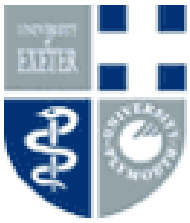

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Preventing Unintentional Injury in Children in the Home Report 2:

Barriers to, and facilitators of the prevention of unintentional injury in children in the home: a systematic review of qualitative research

12 August 2009

COMMISSIONED BY: NICE Centre for Public Health Excellence

PRODUCED BY: Peninsula Technology Assessment Group (PenTAG), Peninsula Medical School, Universities of Exeter and Plymouth

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About the Peninsula Technology Assessment Group (PenTAG)

The Peninsula Technology Assessment Group is part of the Institute of Health Service Research at the Peninsula Medical School. PenTAG was established in 2000 and carries out independent Health Technology Assessments for the UK HTA Programme, systematic reviews and economic analyses for NICE (Technology Appraisal and Centre for Public Health Excellence) and systematic reviews as part of the Cochrane Collaboration Heart Group, as well as for other local and national decision-makers. The group is multi-disciplinary and draws on individuals' backgrounds in public health, health services research, computing and decision analysis, systematic reviewing, statistics and health economics. The Peninsula Medical School is a school within the Universities of Plymouth and Exeter. The Institute of Health Research is made up of discrete but methodologically related research groups, among which Health Technology Assessment is a strong and recurring theme. Projects to date include:

- Barriers to, and facilitators of, the effectiveness of multiple risk factor programmes aimed at reducing cardiovascular disease within a given population: a systematic review of qualitative research (2009)
- Barriers to, and facilitators of, conveying information to the public to prevent the first occurrence of skin cancer (2009)
- Preventing unintentional injury in children on the road; a review of effectiveness and cost effectiveness (2009)
- Barriers to, and facilitators of, preventing unintentional injury in children on the road (2009)
- A Systematic Review of the Effectiveness and Cost-Effectiveness of Weight Management Schemes for the Under Fives (2009)
- The Effectiveness and Cost-Effectiveness of Cochlear Implants for Severe to Profound Deafness in Children and Adults: A Systematic Review and Economic Model (2008)
- The Effectiveness and Cost-Effectiveness of Methods of Storing Donated Kidneys from deceased donors: A Systematic Review and Economic Model (2008)
- Bevacizumab, sorafenib tosylate, sunitinib and temsirolimus for renal cell carcinoma: A systematic review and economic model (2008)
- The Effectiveness and Cost-Effectiveness of Cinacalcet for Secondary Hyperparathyroidism in end stage renal disease patients on dialysis. Systematic Review And Economic Evaluation (2007)
- The effectiveness and cost-effectiveness of Carmustine Implants and Temozolomide for the treatment of newly-diagnosed High Grade Glioma. Systematic Review And Economic Evaluation (2007)
- The Effectiveness and Cost-Effectiveness of Cardiac Resynchronisation Therapy for Heart Failure. Systematic Review And Economic Evaluation (2007)
- Inhaled Corticosteroids and Long-Acting Beta2-Agonists for The Treatment of Chronic Asthma in Adults and Children Aged 12 Years and Over: a Systematic Review and Economic Analysis (2007)

- Inhaled Corticosteroids and Long-Acting Beta2-Agonists for The Treatment of Chronic Asthma an Children Under the Age of 12 Years: a Systematic Review and Economic Analysis (2007)
- The Cost-Effectiveness of testing for hepatitis C (HCV) in former injecting drug users. Systematic Review And Economic Evaluation. (2006)
- Do The Findings Of Case Series Studies Vary Significantly According To Methodological Characteristics?(2005)
- The Effectiveness And Cost-Effectiveness Of Pimecrolimus And Tacrolimus For Atopic Eczema - A Systematic Review And Economic Modelling (2005)
- The Effectiveness And Cost-effectiveness Of Dual Chamber Pacemakers Compared To Single Chamber Pacemakers For Bradycardia Due To Atrioventricular Block Or Sick Sinus Syndrome - Systematic Review And Economic Evaluation (2005)
- The Effectiveness and Cost-Effectiveness Of Surveillance Of Barrett's Oesophagus: Exploring The Uncertainty (2005)
- The Effectiveness And Cost-Effectiveness Of Microwave And Thermal Balloon Endometrial Ablation For Heavy Menstrual Bleeding - A Systematic Review And Economic Modelling (2004)
- Systematic Review Of Endoscopic Sinus Surgery For Nasal Polyps (2003)
- The Effectiveness And Cost-Effectiveness Of Imatinib For First Line Treatment Of Chronic Myeloid Leukaemia In Chronic Phase (2003)
- The Effectiveness And Cost-Effectiveness Of Imatinib (STI 571) In Chronic Myeloid Leukaemia - A Systematic Review (2002)
- Screening For Hepatitis C Among Injecting Drug Users And In Genitourinary Medicine (GUM) Clinics - Systematic Reviews Of Effectiveness, Modelling Study And National Survey Of Current Practice (2002)

Declaration of authors' competing interests

None

Acknowledgments

Thanks to the administrative team at PenTAG for all their support.

Thanks to Ruth Garside and Mark Pearson at PenTAG for identifying papers for inclusion.

Thanks to the CPHE team and Hilary Levan, (Health Visitor Team Leader, Torquay North) for comments on an earlier draft.

List of abbreviations

NA	Not applicable
NR	Not reported
PenTAG	Peninsula Technology Assessment Group

Glossary of terms

Ethnography	A methodological strategy used to provide descriptions of human societies which, as a methodology, does not prescribe any particular method (e.g. observation, interview, questionnaire), but instead prescribes the nature of the study (i.e. to describe people through writing)
First order concepts	The direct expressions of research participants showing how they interpret their experiences.
Grounded theory	The development of theory from qualitative research findings that explain how an aspect of the social world works. Key elements include constant comparison, simultaneous generation and testing of hypotheses, theoretical sampling. The method places primary importance on the perspectives of research participants (i.e. being "grounded" in the data) rather than the researchers' pre-defined concepts.
Health belief model	A theory which tries to explain health behaviour in terms of understanding how people perceive the threat posed by a condition (susceptibility and severity), and the benefits of avoiding it and factors influencing the decision to act (barriers, cues to action and self-efficacy).
Qualitative content analysis	An in-depth analysis of texts using qualitative techniques, paying attention to frequency of themes arising, as well as attention to co-existence of themes.
Second order concepts	The interpretations or explanations of research findings made by researchers (authors of studies).
Thematic analysis	Analysis of qualitative data into descriptive, thematic categories without further development into analytically useful concepts or interpretive explanations or theories.
Third order concepts	The interpretations or explanations of research findings by researchers undertaking a synthesis of research studies.

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1. Summary

1.1. Introduction

This report presents the findings of a systematic review of qualitative research about interventions to reduce unintentional injuries to children in the home, and about parents' and health practitioners' attitudes to, and behaviour about, child safety in the home.

1.2. Aim

The aim of this review is to answer Question 3 of the overall research protocol for preventing unintentional injury to children (under the age of 15) in the home (intervention):

- What are the barriers to, and facilitators of, interventions involving the supply and/or installation of home safety equipment, and/or home risk assessments?

Questions 1 and 2 are addressed in a separate review of the effectiveness and cost-effectiveness of such interventions.

1.3. Methods

The report used published evidence that was identified through a series of electronic bibliographic databases and websites using subject terms and qualitative research filters, together with reference checklists.

Studies were included if they reported in English on qualitative research that focused on interventions to reduce unintentional injuries to children in the home, and/or on attitudes and behaviours relating to unintentional injury in the home. Each included study was quality appraised and the findings, in the form of key themes, concepts and supporting quotations, were extracted. Details were recorded in an evidence table for each study.

Evidence tables for each included study were used to develop a conceptual framework for understanding the key themes in relation to each other. This

conceptual framework provides a way to assess factors that might help or hinder interventions to reduce unintentional injuries to children in the home.

1.4 Findings

Nine peer-reviewed journal articles were included in the review. Four described studies based in the USA, three from the UK, one from Australia and one from Canada.

The methodological quality of the study reports was mixed – four rated as poor, four as adequate, one as good. However, some of the weaker papers, in methodological terms, were more practice-based, focussing on evaluation of interventions. While these intervention-based studies were weaker in methodological and theoretical rigour, their findings were more directly relevant to this synthesis topic.

The main findings are summarised in the fifteen evidence statements below. They are also presented in a schematic diagram shown in the discussion section of the report (Figure 3, page 67).

Evidence statement 1: Legal and policy barriers and facilitators to unintentional injury prevention programmes
Five studies (Brannen, 1992, US, [-]; Carr, 2005, UK, [-]; Brussoni et al, 2006, UK, [-]; Gibbs et al. 2005 Australia, [+]; and Mull et al, 2001 US [+]) explicitly cited perceived legal or policy barriers to unintentional injury prevention programmes. Particular weaknesses identified in carrying out fire safety interventions included work being too short-term and fragmented due to lack of coordination of home safety in one central organisation (Brussoni et al, 2006), Weak legislation for landlords of rented accommodation meant that recommendations were not necessarily implemented effectively (Gibbs et al, 2005; Brussoni et al, 2006). Weak regulation on containers of toxic products was a barrier to reducing unintentional injury in the home, as consumer choice allowed toxic products not always to be sold in child resistant containers (Gibbs et al, 2005). Facilitators for prevention programmes aimed at reducing unintentional injuries to

children in the home included strong policy drivers or legislation – for example, an obligation under the Fire Services act to councils or landlords to implement services, and the provision of funding to enable this (Brussoni et al, 2006).

Evidence statement 2: Provision and timing of information

Three studies (Brannen, 1992, US, [-]; Bennett Murphy, 2001, US, [-]; Brussoni et al, 2006, UK, [-]) found that parents felt there was a lack of information or knowledge about existing policies or supports. Examples included lack of knowledge of poison centre telephone number (Brannen, 1992), and lack of "direct information" on poisoning prevention (Brannen, 1992).

A lack of communication about programs to install smoke alarms limited uptake, especially for the most high-risk families (those in rented accommodation with a rapid turnover of tenants) (Brussoni et al, 2006).

Timing of information was shown to be important. One study (Brannen, 1992) found that parents given information in hospital at the time of a child's birth did not retain this, while information provided subsequently in a community or physician setting was better retained.

Evidence statement 3: Targeting local community to carry out intervention

Three studies (Brannen 1992, USA [-]; Brussoni et al 2006, UK, [-]; Carr 2005 UK [-]) found that partnerships and collaborations between different service providers facilitated the effectiveness of interventions to reduce unintentional injuries to children in low income communities.

Collaborations perceived as useful included multi-agency partnerships between different agencies, and between agencies and hard-to-reach groups, which aided the effectiveness of a UK smoke alarm installation programme (Brussoni et al, 2006), and a partnership between health officials and low income mothers in home safety visits offering advice and provision of safety equipment (Carr, 2005).

The importance of devising information and advice in ways that suit the target community (in terms of language, style, examples used) was noted in both of these papers dealing with low income populations with many ethnic minorities.

Evidence statement 4: Limitations on effectiveness of home safety initiatives due to disempowering effects of living in rented or overcrowded living conditions

Eight studies (Bennett Murphy, US, 2001 [-]; Brannen, 1992, UK, [-]; Brussoni et al, 2006, UK, [-]; Carr, 2005, UK, [-]; Gibbs et al, 2005, Australia, [+],Hendrickson, 2008, US, [+]; Mull et al, 2001, US, [+]; Olsen et al, 2008, Canada, [++]; Roberts et al, 2004, UK, [+];) found that a major barrier to implementing safety equipment and childproofing a home was living in a home one was not free to modify.

The studies found that mothers particularly found a lack of control over their home environment due to living in rented accommodation, and/or with extended family (Mull et al, 2001; Olsen et al, 2008). In rented accommodation, landlords were reported as unresponsive to requests for installation or maintenance of safety equipment (Brussoni et al, 2006). In extended family homes, often in overcrowded situations, young parents often did not have a say in how the home was arranged. Two studies noted that high turnover of tenants in cheap rented accommodation limited the effectiveness of projects to organise effective installation and maintenance (Carr, 2005; Brussoni et al, 2006).

In two studies (Olsen et al, 2008; Hendrickson, 2008), having landlords with the ability and eagerness to make repairs led to more effective interventions.

Evidence statement 5: Provision of appropriate and durable equipment

Four studies (Bennett Murphy, 2001, US, [-]; Roberts et al, 2004, UK, [+]; Gibbs et al, 2005, Australia, [+], Brussoni et al, 2006, UK, [-]) found that faulty or poor quality equipment was a barrier to interventions to reduce unintentional injuries to children in the home. For example, mothers resorted to taping over electric sockets when

safety plugs were not provided or did not work.

The four studies made recommendations for different or better equipment. Brussoni et al (2006) recommended the provision of tamper-proof smoke alarms with 10 year batteries, and alternatives of sprinkler systems for some populations (Brussoni et al, 2006), Roberts et al recommended smoke alarms with longer lasting batteries. Brussoni et al suggested help for fitting alarms, or simpler systems, for older residents. Gibbs et al (2005) recommended more systematic provision of child-resistant containers.

Suspicion by those in vulnerable communities of strangers coming into their homes to assess or install property, and suspicion of "free" offers, needs to be mitigated in successful interventions (Roberts et al, 2004).

Evidence statement 6: Weighing up of risks against inconvenience

The two studies on smoke alarm installation (Roberts et al, 2004 [+]; Brussoni et al, 2006 [-]) both found that people balance immediate and longer term risks to health and wellbeing when they disable alarms. They were aware that it was less than ideal to disable smoke alarms, but weighed this against other factors, especially the inconvenience and stress of malfunctioning alarms.

The reviewers' conclusion is that not only does care have to be taken to provide appropriate, and good quality, equipment in interventions and programmes, but also, there needs to be consideration of how to provide ongoing support and maintenance with using the equipment. Not only do participants need clear support on use of equipment, but interventions would be facilitated if providers were aware of the reasons people fail to comply.

Evidence statement 7: Training in installation and equipment use/replacement

Three studies (Roberts et al, 2004, UK, [+]; Carr, 2005, UK, [-]; Brussoni et al, 2006, UK, [-]) based on evaluation of specific interventions all found that training in

installation and equipment use/replacement was a facilitator to reducing the incidence of unintentional injuries to children in the home.

Evidence statement 8: Actual and perceived cost of safety equipment

Cost emerged as a theme in five of the studies, always as a barrier to reducing accidents to children in the home, or of obtaining help if a chid had been injured (Brannen, 1992, UK, [-]; Bennett Murphy, US, 2001 [-]; Mull et al, 2001, US, [+]; Roberts et al, 2004, UK, [+]];Olsen et al, 2008, Canada, [++]).

Three studies (Bennett Murphy, 2001); Roberts et al, 2004; Olsen et al, 2008) found that the perceived cost of installing safety devices or making repairs was a major barrier in the correct use of smoke alarms (in Roberts et al, 2004) and in general for safety equipment (Bennett Murphy, 2001; Olsen et al 2008).

However, in one study (Roberts et al, 2004) the provision of free safety equipment, in this case a smoke alarm, led to the equipment being rejected due to suspicions precisely because it was free, which suggests that making equipment or installations totally free may not always be appropriate.

Evidence statement 9; Difficulties experienced by young or poorly educated parents in understanding child development

Four studies (Bennett Murphy, 2001, US, [-]; Mull et al, 2001, US, [+] Gibbs et al, 2005, Australia, [++]; Hendrickson, 2008, US, [+]) found that young or poorly educated mothers found it hard to anticipate the child's rate of development in terms of ability to climb, open containers or locks, light fires.

One study, in contrast, found that mothers were good at anticipating developmental milestones and adjusting the home environment in advance of changes, thereby reducing the rate of unintentional injuries in the home (Olsen et al, 2008, Canada, [+]).

A reviewer conclusion is that education and information about general child

development would facilitate the reduction of unintentional injuries to children in the home.

Evidence statement 10: Raised awareness of the risk of unintentional poisoning

One study (Gibbs et al, 2005, Australia, [++]) found that exposure to a child poisoning incident, either in real life or in the media, increased awareness of that particular danger and was a motivator for implementing safety measures.

This suggests that providing information on unintentional poisoning via media outlets might be an effective facilitator in raising awareness of risk.

Evidence statement 11: Fatalism about the nature of unintentional injuries

One study (Bennett Murphy, US, 2001, [-]) found that adolescent mothers found it hard to deal with issues of blame oscillating between ideas of the **accident-prone child** who would have accidents whatever you did, and the **negligent adult** who was responsible for their child's accidents.

Bennett Murphy (2001) recommends that care providers approach the topic of injury in a forthright manner when working with adolescent mothers, challenging the idea that injuries are unavoidable while not assigning blame to the mother for injury to the child. Bennett Murphy (2001) suggests that "helping mothers identify risks to their specific child in their specific environment may be the most effective intervention".

Evidence statement 12: Mothers' safeguarding work

Five studies (Brannen, 1992, UK, [-]; Bennett Murphy, US, 2001 [-]; Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) noted the large and constant amount of work which mothers put into preventing unintentional injuries in the home as a major facilitator of reducing unintentional injuries in the home.

Authors picked up on several main components of this maternal safeguarding work – commonsense safeguarding (Olsen et al, 2008) constant vigilance (Bennett Murphy, 2001; Mull et al, 2001; Olsen et al, 2008; Hendrickson, 2008), and teaching children about safety (Hendrickson, 2008; Olsen et al, 2008).

While these maternal safeguarding activities do act as a short term facilitator to accident reduction, it is important to note that they are time and energy intensive and, that for this reason, need supplementing with other forms of unintentional injury prevention.

Evidence statement 13: Cultural and environmental differences in understanding of safety

Three studies (Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) noted cultural practices which, while they may have been adequate safety measures in the parents' culture of origin, were risky in a new cultural context. There were two aspects to this theme; lack of experience of the particular risks of a host context, and lack of understanding by health officials about different child safety norms and expectations in immigrants' cultures.

Mull (2001) found that the Mexican mothers in her US study mostly came from rural and semi-rural backgrounds, so had less experience with urban hazards such as multi-story buildings and hot water taps which could cause falls or sc. Mexican mothers were also more likely to use Mexican products, which were more likely to come without safety warnings/packaging.

Two US studies (Hendrickson, 2008; Mull et al, 2001), found significant cultural differences in experience and expectations which led to health visitors classing behaviour as risky because of a lack of understanding of immigrants' perception of safety and risk.

Evidence statement 14: Mistrust of officials, especially regarding accusations of neglect or abuse

Five studies (Brannen, 1992, US, [-]; Bennett Murphy, 2001, US, [-]; Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) found that a major barrier to child safety in the home was mothers' worry that asking about child injury in any context, including unintentional injury prevention, or taking an unintentionally hurt child to hospital would result in child being removed/seen as at risk, that they would be accused of abuse or neglect. All of these studies were in the US or Canada and focused on low income mothers, and additionally, most were adolescent mothers or immigrant mothers.

Evidence statement 15: Barriers due to relationship with partner in patriarchal cultures

Two studies (Mull et al, 2001. US, [+]; Olsen et al, 2008, Canada, [++]) found that a major barrier to child safety in the home was mothers' lack of autonomy to make household or financial decisions. Policies/interventions might need to reconsider the often automatic targeting of mothers about safety equipment or behaviour, especially in populations where the fathers (or parents-in-law) traditionally make decisions about household purchases.

2. Aims and Background

2.1. Objectives and Rationale

The aim of this project overall is to evaluate of the effectiveness and cost-effectiveness of the supply and/or installation of safety equipment and risk assessments for preventing unintentional injuries in the home to children and young people aged under 15. The results of the reviews of effectiveness and cost-effectiveness are shown in Report 1. Details about the nature and scale of unintentional injury to children in the home are also given in Report 1.

The objective of this, Report 2 - a review and synthesis of qualitative literature, is to answer question 3 of the research protocol:

- What are the barriers to, and facilitators of, interventions involving the supply and/or installation of home safety equipment, and/or home risk assessments?

To answer this question, this report aimed to identify, critically appraise, summarise and synthesise qualitative evidence relating to contextual or other factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation.

2.2. Review Questions

One primary research question informed this evidence review:

- What are the factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation?

