightforwardly robustness can be used to refer to the methodological quality of the primary studies included in the review and/or the trustworthiness of the product of the synthesis process. Obviously, these are related. The trustworthiness of a synthesis will depend on both the quality and the quantity of the evidence base it is built on. If primary studies of poor methodological quality are included in the review in an uncritical manner then this will affect the trustworthiness of the synthesis.

The trustworthiness of the synthesis will also depen

It is particularly important that the results of any appraisal of the methodological quality of included studies be considered in a systematic manner. Whilst there are well-established methods for assessing the quality of intervention studies, this is not the case in relation to studies of implementation processes, qualitative research or mixed methods research in general so there are no approaches to quality assessment that can be recommended in these situations. Additionally, the results of the appraisal process may or may not have been used to exclude some studies on methodological grounds. Whatever approach to quality appraisal is adopted, (probably at an earlier stage of the review process) this information should inform the assessment of the strength or weight of the evidence available to support conclusions drawn on the basis of the synthesis process.[6]

3.2 Tools and techniques for narrative synthesis

In this section we provide brief descriptions of the tools and techniques we have identified which can be used in the process of narrative synthesis. We have divided these into those which appear to be most appropriate for use in each of the three analytical elements of the synthesis.

At the beginning of each sub-section below the main tools and techniques are listed in a table. As we have noted, decisions about which of these are appropriately used in a specific synthesis will be determined by the nature of the evidence being synthesised as will be illustrated in the practical applications of the guidance.

Before describing the tools and techniques a general comment about the visual representation of data from included studies is warranted. Many of the specific tools and techniques described involve visual representation and this can be invaluable at all stages of a synthesis. However, it is important to recognise that visual representation of data is not sufficient in itself as a synthesis. As Evans[22] has argued, for example, tabulation and other visual representations of data tend to reduce studies to their key characteristics neglecting aspects that could be important in understanding the patterns revealed.

stage of the review process it will not be possible to give more weight to one study over another and hence a fuller description because methodological quality and other aspects of relevance will not yet have been assessed. Whilst textual

common rubric will allow reviewers to develop a meaningful summary of study results and a more robust assessment of the range of effects that would be anticipated from a particular intervention.

Vote-counting as a descriptive tool

Although some commentators[27] have argued strongly against 'vote counting' calculating the frequency of different types of results across included studies can be a useful way of producing an initial description of patterns across the included studies.[28] Indeed, it could be argued to be an intrinsic element of the preliminary stages of any narrative synthesis. In the case of reviews evaluating the effects of an intervention, a simple approach to vote-counting might involve the tabulation of statistically significant and non-significant findings. Some reviewers have developed more complex approaches to vote counting, both in terms of the categories used and by assigning different weights or scores to different categories.

The interpretation of the results of any vote counting exercise is a complex task. According to some methodologists writing about vote counting, the category with the most studies "wins".[29] Similarly in the context of reviews of effects, some commentators argue that the statistical significance category 'containing the largest number of studies represents the direction of the true relationship'.[30] However, it has also been argued that, this approach to synthesis "tends to give equal weight to studies with different sample sizes and effect sizes at varying significance levels, resulting in misleading conclusions".[31] There are examples where vote counting has been compared with other methods of synthesis and major differences in findings have been reported.[32-34] So, whilst vote counting can be a useful step in a preliminary synthesis the interpretation of the results must be approached with caution and these should be subjected to furt

systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding.'[37] Unlike thematic analysis, it is essentially a quantitative method, since all the data are eventually converted into frequencies, though qualitative skills and knowledge of underlying theory may be needed to identify and characterise the categories into which findings are to be fitted.

Element 3: Tools and techniques for exploring relationships

1.	Graphs, frequency distributions, funnel plots, forest plots and L'Abbe plots
2.	Moderator variables and sub-group analyses

Developing conceptual models

There are a number of approaches to exploring relationships within and across the studies included in a systematic review that can be broadly described as conceptual models. The basic idea underpinning these approaches is (i) to group findings that reviewers decide are empirically and/or conceptually similar and (ii) to identify (again on the basis of empirical evidence and/or conceptual/theoretical arguments) relationships between these groupings. The approaches often involve visual methods to help to construct groupings and relationships and to represent the final product of this process. Three specific approaches were identified in the methodological literature review conducted to support the production of this guidance: idea webbing, conceptual mapping and conceptual triangulation. Although we describe them separately below they are very similar as we discuss in the demonstration syntheses reported in chapter 4 and 5. It is perhaps worth noting that these tools can also be used to develop review questions and to begin to identify moderator variables to be explored in more detail before the synthesis begins but we do not discuss these uses in this guidance.

Ideas webbing

Ideas webbing suggested by Clinkenbeard,[29] as a method for conceptualising and exploring connections among the findings reported by the studies included in a review. This approach uses spider diagrams to develop a visual picture of possible relationships across study results.

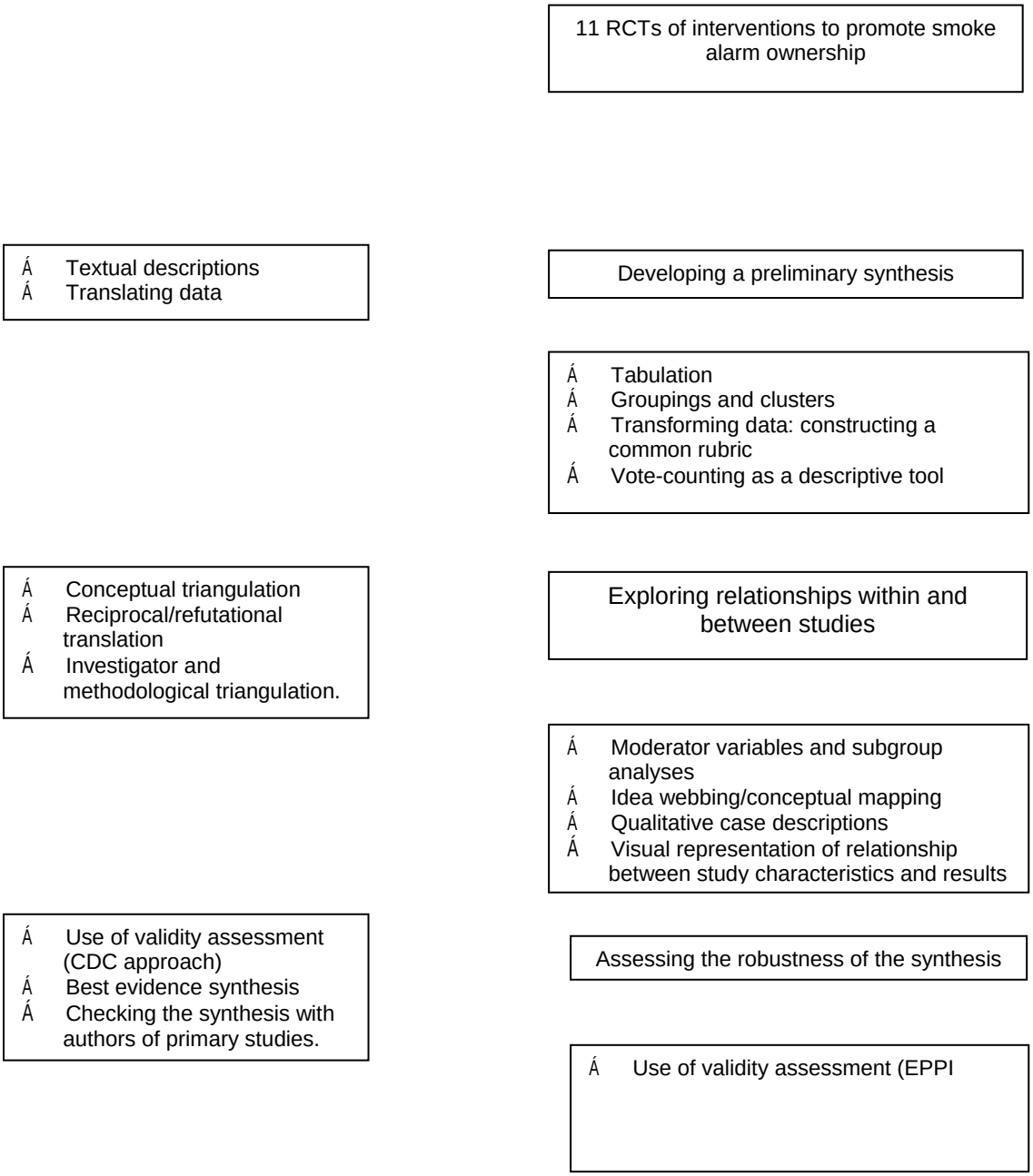
Concept mapping

Mulrow, Langhorne & Grimshaw[40] describe a similar process which we refer to as concept mapping. Their approach involves linking multiple pieces of lite0208(ro)56027 T [(0e)5.14(o)-0.6(rie 1 T09.4(r)4.6As Ligh)0ec

they give relatively little practical advice about how one would go about doing this type of case

