Review Article

Mother's education, age and knowledge about home accident prevention– A relational approach

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Abstract

This review considers barriers to, and facilitators of, success for interventions to reduce unintentional injury to children in the home through supply and/or installation of home safety equipment, and looks at risk assessments. This paper examines the effect of mother education on prevention of home accident among children's domestic accidents. Systematic reviews of qualitative research, bibliographic databases searched for studies on interventions to reduce unintentional child injury in the home, or on related attitudes and behaviors. Studies were quality appraised, findings extracted, and a conceptual framework was developed to assess factors affecting the success of interventions. Nine peer-reviewed journal articles were included. Barriers and facilitators highlighted at organizational, environmental and personal levels. Effective provision of safety equipment involves ongoing support with installation and maintenance. Take up and success of interventions depends on adjusting interventions according to practical limitations and parents' cultural expectations. A particular barrier was parents' inability to modify rented or shared accommodation. This review highlights ways, in which health inequalities affects the take up and success of home safety interventions, and how health workers can use this knowledge to facilitate future interventions.

The way social deprivation defined in different studies varied considerably. The literature not evenly spread across different injury types and does not reflect the burden of injury. There is a paucity of evidence relating to the prevention of child pedestrian injury. Very few studies examined the impact of interventions in different social groups. Without such evidence, it remains difficult for those involved in health promotion to know how to design and target interventions to address inequalities in child injury rates.

Keywords: Mothers' knowledge, Prevention, Home accidents, Education

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1. Introduction

An accidental injury remain the leading cause of death among children aged from 1 to 19 years and is the fifth leading cause of death among infants [1]. Most injury-related deaths occur in low and middle-income countries where knowledge is limited regarding injury prevention [2]. Every year, millions of children are permanently disabled or disfigured because of accidents [3]. In Iraq, one of the leading causes of death among children under five years was found to be domestic accidents [4].Globally, unintentional injury is one of the top 15 causes of death across all age groups of children aged 0-19 years, with road traffic injuries, drowning, fire-related burns and falls being the most common [5-7].

It's known that higher levels of injury morbidity and mortality are found among those from more deprived backgrounds, although to date there has been little robust research about the impact of interventions on different socioeconomic groups [8]. In 2008, 208 deaths among children aged under 15 were recorded as 'accidental' by the UK Office of National Statistics. About half of those are likely to have been sustained at home. Data from recent UK reports (http://www.hassandlass. org.uk) show that on average, in 2000-2002, nearly three-quarters of a million children aged 0-15 years presented at hospital annually having been injured inside the home. Given variation in injury rates both between and within countries, it is clear that many such injuries are preventable. Previous systematic reviews of the effectiveness of interventions designed to reduce injuries to children in the home. These reviews have reported mixed or statistically non-significant home safety equipment use outcomes for the prevention of thermal injuries [9, 10] and falls [11]. However, an improvement in poisoning prevention practices following safety education has been noted [12].Domestic accident cases reflect more clearly than any other, the character and lifestyle of people. New patterns of injury attributable to domestic accidents emerge with each new technical or cultural change [13]. Accidents can take place in a wide variety of environments however; the home is the most likely location for accidents involving children. Accidents occurring in the home are a major cause of death and injury that strongly related to the years of life that are potentially lost [14, 15].The research question posed by the Centre for Public Health Excellence (CPHE) stimulates this review was 'What are the barriers to, and facilitators of, interventions involving the supply and/or installation of home safety equipment, and/or home risk assessments aimed at reducing unintentional injury to children in the home?' This review were conducted as part of a suite of reviews commissioned by the CPHE at the UK's National Institute for Health and Clinical Excellence (NICE) to inform policy-making processes around preventing unintentional injury to children in the home. The effectiveness evidence also reviewed [16] and

showed a mixed picture regarding the effectiveness of interventions involving home safety education and the provision of free or discounted home safety equipment. Much of the published research in this field is quantitative and focused on the nature and extent of child injuries in the home and on initiatives to prevent such injuries. In order for parents and initiative providers to be effectively engaged in any interventions, an understanding of the motivations and barriers to uptake is required. Qualitative studies that focus on attitudes towards, behaviors and understanding of safety and injury prevention can be vital in envisaging how interventions made more effective. The objective of this study was to assess the level of mothers' knowledge with respect to home accidents involving children.