3. Methods

3.1. Identification of evidence

3.1.1. Search strategy

See Appendix 2 for full search methods and database search strategies.

A single strategy was used to identify relevant primary research for the effectiveness, cost-effectiveness (In Report 1), and qualitative research reviews (reported here, Report 2). A search of the electronic bibliographic databases was undertaken: Medline, PsycINFO, ISI Web of Knowledge Social Science Citation Index (SSCI) and Science Citation Index Expanded (SCI-EXPANDED), Health Management Information Consortium (HMIC), CINAHL, Applied Social Science Index and Abstracts (ASSIA), The Cochrane Library database of systematic reviews, EconLit, SafetyLit, the EPPI-Centre databases; TRoPHI, DoPHER, and Bibliomap, and the databases of the Centre for Review and Dissemination; Database of Abstracts of Reviews of Effects (DARE), National Health Service Economic Evaulations Database (NHSEED), and NHS Economic Evaluation Database (HTA). All bibliographic searches used filters to limit publication years from 1990-date of search, English language, and non-animal filters were used as options where possible. A follow up targeted search of named programmes (identified from the bibliographic searches and from scoping work conducted by NICE CPHE) was conducted in Medline and using the search engine *Google*.

Potentially includable papers from a parallel review for the CPHE programme on preventing unintentional injuries in children, “A systematic review of risk factors for unintentional injuries among children and young people aged under 15 years: Quantitative correlates review of unintentional injury in children”, were also tagged during title/abstract screening for this review. Websites and searches of references lists of reports and reviews were also used to locate studies.

3.1.2. Inclusion of relevant evidence

3.1.2.1. Inclusion criteria

Populations

Children and young people aged under the age of 15.

Parents and carers of children and young people aged under 15.

Staff, such as health visitors, involved in the design and delivery of interventions and projects aimed at reducing unintentional injury in children in the home.

Interventions

This report is accompanies reviews of effectiveness and cost-effectiveness of interventions to prevent unintentional injury in the home. Overall, these aimed to assess the supply and/or installation of safety equipment (free of charge or at a reduced cost) inside of a home and the home risk assessments. While this review of qualitative research was interested in intervention specific research, we also looked for studies that explored attitudes, behaviours and understandings related to preventing injury to children in the home generally as these may reveal important underlying factors that may help or hinder the success of interventions.

Settings

Any

Locations

OECD countries

Time period

Since 1990

Study design

The original protocol allowed inclusion related to study design to be an iterative process, since we were not sure at the outset whether sufficient, relevant qualitative

research would be identified to allow for a meaningful synthesis. We therefore initially searched for both qualitative research designs, using recognised methods of data collection and analysis, and survey data that might also address the question of barriers and facilitators. Once these identified papers were obtained in full text form and given an initial reading, it was clear that there was enough, appropriate qualitative research to consider for this question, and only this was included in the review. Identified quantitative research is listed in Appendix 5.

Language

English

3.1.3. Screening

One of two members of the intervention review team (RG, MP) screened the identified titles and abstracts and marked all those that met the inclusion criteria for the review of effectiveness, the review of cost-effectiveness or for this review of qualitative research. Full text papers were ordered, and the same two team members assessed these for inclusion in any of the three reviews. Any uncertainty was resolved by discussion.

3.2. Methods of analysis/synthesis

3.2.1. Quality assessment

Each full text paper was assessed by one reviewer (JS), using the methodology checklist for qualitative research from the CPHE methods guidance manual (2009) to assess a study's internal validity (see Appendix 3Appendix 1 for the quality appraisal of included studies).

The reviewer recorded the key reasons why a study failed to be a '++', noting in particular the main study limitations and their implications. For example, studies which received a '-' typically reported no or very few direct quotations from the participants, and provided little or no theoretical or analytical addition to the wider literature. These statements were noted in the methodology checklist comments

column in the evidence tables under 'limitations identified by review team' (see Appendix 4).

3.2.2 Data extraction

Each included article was read by one researcher (JS) and information was extracted about the population included, the type of intervention or programme being studied, the research methods and findings, and study limitations. For each article, this information is included in an evidence table (see Appendix 4)

3.3 Data analysis and synthesis

Once the key findings from each included study had been extracted, they were read and re-read by one reviewer (JS). Another reviewer (RG) read the papers and the two reviewers collaborated throughout the analysis process, with regular discussion. The coding framework, main themes emerging from the papers, and synthesis of findings were all developed through a process of collaborative discussion.

This synthesis provides a thematic analysis, based on the mainly descriptive themes reported in the nine articles. Themes/codes and their allocation were developed through discussion and further refined during the write-up of the synthesis. Further details can be seen in Section 4.4

A distinction is made in this analysis between participant quotes (sometimes called first order concepts) which are the direct expressions of the participants, which show how they interpret their experiences, and author quotes (sometimes called second order concepts), which are the interpretations or explanations of the findings made by the papers' authors. Themes not introduced by participants or authors, but by the reviewer, are noted as reviewer interpretations (sometimes called third order concepts). Third order concepts often draw on findings and analysis from the body of articles, rather than just on one study. For example, Mull et al (2001) included the following direct quotation from an interviewee: *"In Mexico, you've known everyone living around you for years, and you can rely on them to look out for your kids."* This was interpreted by the study authors as: "Many mothers relied on 'low tech' methods of injury prevention more suited to rural Mexico than congested US cities." So in this

case, the first order concept is the participant's concept (being able to rely on longstanding neighbours to look after your children) and the author's interpretation (reliance on "low tech" methods of injury prevention) is the second order concept. As reviewers, we then developed our own interpretation of this data, drawing together findings from this and other studies, to produce a third order concept (mothers' sense of social isolation and general mistrust of neighbours in a country in which they did not feel at home).

Most of the articles in the synthesis were primarily descriptive rather than explanatory, focussing mainly on first order concepts (participants' descriptive themes)

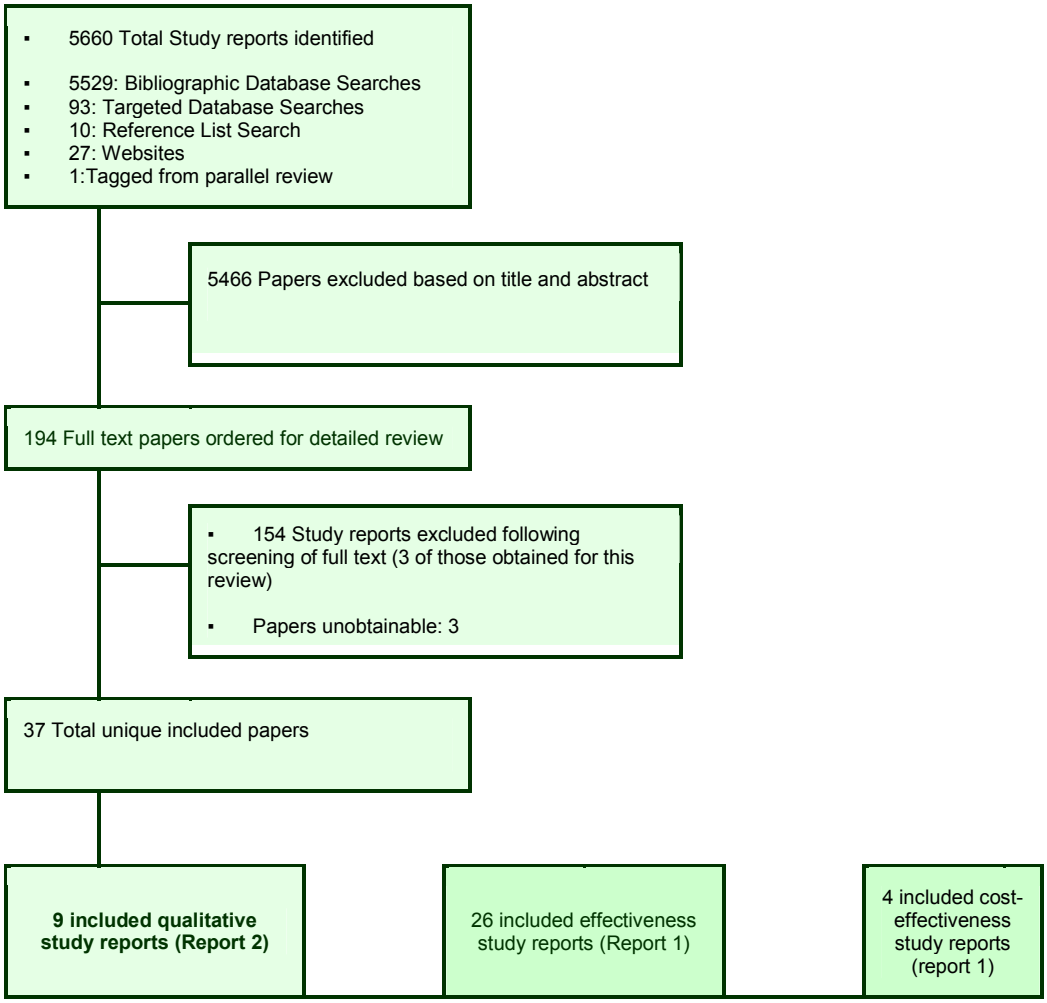
Where possible we use findings from several studies to build a picture of the main issues in terms of barriers and facilitators to the success of projects and interventions that aim to reduce unintentional injury in the home. Themes were developed through discussion and further refined during the write-up of the synthesis.

4. Summary of included studies

4.1. Identified studies

The process of study identification is shown in **FIGURE 1**.

FIGURE 1 *Review flowchart*



A single search was undertaken for the reviews of effectiveness and cost-effectiveness (Report 1) and this review of qualitative research (Report 2). The same

two reviewers (RG and MP) screened all the titles and abstracts and marked them for inclusion for any of the three reviews. In addition, two studies contained information pertinent to both the effectiveness and the cost-effectiveness reviews and so the final row in Figure 1 sums to more than 37.

4.2. Included studies

4.2.1. Study characteristics

Table 1 and Figure 2 summarise key details of the nine studies included.

Location: Four of the study populations were located in the USA (Bennet Murphy 2001; Brannen 1992; Hendrickson 2008; Mull et al 2001), three from the UK (Brussoni et al 2006; Carr 2005; Roberts et al 2004; , one from Australia (Gibbs et al 2005) and one from Canada (Olsen et al 2008).

Participants: All of the nine papers focused primarily on parents, either directly researching their experiences and opinions, or by researching health practitioners' reports of parents' views. Six were specifically restricted to research on mothers, three included fathers, grandparents and other carers (Brannen 1992; Gibbs et al 2005; Roberts et al 2004).

Of the nine studies, seven focused on low income parents either by targeting low income parents directly, or basing the study in an area with an low average income (Bennet Murphy 2001; Brannen 1992; Carr 2005; Hendrickson 2008; Mull et al 2001; Olsen et al 2008; Roberts et al 2004).

Five papers focused on populations which were exclusively or mainly (at least two thirds) black, Hispanic, or a range of ethnic minorities (Bennet Murphy 2001; Brannen 1992; Carr 2005; Hendrickson 2008; Mull et al 2001).

Seven papers reported research directly with parents, one paper looked only at health practitioners' experiences (Brussoni et al 2006) and one other looked at mothers' experiences and views, but it appears that this was based on the words of the health practitioners (Carr 2005).

Dates of studies included. Though the scope of the search included papers from 1990 onwards, only one of the nine papers (Brannen, 1992) was published before 2001.

4.2.2. Scope/focus of included articles

All nine of the included articles included qualitative research aimed at understanding or reducing the incidence of unintentional injuries to children in the home. Four studies investigated attitudes and behaviours about home injury prevention (Bennet Murphy 2001; Hendrickson 2008; Mull et al 2001; Olsen et al 2008). Two studies looked specifically at unintentional poisoning incidents (Brennan 1992; Gibbs et al 2005).

Three studies evaluated a specific intervention, all from the UK (Brussoni et al 2006; Carr et al 2005; Roberts 2004) and two of these were UK based smoke alarm interventions. Brussoni et al (2006) was a case study of a smoke alarm installation programme. Roberts et al (2004) evaluated the use of a specific public health intervention: installing smoke alarms. The other study about an intervention, (Carr 2005) was of an intervention using local mothers to do home visits and advise about the provision of safety equipment.

The type of analysis and findings focused on has some relationship to the type of questions asked, all of the articles evaluating an intervention had a focus on practical outcomes, such as recommendations to fire services or health visitors for future interventions, while the studies looking at attitudes and behaviours tended to focus more on theoretical implications of findings, such as the valuing of unpaid maternal work.

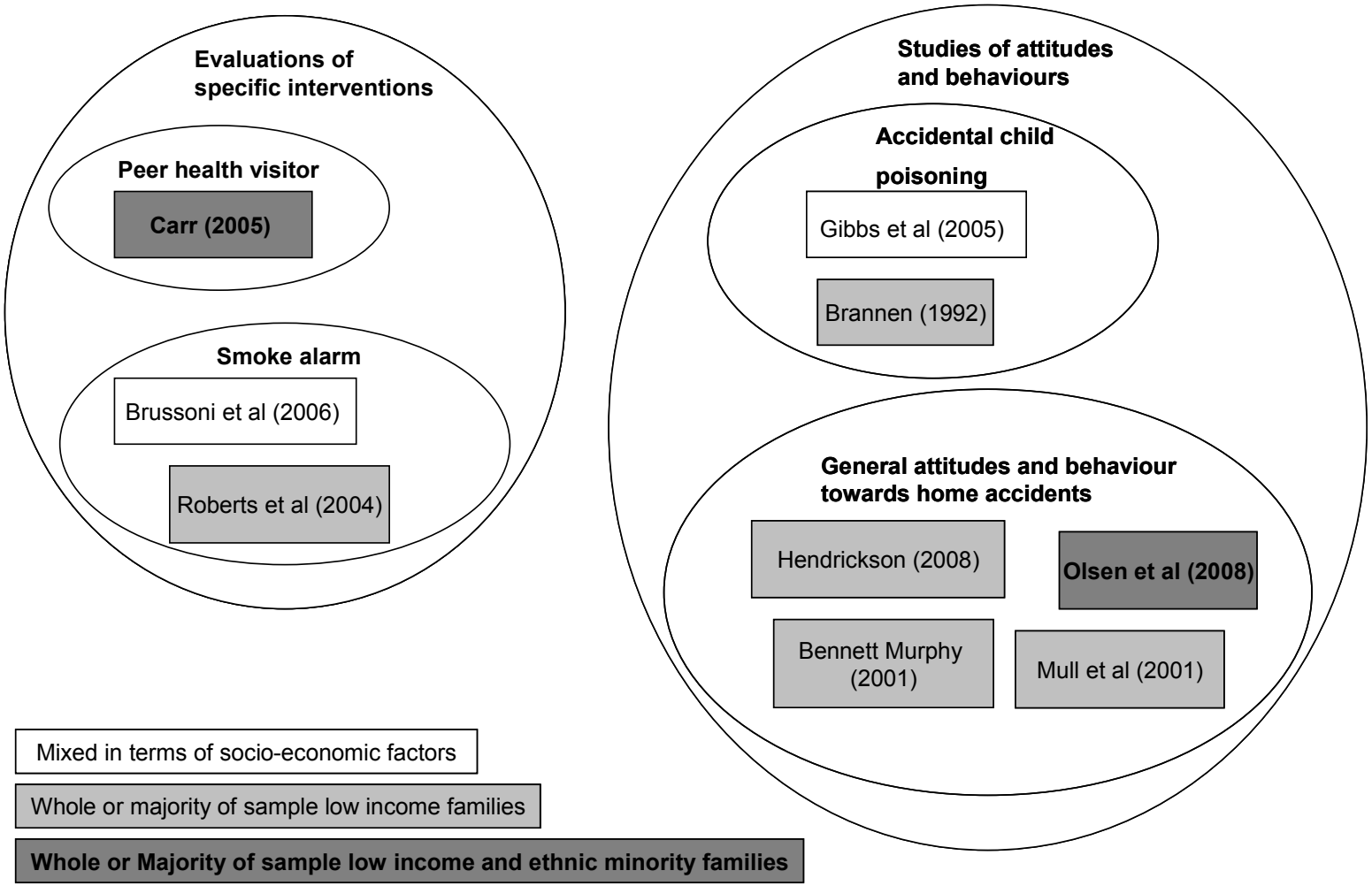
Table 1: Methodological details of included studies

Author	Location	Aim	Theoretical approach	Sample/Population	Sample size	Study design	Analytic process	Quality score
Bennett Murphy (2001)	USA	To identify to what extent adolescent mothers viewed injury prevention as an essential role of parenting. To examine beliefs about why injuries occur and how they can be prevented	Unspecified	Adolescent mothers. Many African-American.	17	Focus group	Thematic analysis (RD)	-
Brannen (1992)	USA	What factors influence use of poison-s and poison control center resources in a nner-city community?	Health belief model.	Mothers and Grandmothers in Black, low income, inner-city community.	32	Inteviews	Thematic analysis (RD)	-
Brussoni et al (2006)	UK	To bring together scientific evidence of what works in injury prevention, using case study of smoke alarm installation in England.	"Kelly et al's" multistep process*	Health practitioners	98	Focus groups/ interviews	Thematic analysis (RD)	-
Carr (2005)	UK	Evaluation of an innovative approach to tackling child accident prevention in the home.	Unspecified	Low income mothers in multi-ethnic community	3	Focus groups/ interviews	Thematic analysis	-
Gibbs et al (2005)	Australia	To develop an understanding of factors acting as barriers and motivators to parental uptake of child poison safety strategies.	Grounded theory.	Parents of young children.	65	Focus groups/ interviews	Thematic analysis	+
Hendrickson (2008)	USA	To explore the worries, safety behaviours, and perceived difficulties in keeping children safe at home in a purposive sample of low-income mostly non-English-speaking mothers as a foundation for nursing interventions.	Health belief model.	Low income mothers. Many Hispanic.	82	Interviews	Qualitative Content analysis	+
Mull et al (2001)	USA	Why is serious pediatric injury higher among Hispanics than non-Hispanic whites in the US?	Focused ethnography	Low income mothers. Many Hispanic.	110	Interviews, home observation.	Thematic analysis	+
Olsen et al (2008)	Canada	To explore the child safety practices of mothers living in low-income situations.	Ethnography	Low income mothers	17	Interviews, home observation.	Thematic analysis (RD)	++
Roberts et al (2004)	UK	To explore barriers and levers to the use of a specific public health intervention: installing smoke alarms.	Unspecified	Parents in trial smoke alarm area.	58	Focus groups/ interviews	Thematic analysis (RD)	+

Quality Score: good [++], adequate [+], poor [-]. Taken from CPHE Methods Manual. RD: Researcher-defined, not specified in paper.

*This process is not widely known, the paper refers to a webpage which no longer exists.

Figure 2: Main research questions and samples



4.4 Study methodology and quality appraisal

Theoretical framework

Not all studies included in the review used a stated theoretical approach or conceptual framework. Three did not specify any sort of theoretical approach, and five did not give details of their analytical approach (see table 1). Of those studies which did use a stated theoretical approach, two (Brannen et al, 1992; Hendrickson, 2008) used a Health Belief Model, one (Gibbs et al 2005) used Grounded Theory, one (Brussoni et al, 2006) used "Kelly et al's Multi-step process" (a process based on a paper on a website, now no longer accessible). As previously mentioned (Section 3.3), in most articles, analysis was thematic and most studies present descriptive rather than explanatory findings.

Three studies (Roberts et al, 2004; Gibbs et al, 2005; Brussoni et al, 2006) organised their themes into barriers and facilitators to accident prevention. As this concurs with the main research question for this report, this was taken as a starting point for developing a conceptual framework for synthesising the findings of the nine studies. These are briefly outlined below.

Gibbs et al (2005), who describe their work as a study of barriers and facilitators to uptake of poison prevention strategies in Australia, based their themes around three main types of barriers to increased uptake of poison prevention strategies:

1. **Environmental barriers,** for example living in rented or grandparents' homes

2. **Knowledge-based barriers** for example limited legislation, parents' lack of awareness.

3. **Behavioural barriers**, for example parents overestimating children's ability to remember instructions, or not accounting for rapid developmental change in abilities.