3.3 Conclusion

In this chapter we have provided an overview of the four main elements of the narrative synthesis process that we have identified and briefly described various tools and techniques that can be used at different points in the synthesis process. In the next two chapters we describe in detail the practical application of the guidance, including the use of particular tools and techniques, to the synthesis of two bodies of research evidence. Chapter four focuses on a narrative synthesis of the findings of the 11 RCTs included in the Cochrane systematic review of interventions for promoting smoke alarm ownership and function.[51] The original Cochrane review involved a meta-analysis which means we are able to compare the results/conclusions of the two approaches to synthesis. Chapter five focuses on the narrative synthesis of studies of the implementation of domestic smoke alarm promotion interventions. This is linked to an earlier pilot review and some comparisons with the outcomes of this earlier work are made.[21, 52]


11 RCTs of interventions to promote smoke alarm ownership
Developing a preliminary synthesis
Á Textual descriptions
Á Translating data
Á Tabulation
Á Groupings and clusters
Á Transforming data: constructing a common rubric
Á Vote-counting as a descriptive tool
Exploring relationships within and between studies
Á Conceptual triangulation
Á Reciprocal/refutational translation
Á Investigator and methodological triangulation.
Á Moderator variables and subgroup analyses
Á Idea webbing/conceptual mapping
Á Qualitative case descriptions
Á Visual representation of relationship between study characteristics and results
Assessing the robustness of the synthesis
Á Use of validity assessment (CDC approach)
Á Best evidence synthesis
Á Checking the synthesis with authors of primary studies.
Á Use of validity assessment (EPPI

Study validity/quality is not addressed in detail in this section of the guidance. However, the

Table 2: Characteristics of included studies

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Barone (1988) USA	*Content:* I: Usual safety education, plus slides and handouts on burn prevention, motor vehicle safety education and video; bath water thermometer; hot water gauge. (n=41) C: Usual safety education (n= 38) *Duration:* 4 x 2h weekly meetings. *Delivered by:* Unclear	Couples or individuals attending "Parenting the toddler" classes	Classes conducted at suburban hospital, family homes	Home inspection 6 months after class 1) Final smoke alarm ownership 2) Final functioning smoke alarms	1) Final smoke alarm ownership I = 32/34 C = 26/29 2) Final functioning smoke alarms: I = 39/41 C = 34/38 I = 32/34 C = 26/29 No significant difference between groups	Allocation by coin toss within paired classes Outcome assessment not blinded Withdrawals: 27% of parents attending randomised classes did not enrol in trial	
Clamp (1998) UK	*Content:* I: Safety advice, leaflets, discount safety devices for low income families (n=83 families) C: Routine child health surveillance and routine consultations without intervention (n=82 families) *Duration:* Unclear *Delivered by:* Health visitors/practice nurses	Families of children <5 yrs on GP list	Delivered during child health surveillance consultations, opportunistically during other consultations, or the family was asked to make an appointment specifically for the intervention	Telephone/ mail survey 6 weeks after visit: 1) Smoke alarms acquired 2) Functioning smoke alarms acquired 3) Final smoke alarm ownership 4) Final functioning smoke alarms	1) Smoke alarms acquired: I = 8/83 C = 0/82 2) Functioning smoke alarms acquired I = 7/83 C = 4/82 3) Final smoke alarm ownership: I: 82/83 C: 71/82 4) Final functioning smoke alarms: I: 80/83, C: 71/82	Allocation by random numbers table numbered 1-165, the first 83 numbers on the list were allocated to the intervention group. Allocation was done by a researcher blinded to the number given to each family at the time of allocation Outcome assessment not blinded Withdrawals: None	

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Davis (1987) USA	*Content:* I: Fire safety lessons with workbook, demonstrations, teacher training, materials, take home materials for parents (n=439) C: Usual lessons (n=418) *Duration:* 6 x 1-hour lessons *Delivered by:* Teacher	Children in grade 4-6 classes	School	In school survey, immediately after class: 1) Final smoke alarm ownership	Final smoke alarm ownership: I = 221/314 C = 195/299 I = 309/439 C = 272/418	Method of random allocation unclear Outcome assessment not blinded Withdrawals: I = 1% C = 0%	The study uses repeated hypothesis testing
Jenkins (1996) Canada	*Content:* I: Discharge teaching book about burn care and prevention; routine discharge teaching (n=62 families) C: Routine discharge teaching (n=61 families) *Duration:* One session						

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Kelly (1987) USA	*Content:* I: Developmentally oriented child safety education, hazard assessment and handout at 6, 9 and 12-month well child visits. (n=55 families) C: Usual 6, 9 and 12-month well child visits (n=54 families) *Duration:* Each visit approx 15 mins *Delivered by:* I = Principal investigator C = primary caretaker (paediatric resident, fellow, faculty member, or nurse practitioner	Families of children aged 6 months seen for well child care	Family home	1) Final smoke alarm ownership (from home inspection, 1 month after 12-month visit) 2) Accidents and/or hospitalisations (from hospital record review)	1) Final smoke alarm ownership: I = 8/55 C = 6/54 No significant difference between groups 2) ER/primary care visits for accidents: I = 15/55 C = 11/54 Accidents requiring treatment: I = 3/55 C = 4/54 Hospitalisations for accidents: I = 1/55 C = 1/54	Method of random allocation unclear Outcome assessment blinded. Withdrawals: I = 35% C = 37%	
Kendrick (1999) UK	*Content:* I: Age specific advice, cheap safety equipment for low income families, home safety checks, first aid training. Checklists, information sheets and literature provided throughout (18 centres randomised, n=1124) C: Usual care (no further description) (18 centres randomised, n=1028) *Duration:* Unclear. *Delivered by:* Health visitors and practice nurses	Children aged 3-12 months	Community	a) Record review of injuries b) Postal survey of safety practices at 25 month follow-up: 1) Smoke alarms acquired 2) Functioning smoke alarms acquired 3) Final smoke alarm ownership 4) Final functioning smoke alarms	1) Smoke alarms acquired: I = 15/274 C = 11/277 2) Functioning smoke alarms acquired: I = 20/274 C = 14/277 3) Final smoke alarm ownership: I = 254/274 C = 248/277 4) Final functioning smoke alarms: I = 243/274 C = 241/277	Allocation by random numbers table by investigator blind to the identity of the practices Outcomes assessment blinded Withdrawals: I = 67% C = 64%	Not all participants received all aspects of the intervention

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
King (2001) Canada	*Content:* I: Home safety inspection and tailored education, safety device coupons; reinforcement (by telephone) at 4 and 8 months, plus a letter from the local project director (n=482 families) C: Home safety inspection and general safety pamphlet only (n=469 families) *Duration:* Unclear *Delivered by:* "Home visitor"	Families of children aged <8 years hospitalised for injuries	Family home	Home inspection at 1 year follow-up: 1) Smoke alarms acquired 2) Functioning smoke alarms acquired 3) Final smoke alarm ownership 4) Final functioning smoke alarms	1) Smoke alarms acquired: I = 14/476 C = 14/464 2) Functioning smoke alarms acquired: I = 44/440 C = 36/435 3) Final smoke alarm ownership: I = 460/479 C = 454/465 1.45 (0.94, 2.22), p=0.05. 4) Final functioning smoke alarms: I = 412/459 C = 401/447 1.01 (0.79, 1.30)	Allocation by opening sealed, serially numbered, opaque envelopes Outcome assessment blinded. Withdrawals: I = 20% C = 18%	Though generally not given feedback after home safety inspection, control group families *were* informed if non-functioning smoke alarms were discovered

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Mathews (1988) USA	*Content:* I: Home safety inspection, video, handouts, modelling re: safety and managing dangerous child behaviour; hot water thermometers; choke tube. (n=12 families) C: Home visit with video, handouts, modelling on language simulation (n=12 families) *Duration:* Home visits 1.5 – 2 hours, intervention 45-60 mins *Delivered by:* Psychologist	Mothers of toddlers (12-14 months at first contact) from clinics, day care centres	Family home	Home inspection 2 weeks after home visit: 1) Smoke alarms acquired 2) Functioning smoke alarms acquired 3) Final smoke alarm ownership 4) Final functioning smoke alarms	1) Smoke alarms acquired: I = 0/12 C = 0/12 2) Functioning smoke alarms acquired: I = 0/12 C = 0/12 3) Final smoke alarm ownership: Pre-test: I = 10/12 C = 9/12 4) Final functioning smoke alarm ownership: I = 6/12 C = 6/12 There were no significant differences between groups or trials on these outcomes	First eight participants allocated in odd-even manner, remainder using open random numbers table Blinding unclear Withdrawals: 8% in total	