Methods

This study systematically identified, critically appraised, summarized and synthesized qualitative evidence relating to contextual or other factors that may enhanced or reduce the effectiveness of interventions aimed at preventing unintentional injury to children in the home through the supply and/or installation of home safety equipment and/or home risk assessments, or which help or hinder their implementation. Our meta-analysis is based on meta-ethnography, an increasingly recognized method for synthesizing qualitative research initiated by Noblit and Hare [17] and developed by others [18-20].It involves several stages, including a systematic search for all relevant articles, and a rigorous process of data extraction to identify and draw similarities and differences between the key concepts from each article. As most papers in this synthesis provide a thematic analysis, as most papers included were mainly descriptive rather than explanatory or theoretical, the synthesis provides a thematic analysis of published qualitative research on this topic, rather than generating new theories.

Study details

Details of the included studies and main research questions samples seen in figure 1. Four described studies were based in the

USA, [21-24] three were from the UK,[25-27] one was from Australia [28] and one was from Canada [29].The methodological quality of the study reports was mixed four were rated as poor, four as adequate, one as good. However, some of the weaker papers, in methodological terms, were more practice based, [26, 27] focusing on evaluation of interventions, so their findings were in some ways more directly relevant to this synthesis topic.

Barriers and facilitators framework

Three papers [25, 27 & 28] explicitly organized their research themes around barriers and facilitators. This used as an organizing framework to synthesize the findings of the nine included studies; the categories within these were determined by our data analysis. Wherever possible, findings from several studies used 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 injury in the home. Themes were developed and refined through discussion. The key findings from the nine studies included in this review outlined in table 1, and synthesized in figure 2.

Main themes emerging

Barriers and facilitators due to legal/policy/health services Legal and policy barriers

Five studies cited perceived legal or policy barriers to injury prevention programmers [21-23, 25-27, 29, 30]. Weak legislation was a barrier to effective implementation of injury prevention programmes for example; Brussoni et al [25] conducted a UK study of healthcare practitioners' views on a smoke alarm intervention, and found that an absence of legislation within the Fire Services led to lack of funding for smoke installation projects. Existing legislation often poorly implemented. For example, rental property owners ignored recommendations to install or maintain alarms, [25, and 28] and some council removed smoke alarms to limit liability if smoke alarms malfunctioned [25].

Gibbs et al [28] found that limited legislation in Australia for child-resistant containers was a barrier to unintentional injury reduction in the home. Parents perceived society as overprotective, yet were surprised to find that products without warnings or child-resistant containers could be dangerous. Parents also understood 'child-resistant' as 'child-proof' so were more likely to store the container unsafely, suggesting that legislation on safety containers may actually reduce parents' tendency to think about danger.

Provision and timing of information

Poor communication with households was another barrier identified in the synthesis. Three studies found that parents felt there was a lack of information or knowledge about existing policies or supports [22, 23 & 25]. Importance was given for timing of information. Brannen [22] 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 retained better. Two studies [25, 26] noted the importance of devising information and advice in ways (style, language, examples) that suit target communities, in these cases low income and ethnic minority populations.

Limitations on effectiveness due to living in rented or overcrowded living conditions

All nine papers in the synthesis found barriers due to socioeconomic circumstances (specifically, poverty, youth, and immigrant status). Eight studies found that a major barrier to implementing safety equipment and childproofing a home was not living in a home, one was free to modify because of living in rented accommodation and/or with extended family [21, 31] '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)'. (Mother of four) [24].