Gibbs et al (2005) also noted motivators (comparable to facilitators) for increased uptake of poison prevention strategies, but did not categorise this further. For example, they found that exposure to a child poisoning incident was the most likely motivator for increased awareness.

Brussoni et al (2006) organised their analysis of a UK smoke alarm distribution program into barriers and facilitators to program implementation. These barriers and facilitators were those viewed from the perspective of the health care practitioners interviewed. Unlike Gibbs et al, Brussoni et al did not categorise further into "types" of barriers and facilitators.

The third paper to use a barriers and facilitators framework was Roberts et al (2004), who explicitly stated their UK study was exploring barriers and levers to the use of a specific public health intervention: installing smoke alarms. Their results were not, however, couched explicitly in terms of barriers and facilitators, rather they were loosely grouped into themes, but they did conclude that the main barrier to smoke alarm use was the distress caused by false alarms.

4.2.3. Quality appraisal

Quality was assessed using an assessment tool taken directly from the CPHE methods manual, and results are shown Appendix 3.

One of the studies were assessed as "++" (Olsen et al 2008), four as "+" (Gibbs et al 2005; Hendrickson 2008; Mull et al 2001; Roberts et al 2004), four as poor "-" (Bennet Murphy 2001; Brannen 1992; Brussoni et al 2006; Carr 2005). Studies were given a score "-" because of lack of reporting of study design, such as methods of recruitment and sampling, lack of details of data collection or analysis, or lack of reflexive consideration. These make it difficult to assess the validity and reliability of the study findings.

4.3. Applicability

There are two main types of study in this synthesis, three studies on specific interventions (Brussoni et al 2006; Carr 2005; Roberts et al 2004), and six focusing more generally on parental attitudes and behaviours to home safety (Bennet Murphy 2001; Brannen 1992; Gibbs et al 2005; Hendrickson 2008; Mull et al 2001; Olsen et al 2008).

Four of the study populations were located in the USA (Bennet Murphy 2001; Brannen 1992; Hendrickson 2008; Mull et al 2001), three from the UK (Brussoni et al 2006;

Carr 2005; Roberts et al 2004; , one from Australia (Gibbs et al 2005) and one from Canada (Olsen et al 2008). All three of the studies on interventions were UK studies, which suggests these are particularly relevant to the UK situation.

The applicability of the non-UK studies to a UK situation is not always easy to assess. Several studies focus on particular ethnic minorities or immigrant populations – notably Hispanic populations in the US, in three studies (Table 1). It is arguable whether those are applicable to a UK situation in all respects, but there may be generic parallels to be drawn between these and UK immigrant or ethnic minority populations such as those related to language needs or conflicts between norms in the country of origin and adopted country. The focus of a majority of these papers (see Figure 2) on the concerns of deprived or "hard to reach" populations has produced themes which can be applied to interventions with other deprived or hard to reach populations. The mechanisms may be similar regardless of the specific cultural contexts. For example, feelings of social isolation or mistrust of neighbours and officials may be similar for many immigrant populations in a new culture and non-native language situation.

Though the scope of the search included papers from 1990 onwards, all except one of the nine papers (Brannen, 1992) was published since 2001. This means that study findings are likely to be still in date and applicable to future interventions.

5. Study findings

5.1. Introduction to findings

5.1.1. Barriers and facilitators framework

Three of the papers (Roberts et al, 2004, UK, [+], Gibbs et al, 2005 Australia, [+]; Brussoni et al, 2006, UK, [-]) explicitly organised their research themes around barriers and facilitators. This was used as an organizing framework to synthesis the findings of the nine included studies.

In this review the main themes emerging in the synthesis are grouped into barriers and facilitators, and the categories within these were determined by our data analysis. The key findings from the nine studies included in this review are outlined in Table 2, below, and summarised in the rest of this chapter.

5.1.2. Types of study findings

As noted earlier, three studies (Brussoni et al, 2006, UK, [-]; Carr, 2005, UK, [-]; Roberts et al, 2004, UK, [+]) evaluated unintentional injury prevention interventions, and their findings were based around themes to do with implementation and practice. While these three studies comprised some of the weaker papers in the synthesis in methodological terms (two of the three were rated [-] poor), they were more practice-based, focussing on evaluation of interventions, and their findings were in general more directly relevant to this synthesis topic.

Two studies specifically about unintentional poisoning also focused mainly on practical implications. Brannen (1992, US, [-]), a study of unintentional poisoning, focussing on mothers in a black low income community, and Gibbs et al (2005, Australia, [+]), a study of unintentional poisoning, focusing on parents of young children.

Four studies - Bennett Murphy (2001, US, [-]), Mull et al (2001, US, [+]), Hendrickson (2008, US, [+]) and Olsen et al (2008, Canada, [++]), - were more theoretically motivated, focusing more on the parent's strategies and behaviours, and indirectly raised issues related to policy and legal situations –

for example in terms of the problems caused to parents by poor housing, and in terms of mothers' activities to keep children safe and the emotional impact of this work.

The studies tended to highlight the barriers more than the facilitators, especially in the participant quotes, or first order concepts. A lot of the "facilitators" described in this section were second order concepts, often cast as recommendations in the discussion section of the papers reviewed, rather than research findings in the analysis sections. Some are authors' extrapolations, direct converses of the barriers. Some of the facilitators are the reviewer's extrapolations, or third order concepts, based on analysis of the themes emerging in the studies. These differences in the themes' origins (participant, study author, reviewer) are noted in the analysis below.

Table 2: **Main themes emerging in synthesis of nine articles**

		BARRIERS to PUIC in the home	**FACILITATORS** to PUIC in the home
Level	**Type of barrier**	**Main barriers identified in the synthesis**	**Main facilitators identified in the synthesis**
1. External: Legal, policy or Organisational	Legal/policy/health services	Weak legislation. Absence of policy drivers influencing resources	Policy drivers and legislation Multi-agency partnerships, linking with other health messages or initiatives
	Information and communication with households	Lack of appropriate information to parents/households about legislation and policies	Good communication between organisations and target audiences Involving local people (e.g. mothers) to be trained in health initiatives. Targeting of population (e.g. school children) to share information
	Socio-economic circumstances	Disempowering effects of living in rented or overcrowded living conditions	
2. Physical or environmental	Housing	Practical barriers due to poor quality (often rented) housing	Stable and child-friendly accommodation Control/ownership of home environment
	Equipment and maintenance	Lack of maintenance of smoke alarms	Landlords' attention to safety issues Provision of appropriate and durable equipment Maintenance of and confidence in other safety devices
	Training.		Training in installation and equipment use/replacement
	Cost	Cost of installing safety devices Costs of accessing treatment	
3. Individual	Understandings of risk	Lack of awareness of risk Fatalism about nature of accidents	Awareness of risk.
	Mothers' safeguarding work		Mothers' work in safeguarding children. Mothers' commitment to vigilance Teaching children about safety
	Cultural background	Cultural differences in experiences and expectations Cultural practices in different cultural context. Language barriers	Culturally sensitive information and advice systems
	Social/relational	Relationship with partner Mistrust of officials Fear of being accused of abuse or neglect Mistrust of neighbours/non-family to look after child.	Social connectedness rather than isolation Building trust in officials via peer education

5.1.3. Structure of analysis section

In this section, the main barriers and facilitators are described, in line with the conceptual framework in Table 2. For each section, there is an introductory paragraph outlining the number of studies which described the theme, and an overall summary of the theme. Each section of themes is divided into barriers, and then related facilitators.

Section 5.1.3 corresponds to the first row of themes in Table 2 – External barriers and facilitators.

4.2.1 Barriers and Facilitators due to legal/policy/health services
4.2.2 Barriers and Facilitators concerning information and communication with households
4.2.3 Barriers and Facilitators due to socio-economic circumstances

Section 5.3 corresponds to the second level of themes in Table 2 – Physical/environmental barriers and facilitators.

4.3.1 Housing
4.3.2 Equipment and Maintenance.
4.3.3 Training.
4.3.4 Cost.

Section 5.4 corresponds to the third level of themes in Table 2 – Individual barriers and facilitators.

4.4.1 Understandings of risk
4.4.2 Mothers' safeguarding work
4.4.3 Cultural background
4.4.4 Social and relational factors

5.2. Barriers and facilitators due to external factors

This section deals with themes emerging in the studies which acted as barriers or facilitators to the prevention of child unintentional injury in the home, but were outside

the individual's or household's control, due to national policy, or legislation. The barriers and facilitators due to external factors located in these studies are divided into subsections as follows:

5.2.1 Barriers and Facilitators due to legal/policy/health services

5.2.2 Barriers and Facilitators concerning information and communication with households

5.2.3 Barriers and Facilitators due to socio-economic circumstances

5.2.1. Barriers due to Legal/ policy/health services

Five studies explicitly cited perceived legal or policy barriers to unintentional injury prevention programmes (Brannen 1992, US; Carr, 2005, UK; Brussoni et al 2006, UK; Gibbs et al 2005, Australia and Mull et al 2001, US). At times the studies were vague about the exact nature of these policy or legal issues, but specific issues detailed below included barriers due to weak legislation for landlords of rented accommodation, and for regulation on containers of toxic products (such as medicines or cleaning products, and facilitators due to strong policy drivers or legislation.

- **Barriers due to weak legislation**

Two studies (Gibbs et al, 2005; Brussoni et al, 2006) noted the theme of weak legislation being a barrier to effective implementation of unintentional injury prevention programme.

Brussoni et al (2006) conducted a UK study of a smoke alarm intervention, getting the views of health care practitioners, and found that an "absence of policy drivers" (author quote) – legislation within the Fire Services – led to lack of resources and funding for projects such as installation of smoke alarms. Particular weaknesses they identified in carrying out interventions included work being too short-term and fragmented due to lack of coordination of home safety in one central organisation. Where there was legislation, Brussoni et al (2006) found examples of weak or poorly implemented legislation. For example, landlords of rented accommodation were ignoring recommendations (not enforced) to install or maintain alarms – this was perceived as limiting the effectiveness of the programme. Brussoni et al (2006) noted

that some UK councils removed smoke alarms to limit their liability if smoke alarms malfunctioned.

Gibbs et al (2005), an Australian study of unintentional poisoning, focusing on parents of young children, found that limited legislation for things like child resistant containers was a barrier to unintentional injury reduction in the home, as many toxic products were not always sold in child resistant containers –"allowing for consumer choice" (author quote, Gibbs et al, 2005). However, the study raised issues concerning legislation in this area. Some parents perceived society as over-protective in terms of too much insistence on labelling or child resistant containers, yet were surprised to find that products without warnings or child resistant containers could be dangerous. Parents also understood "child-resistant" to be "child-proof" so more likely to store the container unsafely. So the existence of legislation on safety containers, for example, may actually reduce parents' tendency to think about danger and the risk of products.

- **Facilitators due to good legislation - "policy drivers"**

One study, Brussoni et al (2006), a UK study of a smoke alarm intervention, getting the views of health care practitioners, found that "policy drivers" in the fire service had a beneficial effect on home safety for families in a deprived community. By "Policy drivers" they gave, as an example, a Fire Services Act which placed an obligation on the Fire Services to be active in community fire safety, and provided funding to install free smoke alarms in vulnerable households. Such legislation, by influencing resources and staffing, facilitated the installation and maintenance of fire safety equipment.

Evidence statement 1: Legal and policy barriers and facilitators to unintentional injury prevention programmes
Five studies (Brannen, 1992, US, [-]; Carr, 2005, UK, [-]; Brussoni et al, 2006, UK, [-]; Gibbs et al. 2005 Australia, [+]; and Mull et al, 2001 US [+]) explicitly cited perceived legal or policy barriers to unintentional injury prevention programmes. Particular weaknesses identified in carrying out fire safety interventions included work being too short-term and fragmented due to lack of coordination of home safety

in one central organisation (Brussoni et al, 2006),

Weak legislation for landlords of rented accommodation meant that recommendations were not necessarily implemented effectively (Gibbs et al, 2005; Brussoni et al, 2006). Weak regulation on containers of toxic products was a barrier to reducing unintentional injury in the home, as consumer choice allowed toxic products not always to be sold in child resistant containers (Gibbs et al, 2005).

Facilitators for prevention programmes aimed at reducing unintentional injuries to children in the home included strong policy drivers or legislation – for example, an obligation under the Fire Services act to councils or landlords to implement services, and the provision of funding to enable this (Brussoni et al, 2006).

5.2.2. Barriers and Facilitators concerning information and communication with households

- **Barriers due to lack of appropriate information to parents/households about legislation and policies**

Three studies found that parents felt there was a lack of information or knowledge about existing policies or supports (Brannen 1992, US; Bennett Murphy 2001, US; Brussoni et al 2006, UK).

Brannen (1992), a US study of unintentional poisoning, focussing on mothers in a black low income community, found that these women reported not knowing the poison control centre telephone number, and there was a lack of "direct information on poisoning prevention" (author quote). Most of the information, for those parents who had been given information, was provided in hospital after a child's birth, and for many, the information given at this time had not been retained. Information given in a community setting or by a physician was retained better.

Brussoni et al (2006), in a UK study of a smoke alarm intervention, getting the views of health care practitioners, similarly found that a lack of communication about programs to install smoke alarms limited uptake, especially for the most high-risk families. This was particularly the case for rented accommodation with a rapid

turnover of tenants. Suspicion of officialdom added to the difficulties of communication to some of the most at-risk households.

Bennett Murphy (2001), in a US study of adolescent mothers' attitudes and behaviours about home injury prevention, found that mothers reported a lack of discussion of injury prevention with health professionals.

Evidence statement 2: Provision and timing of information
Three studies (Brannen, 1992, US, [-]; Bennett Murphy, 2001, US, [-]; Brussoni et al, 2006, UK, [-]) found that parents felt there was a lack of information or knowledge about existing policies or supports. Examples included lack of knowledge of poison centre telephone number (Brannen, 1992), and lack of "direct information" on poisoning prevention (Brannen, 1992). A lack of communication about programs to install smoke alarms limited uptake, especially for the most high-risk families (those in rented accommodation with a rapid turnover of tenants) (Brussoni et al, 2006). Timing of information was shown to be important. One study (Brannen, 1992) found that parents given information in hospital at the time of a child's birth did not retain this, while information provided subsequently in a community or physician setting was better retained.

- **Facilitators in communication between organisations and target populations**

Two studies found that partnerships and collaborations between different service providers facilitated the effectiveness of interventions in low income communities to reduce unintentional injuries to children in the home (Carr 2005, UK; Brussoni et al 2006, UK).

Brussoni et al (2006) found that multi-agency partnerships between different agencies, and between agencies and hard-to-reach groups, aided the effectiveness of a UK smoke alarm installation programme. Carr (2005), in a UK study of an intervention encouraging low income mothers' involvement in home visits and the

provision of safety equipment, found that "the development and maintenance of trust between safety advisers and the families receiving services" (author quote, Carr 2005) was a positive outcome of peer education approaches.

- **Facilitators: Targeting of population**

Three of the papers (Brannen 1992, UK; Carr 2005, UK; Brussoni et al 2006, UK), noting as a barrier the cultural barriers to interventions, suggested that the production and distribution of culturally appropriate and acceptable information would facilitate the success of initiatives and programmes for targeted communities (often low income populations).

Brussoni et al (2006) recommended targeting children in local primary schools, educating on fire prevention as a part of a smoke alarm initiative. They also suggested linking fire prevention messages with other health messages or initiatives, identifying at-risk households through data-sharing with other agencies. Targeting through media – TV, soaps, radio and free newspapers – was also thought to be a valuable way of targeting vulnerable populations, as was working with community leaders for minority ethnic groups.

Carr (2005) concluded that parents in the area she studied were "not averse to learning more about accident prevention and trying to implement this knowledge", and recommended targeting local people (mothers) to share information and be the point of contact for prevention initiatives about unintentional injuries to children in the home. Brannen (1992) similarly recommended the production and distribution of "culturally acceptable" (author quote) poisoning information and frequent reinforcement for families with small children.

Evidence statement 3: Targeting local community to carry out intervention
Three studies (Brannen 1992, USA [-]; Brussoni et al 2006, UK, [-]; Carr 2005 UK [-]) found that partnerships and collaborations between different service providers facilitated the effectiveness of interventions to reduce unintentional injuries to children in low income communities. Collaborations perceived as useful included multi-agency partnerships between different agencies, and between agencies and hard-to-reach groups, which aided the

effectiveness of a UK smoke alarm installation programme (Brussoni et al, 2006), and a partnership between health officials and low income mothers in home safety visits offering advice and provision of safety equipment (Carr, 2005).

The importance of devising information and advice in ways that suit the target community (in terms of language, style, examples used) was noted in both of these papers dealing with low income populations with many ethnic minorities.

5.2.3. Barriers and facilitators due to socio-economic circumstances

All nine of the papers in the synthesis found barriers due to socio-economic circumstances (specifically, poverty, youth, immigrant status). This is partly a consequence of the nature of the samples studied - in many cases, low income parents had been explicitly targeted and research questions were investigating these issues (see Figure 2). The barriers located in these studies which related to the reduction of unintentional injuries to children in the home can be divided into the themes below.

- **Barriers due to disempowering effects of living in rented or overcrowded living conditions.**

Eight studies (Bennett Murphy 2001, US; Brannen et al 1992 US; Brussoni et al 2006, UK; Gibbs et al 2005, Australia; Hendrickson 2008, USA; Mull et al 2001, US; Olsen et al 2008, Canada; Roberts et al 2004, UK) found that a major barrier to implementing safety equipment and childproofing a home was not living in a home one was free to modify. Mothers particularly found a lack of control over their home environment, due to living in rented accommodation and/or with extended family (for example grandparents or parents-in-law). In rented accommodation, landlords were reported as unresponsive to requests for installation or maintenance of safety equipment. In extended family homes, young parents often did not have a say in how the home was arranged.

Olsen et al (2008), in her Canadian study of low income mothers' attitudes and behaviours about home injury prevention, found that downsides of shared, rather than

owned, accommodation included availability of safe play space, both indoors and outdoors, traffic hazards (relevant to this study as traffic hazards led parents to keep children indoors), child care supports, relationships with neighbours, and trust in community services. Some of these were directly related to cramped living conditions, others to transient housing.

Similarly, Hendrickson (2008), in a US study of low income mothers' attitudes and behaviours about home, describes a mother with four children struggling to keep her toddler safe around various hazards she could not deal with:

> *"I am exhausted from telling the older children not to play near the pool where the baby will want to join them (a pool which could not be drained), not to flip on the kitchen lights (sparking electrical system), and not to throw things on the floor that could cause the little one to choke". (Mother of four, in Hendrickson, 2008)*

Mull et al (2001) found that overcrowded living conditions increased the likelihood of unintentional poisoning, as other family members might leave toxic products around (for example, bleach, pesticides etc), while Gibbs et al (2005) found that in homes with farming or home businesses, toxic products were likely to be around the home at times when parents were preoccupied with work and so not closely supervising their children.

Bennett Murphy (2001), in a US study of adolescent mothers' attitudes and behaviours about home injury prevention, found that the limitations (cost, ownership, temporary residence) of installing safety devices or safety proofing a home which was not owned was a barrier to safeguarding the home. Olsen et al (2008) similarly found that "housing deficiencies" (author quote - rented property, not living in own home) limited mothers' ability to fit or mend safety appliances. Both the studies of unintentional poisoning, Gibbs et al (2005) and Brannen (1992) found that mothers on low incomes reported lack of storage space in cramped accommodation as a barrier to safe storage of poisonous products.

Brussoni et al (2006), and Carr (2005) both noted that other effects of living in low cost rented accommodation included a high turnover of tenants, making it hard to organise effective installation and maintenance interventions, and a suspicion by tenants of officialdom (returned to in section 5.4.3).

Evidence statement 4: Limitations on effectiveness of home safety initiatives due to disempowering effects of living in rented or overcrowded living conditions

Eight studies (Bennett Murphy, US, 2001 [-]; Brannen, 1992, UK, [-]; Brussoni et al, 2006, UK, [-]; Carr, 2005, UK, [-]; Gibbs et al, 2005, Australia, [+],Hendrickson, 2008, US, [+]; Mull et al, 2001, US, [+]; Olsen et al, 2008, Canada, [++]; Roberts et al, 2004, UK, [+];) found that a major barrier to implementing safety equipment and childproofing a home was living in a home one was not free to modify.