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Ploeg (1994) Canada	*Content:* I: Safety behaviour promotion A safety checklist developed from the injury prevention literature, used with clients to discuss personal, home and community safety and to address strategies to improve safety. (n=148) C: Influenza immunisation promotion (n=211) *Duration:* One visit Duration unclear *Delivered by:* Public health nurses	English speaking public health clients aged 65 or over Mean age 77.2 years, 67% female	Delivered during a visit to the client's home	Telephone survey after 2-3 months: Smoke alarms acquired	Smoke alarms acquired: I = 3/146 C = 1/197	Allocation by random numbers table read by independent person Outcome assessment blinded Withdrawals: I = 1% C = 7%	
Thomas (1984) USA	*Content:* I: Well-baby classes with standard safety information plus burn prevention education lecture, pamphlet, handouts and discount coupon for smoke alarm purchase (9 classes: n=29) C: Well-baby classes with standard safety information (6 classes: n=26) *Duration:* I/C: 1 x 90min session *Delivered by:* Paediatric nurse practitioners	Volunteer parents of infants enrolled with a single HMO No further information provided	Hospital? (conference room)	Home inspection 4-6 weeks after class: Final smoke alarm ownership	Final smoke alarm ownership: I = 27/28 C = 21/25	Randomised using coin toss. Blinding unclear No withdrawals mentioned	Smoke alarm ownership was very high in

Reference	Intervention	Participants	Setting/context	Outcomes	Results	Methods/quality	Other notes
Williams (1988) USA	*Content:* I: Usual safety education plus 1 hour lecture, handouts on burn						

Table 3: Final smoke alarm ownership (common rubric and vote count)

Reference	Absolute difference (%)	Relative risk (95% CI)	Odds ratio (95% CI)	Vote count RR	Vote count OR	% smoke alarm ownership in control group
Barone (1988)	4.5	1.05 (0.90, 1.22)	1.85 (0.29, 11.89)			90
Clamp (1998)	12.2	1.14 (1.04, 1.25)	12.7 (1.6, 100.85)	V	V	87
Davis (1987)	5.2	1.08 (0.97, 1.20)	1.27 (0.9, 1.78)			65
Jenkins (1996)	-2.8	0.96 (0.78, 1.19)	0.86 (0.39, 1.93)			75
Kelly (1987)	3.4	1.31 (0.49, 3.52)	1.36 (0.44, 4.23)			11
Kendrick (1999)	3.2	1.04 (0.98, 1.09)	1.49 (0.82, 2.7)			90
King (2001)	-1.6	0.98 (0.96, 1.01)	0.59 (0.28, 1.25)			98
Mathews (1988)	8.3	1.11 (0.74, 1.68)	1.67 (0.22, 12.35)			75
Thomas (1984)	12.4	1.15 (0.95, 1.38)	5.14 (0.53, 49.5)			84
Williams (1988)	No stats	No stats	No stats	No stats	No stats	>77

Key to table colour coding

- Significantly favours intervention
- Trend towards intervention
- No difference
- Trend towards control
- Significantly favours control

Vote counting as a descriptive tool

Tables showing two approaches to vote counting were developed: (i) only using ticks where the effect of the intervention was positive and

The four main tools and techniques for exploring relationships within and between studies were conducted in the order described below.

Moderator variables and subgroup analyses

Table 5: Table showing various components of the evaluated interventions

	Burn education	Slides	Handouts	Safety advice	Discount devices /coupons	First aid training	Home safety inspection	Tailored education	Reinforcement	Video	Modelling	Free thermometer /choke tube	School fire safety lessons	Child safety education
Barone (1988)	V	V	V											
Clamp (1998)			V	V	V									

Table 6: Final smoke alarm ownership (potential moderator variables)

A number of questions arose from the process of writing these summaries:

- Does the immediate on-site availability of smoke alarms in the intervention setting increase uptake?
- Are lower income families more likely than higher income families to respond to interventions incorporating discounted smoke alarms?
- Does having experienced a child injury prior to intervention increase uptake of the recommendations given in the intervention?
- Do interventions that focus on burn injuries/fire prevention have different effects to interventions that relate to safety more generally?
- Does advice being age-specific alter outcomes? Would advice regarding fire safety

Visual representation of relationships between study characteristics and results

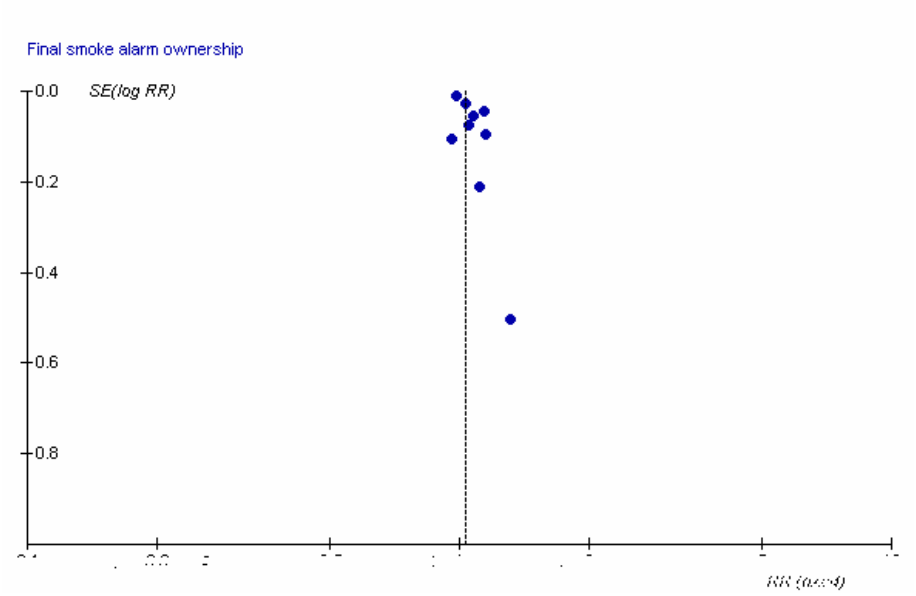
Funnel plots to examine the relationship between study sample size/variance and effect size were constructed by plotting relative risk against standard error (see figure 6). Due to the small number of studies reporting data on the outcomes of interest, these proved to be largely uninformative. The plot for 'final smoke alarm ownership' shows that the study with the lowest precision is that with the most strongly positive effect, but this alone does not provide strong evidence for publication bias.

These proved unhelpful but may be more useful in larger reviews where enough quantitative data are reported to allow a visual display. However this may not be the case for many systematic reviews of social interventions.

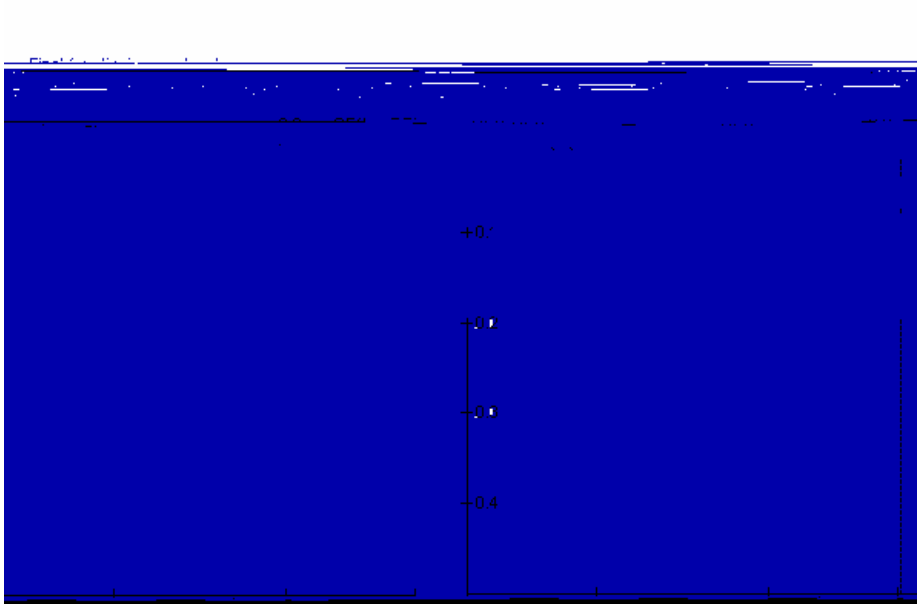
Forest plots showing the point estimates and 95% confidence intervals for each study for each of the main outcomes (but without a pooled estimate) were also drawn, as suggested in the guidance (figure 7). These provide a clear visual representation of the relative risks and associated 95% confidence intervals previously presented as in table 5.