M : Mixed in terms of socio-economic factors

L : Whole or majority of sample low income families

E : Whole or majority of sample low income and ethnic minority families
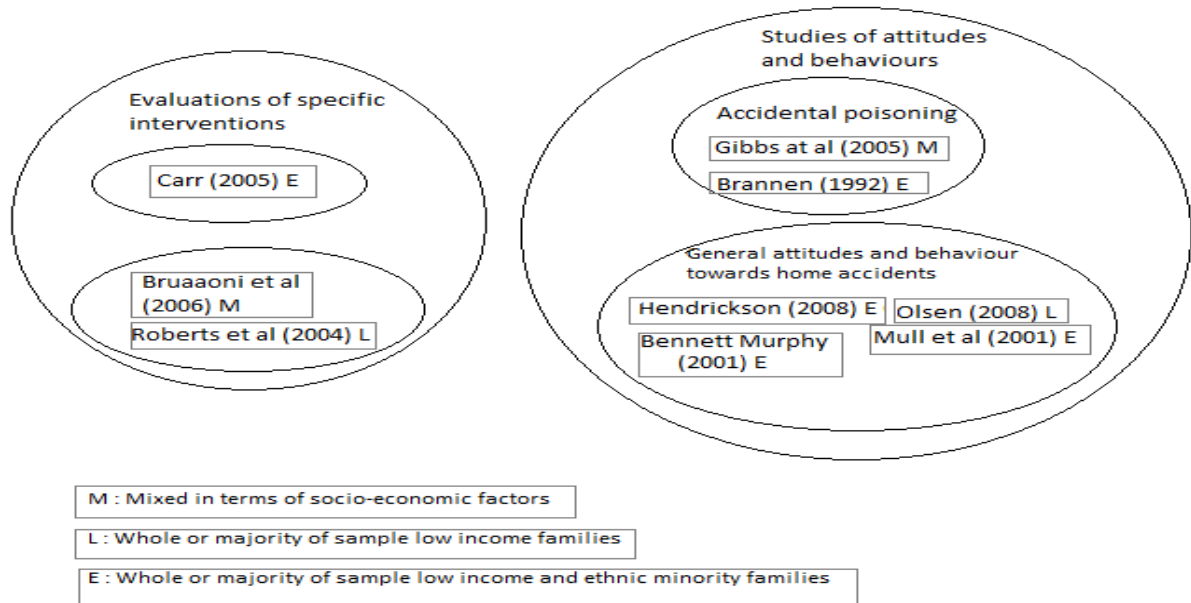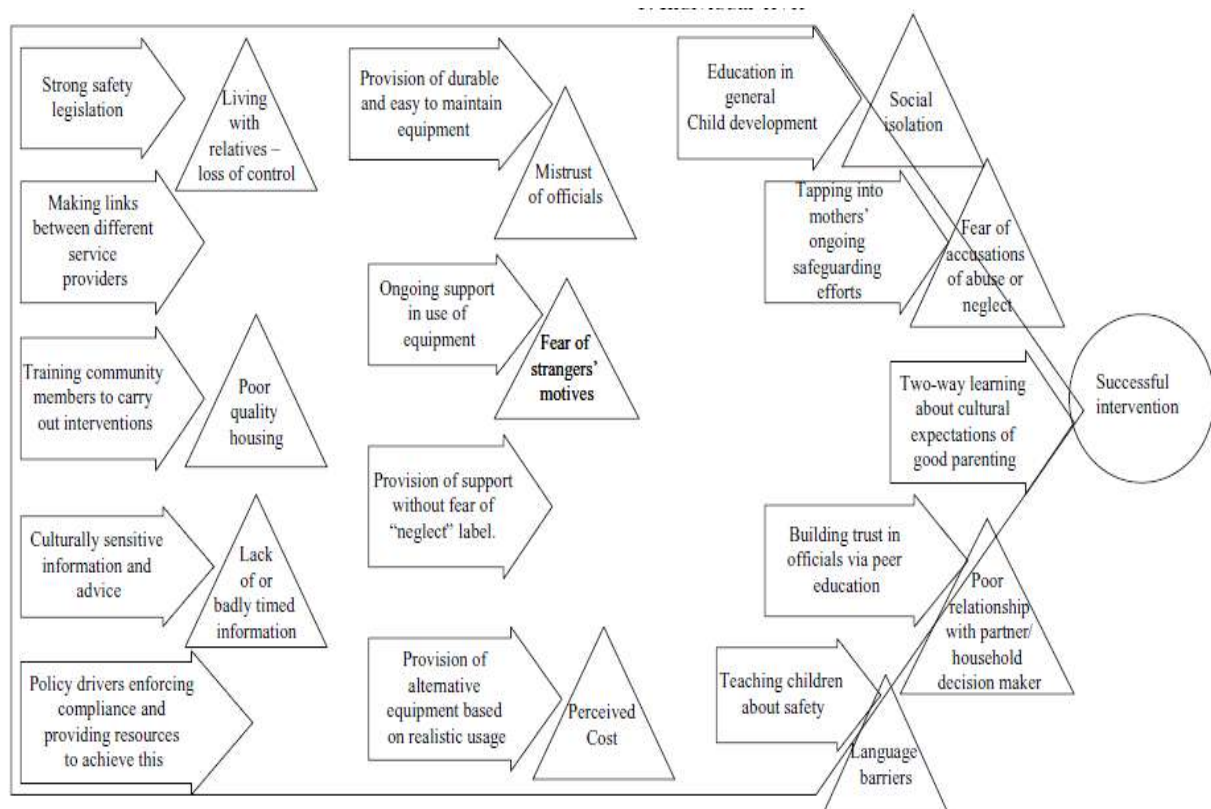
Figure 1: Main research questions and samples.