The studies found that mothers particularly found a lack of control over their home environment due to living in rented accommodation, and/or with extended family (Mull et al, 2001; Olsen et al, 2008). In rented accommodation, landlords were reported as unresponsive to requests for installation or maintenance of safety equipment (Brussoni et al, 2006). In extended family homes, often in overcrowded situations, young parents often did not have a say in how the home was arranged. Two studies noted that high turnover of tenants in cheap rented accommodation limited the effectiveness of projects to organise effective installation and maintenance (Carr, 2005; Brussoni et al, 2006).

In two studies (Olsen et al, 2008; Hendrickson, 2008), having landlords with the ability and eagerness to make repairs led to more effective interventions.

5.3. Physical and Environmental Barriers and Facilitators

This middle level of the conceptual framework deals with themes emerging in the studies which were still outside the individual's control but were an outcome of their environment or circumstances. The barriers and facilitators due to external factors located in these studies are divided into subsections as follows:

5.3.1 Practical barriers due to poor quality (often rented) housing

5.3.2 Equipment and Maintenance.

5.3.3 Training.

5.3.4 Cost.

5.3.1. Practical barriers due to poor quality (often rented) housing

Two of the studies (Mull et al 2001, US; Olsen et al 2008, Canada) mentioned practical barriers to child safety due to living in poor quality accommodation. Often, poor housing was related to problems with installing or maintaining safety equipment, and to difficulties in keeping children safe in the home.

- **Barrier: poor quality housing**

Mull et al (2001), a US study of low income mothers' attitudes and behaviours about home injury prevention, noted that mothers who lived in dilapidated rented accommodation (in some cases condemned for redevelopment) were likely to have rickety stairs, broken window bars and broken safety locks. Olsen et al (2008) found a similar theme: mothers in deficient housing struggled with safety devices (for example, cupboard and window locks) which did not fit or work, and resorted to using plastic bags to tie cupboard handles, and taping over electric sockets.

- **Facilitator: Stable and child-friendly housing**

Olsen et al's (2008) study highlighted how low income mothers in child-friendly accommodation found it easier to care for their children safely. For example, a mother with a one-level apartment appreciated the ease of monitoring her child's activities in the home. This study noted how stability of housing was an important factor in determining mother's ability to safeguard children in the home.

5.3.2. Equipment and Maintenance of safety devices

Four studies (Bennett Murphy, 2001, US; Brussoni et al, 2006 UK; Gibbs et al, 2005 Australia; Roberts et al, 2004 UK) mentioned faulty or poor quality equipment as a barrier to interventions aimed at reducing unintentional injuries to children in the home and made recommendations for different or better equipment. These studies were divided into studies focussing on smoke alarm installation programmes (Roberts et al, 2004; Brussoni et al, 2006) and those focussing on general child safety in the home

(Bennett Murphy, 2001), or on unintentional poisoning (Gibbs et al, 2005). Different barriers emerged for these types of studies, as described below:

- **Barrier: Smoke alarm installation programme barriers**

Both of the two studies focussing on smoke alarm interventions (Roberts et al, 2004; Brussoni et al, 2006) mentioned problems to do with installation programmes – Brussoni et al's (2006) study found that alarms which were hard to fit were particularly problematic for older residents. Roberts et al, (2004) noted that some householders refused installation due to having one already (though these turned out to be not actually installed), suspicion of something provided for free, or suspicion of a stranger coming into their home.

- **Facilitator: Provision of appropriate and durable equipment**

Brussoni et al (2006) recommended the provision of tamper-proof smoke alarms with 10 year batteries, as a facilitator for a smoke alarm installation programme. Roberts et al (2004) similarly recommended smoke alarms with longer lasting batteries as a facilitator for the smoke alarm installation programme they studied. Brussoni et al (2006) also recommended the alternative of sprinkler systems instead of smoke alarms for "certain vulnerable populations" (author quote), but did not elaborate on reasons for this.

Evidence statement 5: Provision of appropriate and durable equipment
Four studies (Bennett Murphy, 2001, US, [-]; Roberts et al, 2004, UK, [+]; Gibbs et al, 2005, Australia, [+], Brussoni et al, 2006, UK, [-]) found that faulty or poor quality equipment was a barrier to interventions to reduce unintentional injuries to children in the home. For example, mothers resorted to taping over electric sockets when safety plugs were not provided or did not work. The four studies made recommendations for different or better equipment. Brussoni et al (2006) recommended the provision of tamper-proof smoke alarms with 10 year batteries, and alternatives of sprinkler systems for some populations (Brussoni et al, 2006), Roberts et al recommended smoke alarms with longer lasting batteries. Brussoni et al suggested help for fitting alarms, or simpler systems, for older

residents. Gibbs et al (2005) recommended more systematic provision of child-resistant containers.

Suspicion by those in vulnerable communities of strangers coming into their homes to assess or install property, and suspicion of "free" offers, needs to be mitigated in successful interventions (Roberts et al, 2004).

- **Barrier: Poor quality or inappropriate safety devices**

Gibbs et al (2005) noted that products designed to safeguard children – safety gates and locks, child resistant containers - were often abandoned when children became able to break or bypass them, but were still young enough to be at risk.

Bennett Murphy (2001), in her US study of adolescent mothers' attitudes and behaviours about home injury prevention, also found that some mothers struggled with the effectiveness of broken or poorly maintained safety equipment:

> *"Them socket protectors don't work. My son takes 'em out and then sticks his finger in"*
>
> *"They're just as likely to be hurt by the playpen as without it". ("Exemplars of responses" in Bennett Murphy, 2001, no further details of speaker)*

This lack of consensus on whether "safety equipment" does work can be found for other items, for example baby walkers – mothers in Bennett Murphys' study used these as a way of keeping a child safe, but in Carr's (2005) UK study of an intervention encouraging low income mothers' involvement in home visits and the provision of safety equipment, professionals regarded stopping using a baby walker as an example of "evidence of parental activity on safety advice" (author quote).

One of the two studies focusing on smoke alarm interventions, one (Roberts et al, 2004) had a theme about problems due to maintenance. They found that the main barrier to safe use of smoke alarms was the stress caused by smoke alarms going off:

> *"It is an incredible noise and I don't get panicked… but when than came on I was just like Oh!. It's such a pitch you just really want to stop it, and it's in your own*

home….(..) you feel completely powerless and that's a horrible feeling in your home." (Mother, white, in Roberts et al, 2004)

"So I grabbed a broom and I thought, I've got to hit that thing up there. So I started banging it with the broom, and it broke and smashed around me.. and that was the end of the smoke alarm." (Mother, white, in Roberts et al, 2004)

Roberts et al noted that people balance immediate and longer term risks to health and wellbeing when they disable smoke alarms – they were aware that it was less than ideal to disable them, but weighted this against other factors.

The other study about smoke alarm installation, Brussoni et al (2006), found that some landlords (including local councils) removed smoke alarms rather than risk liability for non-functioning alarms, so potential problems with maintenance actually meant that there were no alarms.

From these findings on equipment and maintenance, we suggest firstly that providers of safety equipment schemes need to be aware of the reasons people fail to comply, even when they might want to. Notable here is the intrusive nature of malfunctioning smoke alarms: residents weighed up the theoretical, future safety of having an alarm against the noise and practical, immediate stress of it going off too often.

Secondly, we conclude that, not only does care have to be taken to provide appropriate, and good quality, equipment in interventions and programmes, but also, there needs to be consideration of how to provide ongoing support and maintenance with using the equipment.

- **Facilitator: Landlords' attention to safety issues**

Two studies mentioned the beneficial effect of having landlords with the ability and eagerness to make repairs, rearrange space and structures (Olsen et al, 2008; Hendrickson, 2008).

Evidence statement 6: Weighing up of risks against inconvenience
The two studies on smoke alarm installation (Roberts et al, 2004 [+]; Brussoni et al, 2006 [-]) both found that people balance immediate and longer term risks to health and wellbeing when they disable alarms. They were aware that it was less than ideal to disable smoke

alarms, but weighed this against other factors, especially the inconvenience and stress of malfunctioning alarms.

The reviewers' conclusion is that not only does care have to be taken to provide appropriate, and good quality, equipment in interventions and programmes, but also, there needs to be consideration of how to provide ongoing support and maintenance with using the equipment. Not only do participants need clear support on use of equipment, but interventions would be facilitated if providers were aware of the reasons people fail to comply.

5.3.3. Training

- **Facilitator: Training in installation and equipment use/replacement**

The three studies (Carr, 2005 UK; Brussoni et al, 2006 UK; Roberts et al, 2004 UK) based on evaluation of a specific intervention all found that training was a facilitator to reducing the incidence of unintentional injuries to children in the home:

Brussoni et al (2006) found that training in installation for landlords and councils facilitated the success of a UK smoke alarm installation programme. Specifically, they also recommended educating school children on fire prevention. Mere provision of smoke alarms was not seen as sufficient, especially for high risk groups such as older people who needed extra help with installing and maintaining. They recommended training on correct alarm installation. Carr's (2005) study of a UK peer educator programme also noted that involving local people – in this case mothers from the community – in home safety advice visits led to more parents getting trained in equipment use. Roberts et al (2004), as noted above, highlighted the need for clearer instructions on installing and maintaining smoke alarms.

Evidence statement 7: Training in installation and equipment use/replacement
Three studies (Roberts et al, 2004, UK, [+]; Carr, 2005, UK, [-]; Brussoni et al, 2006, UK, [-]) based on evaluation of specific interventions all found that training in installation and equipment use/replacement was a facilitator to reducing the incidence

of unintentional injuries to children in the home.

5.3.4. Cost

Cost emerged as a theme in five of the studies, always as a barrier to reducing accidents to children in the home, or of obtaining help if a chid had been injured (Bennet Murphy 2001, US; Brannen 1992, US; Mull et al 2001, US; Olsen et al 2008, Canada; Roberts et al 2004, UK).

- **Barrier: Cost of installing and maintaining safety devices**

Three studies (Bennett Murphy, 2001; Roberts et al, 2004; Olsen et al, 2008) noted cost of installing and maintaining safety devices (ranging from smoke alarms to safety gates and window locks) was a deterrent to low income households.

Bennett Murphy (2001), a US study of adolescent mothers' attitudes and behaviours about home injury prevention, found that the cost of installing safety devices or safety proofing a home was a barrier to safeguarding the home. Two studies (Roberts et al, 2004; Olsen et al, 2008) found that the perceived cost and skills required in making repairs was a major barrier to the correct use of smoke alarms (in Roberts et al, 2004) and in general for safety equipment (in Olsen et al 2008).

However, as noted in section 5.3.1, in one study (Roberts et al, 2004) the provision of free safety equipment, in this case a smoke alarm, led to the equipment being rejected due to suspicions precisely because it was free, which suggests that making equipment or installations totally free may not always be appropriate.

- **Barrier: Costs of accessing treatment**

The cost of accessing support or treatment was a theme in two of the US studies. Brannen (1992), in a US study of unintentional poisoning, focussing on mothers in a black, low income community, found that a lack of money hindered mothers from seeking treatment or asking for help from official sources. Mothers worried about incurring high costs, and also mentioned lack of access to telephones, transport to health centres, or access to hospital. Mothers in Mull et al's (2001) study showed similar concerns:

"The hospitals don't want to care for you if you don't have any money". (in Brannen, 1992, no further details of speaker)

The cost of emergency health care or transport to hospital only emerged in the US context, and may not be relevant to a UK situation. However, telephoning the emergency services in the US is free, yet parents worried that it would be expensive. Worries about cost of advice, transport or treatment may exist even in contexts where these supports are free or subsidised.

Evidence statement 8: Actual and perceived cost of safety equipment
Cost emerged as a theme in five of the studies, always as a barrier to reducing accidents to children in the home, or of obtaining help if a chid had been injured (Brannen, 1992, UK, [-]; Bennett Murphy, US, 2001 [-]; Mull et al, 2001, US, [+]; Roberts et al, 2004, UK, [+]];Olsen et al, 2008, Canada, [++]). Three studies (Bennett Murphy, 2001); Roberts et al, 2004; Olsen et al, 2008) found that the perceived cost of installing safety devices or making repairs was a major barrier in the correct use of smoke alarms (in Roberts et al, 2004) and in general for safety equipment (Bennett Murphy, 2001; Olsen et al 2008). However, in one study (Roberts et al, 2004) the provision of free safety equipment, in this case a smoke alarm, led to the equipment being rejected due to suspicions precisely because it was free, which suggests that making equipment or installations totally free may not always be appropriate.

5.4. Individual Barriers and Facilitators

The barriers and facilitators due to individual factors are mainly psychological, emotional, and cultural barriers and facilitators, often linked to experience and upbringing. These have links to policy and to physical and environmental factors, (for example, the effects of being an immigrant in a community have been mentioned in sections 5.2.2 and 5.2.3). They are divided into subsections as follows:

5.4.1 Understandings of risk

5.4.2 Mothers' safeguarding work
5.4.3 Cultural background
5.4.4 Social and relational factors

5.4.1. Understandings of risk

- **Barrier: Lack of awareness of risk**

Parents' lack of awareness of risks to young children, coupled with a low level of parental education, was highlighted as a barrier in four studies (Bennett Murphy 2001, US; Gibbs et al 2005, Austalia; Hendrickson 2008, US; Mull et al 2001, US).

In two studies (Gibbs et al, 2005; Hendrickson, 2008) a barrier to preventing unintentional injuries was parents' overestimation of their children's ability to remember instructions or not planning or accounting for rapid developmental change in focus or abilities:

> *"There are more dangerous things in the laundry but they've never really taken an interest in the laundry stuff". (Mother of 3 year old and 5 year old, Gibbs et al, 2005)*

> *"I don't think to move anything until he's been into it". (Mother of 3 year old and 8 month old, Gibbs et al, 2005)*

- **Facilitator: Awareness of risk**

Olsen et al (2008), a Canadian study of low income mothers' attitudes and behaviours about home injury prevention described the "cognitive work" (author quote) mothers did in thinking about and making decisions about child safety. This included being aware of the child's speed of development and making decisions before the child reaches a developmental milestone:

> *"As he gets older he's going to be able to do more things, so right now the little hooks on the doors… are fine because he doesn't know how to do that. But fairly soon I think he's going to clue in how to open them so then I'll have to come up with something else" (29 year old mother, single, 2 year old boy, in Olsen et al, 2008).*

This contrasts with mothers described in the three studies above (Bennett Murphy, 2001; Gibbs et al, 2005; Hendrickson, 2008) who found it hard to anticipate the child's rate of change.

Evidence statement 9; Difficulties experienced by young or poorly educated parents in understanding child development
Four studies (Bennett Murphy, 2001, US, [-]; Mull et al, 2001, US, [+] Gibbs et al, 2005, Australia, [++]; Hendrickson, 2008, US, [+]) found that young or poorly educated mothers found it hard to anticipate the child's rate of development in terms of ability to climb, open containers or locks, light fires. One study, in contrast, found that mothers were good at anticipating developmental milestones and adjusting the home environment in advance of changes, thereby reducing the rate of unintentional injuries in the home (Olsen et al, 2008, Canada, [+]). A reviewer conclusion is that education and information about general child development would facilitate the reduction of unintentional injuries to children in the home.

Gibbs et al (2005) found that awareness caused by direct or heard-of exposure to child poisoning incident was the most likely motivator for increased awareness:

> *"Yeah, I didn't think until I saw that show [about a baby that died after swallowing baby oil]. As soon as I saw that show I went and got the baby oil because I just used to put it there. I didn't even think". (Mother of two children, in Gibbs et al, 2005)*

The reviewer interpretation is that this finding suggests that providing information on unintentional poisoning via media outlets might be effective in raising awareness of risk.

Evidence statement 10: Raised awareness of the risk of unintentional poisoning
One study (Gibbs et al, 2005, Australia, [++]) found that exposure to a child poisoning incident, either in real life or in the media, increased awareness of that particular

danger and was a motivator for implementing safety measures.

This suggests that providing information on unintentional poisoning via media outlets might be an effective facilitator in raising awareness of risk.

- **Barrier: Fatalism about the nature of unintentional injuries**

One study (Bennett Murphy, 2001) found that young mothers found it hard to deal with issues of blame – in a focus group the mothers debated between ideas of the "a**ccident-prone child"** (author term) who would have accidents whatever you did:

> "*Some kids are accident prone",*
>
> *"That's the way they are going to play"*

and the "**negligent adult"** (author term) who was responsible for their child's accidents:

> *"People are too lazy to watch their kids". (all three quotations from Bennett Murphy,2001, no further details of speaker)*

Bennett Murphy noted that young mothers in this study oscillated between the two concepts, unsure whether accidents were due to children or adults, but tending not to think that there was much to be done to prevent them. Moreover, many of the young mothers saw unintentional injury and maltreatment as related, and found it difficult to view unintentional injury as separate from neglect or abuse (see section 5.4.3 for more on this theme).

We suggest, as a conclusion from this synthesis's findings on notions of risk and fatalism, that greater generic advice and support on child development might facilitate the prevention of accidents in the home.

Evidence statement 11: Fatalism about the nature of unintentional injuries
One study (Bennett Murphy, US, 2001, [-]) found that adolescent mothers found it hard to deal with issues of blame oscillating between ideas of the **accident-prone**

child who would have accidents whatever you did, and the **negligent adult** who was responsible for their child's accidents.

Bennett Murphy (2001) recommends that care providers approach the topic of injury in a forthright manner when working with adolescent mothers, challenging the idea that injuries are unavoidable while not assigning blame to the mother for injury to the child. Bennett Murphy (2001) suggests that "helping mothers identify risks to their specific child in their specific environment may be the most effective intervention".

5.4.2. Mothers' work in safeguarding of children

The work which mothers (nearly always mothers rather than other family members) put into preventing unintentional injuries in the home was a theme in five papers, (Brannen, 1992 UK; Bennett Murphy, 2001 US; Hendrickson, 2008 US; Mull et al, 2001 US; Olsen et al, 2008 Canada). Authors picked up on several main components of this maternal safeguarding work – commonsense safeguarding, constant vigilance, and teaching children about safety:

- **Commonsense safeguarding – "things you automatically do"**

Olsen et al (2008), in a Canadian study of low income mothers' attitudes and behaviours about home injury prevention, found that mothers took their own safety efforts for granted – "common sense" (participant quote) This, according to Olsen et al's analysis, was a consequence of mothers downplaying their domestic and childcare work as "non work" (author quote).

> *"Not leaving things hanging… handles on your stove, making sure they're in. Just little things…. There's things that you automatically do." (Grandmother and mother co-parenting 2 year old boy, Olsen et al, 2008)]*

- **Constant vigilance**

Four studies (Bennett Murphy, 2001; Mull et al, 2001; Olsen et al, 2008; Hendrickson, 2008) all of which focused on mothers in low income communities, noted as a major

theme mothers' commitment to constant vigilance and sacrifices they made to achieve this.

> *"Constant vigilance. That's all that there is. It means that if the kids are up, I'm up. I don't go to bed when they're up…. I always feel like I'm on guard". (33 year old mother with partner, 6 children, in Olsen et al, 2008)*

> *I'm afraid if I don't watch him constantly he'll start a fire in the house like my little brother did". (Mother of 13 month old boy, in Hendrickson, 2008)*

> *"No, nothing is difficult because I don't do anything but run behind her and when I take her outside I go with her." (in Hendrickson, 2008, no further details of speaker)*

> *"Never let your child out of your sight." (in Bennett Murphy,2001, no further details of speaker)*

Mothers in Bennett Murphy's (2001) US study of adolescent mothers' attitudes and behaviours about home injury prevention, tended to believe that physical boundaries (cots, playpens, baby walkers) and, otherwise, constant maternal vigilance were the appropriate ways to limit unintentional injuries in the home.

The occurrence of this theme is related to difficulties in substandard housing, or crowded accommodation (see Section 5.3.1). Overcrowded, substandard housing conditions mean that mothers need to be more vigilant than in more child-friendly or purpose-built or adapted accommodation.