Figure 6: Funnel plots showing standard error versus relative risk for each outcome

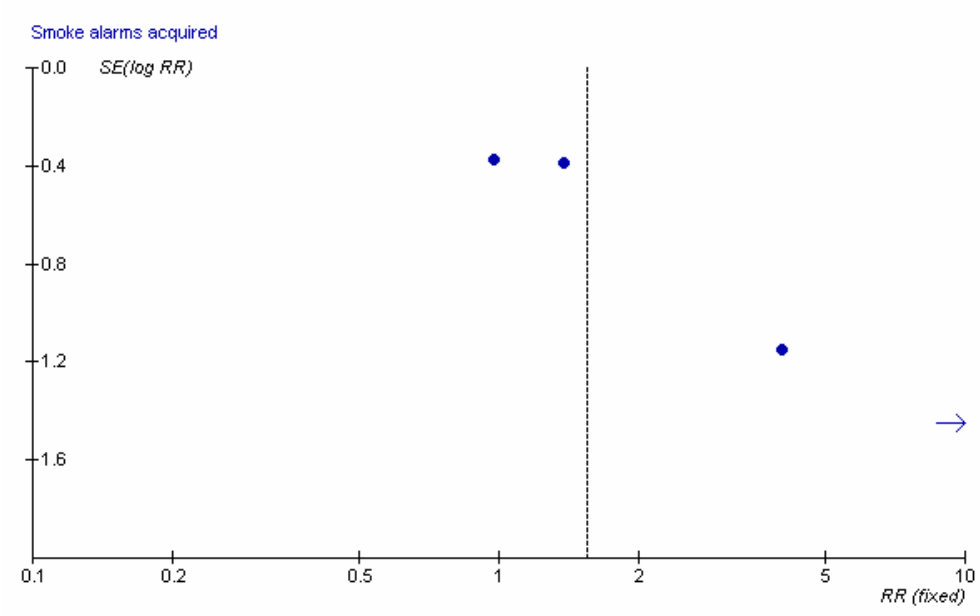
a)



b)



c)


Smoke alarms acquired
0.0
SE(log RR)
0.4
0.8
1.2
1.6
0.1
0.2
0.5
1
2
5
10
RR (fixed)

d)

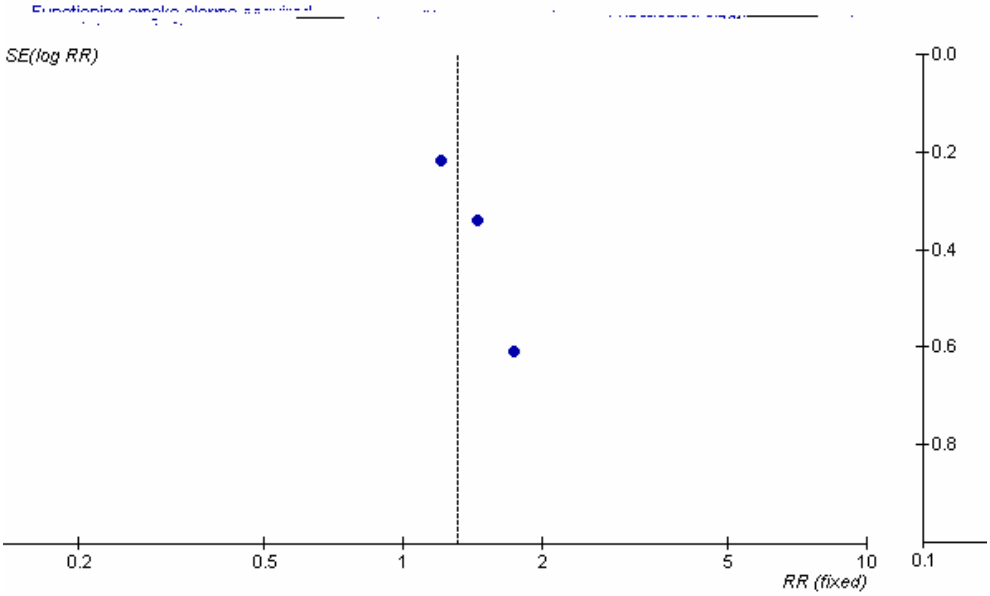
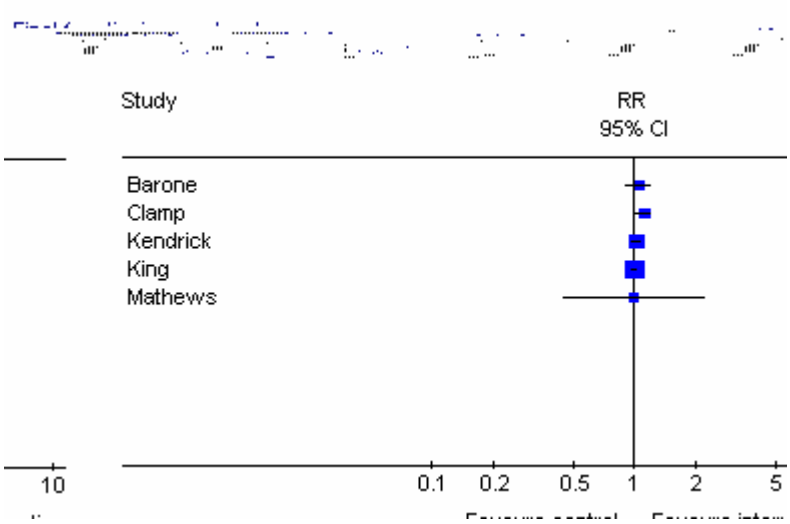

SE(log RR)
0.0
0.2
0.4
0.6
0.8
0.2
0.5
1
2
5
10
0.1
RR (fixed)

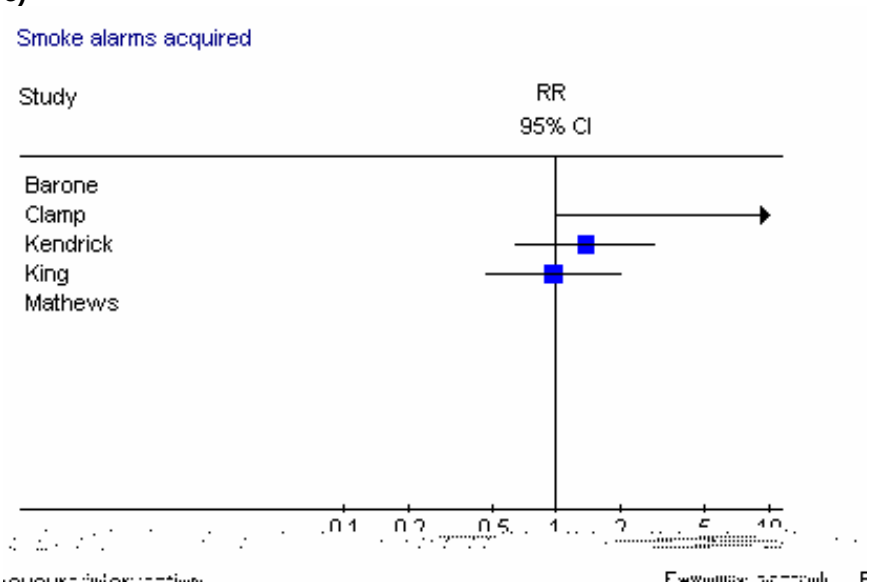
Figure 7: Forest plots (without pooled data) for each outcome

a)

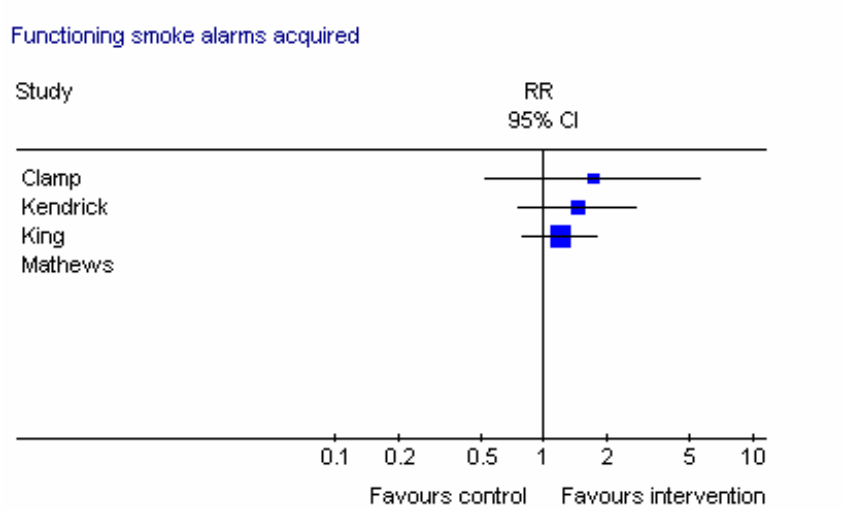
b)



c)


Smoke alarms acquired
Study
RR
95% CI
Barone
Clamp
Kendrick
King
Mathews

d)


Functioning smoke alarms acquired
Study
RR
95% CI
Clamp
Kendrick
King
Mathews
0.1
0.2
0.5
1
2
5
10
Favours control
Favours intervention

adoption, and ensure that data is provided on each of the steps (or events) in the pathway.