Figure 2: Synthesis model: What facilitates an intervention to prevent injuries to children in the home?

Physical and environmental barriers and facilitators

This middle level of the conceptual framework deals with themes emerging in the studies that were still outside the individual's control but were an outcome of their environment or circumstances.

Provision of appropriate and durable equipment

Four studies found that faulty equipment was a barrier to interventions [23, 25, 27, & 28]. For example, mothers taped over electric sockets when safety plugs did not work. 'Them socket protectors do not work. Facilitators recommended in these studies included tamperproof smoke alarms with longer lasting batteries, help for fitting alarms, or simpler systems, more systematic provision of child resistant containers, and training in installation, equipment use and replacement, all of which reduced the incidence of unintentional injury to children in the home.

Weighing up of risks against inconvenience

Suspicion of strangers coming into their homes to assess or install property, and of 'free' offers, need to be mitigated in successful interventions [25]. The two studies on smoke alarm installation [25, 27] both found that people balance immediate and longer-term risks to health and well-being when they disable alarms, weighing the safety aspect against the inconvenience and stress of malfunctioning alarms. '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) [27]

Actual and perceived cost of safety equipment

Cost emerged as a theme in five of the studies, always as a barrier to reducing unintentional injury to children in the home, or of obtaining help if a child had had an injury [21, 23, 25, and 27]. Three studies found that the perceived cost of installing safety devices or making repairs was a major barrier in the correct use of smoke alarms [25] and in general for safety equipment [19 25].

Individual barriers and facilitators

Difficulties experienced by young or poorly educated parents in understanding child development

The barriers and facilitators due to individual factors often linked to experience and upbringing. Four studies [21, 23, 24 & 28] 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. Parents overestimated children's ability to remember instructions and underestimated rapid developmental changes. 'Ben's 8 months so he's not into any of that stuff. I don't think to move anything until he's been in it.' (Mother of 3-year-old and 8 month-old) [28].

Fatalism about the nature of injuries

Bennett Murphy [23] found that young mothers found it hard to deal with issues of blamed in a focus group the mothers debated between ideas of the 'accident-prone child' who would injure themselves whatever you did ('Some kids are accident prone'), and the 'negligent adult' who was responsible for their child's injuries ('People are too lazy to watch their kids'). Young mothers oscillated between the two concepts, unsure whether injuries were due to children or adults, but tending to think that there was little to be doing to prevent them. Moreover, many young mothers saw unintentional injury and maltreatment as related, and found it difficult to view unintentional injury as separate from neglect or abuse.