While efforts at constant maternal vigilance were a facilitator in reducing unintentional injuries to children at home, there were significant costs to the mothers in these studies who acted in this way:

> *"I would like to feel calm and relaxed. And I don't… letting them explore their world is really hard for me to do, and it's not even that they're reckless, and they're not really naughty children or anything like that… I don't know, it's just scary". (31 year old mother, single, 2 year old boy, in Olsen et al, 2008)*

Olsen et al (2008) noted the contradictions between mothers characterisation of routine looking-after children as minimal, and the descriptions of the effort they took.

This labour-intensive strategy, while facilitating unintentional injury prevention in the short term, often resulting from mothers being culturally isolated from their own place of upbringing and extended family, and may be unsustainable as a longer term strategy.

The strategy of constant maternal vigilance also has consequences for child development, as Bennett Murphy (2001) noted. Mothers felt it was safer to distract children; *"have him watch TV", "watch videos" (in Bennett Murphy, 2001, no further details of speaker),* and risky to let children play outside without constant maternal supervision. This is related to the theme earlier (Section 5.2.3) about limitations of physical environment. The mothers who were reluctant to let their children outside to play, more likely to distract them with TV, or to use playpens or cots or baby walkers to physically contain children, were less likely to have safe outdoor spaces easily accessible. The reluctance to let children outdoors to play, as a way of keeping them safe, may have negative unintended safety consequences in terms of, for example, levels of sedentary behaviour, child obesity and awareness of "outdoor" risk.

- **Teaching children about safety**

Two studies (Hendrickson, 2008; and Olsen et al, 2008) noted mothers' tensions between teaching children about how to behave appropriately to limit accidents and removing threats to safety – for example, should they supervise children or teach them not to climb over banisters and expect it to follow this? These studies contrast with Bennett Murphy's (2001) study of adolescent mothers, which found young mothers were more likely to try to limit the child's physical boundaries, or attempt constant maternal vigilance, than to try and teach children about safety and risk.

Evidence statement 12: Mothers' safeguarding work
Five studies (Brannen, 1992, UK, [-]; Bennett Murphy, US, 2001 [-]; Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) noted the large and constant amount of work which mothers put into preventing unintentional injuries in the home as a major facilitator of reducing unintentional injuries in the home. Authors picked up on several main components of this maternal safeguarding work –

commonsense safeguarding (Olsen et al, 2008) constant vigilance (Bennett Murphy, 2001; Mull et al, 2001; Olsen et al, 2008; Hendrickson, 2008), and teaching children about safety (Hendrickson, 2008; Olsen et al, 2008).

While these maternal safeguarding activities do act as a short term facilitator to accident reduction, it is important to note that they are time and energy intensive and, that for this reason, need supplementing with other forms of unintentional injury prevention.

5.4.3. Cultural differences in experiences and expectations.

In this section "cultural differences" refers particularly to differences due to being an immigrant, or in an ethnic minority population. Five of the studies involved samples that were wholly or mainly ethnic minority populations (see Figure 2. Bennett Murphy 2001, US; Brannen 1992, US; Carr 2005, UK; Henrickson 2008, US; Mull et a; 2001, US).

There were two aspects to this theme; lack of experience of the particular risks of a host context, and lack of understanding by health officials about different child safety norms and expectations.

- **Barriers: Cultural practices which may not work in different cultural context**

Three studies (Mull, 2001; Hendrickson, 2008; Olsen et al, 2008) noted cultural practices which, while they may have been adequate safety measures in the parents' culture of origin, were risky in a new cultural context. Two of these studies (Hendrickson, 2008; Mull et al, 2001), found that there were significant cultural differences in experience and expectations which led to behaviour which was classed as risky by health visitors, when it would have been acceptable in the home culture.

Mull (2001) found that the Mexican mothers in her study mostly came from rural and semi-rural backgrounds, so had less experience with urban hazards such as multi-story buildings, staircases, balconies or hot tap water, noting that "many mothers relied on "low tech methods of injury prevention more suited to rural Mexico than congested US cities" (author quote, Mull, 2001). Falls and burns sometimes reflected mothers' lack of familiarity with stairs, balconies, and hot water taps. Mull et al (2001)

also found Mexican mothers were also more likely to use Mexican products, which were more likely to come without safety warnings/packaging.

The same three studies (Mull, 2001; Hendrickson, 2008; Olsen et al, 2008) explored how beliefs about being a "good mother" affected unintentional injury prevention. For example, Mull found that cultural customs meant Mexican-born mothers in a US study tended to keep their children in the home rather than supervising outdoors, and they felt women would be criticised for spending time outside supervising her children rather than doing housework and cooking for her family.

A reviewer conclusion is that health practitioners devising and carrying out interventions need to distinguish between different cultural notions and priorities concerning acceptable risk and safety, and lack of awareness of risk or safety in a new context.

Evidence statement 13: Cultural and environmental differences in understanding of safety
Three studies (Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) noted cultural practices which, while they may have been adequate safety measures in the parents' culture of origin, were risky in a new cultural context. There were two aspects to this theme; lack of experience of the particular risks of a host context, and lack of understanding by health officials about different child safety norms and expectations in immigrants' cultures. Mull (2001) found that the Mexican mothers in her US study mostly came from rural and semi-rural backgrounds, so had less experience with urban hazards such as multi-story buildings and hot water taps which could cause falls or sc. Mexican mothers were also more likely to use Mexican products, which were more likely to come without safety warnings/packaging. Two US studies (Hendrickson, 2008; Mull et al, 2001), found significant cultural differences in experience and expectations which led to health visitors classing behaviour as risky because of a lack of understanding of immigrants' perception of safety and risk.

- **Barrier: language**

Language did not emerge as a first or second order concept in these studies, but was noted as an issue in three studies (Mull et al, 2001; Carr, 2005; Hendrickson, 20008) in which a majority of participants were non-native speakers.

Carr (2005) noted that many of the parents in her UK study did not share an ethnic identity with the trained parent peer educators, so much of the work had to be conducted through interpreters. Hendrickson's US study (2008) of low income mothers' attitudes to, and behaviours about, home injury prevention included a majority of mothers who chose to be interviewed in Spanish and, while Hendrickson did not mention language barriers as a theme, she noted the isolation and mistrust which many of the immigrant mothers felt. In Mull et al's (2001) study, with a similar population and comparable research question, many of the mothers were interviewed in Spanish. In these studies, the language and translation needs had an impact on the resources needed for the programme, and on communication and feedback during the intervention or study.

- **Facilitators: Culturally sensitive information and advice systems**

As noted in section 5.2.2, three studies (Brannen, 1992; Carr, 2005, Brussoni et al, 2006) specifically noted the need to provide "culturally sensitive" information and advice to mothers in low income areas with high ethnic minority populations as part of interventions. These concepts were not very comprehensively defined but were raised in the context of how to communicate and work with immigrant and ethnic minority populations in reduce unintentional injuries to children.

Brannen (1992), in a US study of unintentional poisoning, focussing on mothers in a black low income community, also found that cultural factors played a part. She concluded that there was a "Need to distribute culturally acceptable poisoning information and frequent reinforcement for families with small children" (author quote, Brannen, 1992).

Carr (2005), in a UK study of an intervention encouraging low income mothers' involvement in home visits and the provision of safety equipment, also noted that mothers welcomed interventions – in this case the distribution of safety equipment

and advice on home safety – which were influenced by the local culture. This culture, a deprived city area, was described as "fatalistic", where children should be "hard" and "independent" (author quotes, Carr, 2005). Carr defined cultural sensitivity as living in the same "geographical area and being a parent". This notion of the importance of cultural sensitivity in interventions and information was also noted, indirectly, in Brussoni et al's (2006) study of a UK smoke alarm installation programme. Notions of the importance of cultural sensitivity in these studies therefore included socio-economic status, class, geographical location, parenthood, and ethnicity.

It is worth noting that, in the studies which did mention this need for "culturally sensitive" interventions and information, it was hard to tell if this actually came up as a first order theme in the study or if authors are adding it: a second-order concept as an extrapolation from the opposite first order concept. It is possibly one of those observations which authors tend to insert at the end of a discussion – they note mistrust of officials and they consequently recommend involvement of community groups and leaders. As there is little or no first order evidence for this recommendation in the studies, it is not included here as part of an evidence statement, but might be a fruitful topic for further research.

5.4.4. Social and relational factors

Six studies noted different aspects of social and relational factors which influenced the risk of child accidents in the home, either negatively or positively (Bennett Murphy, 2001 US; Brannen, 1992 US; Carr 2005, UK; Hendrickson, 2008 US; Mull et al, 2001 US; Olsen et al, 2008 Canada). These social interactions and relationships (and the lack of them) were at several levels – relationships within the family, with neighbours and local friends, and with health and government officials.

- **Barrier: Mistrust of officials, especially regarding accusations of neglect or abuse**

Five studies (Bennett Murphy, 2001; Brannen, 1992; Hendrickson, 2008; Mull et al, 2001; Olsen et al, 2008) found that a major barrier to child safety in the home was mothers' worry that asking about child accidents in any context, including injury prevention, or taking an unintentionally hurt child to hospital, would result in that child

being seen as at risk, or even removed from them and that they would be accused of abuse or neglect. All of these studies focused on low income mothers, and additionally, most were adolescent mothers or immigrant mothers.

Bennett Murphy (2001) reported that the adolescent mothers in her study were particularly concerned about suspicion of abuse if their child was injured, they believed their parenting skills were scrutinised and that they were more likely than older mothers to be suspected of mistreatment or neglect.

> *"It seems like other people basically don't see that teenaged moms are well enough to take care of our child. Because they see a bruise or a bump or whatever, they think we're just not taking care of them right" (In Bennett Murphy, 2001, no further details of speaker)*

Brannen (1992), in her study of low income mothers in a black, inner city area in the US, noted that mothers were worried about accusations of child abuse:

> *"afraid that they'll get back to the agency and accuse you of child abuse". In Brannen, 1992, no further details of speaker)*

Mull (2001) and Hendrickson (2008) both found fear of being accused of child abuse was a particularly strong theme among Mexican-born mothers, who were worried that the whole family might be investigated if an injury occurred that might be viewed as suspicious. Olsen et al (2008), in a Canadian study of low income mothers' attitudes and behaviours about home injury prevention, reported that mothers worried that neighbours would report them to child welfare.

- **Barrier: Mistrust of officialdom in general**

Two studies (Carr, 2005; Brussoni et al, 2006) noted that suspicion of officialdom in general limited the effectiveness of a smoke alarm installation programme for the most at-risk households, though the reasons for suspicion were not explored in these papers.

- **Facilitator: building trust in officials**

As well as noting suspicion of officialdom as a barrier, one study, Carr (2005) noted that the peer educator approach was a means of building trust between families and safety advisors, in marginalised populations who "are reluctant to accept statutory service interventions" (author quote).

A conclusion from the reviewers is that Interventions are likely to be more effective if participants are confident that there are safe ways of asking for advice or help with parenting or home safety that do not invoke critical investigation.

Evidence statement 14: Mistrust of officials, especially regarding accusations of neglect or abuse
Five studies (Brannen, 1992, US, [-]; Bennett Murphy, 2001, US, [-]; Mull et al, 2001, US, [+]; Hendrickson, 2008, US, [+]; Olsen et al, 2008, Canada, [++]) found that a major barrier to child safety in the home was mothers' worry that asking about child injury in any context, including unintentional injury prevention, or taking an unintentionally hurt child to hospital would result in child being removed/seen as at risk, that they would be accused of abuse or neglect. All of these studies were in the US or Canada and focused on low income mothers, and additionally, most were adolescent mothers or immigrant mothers.

- **Barriers due to relationship with partner**

Two studies raised the issue of mothers' difficulties communicating with their partners on home safety issues (Mull et al, 2001; Olsen et al, 2008). Mothers in Mull et al's (2001) study tended to wait until something was authorised by the fathers rather than acting on their own to buy a safety device. In Olsen et al's (2008) study, mothers similarly tended to leave the fathers to buy safety equipment or make decisions about the household. Both of these studies involved many Mexican and Hispanic families in the US.

A conclusion by the synthesis reviewers is that policies/interventions might need to reconsider targeting of mothers especially in populations where the fathers (or parents in law) traditionally make decisions about household purchases.

Evidence statement 15: Barriers due to relationship with partner in patriarchal cultures
Two studies (Mull et al, 2001. US, [+]; Olsen et al, 2008, Canada, [++]) found that a major barrier to child safety in the home was mothers' lack of autonomy to make household or financial decisions. Policies/interventions might need to reconsider the often automatic targeting of mothers about safety equipment or behaviour, especially in populations where the fathers (or parents-in-law) traditionally make decisions about household purchases.

- **Relationships between siblings: Older children looking after younger siblings**

One way of safeguarding mentioned in two of the studies (Brannen, 1992; Mull et al, 2001) was to expect or teach older children too look after younger ones. Brannen (1992) described how older children "watched out for the baby" (author quote). As with some of the themes noted in Section 5.4.2 on maternal safeguarding, while this may, arguably, work as a way of safeguarding children, it may not be desirable or sustainable as a longer term strategy. Mull et al (2001) describe an incident when a toddler fell from an apartment staircase, when his five-year old sister was supposed to be watching him (Mull et al, 2001).

- **Barrier: Social Isolation**

The concept of social isolation as a barrier to interventions is a third order theme in this synthesis, derived from related concepts in a majority of the studies. Isolation in neighbourhood, and lack of family locally to help with childcare, was a theme in three studies (Mull, 2001; Hendrickson, 2008; Olsen et al, 2008). The first two of these were focused particularly on immigrant mothers, and social isolation was related to general mistrust of neighbours and officialdom in a country in which women did not feel at home. This led to feelings of not being able to ask neighbours or health visitors for help or advice, and a tendency to try and cope alone:

> *"I have no family here to help with the children. In this country they will take your children away if you leave them alone. I never do it but other women in the trailer park do." (in Hendrickson, 2008, no further details of speaker)*

> *"In Mexico you've known everyone living around you for years, and you can rely on them to look out for your kids." (Mother, in Mull et al, 2001)*

In Olsen et al (2008) this theme of only trusting your own family to look after your child also emerged:

> *"My family's really close and you know that we kind of watch out for each other, we need that. That's part of the reason we're going home… at least then I can leave him for a couple of hours and I'll feel safe about it, because I trust my family and I know that they're gonna watch out for him – make sure nothing happens." (29 year old mother with partner, 16 month old boy, in Olsen et al, 2008)*

- **Facilitators: social connectedness**

This theme did not emerge in the studies as a first order or second order concept, but is a converse of a barrier described in some studies – families', and particularly mothers', isolation as immigrants, ethnic minority members and/or non-native speakers were a contributory factor in several of the main themes which emerged as barriers to the prevention of unintentional injuries to children in the home. This suggests that social connectedness – with neighbours, with wider family, with service providers – is likely to be a facilitator to reducing unintentional household injuries.

6. Discussion

6.1. Statement of principal findings

This review was aimed at addressing the question:

> What are the factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation?

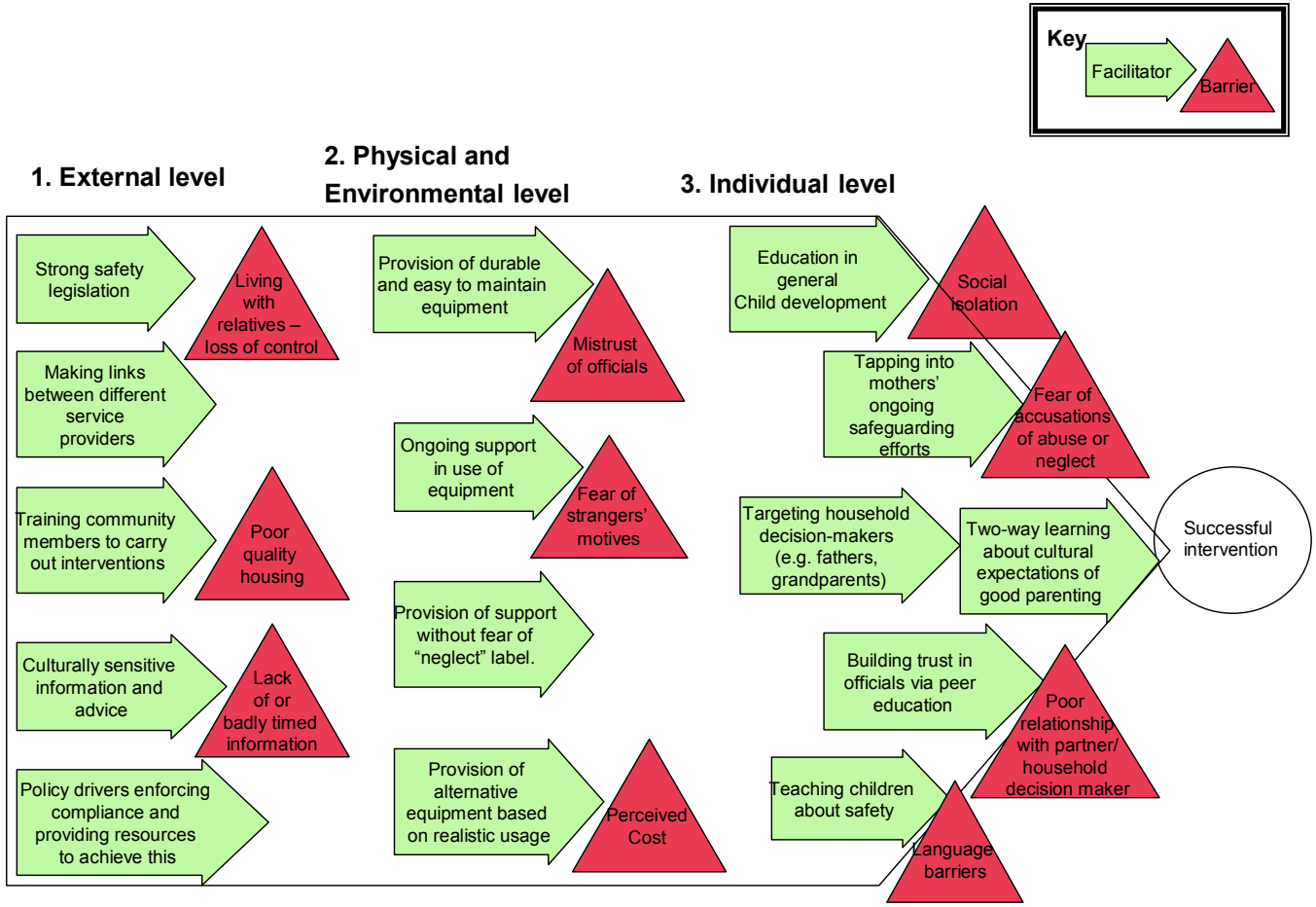
In order to address this question we searched for qualitative research that explored the views and experiences of people, mostly parents of young children, but also some grandparents and health practitioners, about the barriers and facilitators to safety of children in the home, with particular emphasis on interventions involving the supply and installation of equipment, and home risk assessments. Nine study reports were identified which fitted these criteria.

Three of the included studies directly explored the effectiveness of interventions (two of smoke alarm installation programmes, one of a peer educator intervention, all three in the UK). The other six studies focused mainly on parents' attitudes and experiences of child safety in the home.

The findings were described using a conceptual framework (Table 2) based on the notion of barriers and facilitators (which three of the studies used as an organising framework). The main concepts emerging in this synthesis were considered as being at three "levels" – External (legal, policy or organisational level), Physical and Environmental, and Individual.

The main themes emerging in the synthesis are represented in Figure 3, note that this is a schematic model, a representation or interpretation of the main findings rather than an exact summary.

Figure 3. Synthesis model: What facilitates the successful interventions to prevent unintentional injury to children in the home?



6.2 Reflections on synthesis findings and their implications

Provision of safety equipment

This synthesis demonstrates that effective provision of safety equipment is not just about provision of appropriate items, or support with installation. The importance of providing ongoing support for usage, maintenance of equipment, and safety checks is highlighted in this review.

Understanding of what safety equipment includes

A discrepancy was noted between what some parents thought of as "safety equipment" (baby walkers, playpens) and what health professionals might view as safety equipment (generally, baby walkers are seen by health professionals as not safe for small children).

What counts as good parental behaviour?