- Randomised studies should take into account confounding due to concurrent community-wide initiatives and legislation to increase fire injury awareness and smoke alarm ownership.
-

possibility of undertaking

CHAPTER 5: *APPLYING THE GUIDANCE 2:* A NARRATIVE SYNTHESIS OF STUDIES INFORMING THE IMPLEMENTATION OF DOMESTIC SMOKE ALARM PROMOTION INTERVENTIONS.

5.1 Introduction

This chapter, like the previous one, provides a practical example of a narrative synthesis. In this case, however, the focus is on the synthesis of evidence on factors influencing the ***implementation of interventions*** rather than effectiveness. The specific aims of the chapter are to:

- Illustrate in practical terms the decision making processes involved in the application of the guidance to a specif

5.3 The narrative synthesis

The guidance is structured around four elements in the synthesis process:

- Developing a theory of how the intervention works, why and for whom
- Developing a preliminary synthesis
- Exploring relationships within and between studies
- Assessing the robustness of the synthesis

In the NS reported here no *prima facie*

factors affecting the implementation of interventions aiming to increase the uptake of domestic smoke alarms. A flow chart summarising the synthesis process as a whole is presented in figure 8 below. Some of the worked examples have been limited by the relatively small size of the evidence base as several of the tools and techniques are only relevant when synthesising a large body of literature.

Developing a preliminary synthesis

Textual description

This was used by both reviewers at an early stage, and was found useful as a way of summarising the papers and beginning to extract information in a systematic way. Textual descriptions offer the potential to include more details than, for example, tabulations.

Examples of textual description:

Example 1

> In McConnell et al,[66] the **target population** was new heads of households in public housing residences of the Memphis Housing Authority (MHA), USA and they were predominantly female Afro Americans living with children. The MHA policy is to ensure that a functioning smoke detector is in every unit when rented, but a spot check of 325 units in 1992 found that less than 8% had a working smoke detector. The 35 minute **intervention** (delivered during mandatory orientation sessions for new MHA heads of household) consisted of the following components: a pre test; videotape accompanied by lecturettes delivered by one of 36 uniformed fire fighters, one MHA supervisor or one civilian educator; behavioural contract, post test, and fire-safety reminder card. The **outcomes** were fire incidence data (after possibly 15 months, timescale not clear); residents' evaluations of the programme; changes in their fire safety knowledge; and their commitments to fire safety behaviours. The method of **evaluation** was an uncontrolled comparison between trained and untrained residents, using contemporary and historical comparison groups. The evaluation **data** were all quantitative. The **results** showed a lower incidence of fires in trained residents compared with untrained residents (1 fire for every 4312 renter months in trained residents compared with 1 fire for every 780 renter months in untrained residents; a relative risk of 5.5). Comparing trained residents with untrained residents over the 9 year baseline period gave a relative risk of 4.8. Comparisons between newer and older residents from the MHA records suggested that newer residents were more likely to experience fires, thus countering the suggestion that the results can be explained by the fact that the trained residents were also new residents. No data were provided on the proportion of working smoke detectors post intervention.

Example 2

> Young et al (1999),[68] Camit (2002)[64] and Camit (1998)[63] report on the effectiveness and implementation of a smoke alarm promotion campaign in NSW Australia oriented to the needs of Arabic, Chinese and Vietnamese communities. Qualitative data were collected in focus groups and interviews. Survey data were also collected. Their main observations in relation to implementation are that among the target community there was a lack of awareness of the need for smoke alarms. Living in rented property where the landlord was thought to be unsympathetic to the need for a smoke alarm also created barriers to the installation of smoke alarms.

Tabulation

Both reviewers felt that tabulation and textual descriptions were very similar, possibly using the same headings but laid out differently. In a table, however, it was easier to compare data across different studies.

Table 11. Example of tabulation

Author & year	Location & setting	Target population	Method	Main findings
Roberts et al				

Table14: Example 3

- Barriers/levers to the acquisition of smoke alarms
- Barriers/levers to the installation of smoke alarms
- Barriers/levers to the continued use of smoke alarms

1) Barriers/levers to acquisition of smoke alarms

General

Barriers	*Levers*
Problems accessing communities/gatekeepers	Gaining trust of key community 'players' and leaders
Suspicion of 'authority' or local government	Emphasising separation from distrusted authority/alliance with trusted partners

Specific to smoke alarm campaigns

Lack of awareness of benefits of smoke alarms	Running well-coordinated, culturally appropriate awareness campaign
Perceived cost of smoke alarms	Giveaway or availability of reduced price alarms
Perception that household is not at risk of fire (due to type of house or characteristics of household members)	Awareness campaign

2) Barriers/levers to installation of smoke alarms

General

Barriers	*Levers*
Anxiety about damage to property	Landlord approval/permission for installation, or landlord example of installation

Specific to smoke alarm campaigns

Inability/unwillingness to install alarm	Installation of alarm by project worker

3) Barriers/levers to continued use of smoke alarms

Barriers	*Levers*
False alarms	Education about triggers for false alarms/re-installation of alarm
Problems with maintenance	Project workers offer to maintain alarms/education about maintenance

The differences over time or between reviewers do not suggest that the synthesis is flawed but rather draws attention to different ways of interpreting the same data. Both reviewers identified a typology including facilitators and barriers as did some of the study authors. Whether the data are seen ecologically or in stages, the idea of barriers and facilitators are common to both. In a final synthesis, specific factors that act as barriers/levers, the notion of stages (temporality) and the organisation of these factors within domains at different levels (ecological perspective) could be brought together.

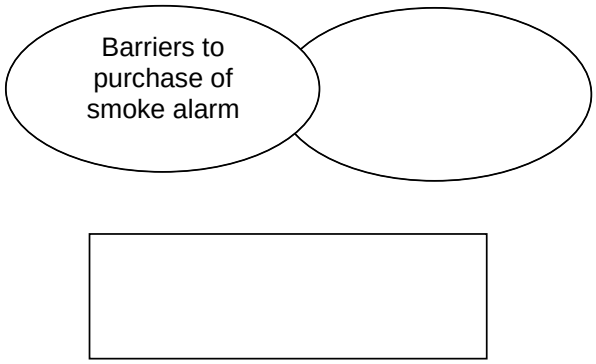
Translating the data: Content analysis

This technique was not found useful by either reviewer as the data did not lend themselves to conversion into frequencies.

Vote counting as a descriptive tool

Figure 9. Examples of idea webbing

a)



b)

Main levers :
General:
- Gaining geographic or social access to communities
- Overcoming suspicions of strangers & authority figures

Specific levers:
- Overcoming lack of awareness of benefits of alarms

Conceptual triangulation
Neither reviewer found this technique useful for this exercise but felt that it would be useful with a larger number of studies.

Translation as an approach to exploring relationships
One reviewer with no previous experience of meta-ethnography attempted unsuccessfully to use it. The other reviewer, who does have previous experience of meta-ethnography, felt that translation was the most useful technique at this stage.

Example of reciprocal translation

> There are three concepts that seem to offer themselves for translation across studies. The **first** is the one of landlord commitment/lack of commitment. The difficulties with landlords discussed in the Young paper seem to be the exact opposite of the commitment demonstrated by the MHA in the McConnell paper, but not explicitly commented on by the authors. The **second** concept is risk perception: feeling oneself at high risk (Roberts), or underestimating the risk of fire (Young). The McConnell intervention presumably increased residents' estimates of their own risk but no information is provided about this. The **third** and less robust concept is residents' level

    - This is frequently limited to a discussion of the problems encountered by those implementing the programme rather than those receiving it and rarely substantiated by reference to data collected during the trial (or, indeed, any other data). From a methodological perspective, this constrains the use of these insights.