Mistrust of officials, especially regarding accusations of neglect or abuse

Five studies on low income, adolescent and/or immigrant mothers found that mothers worried that asking about injury prevention or taking an unintentionally hurt child to hospital would result in accusations of abuse or

neglect [21-24, 31]. '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' [23].

Mothers' safeguarding work

The variety of safeguarding work that mothers put into preventing unintentional injury in the homed common sense safeguarding, constant vigilance, and teaching children about safety was a theme in five papers [21-24, 31]. Mothers routinely took their safety efforts for granted common sense'. 'Not leaving things hanging handles on your stove, making sure they're in. Just little things. There are things that you automatically do [31]. Four studies had as a major theme mothers' commitment to constant vigilance and sacrifices to achieve this. 'No, nothing is difficult because I don't do anything but run behind her and when I take her outside I go with her' [24]. Two studies [24, 31] noted mothers' tensions between teaching children about limiting injuries and removing threats to safety. Three studies noted immigrant mothers' isolation and lack of family to help with childcare [21, 24 & 31] '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 will do [24]. These studies noted a practice that has been seen as adequate safety measures in the parents' country of origin, but were risky in a new cultural context. Authors noted 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. For example, Mexican-born mothers in a US study often kept their children inside, believing women would be criticized for spending time outside supervising children rather than doing housework and cooking for the family [21].

Principal findings

The synthesis found barriers and facilitators to the success of interventions to reduce child injuries in the home at organizational, physical and individual levels. Figure 2 provides a summary of the main barriers and facilitators, at each of these three levels, to the success of projects and interventions that aim to reduce injury in the home. At the organizational level, the study demonstrates that effective provision of safety equipment includes support with installation, ongoing support for usage, maintenance of equipment, and safety checks. At the physical or environmental level, the difficulties for parents living in rented or extended family accommodation, with limited possibilities for modifying their environment, were a major barrier to successful uptake of home safety interventions. At the individual level, health inequalities stemming from parents' cultural and socioeconomic background, age and experience affected take up or longer-term success of interventions in a variety of ways. Cultural background, especially for immigrant parents with experience of different parenting contexts, led to conflicting understanding of child safety between parents and health workers. A particular tension were noted between the belief that a good parent constantly monitors, or implements physical boundaries, and the belief that a good parent teaches children appropriate behavior. There is a strong socioeconomic aspect to this containing a baby in a playpen is less acceptable than containing a child in a private, secure garden. This review highlights how possibilities for appropriate actions depend on factors such as owning one's own home, not being over-crowded, or access to safe outdoor space. The synthesis thus draws attention to ways in which policy needs to consider health inequalities in the design and implementation of interventions to reduce unintentional injuries to children in the home. Strengths and weaknesses of the study review limitations. Studies reviewing published research necessarily determined by the articles published, in topic range and in scope of analysis. Areas not covered by the articles published include suffocation, burn and scald prevention. Fathers were rarely included in the research in these articles. Most papers reviewed had little description of the theoretical approach. Several were stronger on practitioner relevance than on theory. Analysis sections were mostly short, with themes stated but not always evidenced by relevant first-order quotations. Space

restrictions in journals limit the extent to which evaluations of public health programmes can include rigorous data about the contextual factors that affect a programme's effectiveness, but such data are crucial for informing recommendations about effective programmes [32]. Recent debates on quality of evidence in public health suggest that syntheses focus on 'maximising the conceptual yield of included papers' [16] lower quality papers, with poorly developed concepts and less theorizing may support concepts and theories developed in the stronger papers. In this study, the key concepts were based on the 'stronger' studies, but papers rated as methodologically weaker (often based on practitioner viewpoints or a particular intervention) added to the overall picture.