Participants, and sometimes health professionals, were not always in agreement about what constitutes good parental behaviour. Tensions were noted between the idea that a good parent will be constantly monitoring, or implementing physical boundaries, and the idea that a good parent will be teaching children appropriate behaviour. This tension runs through the studies in various ways – while mothers are often confused about this, health professionals are too. There is a strong socio-economic aspect to this, as well as cultural variations – containing a baby in a walker or playpen, or in front of TV, or inside in general, may be frowned upon by professional child development experts, who may approve of containing a child in a private, secure garden. These factors are closely related to socio-economic circumstances, such as owning one's own home and having access to a private garden or safe outdoor space (noted in Olsen et al, 2008). Mothers struggling to keep children safe in poor quality accommodation with limited or unsafe outdoor space may need different notions of safety behaviour. Interventions need to consider this, and provide realistic ways for parents to keep children safe without necessarily curtailing children's freedom to play and develop.

Cultural differences in experiences and expectations

The synthesis highlighted cultural (in particular, national culture and ethnic group differences) differences in definitions of risky behaviour, leading to perceptions of

risky behaviour by immigrant mothers, or by actual risky behaviour due to lack of familiarity with type of risk in current environment. Designers of safety interventions need to consider a two-way understanding of and learning about cultural differences, and not necessarily assume that the host culture knows better. Health practitioners devising and carrying out interventions need to distinguish between different notions of risk, and lack of awareness of risk in a new context.

Balancing awareness of risk against other needs

The synthesis demonstrates that, not only do people need appropriate information, but providers need to be aware of the reasons people fail to comply, even when they might want to. Notable here is the intrusive nature of malfunctioning smoke alarms: residents weighed up the safety of having an alarm against the noise and stress of it going off too often.

Fatalistic view of accidents

One study (Bennett Murphy, US, 2001) found that adolescent mothers found it hard to deal with issues of blame oscillating between ideas of the **accident-prone child** who would have accidents whatever you did, and the **negligent adult** who was responsible for their child's accidents: This suggests that greater generic advice and support on child development might facilitate the prevention of unintentional injuries in the home

Confidence in officials

The mistrust of officials and interventions in some communities is a barrier for effective implementation in a variety of ways – including a suspicion of free equipment, in some cases.

Maternal safeguarding work

Other studies have suggested that people living in deprived communities may be passive about uptake and involvement in safety interventions (see the Effectiveness Review in Report 1). The findings of this synthesis suggest that, in contrast, mothers in difficult socio-economic circumstances often work extremely hard to safeguard their children and are highly attuned to worrying about unintentional injury and considering risk.

6.2 Methodological considerations

Not all studies used a stated theoretical approach or conceptual framework. Three did not specify any sort of theoretical approach, and five did not give details of their analytical approach (see table 1). Of those studies which did use a stated theoretical approach, two (Brannen et al, 1992; Hendrickson, 2008) used a Health Belief model, one (Gibbs et al 2005) used Grounded Theory, one (Brussoni et al, 2006) used "Kelly et al's Multi-step process" (a process based on a paper on a website, now no longer accessible). As mentioned before (section 2.2.3), in most articles, analysis was thematic and most studies present descriptive rather than explanatory findings.

There were regularly-occurring weaknesses in many of the papers. In particular, there was often little description of the theoretical or methodological approach, and analysis sections tended to be short, with themes stated but not particularly demonstrated by relevant first order quotations.

The limitations are party due to the requirements of many health journals for short papers, so there is little space to present qualitative data adequately, leaving readers make assumptions about whether the authors have made a reasonable interpretation from the data. In some cases, the authors of the study are clearly not particularly experienced in conducting and analysing qualitative research, but come to the field from a practitioner perspective. These factors cause problems when trying to draw out the detail about concepts and the links between them in a synthesis.

The lack of reporting of original data, particularly in the papers about evaluation of interventions, makes a quality assessment difficult – some of the papers focused particularly on description of an intervention and practical recommendations, so scored poorly on an academic assessment of methodological and theoretical rigour, yet may be particularly relevant for this synthesis.

The review and synthesis of qualitative work is necessarily an interpretive process, and this synthesis is mainly the work of one researcher, though other researchers in the team were involved in discussion and comments.

Following what is becoming standard practiced in synthesis studies (see, for example, Campbell et al, 2002) we did not exclude papers on the basis of their appraised

quality. The reasoning behind this is that in a synthesis process, lower quality papers, with less well developed concepts, and less theorising, will contribute less to the synthesis, while the concepts and theories in stronger papers will automatically figure more prominently in the synthesis. While this did happen in this synthesis, there are still problems with building on overarching theories, or third order concepts, on the basis of the studies included. Inclusion of papers with small sample sizes limited data and inadequate contextualisation might lead to the concepts developed becoming less grounded in the participants' experiences, despite attempts by the reviewer (an experienced qualitative researcher with prior experience of qualitative synthesis of health research). Any synthesis is necessarily constrained by the limitations of the original articles.

6.3 Strength and weakness of the review

A strength of a qualitative synthesis is that, while most research articles tend to be snapshots of participants in a particular community, or experiencing a specific intervention, a qualitative synthesis provides a fuller picture of the experiences of people in a range of national and ethnic settings, and includes a variety of interventions, and a range of research methods. Common themes emerging from this range of qualitative studies on a set topic therefore provide crucial knowledge about the current state of knowledge on a particular issue. A qualitative synthesis is a highly efficient approach to find the strengths and limitations of a particular research area, and to suggest directions for further research. The synthesis was not limited to those studies which specifically described barriers and facilitators to interventions, and as such included more general attitudes and experiences and behaviours that can be interpreted into a framework of barriers and facilitators to home safety interventions.

Many of the key findings in this review were noted in the discussion sections or conclusion comments made by authors of the effectiveness studies (see the related Effectiveness Review in Report 1). The themes were noted in those papers, and have been elaborated on in depth in the qualitative studies in this current synthesis. This suggests that a qualitative synthesis can usefully be used to support and expand upon findings from quantitative reviews, both types of data combining to provide a fuller picture of what works, and what hinders, the effectiveness of interventions to improve safety in the home.

6.4 Further research

Further research could consider how to build on this maternal safeguarding work in home safety interventions, tying interventions in with parental efforts to keep children safe, rather than viewing participants in deprived communities as passive in terms of safety interventions.

Further research could also explore ways of addressing the complex reasons why targeted participants, often in deprived socio-economic areas, and often including immigrant or ethnic minority populations, might not take up available safety interventions, yet might still be concerned about home safety.

These reasons, as demonstrated in this synthesis, include misunderstanding of cultural expectations – both from health professionals, and from targeted populations, mistrust of officialdom, and, in many cases, mistrust of neighbours or local context, especially for those originating in another country.

Several studies (section 5.4.3) noted mistrust of officials as a first order concept, and consequently recommended involvement of community groups and leaders in interventions. As there is little or no direct first order evidence for this being a facilitator, this recommendation of the involvement of community groups and leaders in interventions was not included in this synthesis as part of an evidence statement. The involvement of community groups and leaders in interventions would however be a fruitful topic for further research.

Appendix 1 Protocol

Clarification of scope

Populations

Groups that will be covered

Children and young people aged under 15, particularly those in disadvantaged circumstances (for example, those living with families on a low income, living in overcrowded housing or with a lone parent).

Parents and carers of children and young people aged under 15.

Groups that will not be covered

Anyone aged 15 or older, except parents and carers of children and young people aged under 15 (where they are the focus of research about their children, or where they are targeted as key agents to reduce unintentional injuries in their children).

Interventions /Activities that will be covered

NICE is developing a range of public health guidance to prevent unintentional injuries among children and young people aged under 15. This protocol relates to producing evidence about interventions which prevent such injuries in the home.

In parallel with this work, NICE will also be developing public health guidance (also developed using the intervention development process) to prevent unintentional injuries on road, street and other external environments. There will also be public health guidance (developed through the programme guidance process) focusing on the broader legislative/regulatory and related activities which aim to prevent unintentional injuries in children. The present guidance will complement these publications and will focus on the following interventions in the home, either combined or delivered separately:

a) Supply and/or installation of safety equipment (free of charge or at a reduced cost) inside of a home

b) Home risk assessments[1], where the unintentional injury outcomes in children and young people aged under 15 can be disaggregated

Activities/measures that will not be covered

a) Policy and legislative interventions

b) National and local media campaigns

c) Educational interventions (unless delivered alongside the included activities listed above)

d) Reward and incentive schemes, hazard and risk counselling (unless delivered alongside the included activities listed above)

e) Design, manufacture and measures of efficacy of safety equipment

Key questions

Question 1: Which interventions involving the supply and/or installation of home safety equipment are effective and cost effective in preventing unintentional injuries among children and young people aged under 15 in the home?

Question 2: Are home risk assessments effective and cost effective in preventing unintentional injuries among children and young people aged under 15?

Question 3: What are the barriers to, and facilitators of, interventions involving the supply and/or installation of home safety equipment, and/or home risk assessments?

Reports

Report 1 will include Reviews 1 (effectiveness) and 2 (cost-effectiveness). Report 2 will include Review 3 (barriers and facilitators) if it is to be included as a separate review. Report 3 will include an economic analysis of one or more types of intervention (if deemed feasible and useful). The division of resources for the

[1] **Defined as: A systematic assessment of a home to identify potential hazards, evaluate the risk, and provide information or advice on appropriate actions to reduce those risks. The assessment may either be by a trained assessor visiting the home, or by a householder assessing their own home**

production of each of the reports will be finalised in discussion with the relevant lead analyst and associate director at NICE CPHE in accordance with what is deemed feasible and useful.

Reviews

Aims, key review questions and key outcomes

Report 1: Systematic review of effectiveness and cost-effectiveness studies

a) Aim

To identify, critically appraise, summarise and synthesise evidence relating to the effectiveness (review 1) and cost-effectiveness (review 2) of the specified types of interventions in the home aimed at reducing unintentional injuries in children and young people aged under 15.

b) Key review questions

Review 1 (effectiveness)

a. What is the effectiveness (in terms of preventing and reducing unintentional injuries in children) of interventions involving the supply (free of charge or at a reduced cost) and/or installation of home safety equipment or devices?

b. What is the effectiveness (in terms of reducing the number or severity of unintentional injuries in children) of home risk assessments?

c. What are the factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation?

Expected outcomes:

a) Changes in injuries and deaths in children and young people aged under 15.

b) Changes in knowledge, attitude, skills and behaviour in relation to preventing unintentional injuries among children and young people aged under 15 in the home.

c) The rates of supply, correct installation and proper maintenance of safety equipment resulting in a reduction in unintentional injuries among children and young people aged under 15 in the home.

Review 2 (cost-effectiveness)

a. What is the cost-effectiveness of interventions involving the supply and/or installation of home safety equipment?

b. What is the cost-effectiveness of home risk assessments?

c. What are the main causal relationships which seem to explain how the different combinations of resources (and levels of costs) of these interventions are related to intended outcomes?

In addition, for Review 2:

- costs and/or resource use
- cost-benefit estimates
- cost-effectiveness ratios

Report 2: Systematic review of evidence about 'barriers and facilitators'

Production of a separate review of barriers and facilitators is conditional upon (a) the number of studies identified for inclusion in the effectiveness and cost-effectiveness reviews (the "main reviews"); and (b) the number of studies eligible for inclusion in a "barriers and facilitators" review. The number, range, and complexity of the identified studies will be discussed at the first interim progress meeting (8th May) with regard to the feasibility of producing a separate barriers and facilitators reviews. If the production of a set of high quality reviews under each of these headings is deemed unmanageable given the time and resources available, then a separate review of barriers and facilitators will not be conducted. However, in order to still answer the "barriers and facilitators" review question – it is proposed that relevant observations from the 'Discussion' and 'Conclusion' sections of all the included effectiveness papers will be extracted as part of that review (e.g. where authors try to explain why their evaluated outcomes differed from others, or differed from what they expected).

a) Aim

To identify, critically appraise, summarise and synthesise qualitative and/or quantitative evidence relating to contextual or other factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation.

b) Key review questions

What are the factors which either enhance or reduce the effectiveness of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation?

Methods

1.1 Overview

An electronic search of relevant bibliographic databases, and also selected websites, will be conducted in order to identify relevant primary research (to be supplemented by communication with experts and/or organisations involved in the relevant research or policy areas).

1.2 Search process and methods

- To review published literature and relevant unpublished/grey literature in order to identify ineffective as well as effective interventions and approaches, as far as time and other resources allow.

- To include all relevant primary research that meet the inclusion criteria (see section 1.3). Searches will be conducted in the following databases:

  The following databases will be searched.

  From the "core databases":

  - ASSIA (Applied Social Science Index and Abstracts)
  - CINAHL
  - Database of Abstracts of Reviews of Effectiveness (DARE); NHS EED; HTA (all in the CRD database)

- HMIC (or Kings Fund catalogue and DH data)
- MEDLINE
- PsycINFO
- Social Science Citation Index
- Cochrane Database of Systematic Reviews [predominantly for reference checking]
- EconLit

From the "topic-specific databases":

- SafetyLit
- EPPI Centre databases
  - Bibliomap
  - DoPHER
  - TRoPHI
- The Campbell Collaboration

- Search terms – ***See Annex A***

Websites of the following relevant organisations will also be searched for published and unpublished research:

- Child Accident Prevention Trust (http://www.capt.org.uk)
- Children in Wales (http://www.childreninwales.org.uk/areasofwork/childsafety)
- Injury Observatory for Britain & Ireland (http://www.injuryobservatory.net)
- Public Health Observatory website for the South West (lead on Injuries) http://www.swpho.nhs.uk/)
- The Royal Society for the Prevention of Accidents (http://www.rospa.org)
- International Society for Child and Adolescent Injury Prevention (http://www.iscaip.net/)
- Integris (EU Injuries programme for coordinating injury data) (http://www.rp7integris.eu/en/pages/home-1.aspx)
- Eurosafe

And may include the following, should time and resources allow:

- Scottish Executive
- Welsh Assembly Government
- Expert contacts in the relevant policy/practice areas as well as key researchers of these types of intervention will also be consulted

1.3 Study selection

Inclusion criteria (common to all reviews):

Studies published from 1990

Studies published in English language

Studies conducted in OECD countries

Criteria specific to Review 1 (effectiveness):

Inclusion criteria:

Evaluations (prospective or retrospective) of interventions involving the supply and/or installation of home safety equipment and/or home risk assessments using comparative designs (randomized controlled trials, non-randomized controlled trials, before and after studies, or natural experiments)

Studies reporting the relevant injury outcomes (see page 8) in children (or in both adults and children but with the outcomes for children shown separately). This inclusion criteria will only be applied at full-text assessment stage. In other words, no papers will be excluded on the basis of age at the title and abstract screening stage. *Where a study reports relevant outcomes related to an age range which overlaps with, but is not restricted to, the focus for this review (for example, aged 5-18 rather than under 15), it will be included only where the majority are of the appropriate age*.

Exclusion criteria:

Empirical studies which only document interventions and related outcomes without evidence regarding injury outcomes (see page 8) prior to or without the intervention.

Empirical studies which do not separately report injury-related outcomes for children or young people aged under 15.

Criteria specific to Review 2 (cost-effectiveness):

Inclusion criteria:

Full economic evaluations of relevant types of intervention, and high quality costing studies conducted in the UK or countries of a similar level of economic development.

Exclusion criteria:

Cost-of-illness studies, or other studies which do not involve assessing the cost and related benefits/effectiveness of particular interventions (or class of intervention).

Criteria specific to Review 3 (barriers & facilitators):

Inclusion criteria:

Primary qualitative research involving the analysis of written or spoken speech/evidence, regarding attitudes towards, or experiences of, the relevant interventions; OR

Quantitative or qualitative surveys of attitudes towards, or experiences of the relevant interventions.

Exclusion criteria:

Research which does not involve the collection and analysis of qualitative data using established qualitative research methods[2].

Study selection process

Assessment for inclusion will be undertaken initially at title and/or abstract level (to identify potential papers/reports for inclusion) by a single reviewer (and a sample checked by a second reviewer), and then by examination of full papers. Where the research methods used are not clear from the abstract, assessment will be based upon a reading of the full paper. Any relevant systematic reviews will be used first as

[2] **Primary qualitative research designs which use recognised methods of data collection and analysis (including, but not limited to, observational methods, interviews and focus groups for the former and grounded theory, thematic analysis, hermeneutic phenomenological analysis, discourse analysis etc. for the latter).**

a further source of references for primary studies, but where there is a recent and high quality systematic review that substantively answers an aspect of the review question(s), we shall include the review, updating and extending it if it is considered feasible to do so. All such decisions regarding the utilisation of systematic reviews will be made in consultation with the NICE CPHE team.

If there are a large number of includable studies, such that a high quality review of them all would not be feasible within the time and resources available, then studies may be excluded from the full review on the basis of the study quality and/or applicability to the UK context. The reasons for such exclusions will be discussed and agreed with the CPHE team at the interim progress meeting (8th May).

Quality assessment and data extraction

All included studies will be quality assessed using the checklists in the *Methods for development of NICE public health guidance 2006* where these are appropriate (so if, for example, one is not available for a particular included study design we will seek a valid checklist from other sources such as CRD or CASP). Any departure from the methods manual will be discussed and agreed with the NICE CPHE Team. Data extraction and quality assessment will be conducted by a single reviewer, and checked by a second reviewer for a sample of studies, as agreed with the NICE CPHE team.

Data synthesis and presentation, including evidence statements

Data synthesis and presentation, including evidence statements will be conducted according to the procedures outlined in the *Methods for development of NICE public health guidance 2006*. Key choices in how to synthesise the included evidence, or in how to develop evidence statements, will be discussed with the relevant analysts at CPHE.

Report 3: Economic analysis of a selected type of intervention

(IF FEASIBLE AND USEFUL)

c) Aim

For a specific type(s) of intervention(s), to assess the relationship between the amounts and combinations of resources and costs, and the levels of resulting benefits and/or effectiveness (related to avoiding unintentional injuries to, and death in, children).(ie. To look at the costs and benefits of all impacts of an intervention in relation to unintentional injuries including death in children).

d) Perspective

The analysis will adopt both a health and Personal Social Services perspective, and a broader public sector perspective in relation to costs and benefits (as in *Methods for development of NICE public health guidance 2006)*. Injury-related health outcomes will be expressed in terms of QALYs or life-years gained/lost wherever possible. If good data are available, and where appropriate, impacts in terms of other outcomes, such as lost school days may also be part of a broader cost-consequence approach to analysis. Also, if sufficient good data are available, outcomes may be expressed in monetary terms and an assessment of whether benefits exceed costs made.

Appendix 2 Search Strategy

Interventions to prevent unintentional injury to children in the home.

Searches were performed to find relevant primary research using a comparative design, qualitative studies, and cost-effectiveness studies. The reference list of systematic reviews of found studies will also be utilised. Searches were conducted in medical, social science and policy databases along with a search for grey literature.

All searches were limited to those in English published since 1990, where possible. No study design filters were applied.

PART 1: Bibliographic Databases

The following databases were searched. Use of "core and topic specific" based on NICE guidance wording:

From the "core databases":

- ASSIA (Applied Social Science Index and Abstracts)
- CINAHL
- Database of Abstracts of Reviews of Effectiveness (DARE); NHS EED; HTA (all in the CRD database)
- HMIC (or Kings Fund catalogue and DH data)
- MEDLINE
- PsycINFO
- Social Science Citation Index
- Cochrane Database of Systematic Reviews [predominantly for reference checking]
- EconLit

From the "topic-specific databases":

- SafetyLit
- EPPI Centre databases

- Bibliomap
- DoPHER
- TRoPHI
- The Campbell Collaboration

Search Strategy

Search Strategies for the bibliographic databases were based on text words and thesaurus headings applicable to the individual database. The searches were carried out in 3 parts but the results were de-duplicated against each other before the screening process.

The Medline search strategy examples follow and were "translated" according to the appropriate thesaurus terms for each individual database. Where a database does not have a thesaurus or does not have a search facility to incorporate thesaurus searching, text words were used.