- Some recognition of the discrepancy between the design and orientation of an intervention and its implementation in an everyday setting.
- Some exploration of the reasons for anomalous results and findings.
- Some description of the factors that affect implementation.
    - Includes: the importance of understanding the people and the community receiving the intervention; the need to consider the role of community leaders

CHAPTER 6: THE NEXT STEPS

Narrative approaches to synthesis are widespread in systematic reviews yet as we have noted these approaches do not rest on an authoritative body of knowledge. The guidance presented here has been developed on the basis of an extensive review of methodological literature and it has been applied to two contrasting bodies of evidence – one focusing on the effects of interventions to promote the use of domestic smoke alarms and the other focusing on evidence to inform the implementation of such interventions. In undertaking these demonstration syntheses detailed notes were kept of all major decisions taken and the reasoning behind them. This approach of prospectively documenting the synthesis process was a helpful aid to transparency and recall. We would recommend this to all reviewers adopting a narrative approach.

We do not claim to have produced the definitive guide to narrative synthesis – there is much work still to be done to develop and refine this approach to evidence synthesis. However, we do believe that the guidance offers both a general framework and specific tools and techniques that can help to increase the transparency and trustworthiness of systematic reviews involving narrative synthesis. We would also stress that whilst the guidance describes a range of tools and techniques that if used appropriately will improve the process of narrative synthesis these will not remove the need for reviewers to combine sound methodology with creative interpretative work.

We hope that people will find the guidance useful and that they will let us have feedback so that we can revise the guidance in light of this. The guidance is to be made available on the project website (address to be added) and comments can be sent by email to j.popay@lancaster.ac.uk

REFERENCES

1. NHS Centre for Reviews and Dissemination. *Undertaking systematic reviews of research on effectiveness: CRD's guidance for carrying out or commissioning reviews. CRD report 4*. 2nd ed. York: NHS Centre for Reviews and Dissemination, 2001.
2. Dixon-Woods M, Agarwal S, Young B, Jones D, Sutton A. *Integrative approaches to qualitative and quantitative evidence*. London: NHS Health Development Agency, 2004. Available from: http://www.hda.nhs.uk/documents/integrative_approaches.pdf
3. Human Resources at Massachusetts Institute of Technology. *Performance review forms [monograph online]*. Human Resources at Massachusetts Institute of Technology; [cited Jan 2006]. Available from: http://web.mit.edu/hr/performance/forms.html.
4. Eisen GM, Weinberg DS. Narrative review: screening for colorectal cancer in patients with a first-degree relative with colonic neoplasia. *Ann Intern Med* 2005;143:190-98.
5. Higgins JPT, Green S. *Cochrane handbook for systematic reviews of interventions 4.2.5 [updated May 2005]*. Available from: http://www.cochrane.org/resources/handbook/index.htm (accessed 31st May 2005)
6. EPPI Centre. *EPPI-Centre Review Group Manual: working document version 1.1 [monograph online]*. London: EPPI Centre, 2001. Available from: http://eppi.ioe.ac.uk/EPPIWebContent/downloads/RG_manual_version_1_1.pdf
7. Weiss CH. *Evaluation: methods for studying programs and policies*. New Jersey: Prentice-Hall, 1998.
8. Shadish W. Meta-analysis and the exploration of causal mediating processes: a primer of examples, methods, and issues. *Psychological Methods* 1996;1:47-65.
9. Pawson R. *Does Megan's Law work? A theory-driven systematic review [monograph online]*. London: ESRC Centre for Evidence Based Policy and Practice, 2002. Available from: http://www.evidencenetwork.org/Documents/wp8.pdf
10. Miller N, Pollock VE. Meta-analytic synthesis for theory development. In: Cooper H, Hedges LV, editors. *The handbook of research synthesis*. New York: Russell Sage Foundation; 1994. p. 457-83.
11. Powell S, Tod J. A systematic review of how theories explain learning behaviour in school contexts. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education; 2004. Available from: http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?&page=/reel/reviews.htm
12. Pawson R, Greenhalgh T, Harvey G, Walshe K. *Realist synthesis: an introduction*. RMP Methods Paper 2/2004. Manchester: ESRC Research Methods Programme; 2004. Available from: http://www.ccsr.ac.uk/methods/publications/documents/RMPmethods2.pdf
13. Petticrew M, Roberts H. *Systematic reviews in the social sciences: a practical guide*. Oxford: Blackwell, 2006.
14. Light RJ, Pillemer DB. *Summing up: the science of reviewing research*. Cambridge, MA, USA: Harvard University Press, 1984.
15. Cook TD, Leviton LC. Reviewing the literature: a comparison of traditional methods versus meta-analysis. *J Pers* 1980;48:449-72.
16. Grimshaw J, Freemantle N, Wallace S, Russell IT, Hurwitz B, Watt I, et al. Developing and implementing clinical guidelines. *Qual Health Care* 1995;4:55-64.
17. Rychetnik L, Frommer M, Hawe P, Shiell A. Criteria for evaluating evidence on public health interventions. *J Epidemiol Community Health* 2002;56.
18. Hawe P, Shiell A, Riley T. Complex interventions: how "out of control" can a randomised controlled trial be? *BMJ* 2004;2004:1561-63.
19. Campbell M, Fitzpatrick R, Haines A, Kinmonth A, Sandercock P, Spiegelhalter D, et al. Framework for design and evaluation of complex interventions to improve health. *BMJ* 2000;321:694-6.
20. Jackson N, Cochrane Health Promotion and Public Health Field, Victorian Health Promotion Foundation. *Handbook: systematic reviews of health promotion and public health interventions*. Victoria, Australia: Deakin University, 2004.
21. Roen G-0.0siex interveaog003 Tw comk o T2(3n)-BMJ63.

23. Long TJ, Convey JJ, Chwalek AR. *Completing dissertations in the behavioral sciences and*

49. Busse R, Orvain J, Velasco M, Perleth M, Drummond M, Gurtner F, et al. Best practice in

APPENDIX 1: METHODS USED IN THE PRODUCTION OF THE GUIDANCE

Literature Search

It was suggested by the funders that rather than reviewing the literature in this area systematically,

- Khan KS, Ter Riet G, Glanville J*, et al. Undertaking systematic reviews of research on effectiveness: CRD's guidance for carrying out or commissioning reviews: CRD report 4*. 2nd ed. York: NHS Centre for Reviews and Dissemination, 2001.

- Mays N, Roberts E, Popay J. Synthesising research evidence. In: Fulop N, Allen P, Clarke A, Black N, editors. *Studying the organisation and delivery of health services: research methods*. London: Routledge, 2001.

- Williamson JW, Weir CR, Turner CW*, et al. Healthcare informatics and information synthesis; developing and applying clinical knowledge to improve outcomes*. Thousand Oaks, CA, USA: Sage Publications, 2002.

Internet searches

Websites on evidence-based policy and practice were browsed for publications, guidelines, ongoing research and other information of potential interest. Searches of organisation websites where search engines were available were undertaken using single terms and phrases such as ‘narrative’, ‘synthesis’ ‘systematic review’ or ‘meta-analysis’ or combinations of these. Anything o23e9d-0.000ne1Bdse.hing

***Centre for Evidence-Based Medicine*.**
Oxford. 8th September 2003.

INAHTA member sites searched:

- Australia (ASERNIP, MSAC)
- Austria (ITA)
- Canada (AETMIS, AHFMR, CCOHTA)
- Chile (ETESA)
- Cuba (INHEM)
- Denmark (DACEHTA, DSI)
- Finland (FinOHTA)
- France (ANAES, CEDIT)
- Germany (DIMDI)
- Netherlands (CVZ, GR, TNO, ZonMW)

Social Care Institute for Excellence (SCIE).
London. 11th September 2003.
http://www.scie.org.uk/
Found: Nothing of relevance was identified.

electronic Library for Social Care [.2f.5 6(nS).97(C).
Septembe4.9(0e)1.13r 20.

Copernic (meta-search engine).
12th September 2003.
http://www.copernic.com
Searched for 'narrative synthesis', 'systematic review' and 'meta-analysis'. Browsed through hits, but found nothing of relevance that had not already been identified.

Google (general search engine).
12th September 2003.
http://www.google.com

17. grounded theory
18. realist synth
19. interp$ synth
20. meta synth$
21. (meta matrix) or (meta matrices)
22. mini synth$
23. explanatory synth$
24. triangulation
25. theory led
26. bayesian adj2 hierarch$
27. or/12-26
28. 11 and 27

Sociological Abstracts: WebSPIRS. Internet. 1963-2003/6. 9th September 2003.
The Sociological Abstracts search covered the date range 1963 to June 2003. 92 records were identified.