Ovid MEDLINE(R) 1950-current (online version)
Search a): Safety Devices AND injuries in the home
1. (accident* or injur*).tw.
2. (home* or house* or residen*).tw.
3. 1 and 2
4. Accidents, Home/
5. exp Accident Prevention/
6. 1 or 4 or 5
7. Protective Devices/
8. (safety adj2 (device* or equipment* or appliance*)).mp.
9. ((fire* or smoke* or carbon or CO) adj2 alarm*).tw.
10. ((fire* or smoke* or carbon or CO) adj2 detector*).tw.
11. (temperature adj3 (restrictor* or restricter*)).tw.
12. (thermostat* or TMV).tw.
13. ((cut-off or cut off) adj2 (tap* or valve*)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
14. water AJD2 tap*.tw.
15. (temperature adj3 (control* or regulat*)).tw.
16. (anti-scald* or anti scald*).mp.
17. (stair* gate* or stair* guard*).mp.
18. ((bed* or bath*) adj3 (guard* or gate*)).mp.
19. fireguard*.mp.
20. (fire* adj2 guard*).mp.
21. door* guard*.tw.
22. ((oven* or stove*) adj2 guard*).mp.
23. ((child* or resistant* or lock*) adj4 container*).tw.
24. ((cupboard* or appliance*) adj4 (lock* or latch*)).tw.
25. ((window* or door*) adj2 (locks or latch*)).tw.
26. rail guard*.tw.
27. (safe* adj2 (glass* or film)).tw.
28. (wall adj2 strap*).tw.
29. (door adj3 (cover* or jamm* or stop*)).tw.
30. (bath* adj4 (mat* or rail* or handle*)).tw.

31. (corner adj2 cushion*).tw.
32. ((electrical* or blind*) adj2 cord).tw.
33. ((outlet or radiator*) adj2 cover*).tw.
34. (thermometer* adj2 room*).tw.
35. socket* cover*.tw.
36. (window* adj2 (guard* or safe* or mechanism* or bar*)).mp.
37. ((poison adj2 cabinet) or harness).tw.
38. or/7-30
39. 6 and 38
40. limit 39 to (english language and yr="1990 - 2009")
41. (animals not humans).sh.
42. 40 not 41

Search b): Type of scheme AND injuries in the home

1. (accident* or injur*).tw.
2. (home* or house*).tw.
3. 1 and 2
4. Accidents, Home/
5. exp Accident Prevention/
6. 4 or 3 or 5
7. (giveaway* or give-a-way).mp.
8. distribut*.mp.
9. discount*.mp.
10. free.tw.
11. home deliver*.tw.
12. (low-cost* or (low adj2 cost*)).tw.
13. loan*.tw.
14. (subsidized or subsidised).tw.
15. (fit or fitted).tw.
16. instal*.tw.
17. (provision* or provid*).mp.
18. suppl*.tw.
19. scheme*.tw.
20. or/7-19
21. 6 and 20
22. (device* or equipment*).mp.
23. 21 and 22
24. limit 23 to (english language and yr="1990 - 2009")
25. (animals not humans).sh.
26. 24 not 25

Search c): Home Assessments AND injuries

1. (accident* or injur*).tw.
2. (resident* or home* or house*).tw.
3. 1 and 2
4. Accidents, Home/
5. exp Accident Prevention/
6. 4 or 3 or 5
7. (home adj4 visit*).tw.
8. inspect*.tw.
9. visit.tw.
10. (safety adj2 (assessment* or check*)).tw.
11. home visit*.tw.
12. safety consult*.tw.
13. (home adj2 (assessment* or evaluation*)).tw.
14. 8 or 13 or 9 or 11 or 7 or 12 or 10
15. 6 and 14
16. limit 15 to (english language and yr="1990 - 2009")
17. (animals not humans).sh.
18. 16 not 17
19. (1 or 5) and 2
20. 19 or 4

21. (visit* or inspection* or assessment* or check* or evaluation* or (safety adj consult*)).tw.
22. 20 and 21
23. limit 22 to (english language and yr="1990 - 2009")
24. 23 not 17
25. 18 or 24

Part 2: Organisation web-sites and in-house databases:

Websites of the following relevant organisations were searched for published and unpublished research:

Child Accident Prevention Trust (http://www.capt.org.uk)

Children in Wales (http://www.childreninwales.org.uk/areasofwork/childsafety)

Injury Observatory for Britain & Ireland (http://www.injuryobservatory.net)

Public Health Observatory website for the South West (lead on Injuries)
http://www.swpho.nhs.uk/)

The Royal Society for the Prevention of Accidents (http://www.rospa.org)

International Society for Child and Adolescent Injury Prevention
(http://www.iscaip.net/)

Integris (EU Injuries programme for coordinating injury data)
www.rp7integris.eu/en/pages/home-1.aspx

Department for children schools and families
(http://www.dcsf.gov.uk/pns/DisplayPN.cgi?pn_id=2009_0036

Eurosafe
http://www.eurosafe.eu.com/csi/eurosafe2006.nsf/wwwvwcontent/l3childsafety-cxvbcx.htm

Collaboration for Accident Prevention and Injury Control (CAPIC)
http://www.capic.org.uk/

http://www.vnc.org.uk/vhsi/vhsi.htm

Collaboration for Accident Prevention and Injury Control (CAPIC) (http://www.capic.org.uk/)

Health and Safety Executive http://www.hse.gov.uk/

Communities and Local Government http://www.communities.gov.uk/fire/firesafety/prevention/

PART 3: Additional Searches

Additional "targeted" searches were performed of the following named programmes on Medline and using an Internet search engine (Google):

safe block, dangerpoint, care and repair, sure start, early start, project safe care, safe at home, child injury prevention program (SCIPP), Let's Get Alarmed!, family safety scheme, safe place project, eastside childsafe project, Care and Repair Programme, Handy Person Scheme, Lifetime Homes, Lifetime Neighbourhoods, Safe @home, child safe: safer Cardiff.

PART 4: Citation and Reference Searching

The reference lists of systematic reviews, key reports, and included studies were searched for additional papers.

Appendix 3 Quality appraisal

Table 3: Quality appraisal of included studies

	Overall score	Is the study clear in what it seeks to do?	Is the methodology defensible rigorous	Was the data collection well carried out?	Is the role of the researcher clearly described?	Is the context clearly described?	Are the methods reliable?	Is the data analysis sufficiently rigorous?	Is the data rich?	Is the analysis reliable?	Are the findings convincing?	Is there adequate discussion of limitations?	Is there clear and coherent reporting of ethics?
Bennett Murphy 2001	-	Y	CT	Y	N	Y	Y	CT	N	CT	Y	N	Y
Brannen, 1992	-	Y	Y	Y	Y	Y	Y	CT	N	Y	CT	N	Y
Brussoni et al, 2006	-	Y	Y	Y	Y	Y	Y	CT	N	CT	CT	Y	Y
Carr, 2005	-	Y	CT	N	N	N	N	N	N	CT	CT	N	Y
Gibbs et al 2005	+	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Hendrickson, 2008	+	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y
Mull et al, 2001	+	Y	Y	Y	Y	Y	CT	Y	Y	CT	CT	N	Y
Olsen et al, 2008	++	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Roberts et al, 2004	+	Y	Y	CT	N	Y	Y	N	N	Y	Y	N	Y

Y = yes N = no CT = Can't tell NA = Not applicable

Appendix 4 Evidence tables

Evidence tables for nine studies included, in alphabetical order

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
Authors Bennett Murphy, L. M. **(Year of publication)** 2001 **Citation** Adolescent mothers' beliefs about parenting and injury prevention: results of a focus group. *Journal of Pediatric Health Care* 2001;15(4):194-199 **Quality score:** (++, + or -) -	**What was/were the research questions:** To identify to what extent adolescent mothers viewed injury prevention as an essential role of parenting. To examine beliefs about why injuries occur and how they can be prevented. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Not specified by author, appears to be thematic analysis approach. References a focus group guide. **How were the data collected:** - What method (s): 1 focus group. Participants responded to questions about important aspects of mothering, causes of injury, and strategies to prevent	**What population were the sample recruited from:** First-time adolescent mothers, aged 18 or under. 12 African-American, 3 White, 2 Latina. **How were they recruited:** All were part of an ongoing parent education and support group for adolescent mothers. **How many participants were recruited:** 17 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** All mothers had at least one child under 3 years old.	**Brief description of method and process of analysis:** Thematic analysis (reviewer definition) Coding procedure outlined by Vaughn et al (1996) on focus group analysis. An "inductive approach" provided guidelines for following several steps: identifying major ideas, unitising data, categorising data, re-examining and developing major themes.	**Limitations identified by author:** No research limitations identified by authors **Limitations identified by review team**: Underpinning values are not properly discussed, and there is limited reference to the literature. One focus group – small convenience sample. Quotations are brief and de-contextualised. Confusion (by authors) about what is a focus group topic and what is an emerging theme. In the discussion section are conclusions I would have in the results section. Analysis presented mostly as a list which does not develop

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
	injuries. - **By whom:** Not stated. Probably the author. - **What setting(s):** During a standard evening support group session.			the data into a conceptual framework No details of author's involvement or relationship to the research. Not clear if author moderated the focus group. **Evidence gaps and/or recommendations for future research:** More research is necessary describing the encounters between pediatricians, nurses, and parents of young children. **Source of funding:** Not stated

Key themes (with illustrative quotes if available) relevant to this review:

A bit hard to determine, responses to the focus group questions are categorised, so the themes arising from the analysis are confused/integrated with the 5 (main?) focus group questions.

Exemplar responses to the question "What are the most important things you do as a mother?": 6 categories of responses:

1. Child health and wellbeing
2. Child behaviour
3. Child emotional wellbeing
4. Child cognitive growth
5. Maternal wellbeing
6. Maintaining the environment.

Exemplar responses to the question "What are the ways in which your child gets hurt accidentally?": 3 categories of responses:

1. Household dangers
2. Fault of another child
3. Falls

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes

Exemplar responses to the question "Why do accidents happen?": 4 categories of responses:

1. Child characteristics
2. Lack of supervision
3. Cannot be prevented
4. Restrictions on parental discipline.

Exemplar responses to the question "How can you prevent injury?": 4 categories of responses:

1. Physical boundaries
2. Supervision
3. Distraction
4. Walkers

Exemplar responses to the question "How is your doctor helpful in making you a better mother? Do you discuss parenting and safety with your doctor?": No categories but some sample quotes, including:
"I think my doctor is only helpful with medications and stuff. I only talk to her when he (the baby) is sick or crying a lot of the time".
" don't talk to my doctor about parenting but he's helpful when the child is sick".

Themes described in conclusions section but not included by authors in the "Exemplars of responses" boxes:

Mothers found it hard to deal with issues of blame – swinging between the Accident-prone child and the Negligent adult.
Many of the young mothers saw unintentional injury and maltreatment as related.
They were afraid of being labelled a bad mother if they discussed issues related to injuries with health professionals.

No mother spontaneously identified injury prevention as an important part of mothering.
More than half the participants believed that injuries are unpreventable.
Only limited strategies identified to prevent injury.
No mothers had discussed injury prevention with a health professional (a paediatrician).

Many mothers described being unable to afford safety devices or to safety proof their home as they were not homeowners.

Adolescent mothers were particularly concerned about suspicion of abuse if their child was injured, they believed their parenting skills were scrutinised and they were more likely than older mothers to be suspected of mistreatment or neglect.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Brannen, J. **Year:** 1992 **Citation:** Accidental poisoning of children: Barriers to resource use in a black, low-income community **Quality score:** (++, + or -) **-**	**What was/were the research questions:** What factors influence use of poison-prevention measures and poison control center resources ina black, low-income, inner-city community? **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Does not specify but seems to be thematic analysis. Data organised around health belief model. **How were the data collected:** **What method (s):** Semi-structured interview schedule. **By whom:** The project investigator **What setting(s):** At the health centres and community pantries from which participants were recruited. USA. **When:** 6 occasions over 2 months.	**What population were the sample recruited from:** Mothers of children under 10 in black, low income, inner-city community. **How were they recruited:** Convenience sample at two federally funded health centres and two community food pantries. **How many participants were recruited:** 32 (28 mothers of children under 10, 4 grandmothers raising or helping to raise grandchildren). **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** None stated	**Brief description of method and process of analysis:** Thematic analysis (reviewer definition) 7 section interview schedule with 50 items developed from theoretical and empirical literature. 3 community members reviewed the interview schedule for clarity, language appropriateness, sensitivity. Pilot interview took place.	**Limitations identified by author:** Study limited to one community. Small sample size restricts generalisations. Outsider position of researcher in black low-income community. **Limitations identified by review team**: Method of analysis not clearly defined (reviewer defined as thematic analysis). There is not enough detail of questions asked and responses obtained. This makes it hard to know if the findings are convincing. **Evidence gaps and/or recommendations for future research:** Need further research into resource use and poisoning awareness in black, low-income communities. Important that nurses become involved in research identifying barriers to achieving objectives. **Source of funding:** Not stated.
Key themes (with illustrative quotes if available) relevant to this review:				

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes

The majority of mothers had a considerable degree of awareness regarding poisoning susceptibility, severity and prevention.

"kept things out of reach"
Older children "watched out for the baby".

Few had access to or had used the poison control centre's telephone number.

Only 56% had received direct information regarding poisoning.

Recall of information was more accurate when information was obtained outside of prenatal and postpartum sessions.

Lack of awareness of poisoning management and poison control centre resources was most frequently cited as a barrier.

Mothers were worried about accusations of child abuse:
"afraid that they'll get back to the agency and accuse you of child abuse"

"The hospitals don't want to care for you if you don't have any money".

Conclusions
Need to distribute culturally acceptable poisoning information and frequent reinforcement for families with small children.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Brussoni, Towner Hayes. **Year:** 2006 **Citation:** Evidence into practice: combining the art and science of injury prevention **Quality score:** (++, + or -) -	**What was/were the research questions:** To bring together scientific evidence of what works in injury prevention, using case study of smoke alarm installation in England. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** "Kelly et al's methodology" – multi-step process to translate evidence into practice in a structured way, reflecting local contexts. **How were the data collected:** **What method (s):** Structured discussion meetings with ctitioners and policy makers. **By whom:** A research team **What setting(s):** Meetings held in 6 venues across England. **When:** Not stated	**What population were the sample recruited from:** A range of professional backgrounds and sectors. **How were they recruited:** Participants – health care practitioners, specialist in the study areas - identified through Child Accident Prevention Trust database **How many participants were recruited:** 98 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** Expertise in study areas.	Brief description of method and process of analysis: Thematic analysis (reviewer definition) The outcomes are the discussion outcomes from the subgroups of practitioners and policymakers. Broad implications for accident prevention with the potential for transferability to many injury prevention topics.	**Limitations identified by author:** Difficult to recruit senior managers. Some subgroups too small for intended discussion format. **Limitations identified by review team**: Method of analysis not clearly defined (reviewer defined as thematic analysis). No original data shown. Reader does not see any primary data, only the themes emerging. Do not know what questions people were asked, or what they replied. **Evidence gaps and/or recommendations for future research:** None specified **Source of funding:** Health Development Agency.
Key themes (with illustrative quotes if available) relevant to this review: This paper is primarily about the process not about the outcomes of the process. Themes described in terms of barriers and facilitators, as seen mainly by the health practitioners (I think):				

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes

Barriers to program implementation (smoke alarm distribution program)
Absence of policy drivers influencing resources and staffing.
Insufficient provision of smoke alarms to target populations especially older people who may not be capable of installing them.
Funding often inflexible or short term, limiting impact of programme.
Work often fragmented, due to lack of coordination of home safety in one central organisation.
Interagency collaboration difficult with lack of communication, data sharing obstacles, and cultural barriers.
Landlords (private and public) create barriers – could ignore suggestions of installing and maintaining smoke alarms.
Some councils removed alarms to limit liability if they malfunctioned.
Rapid turnover of tenants and high risk of damage or disablement of alarms in most at-risk households meant that repeat visits to households were necessary.
Suspicion of officialdom in high risk communities.

Facilitators
Policy drives, including funding, e.g. to install free smoke alarms in vulnerable households.
Multi-agency partnerships perceived as crucial to promotion of smoke alarms, offering opportunities for referrals between agencies and access to hard-to-reach groups.
Training on correct alarm installation would ensure optimal placement and reduce false alarms.
Tamper-proof alarms with 10 year batteries recommended for distribution.
Accessing high risk households – suggestions included targeted interventions, using media (TV soaps, radio, free newspapers).
Alternative solutions such as sprinklers perhaps sometimes more appropriate.
Using community and religious leaders as key collaborators for targeting interventions.
Targetting children to ensure they grow up with knowledge of smoke alarm programmes.
FRS act seen as a major facilitator, providing national leadership and targets.
Potential for linkage with other health messages or initiatives.
Data sharing with partners meant high risk households could be identified and targeted.
Changes in building regulations meant all new properties required smoke alarms.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Carr, S **Year:** 2005 **Citation:** Peer educators--contributing to child accident prevention **Quality score:** **(++, + or -)** -	**What was/were the research questions:** Evaluation of an innovative approach to tackling child accident prevention in the home. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Thematic analysis. **How were the data collected:** **What method (s):** Individual and focus group interviews. **By whom:** Peer safety advisors, and health visitors. **What setting(s):** People's homes, deprived area of northern England. UK. **When:** Not stated	**What population were the sample recruited from:** "A deprived inner city and multi-ethnic community in the North of England. **How were they recruited:** Aimed for Local mothers and grandparents recruited and trained to take on role of peer educators. **How many participants were recruited:** 3 local mothers, one from a minority ethnic group. **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** None stated	**Brief description of method and process of analysis:** Thematic analysis A variety of individual face to face and telephone interviews, and focus groups – depending on parents' language, mobility etc. Interviews and focus groups were recorded and transcribed, themes identified and grouped. Findings presented from three perspectives: parents, safety advisors, other professionals.	**Limitations identified by author:** Low morale and enthusiasm levels of deprived and challenging population, difficult to recruit people from this group to carry out the scheme. **Limitations identified by review team**: Very small sample. Only 3 parents (mothers) involved. Methodology not clear. What questions asked? Unspecified theoretical approach. Methodology not always appropriate – described as "Four focus groups, n=0, n=1, n=3, n=3." But it cannot be a focus group containing only one (or zero) participants. Not clear, but possible, that the same 3 parents took part in each group. Parents' views were "based on primary data from users and inferences from other stakeholders". Not clear what this means but seems possible they're talking about health visitors' or scheme manager's views of parents, or perhaps peer educator parents' views of other parents. Indirect. Not actually the parents' views. This evaluation is mostly about the acceptability of peer educators to this population, rather than about home accident prevention. Evaluation by health workers and by 3 mothers, mostly about process of peer education, rather than about topic. Partially relevant.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
				Evidence gaps and/or recommendations for future research: Need to review how health promotion is packaged in order to address enduring health problems. **Source of funding:** Not clear, but local community workers were funded, so assume some public sector funding

Key themes (with illustrative quotes if available) relevant to this review:

Parents' perceptions (these seem to be from the professionals or safety advisors' perspective about the parents, actually)
Parents all keen on scheme and would welcome assistance to prevent their children from experiencing accidents.
Reduction in no-access visits as scheme progressed.
Parents started advising friends of availability of and process of accessing safety equipment.

Safety advisor perceptions (these were trained parents in the peer approach)
Felt that being seen as a local person, living locally, experiencing the same community problems, attending same residents' group meetings, were all positive aspects of the scheme, and provided opportunistic follow-up contacts to discuss safety generally. E.g. while standing at school gates.
Being members of local community gave insight into local "mindset". E.g. attitudes to accident prevention were influenced by the local culture – described as "fatalistic", where children should be "hard" and "independent".

Scheme manager and health visitors' perspectives
HVs viewed scheme as supplementing and complementing their work, rather than replacing their input, but leaving them free to focus on other things.

Findings/conclusions
Model seemed successful and acceptable to target group. Dominant issue is cultural sensitivity interpreted here as living in the same geographical area and being a parent.