#1 review in ti,ab,de
#2 meta analy*
#3 #1 or #2
#4 narrative near3 (synth* or summar* or analy* or description* or finding* or form or forms)
#5 realistic evaluation*
#6 collective interp*
#7 meta ethnograp*
#8 meta stud*
#9 grounded theory
#10 realist synth*
#11 interp* synth*
#12 meta synth*
#13 mini synth*
#14 explanatory synth*
#15 triangulation
#16 (meta matrix) or (meta matrices)
#17 theory led
#18 bayesian near3 hierarch*
#19 #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18
#20 #3 and #19

Social Science Citation Index (SSCI): Web of Science. Internet. 1981-2003/8. 9th September 2003.
The SSCI search covered the date range 1981 to August 2003. 195 records were identified.
TS=metaanalysis
TS=meta analysis
TS=systematic SAME TS=review*
TS=systematic SAME TS=overview*
TS=literature SAME TS=review*
#1 or #2 or #3 or #4 or #5
TS=narrative SAME TS=synth*
TS=narrative SAME (TS=summar* or TS=description*)
TS=narrative SAME (TS=finding* or TS=review*)
TS=narrative SAME (TS=form or TS=forms)
TS=meta SAME (TS=ethnography OR TS=synthesis OR TS=study)
(TS=realistic evaluation) or (TS=collective interp*)
TS=synthesis SAME (TS=interp* OR TS=explanatory)
TS=synthesis SAME (TS=mini OR TS=realist)
TS=grounded theory
(TS=meta matrix) or (TS=theory led)
TS=bayesian SAME TS=hierarch*

TS=triangulation
#7 or #11 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18
#6 and #19

PsycINFO: BIDS. Internet. 1872-2003/9. 9th September 2003.
The PsycINFO search covered the date range 1872 to September 2003. This search identified 352 records.
#1 META-ANALYSIS in PT
#2 LITERATURE-REVIEW-RESEARCH-REVIEW in PT
#3 metaanaly* in ti,de
#4 meta-analy* in ti,de
#5 (review* or overview*) in ti
#6 (review literature) in ti
#7 synthes* near3 ((literature* or research or studies or data) in ti)
#8 ((review* or overview*) in ti) near10 ((systematic* or methodologic* or quantitativ* or research* or literature or studies or trial* or effective*) in ti)
#9 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8
#10 narrative near3 (synth* or summar* or analy* or description* or finding* or form or forms)
#11 realistic evaluation*
#12 collective interpret*
#13 meta ethnograp*
#14 meta stud*
#15 grounded theory
#16 realist synth*
#17 interp* synth*
#18 meta synth*
#19 mini synth*
#20 explanatory synth*
#21 triangulation
#22 (meta matrix) or (meta matrices)
#23 theory led
#24 bayesian near3 hierarch*
#25 #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24
#26 #9 and #25

Cochrane Library Methodology Register: Internet. 2003:Issue 3. 9th September 2003.
The Cochrane Library Methodology Register search identified 8 records.
#1 (narrativ* next synth*)
#2 (narrativ* next summar*)
#3 (narrativ* next description*)
#4 (narrativ* next finding*)
#5 (narrativ* next form*)
#6 (realistic next evaluation*)
#7 (collective next interp*)
#8 (meta next ethnograp*)
#9 (grounded next theory)
#10 (realist next synth*)
#11 (interp* next synt*)
#12 (meta next synth*)
#13 (mini next synth*)
#14 (explanatory next synth*)
#15 (#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14)

CareData. Internet. 9th September 2003.
http://www.elsc.org.uk/caredata/caredata.htm
CareData produced 23 unique records. The search interface available for CareData does not allow for sophisticated search strategies. Separate phrase searching was undertaken, firstly in the abstract field and then in the keyword field. The phrases searched in the abstract field were 'narrative

synthesis', 'synthesis' 'systematic review' and 'meta analysis'. The keyword field had an index and the terms 'literature review' and 'research methods' were combined. The results of the 5 separate searches were pooled, and the duplicate references removed.

DARE (Database of Abstracts of Reviews of Effects): Internal CRD administration database. CAIRS T System. 1994-2003/8. 9th September 2003.

The internal CRD administration version of DARE was searched for methodology papers identified as part of the DARE production process, and CRD records which are not available on the public DARE

Applied Social Sciences Index and Abstracts (ASSIA): Cambridge Scientific Abstracts (CSA). Internet. 1987-2003. 9th September 2003.
The ASSIA search covered the date range 1987 to date. The search identified 55 records
((synthesis) OR (narrative)) AND ((systematic review) OR (meta analysis) OR KW=(systematic reviews) OR (meta analysis))

Educational Resources Information Center (ERIC): Dialog. Internet. 1966-2003/6. 9th September 2003.
The ERIC search covered the date range 1966 to June 2003. The search identified 176 records.
EXPLANATORY SYNTH? OR MINI SYNTH? OR META SYNTH? OR INTERP? SYNTH? OR REALIST SYNTH? OR GROUNDED THEORY OR META STUD? OR META ETHNOGRAP? OR COLLECTIVE INTERPRET? OR REALISTIC EVALUATION? OR NARRATIV? WITH(3) (SYNTH? OR SUMMAR? OR DESCRIPTION? OR ANALY? OR FINDING? OR FORM OR FORMS OR REVIEW?) AND META ANALYSIS OR 1 term(s): ERIC Subject Headings=("META ANALYSIS") OR REVIEW

All references were downloaded into an EndNote Library and deduplicated.

Additional database searches

- *8th Cochrane Colloquium: Evidence for action: challenges for the Cochrane Collaboration in the 21st century*; 2000 Oct 25-29; Cape Town, South Africa.

- *7th Cochrane Colloquium: The best evidence for healthcare: the role of the Cochrane Collaboration*; 1999 Oct 5-9; Rome, Italy.

- *6th Cochrane Colloquium: Systematic reviews: evidence for action*; 1998 Oct 22-26; Baltimore, USA.

- *5th Cochrane Colloquium: Using the evidence*; 1997 Oct 8-12; Amsterdam, Holland.

- *4th Cochrane Colloquium*; 1996; Adelaide, Australia.

- *3rd Cochrane Colloquium*; 1995 Oct 4-8; Oslo, Norway.

- *2nd Cochrane Colloquium*; 1994; Hamilton, Canada

Methods texts selection process

A total of 1,307 articles were retrieved from the literature searches. Two reviewers independently selected articles from the titles and abstracts available from the searches. Articles were included if they offered guidance on the conduct of reviews or combining data from different studies. Where reviewers disagreed, the full article was included for further investigation. This resulted in a total of 260 full publications being ordered for further assessment. One reviewer then selected all published articles that reported any tool or technique meeting the following criteria:

1) Was concerned with the synthesis of primary research
2) Was not a strictly statistical technique (e.g. meta-analysis)
3) Could conceivably be applied or adapted to the context of a systematic review of the literature.

A total of 69 studies were selected on the basis of these criteria, and were used to inform our guidance.

The majority of included articles were initially identified from the internet searches (36%) and database searches (33%) (see figure 1.1). Thirteen (19%) of the initial texts identified by the project team were included in the final 66 selected articles. A further eight articles (12%) were identified by handsearching/scanning of reference lists.