Parents not averse to learning more about accident prevention and trying to implement this knowledge.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Gibbs, Waters et al. **Year:** 2005 **Citation:** Understanding parental motivators and barriers to uptake of child poison safety strategies: a qualitative study. Quality score: **(++, + or -)** +	**What was/were the research questions:** To develop an understanding of factors acting as barriers and motivators to parental uptake of child poison safety strategies. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Grounded theory **How were the data collected:** **What method (s):** Semistructured interviews (23) and focus groups (7). **By whom:** Some by project manager, some by ED (?) nurses. **What setting(s):** Interivews in participants' homes, or over phone for difficult-to-reach participants. Focus groups in playground setting. Australia. **When:** Not stated.	**What population were the sample recruited from:** Parents of young children (under 5). **How were they recruited:** Purposive sampling from community groups, and selective sampling for the parents with experience of child poisoning incidents. **How many participants were recruited:** 65 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** Some had experience of unintentional child poisoning incidents.	**Brief description of method and process of analysis:** Thematic analysis Interview and focus group protocols developed from study goal, guided by profile of child unintentional poisoning and common features of poisoning incidents in literature review. Interview data written down in note form (for telephone interviews) or audiotaped and transcribed. Entered into Nvivo, analysed using grounded theory approach.	**Limitations identified by author:** Can not do detailed exploration of socio-demographic differences, did not get detailed enough information in some settings. **Limitations identified by review team**: Findings are convincing as far as they go, could go further. First order quotes tend to be short and decontextualised. Conclusions fairly basic, do not extend theory. **Evidence gaps and/or recommendations for future research:** Further quantitative research would help in evaluating the effectiveness of interventions targeting parental motivators/barriers and subsequent uptake of safety practices, and the impact of increased safety practices on incidence of child unintentional poisoning. In depth research with culturally and linguistically diverse communities would provide greater understanding

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
				of socio-cultural differences in risk/protective factors operating in relation to child unintentional poisoning. **Source of funding:** Department of Human Services Victoria.

Key themes (with illustrative quotes if available) relevant to this review:

Overall, parents were aware of the need for poison safety strategies and were implementing strategies to varying degrees bur not comprehensibly in the home.

Knowledge based barriers
Limited legislation for child resistant containers CRCs (This is in Australia).
Parents viewed child-resistant as child-proof so more likely to store CRC unsafely.
Parents perceived society as over-protective, were surprised to find that products without warnings or CRCs could be dangerous.

Environmental barriers
Little evidence of overhead, locked cupboards. Parents assumed that if overhead, no need to lock.
"I close the door but not lock it… No key. But now he brig that chair".
Living in rented homes or grandparents' homes limited parents' ability to implement safety practices.
Products often abandoned when children were able to break or bypass them.

Behavioural barriers
Poison safety procedures tend to be only partially implemented in the home.
More likely to be applied in kitchen than in laundry or bathroom.
Less likely in outdoor sheds, gardens, laundries. "There are more dangerous things in the laundry but they've never really taken an interest in the laundry stuff".
"I don't think to move anything until he's been into it".
"Customised" approach to safety measures tailored to perceived skill and mobility of child but often does not account for rapid changes in ability.
Parents often overestimated the ability of young children to remember instructions, apply them consistently, and relate them to changed circumstances.
Convenience in storage of products, especially contraceptives, medications in use, dishwashing powder, home-based business products.
Worries that if too diligent about storage, would leave things around more:
"Well yeah for something that you want to keep handy and use all the time, you're not going to go and lock it in a bloody cupboard are you? You're going to use it and you're gonna go, "yeah, I'll put that away later".
Home businesss or farming environment meant toxic products more likely to be accessible to children at a time when parents were focused on work activities.

Motivators for increased uptake of poison prevention strategies
Exposure to child poisoning incident was the most likely motivator for shifting recognition of personal risk.
"Yeah, I didn't think until I saw that show [about a baby that died after swallowing baby oil]. As soon as I saw that show I went and got the baby oil because I just used to put it there. I didn't even think".

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
However, if child was unhurt in a poisoning event parents perceived this as meaning that poisoning was low risk; “Metho’s not poisonous, trust me, my kids have drunk it!” **Key Points** Parental selection of safety practices was often guided by the interests and behaviours of the child, resulting in incomplete application of safety measures. Personal or vicarious exposure of a parent to a child poisoning incident was a significant motivator for increased uptake of safety practices.				

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Hendrickson. S. **Year:** 2008 Citation: Maternal worries, home safety behaviors, and perceived difficulties **Quality score**: **(++, + or -)** **+**	**What was/were the research questions:** To explore the worries, safety behaviours, and perceived difficulties in keeping children safe at home in a purposive sample of low-income mostly non-English-speaking mothers as a foundation for nursing interventions. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Conceptual framework using Health Belief Model (Strecher and Rosenstock, 1997). **How were the data collected:** **What method (s):** Structured/semistructured interviews. **By whom:** The researcher. **What setting(s):** USA. **When:** Not stated	**What population were the sample recruited from:** Low income mothers (at or below the poverty level), at least 18, with 1-4 year old children. 64% monolingual Spanish speakers. **How were they recruited:** Purposive sample. In a mainly Hispanic area of Texas. Various recruitment sites including women's programs, a clinic, agencies providing support to Hispanic low income families. **How many participants were recruited:** 82 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** None stated	**Brief description of method and process of analysis:** Qualitative content analysis "Semistructured" interviews. In written or verbal form depending on participants' literacy level and choice. Open ended question "What do you worry about the most that can happen to your child?" 3 structured interview questions, researcher or participant wrote down the responses. Probes to "obtain richer responses". Content analysis, using Nudist. Following Miles and Huberman guidelines. Interpretations translated into English. 52/82 mothers chose Spanish.	**Limitations identified by author:** Not all mothers could read and write, so investigator relied on transcription and respondents' willingness to correct inaccuracies when their responses were read back. Ideally, mothers would have been comfortable with tape recording interviews. **Limitations identified by review team**: There were very few questions in the interview schedule, the study would have been better with more questions, and richer answers. The questions were perhaps too leading. Could have been more specific. Data analysis seems fairly rigorous but not very rich data to work on. A lot about the worries, less about the safety behaviours. **Evidence gaps and/or recommendations for future research:** Need to develop and test

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
				effective interventions to keep low-income and language-isolated children safe. Need to develop methods to develop trust and increase support for mothers of these children. **Source of funding:** Not stated

Key themes (with illustrative quotes if available) relevant to this review:

Themes organised by the questions posed.

1. Maternal worries

Falls, child's health, kidnapping, vehicle-related injuries.
Mothers used the term "accident" to describe myriad conditions that could occur despite their vigilance.
Worried that other people weren't careful enough for the child's safety.
Reluctance to take children to hospital EDs for fear of having children taken away.
Especially if taking the same child to hospital twice.
Fear of going to jail as "negligent mother".
"The hospital puts your name and where you live in a computer that tracks what you come in for".

2. Safety behaviours

Three themes representative of mothers' preventative efforts:

- Physically preventative – relying on constant presence, visual supervision. Especially among the Spanish-speaking mothers.
- Environmentally preventative – electric outlet covers, moving saucepan handles. Controlling child's living area. Child safety gates, picking up choking object (for the under 3s).
- "They're so smart.. he saw me move the box of insect poison to the top of the fridge and promptly dragged a chair over."
- Verbally preventative. Mothers of over 3s expected verbal directives to be effective. Mothers spent considerable energy describing dangers, repeating rules, reasoning with children.

"He was too little to use the stove, how badly burns hurt, and that the house could burn down." But later she smelt burning "He had climbed on a chair, gotten a stove knob out of the cabinet, turned the burner on, and had placed a box of macaroni and cheese directly on the electric burner despite all my warnings".

3. Difficulties in keeping the child safe.

Responses fit into several themes, stressors corresponded to mothers' preventative behaviours.

- Keeping the child close "I'm afraid if I don't watch him constantly he'll start a fire in the house like my little brother did".
- Keeping the child inside. These two themes related to individual circumstances, such as living in parent's house so being unable to put things away

"I am exhausted from telling the older children not to play near the pool where the baby will want to join them (a pool which could not be drained), not to flip on the kitchen lights (sparking electrical system), and not to throw things on the floor that could cause the little one to choke".

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes

"It's work to keep him in the house because he always wants to go outside and I cannot be out of the house long with him."
"I have no family here to help with the children. In this country they will take your children away if you leave them alone. I never do it but other women in the trailer park do."
Living quarters often small and geographically isolated.

- Denial of difficulty (occasionally)

"No, nothing is difficult because I don't do anything but run behind her and when I take her outside I go with her." "That's just what mothers do.

- Child's characteristics

Mothers said that child's personality or age was the most difficult factor in maintaining home safety. Including copying or following siblings.

Findings
Major worries were falling, health, kidnapping, and being hit by a car.
Leading maternal behaviours: physically, verbally and environmentally preventative.
Mothers said it was their role to provide safety and that this role could be wearisome, constant supervision was difficult.

Worries did not always relate to outcomes or actions.

Culture and poverty influence injury-prevention experiences. Frustration from Mexican mothers, having left family behind who could have shared supervision responsibilities.
Contrasting frustration from Mexican-American mother with hazards of crowded 3-generation family.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: **Mull et al** Year: **2001** Citation: **Injury in children of low-income Mexican, Mexican American and non-Hispanic white mothers in the USA: a focused ethnography.** Quality score: **(++, + or -)** +	**What was/were the research questions:** Why is serious pediatric injury higher among Hispanics than non-Hispanic whites in the US? To obtain background information to help health professionals understand and prevent pediatric injury. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Focused ethnography **How were the data collected:** **What method (s):** Household conditions and behaviours observed, family history obtained. Interviews (2-3 hours) **By whom:** The first author – non-Hispanic medical anthropologist, accompanied by a bilingual, bicultural woman research assistant. **What setting(s):** USA. **When:** 1997-8	**What population were the sample recruited from:** Mothers, low income neighbourhoods, Southern California. 50 Mexicans, 30 Mexican Americans, 30 non-Hispanic white Americans. **How were they recruited:** Door-to-door canvassing. **How many participants were recruited:** 110 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** None stated	**Brief description of method and process of analysis:** Semi-structured interview guide used, ethnographic method so many follow-up (open) questions. Information from one mother presented to other mothers for validation. Thematic analysis.	**Limitations identified by author:** None. **Limitations identified by review team**: Lack of description of questions asked, and lack of showing primary data. Difficult to extract the main themes. The analysis section is a long narrative in style. Sometimes it's hard to evaluate ethnographic studies by general qualitative research criteria. **Evidence gaps and/or recommendations for future research:** none **Source of funding:** National Institute of child health and development.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes

Key themes (with illustrative quotes if available) relevant to this review:
Themes not clearly differentiated in narrative style results section. So I'm extrapolating.

Issues to do with having grown up in rural environment in Mexico:
Mexican mothers mostly came from rural and semi-rural backgrounds, so had less experience with urban hazards such as multi-story buildings, staircases, heavy traffic.
Falls and burns sometimes reflected mothers' lack of familiarity with stairs, balconies, and hot water taps.

Also more isolated within their neighbourhoods, less ability to purchase and install safety devices on their own.
Cultural customs meant Mexican mothers tended to keep their children in the home rather than supervising outdoors (they felt women would be criticised for spending time outside supervising her children rather than doing housework and cooking for her family".

Many mothers relied on "low tech" methods of injury prevention more suited to rural Mexico than congested US cities.
"In Mexico, you've known everyone living around you for years, and you can rely on them to look out for your kids".

Because of poverty, mothers sometimes purchased hazardous second-hand items.
Overcrowded living conditions increased risk of poisoning by medicines or household chemicals.
Packaging of toxic products – Mexican mothers more likely to use Mexican products without safety warnings/packaging.

Many of the Mexican-American and white American women were estranged from their families, and some recounted histories of abuse.

Mexican American and white mothers were more easily alarmed by relatively minor injury than Mexican mothers. E.g. took child to doctor when no visible wound. Mexican mothers less likely to take a child to the doctor with a minor injury. Especially due to access to health care problems – notably taking child by bus.

Barriers
Lack of transport to access health care.
Fear of incurring high costs as a reason for not dialling 911.
Lack of health insurance.
Fear of being accused of child abuse (a very strong theme among all Mexican mothers, they said that the whole family might be investigated if a "suspicious" injury occurred). This theme only came out among the Mexican mothers in this study (I think).
Mexican mothers more likely to rely on assumption that nothing serious would happen. (due to poverty, lack of education, tendency to wait for fathers to authorise purchase of e.g. a safety device, apprehension about landlords view on modification of living space, adherence to cultural norms.

Facilitators
Mexican families benefited from low levels of "excessive activity or aggression" among children, and from low levels of drug use or "mental dysfunction" among mothers.
Beneficial habit of using older siblings for childcare.
Mexican mothers less likely to have play equipment with the potential to cause injury, or dogs.

Different nature of injuries reported by the 3 different groups.

Mexican families were poorer, lived in more hazardous and crowded conditions than the other two groups.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Les self-reported smoking, drug use and mental dysfunction among Mexican mothers and male partners. Less aggressive behaviour among their children. Anthropological view of “injury” looks beyond epidemiologically defined “risk factors” to identify culture-linked characteristics that may underlie hazardous or protective behaviours.				

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Olsen, Bottorof, Raina, Frankish **Year:** 2008 **Citation:** .An ethnography of low-income mothers' safeguarding efforts. *Journal of Safety Research* 2008;39(6):609-616. **Quality score:** (++, + or -) **++**	**What was/were the research questions:** To explore the child safety practices of mothers living in low-income situations. **What** situations **theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Ethnography **How were the data collected:** **What method (s):** Interviews and observations. Hour long in-home interviews, 2 hours of observation. **By whom:** The researcher **What setting(s):** Family homes. Canada **When:** Not stated	**What population were the sample recruited from:** From a community of 70,000 residents in Canada. **How were they recruited:** Solicited sampling and purposeful sampling. Letters and follow-up phone calls. Posters at health unit and contacting parenting groups. **How many participants were recruited:** 17 **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** Being a mother and a primary caregiver of a child between 1-5 years. Living in a low-income household.	**Brief description of method and process of analysis:** Thematic analysis (reviewer definition) Interview and observational data was coded in Nvivo. Codes revised and reorganised (grounded theory approach though they don't call it that).	**Limitations identified by author:** Participants may not represent the full range of mothers' experiences. Participants included mothers who had made extra efforts on child safety measures – taken part in a separate child safety study. Findings may not apply in different communities with different levels of support for low income families. Mothers may have emphasised socially desirable responses because they believed their parenting was under scrutiny. Interviewer's social location (white middle class educated woman) may have made a difference. **Limitations identified by review team**: Small sample, one area. Method of analysis not clearly defined (reviewer defined as thematic analysis). **Evidence gaps and/or recommendations for future research:**

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
				Further research is needed on how mothers' safeguarding work can be better supported to enhance the quality of women's lives and improve the conditions under which they safeguard children. **Source of funding:** Canadian institutes for health research

Key themes (with illustrative quotes if available) relevant to this review:

Nature of mothers' safeguarding work
Mothers took own safety efforts for granted – "common sense." Downplaying of domestic and childcare work as "non work".
"Not leaving things hanging… handles on your stove, making sure they're in. Just little things…. There's things that you automatically do"
Mothers emphasised commitment to "constant vigilance and sacrifices to achieve this:
"Constant vigilance. That's all that there is. It means that if the kids are up, I'm up. I don't go to bed when they're up…. I always feel like I'm on guard".

Components of mothers' safeguarding work
4 types of work identified:
1. Cognitive and emotional work:
Risk appraisal
Emotional work

2**. Child directed work**
Teaching and communicating
Supervising and monitoring
Intervening with child
Balancing child needs

3. Work directed at physical environment
Altering physical structures.
Using devices
Making repairs
Arranging space and objects

4. Work directed at social environment
Partner communication
Negotiations with others for repairs, child safety needs.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes

Cognitive work: Thinking about and making decisions about child safety.
"As he gets older he's going to be able to do more things, so right now the little hooks on the doors… are fine because he doesn't know how to do that. But fairly soon I think he's going to clue in how to open them so then I'll have to come up with something else.

Emotional work
"I would like to feel calm and relaxed. And I don't… letting them explore their world is really hard for me to do, and it's not even that they're reckless, and they're not really naughty children or anything like that… I don't know, it's just scary".
Child directed work
"I'm big on saying "no, because if you do it you will get hurt"".
Mothers emphasised the importance of tailoring teaching to child's age and developmental needs and personality characteristics.
Work directed at social environment:
Mothers often mistrusted others to look after their children. Especially non family members. Led to sense of isolation in safeguarding work.
Mothers worried that neighbours would report them to child welfare.

Factors that influenced the women's safeguarding included the quality of the indoor space, availability of safe play space, traffic hazards, sibling interactions, child care supports, relationships with neighbours, and trust in community services.

Housing deficiencies (rented property, not living in own home) limited ability to fit or mend safety appliances.

Limited indoor play space a problem, no safe place to play.

Safeguarding work seen as time consuming, often taken for granted by the women themselves (links to wider literature on Women's work).

Contradictions between characterising of safeguarding work as minimal but descriptions of the effort they took.

Barriers to protecting children related to difficulties associated with unstable housing, poor housing conditions, lack of access to safe outdoor play areas.

Physical and social contexts are involved in shaping mothers' safety behaviours.

References Roberts et al Scottish study 95, could be the same team as the later Roberts paper included here.

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
Authors: Roberts et al **Year:** 2004 **Citation:** Putting public health evidence into practice: increasing the prevalence of working smoke alarms in disadvantaged inner city housing **Quality score:** (++, + or -) +	**What was/were the research questions:** To explore barriers and levers to the use of a specific public health intervention: installing smoke alarms. **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** None stated **How were the data collected:** - **What method (s):** Semi-structured group (10 groups with 39 adult participants, 4 groups with 41 children) and individual interviews (19). "draw and write" techniques with children. **By whom:** 2 researchers at each focus group session. **What setting(s):** Inner city housing estate, London, UK. **When:** Over a 12 month period.	**What population were the sample recruited from:** Trial participants and primary school children in the trial neighbourhood. Deprived area, 23% non native English speakers. **How were they recruited:** Purposive sample, including people with children under 4, and people over 65. Children aged 7-11 from local primary school. **How many participants were recruited:** 58 adults 41 children. **Were there specific exclusion criteria:** None stated **Were there specific inclusion criteria:** None stated	**Brief description of method and process of analysis:** Thematic analysis (reviewer definition) FG and interview questions based around a topic guide with follow-up prompts. Critical incidents explored in more depth. Topic guide included perceptions of fire risk, benefits and problems of living with a smoke alarm, reflections on participation in a trial. Interviews all recorded and transcribed. Researchers read the data independently for key themes.	**Limitations identified by author:** None. **Limitations identified by review team**: Method of analysis not clearly defined (reviewer defined as thematic analysis). General methodology limitations. Lack of description of questions, the reader does not see very extended quotes, limited focus. Not very rich data. **Evidence gaps and/or recommendations for future research:** More work needed to find acceptable smoke alarms, and addressing a health risk with important implications for reducing inequalities. **Source of funding:** UK Medical research council.
Key themes (with illustrative quotes if available) relevant to this review: **Alarms as a source of stress**				

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Findings	Notes
"It is an incredible noise and I don't get panicked… but when than came on I was just like Oh!. It's such a pitch you just really want to stop it, and it's in your own home….(..) you feel completely powerless and that's a horrible feeling in your home." **Problems with maintenance** *"So I grabbed a broom and I thought, I've got to hit that thing up there. So I started banging it with the broom, and it broke and smashed around me.. and that was the end of the smoke alarm."* **Alarm sensitivity** *"Mostly the smoke alarm goes on when a parent's cooking something."* **Alarms as nuisance** *"My mum was cooking something and then it went on and it was so loud I had to wake up."* **Results** Main barrier to smoke alarm use was the distress caused by false alarms. People balance immediate and longer term risks to health and wellbeing when they disable alarms.				

Appendix 5 Studies excluded at full text stage

Study	Research question	Reason for exclusion
Gielen et al 1995	To describe parents' in-home injury prevention practices and their beliefs about benefits and barriers, and determine the extent to which psychosocial and environmental factors are associated with these practices.	Not qualitative research
Hooper et al 2003	To obtain New Zealand data on beliefs related to a broad spectrum of injuries and their prevention	Not qualitative research
Pratt et al 1998	How prepared were home visitors to address childhood injury prevention, and what practices and factors influenced their ability to undertake injury prevention attitudes?	Not qualitative research

Appendix 6 Bibliography

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