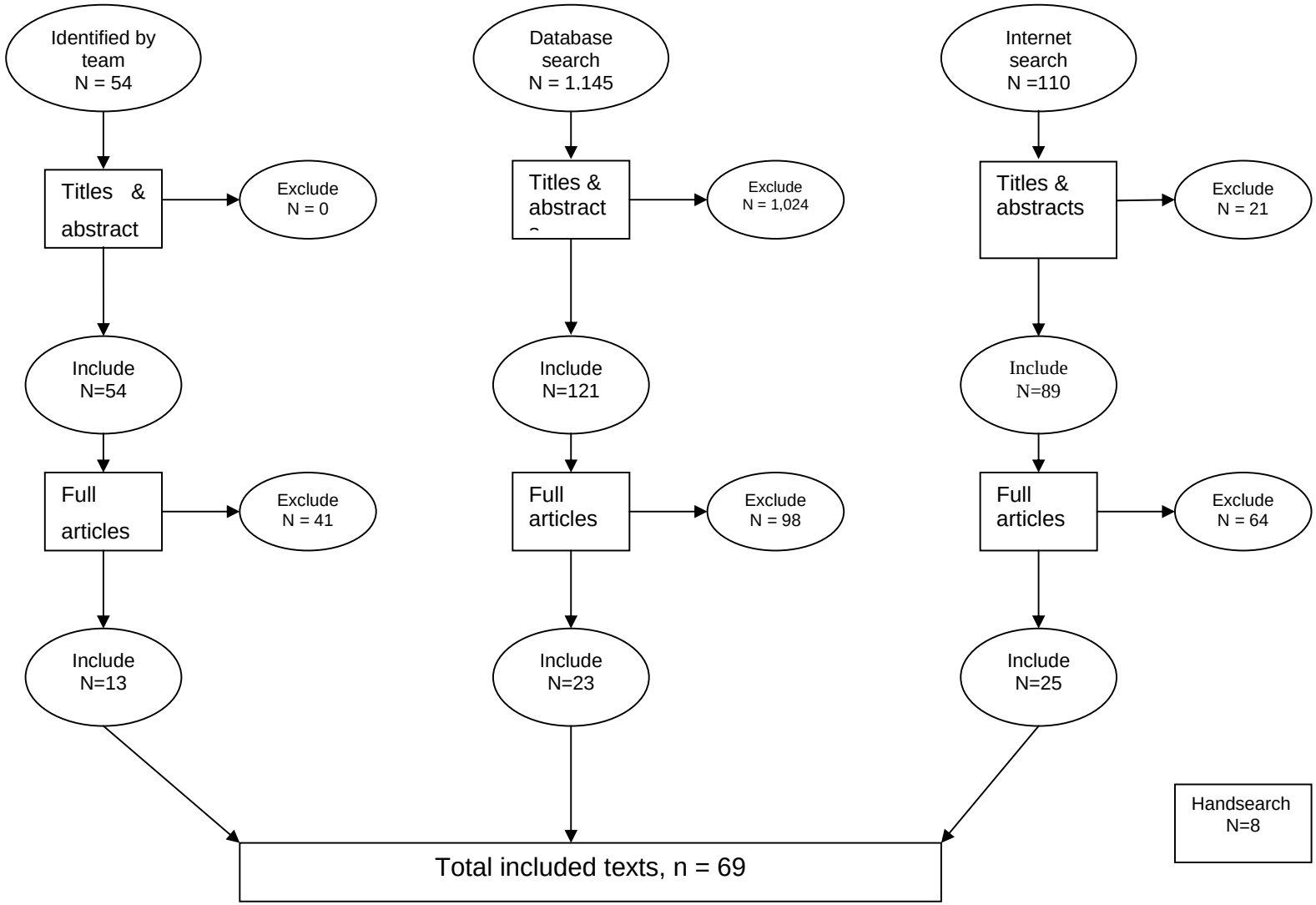


Figure 1.1: Methods text selection process.

APPENDIX 2: BIBLIOGRAPHY OF METHODOLOGICAL TEXTS USED IN THE PRODUCTION OF THE GUIDANCE

Extracted methods texts

1. Bangert Drowns RL, Wells Parker E, Chevillard I. Assessing the methodological quality of research in narrative reviews and meta-analyses. In: Bryant KJ, Windle M, editors. *The science of prevention: methodological advances from alcohol and substance abuse research*. Washington, DC, US: American Psychological Association, 1997. p. 405-429.

2. Barbour RS, Barbour M. Evaluating and synthesizing qualitative research: the need to develop a distinctive approach. *J Eval Clin Pract* 2003;9:179-186.

3. Beck CT. Mothering multiples: a meta-synthesis of qualitative research. *MCN, American Journal*

16. Curlette WL, Cannella KS. Going beyond the narrative summarization of research findings: the meta-analysis approach. *Research in Nursing & Health.* 1985;8:293-301.

17. Dixon-Woods M, Fitzpatrick R, Roberts KA. Including qualitative research in systematic reviews: opportunities and problems. *J Eval Clin Pract* 2001;7:125-133.

18. Eaves YD. A synthesis technique for grounded theory data analysis. *J Adv Nurs* 2001;35:654-63.

19. EPPI Centre. *EPPI-Centre Review Group Manual: working document version 1.1 [monograph online]*. London: EPPI Centre, 2001. Available from:

33. Noblit GW, Hare RD. *Meta-ethnography: synthesizing qualitative studies*. London: Sage, 1988.

34. Nurius PS, Yeaton WH. Research synthesis reviews: an illustrated critique of "hidden" judgments, choices, and compromises. *Clin Psychol Rev* 1987;7:695-714.

35. Pawson R. Evidence-based policy: the promise of realist synthesis. *Evaluation* 2002;8:340-358.

36. Popay J, Rogers A, Williams G. Rationale and standards for the systematic review of qualitative literature in health services research. *Qualitative Health Research* 1998;8:341-51.

37. Ragin CC. *The comparative method: moving beyond qualitative and quantitative strategies*. Berkeley, CA: University of California Press, 1987.

38. Rees R, Harden A, Shepherd J, Brunton G, Oliver S, Oakley A. *Young people and physical activity: a systematic review of research on barriers and facilitators [monograph online]*. London: EPPI Centre, 2001. Available from: http://eppi.ioe.ac.uk/EPPIWebContent/hp/reports/physical_activity01/physical_activity.pdf

39. Risjord MW, Dunbar SB, Moloney MF. A new foundation for methodological triangulation. *J Nurs Scholarsh* 2002;34:269-75.

40. Shepherd J, Harden A, Rees R, Brunton G, Garcia J, Oliver S, et al. *Young people and healthy eating: a systematic review of research on barriers and facilitators [monograph online]*. London: EPPI Centre, 2001. Available from: http://eppi.ioe.ac.uk/EPPIWebContent/hp/reports/health_eating01/healthy_eating_yp.pdf

41. Slavin RE. Best-evidence synthesis: an alternative to meta-analytic and traditional reviews. In: Shadish WRJ, Reichardt CS, editors. *Evaluation studies: review annual*. Thousand Oaks, CA: Sage Publications, Inc., 1987. p. 667-673.

42. Slavin RE. Best evidence synthesis: an intelligent alternative to meta-analysis. *J Clin Epidemiol* 1995;48:9-18.

43. Suri H, Clarke D. Revisiting methods of literature synthesis. In: *Annual Meeting of the American Educational Research Association*; 1999 Apr 19-23; Montreal, Canada. 1999. p. 2-15.

44. Suri H. The process of synthesising qualitative research: a case study. In: *Annual Conference of the Association for Qualitative Research*; 1999 Jul 6-10; Melbourne. 1999. Available from: http://www.latrobe.edu.au/aqr/offer/papers/HSuri.htm

45. Suri H. A methodologically inclusive model for research synthesis [monograph online]. In: *Australian Association for Research in Education (AARE) and the New-Zealand Association for Research in Education (NZARE) Joint-Conference*; 1999 Dec; Melbourne. 1999. Available from: http://www.aare.edu.au/99pap/sur99673.htm

46. Suri H. A critique of contemporary methods of research synthesis. *Post-Script* 2000;1:49-55. Available from: http://www.edfac.unimelb.edu.au/student/insight/postscriptfiles/vol1/suri.pdf

47. Sutton A, Abrams KR, Jones DR, Sheldon TA, Song F. Systematic reviews of trials and other studies. *Health Technol Assess* 1998;2.

48. Thomas J, Harden A, Oakley A, Oliver S, Sutcliffe K, Rees R, et al. Integrating qualitative research with trials in systematic reviews. *BMJ* 2004;328:1010-1012.

49. Williamson JW, Weir CR, Turner CW, Lincoln MJ, Cofrin KMW. *Healthcare informatics and inform6.2(M)J,6.7001.9(iO2 M)J,6.f.2(th)-5.9(e)6.4(s)-6i9(l)5s; d1(Re)-5velop7(a)-5.9(r)-1n9(e)6gffe andanlsltc m6.*

50. Yin RK, Heald KA. Using the case survey method to analyze policy studies. *Administrative Science Quarterly* 1975;20:371-81.

Methods texts covering material similar or identical to previously extracted texts

1. ACC/AHA Task Force on Practice Guidelines. Section II: tools and methods for creating guidelines. Step four: synthesize and interpret the evidence [monograph online]. In: *Manual for ACC/AHA Guideline Writing Committees.Methodologies and Policies from the ACC/AHA Task Force on Practice Guidelines*. Bethesda, MD: American College of Cardiology, American Heart Association, 2002. Available from: http://www.acc.org/clinical/manual/manual_IIstep4.htm

2. Booth A. Cochrane or cock-eyed? How should we conduct systematic reviews of qualitative research? [monograph online]. In: *Qualitative Evidence-Based Practice Conference*; 2001 May 14-16; Coventry University. 2001. Available from: http://www.leeds.ac.uk/educol/documents/00001724.htm

3. Bryman r .a.8(s)-5.4(n011 arch m)-1.2(nth)3. Bedeelines

Methods texts not yet received/extracted

1. Cwikel J, Behar L, Rabson-Hare J. A comparison of a vote-count and meta-analysis review of intervention research with adult cancer patients. *Res Soc Work Pract* 2000;10:139-158.

2. Edwards A, Russell I, Stott N. Signal versus noise in the evidence base for medicine: an alternative to hierarchies of evidence? *Fam Pract* 1998;15:319-322.

3. Tashakkori A, Teddlie C. *Mixed Methodologogy: combining qualitative and quantitative*