Conclusion

Synthesis studies are particularly useful in identifying further research needs. Future studies could consider how to tie interventions in with parental efforts to keep children safe, rather than viewing participants in deprived communities as passive in terms of safety interventions. While most studies reviewed here and hence the emerging themes in this paper, focused on mothers, the role of fathers in safeguarding work should be included. Further research could explore ways of addressing the complex reasons why targeted participants, often in deprived socioeconomic areas and often including immigrant or ethnic minority populations, might not take up available safety interventions, including misunderstanding of cultural expectations from health professionals and mistrust of officialdom and neighbors.

References

[1] Weintrub, P.S. (2012). Deaths from Unintentional Injury Are Declining Among U.S. Children. *Journal Watch Pediatrics and Adolescent Medicine.*

[2] Rezapur-Shahkolai, F., Naghavi, M., Shokouhi, M., & Laflamme, L. (2008). Unintentional injuries in the rural population of Twiserkan, Iran: a cross-sectional study on their incidence, characteristics and preventability. *BMC public health*, 8(1), 1.

[3] Laursen, B., & Møller, H. (2009).Unintentional injuries in children of Danish and foreign-born mothers. *Scandinavian journal of public health*.

[4] Awqati, N. A., Ali, M. M., Al-Ward, N. J., Majeed, F. A., Salman, K., Al-Alak, M., & Al-Gasseer, N. (2009). Causes and differentials of childhood mortality in Iraq. *BMC pediatrics*, 9(1), 1.

[5] Peden, M. M. (2008). *World report on child injury prevention.* World Health Organization.

[6] Dowswell, T., & Towner, E. (2002). Social deprivation and the prevention of unintentional injury in childhood: a systematic review. Health education research, 17(2), 221-237.

[7] Audit Commission, & Healthcare Commission. (2007). better safe than sorry: preventing unintentional injury to children. London: *Audit Commission*.

[8] Walsh, S. S., Jarvis, S. N., Towner, E. M., & Aynsley-Green, A. (1996). Annual incidence of unintentional injury among 54,000 children. *Injury prevention*, 2(1), 16-20.

[9] DiGuiseppi, C., Goss, C. W., & Higgins, J. (2001). Interventions for promoting smoke alarm ownership and function. *The Cochrane Library*.

[10] Kendrick, D., Smith, S., Sutton, A. J., Mulvaney, C., Watson, M., Coupland, C., & Mason-Jones, A. (2009). The effect of education and home safety equipment on childhood thermal injury prevention: meta-analysis and meta-regression. *Injury prevention,* 15(3), 197-204.

[11] Kendrick, D., Watson, M. C., Mulvaney, C. A., Smith, S. J., Sutton, A. J., Coupland, C. A., & Mason-Jones, A. J. (2008). Preventing childhood falls at home: meta-analysis and meta-regression. *American journal of preventive medicine,* 35(4), 370-379.

[12] Kendrick, D., Smith, S., Sutton, A., Watson, M. C., Coupland, C., Mulvaney, C., & Mason-Jones, A. (2008). The effect of education and safety equipment on poisoning prevention practices and poisoning: systematic review, meta-analysis and meta-regression. *Archives of disease in childhood.*

[13] Aggarwal, R., Singh, G., & Aditya, K. (2010). Pattern of Domestic Injuries in a Rural Area of India. *Internet J Health*, 11(2).

[14] Royal Society for the Prevention of Accidents; home Safety Factsheet. Available from: http. (Accessed August 2013)

[15] Dowswell, T., Towner, E. M., Simpson, G., & Jarvis, S. N. (1996). Preventing childhood unintentional injuries--what works? A literature review. *Injury Prevention,* 2(2), 140-149.

[16] Pearson, M, Garside, R, & Moxham, T, (2010). Preventing unintentional injuries to children in the home: A systematic review of the effectiveness of programmes supplying and/ or installing home safety equipment. Health Promotion International. PMID: 21131627

[17] Noblit, G.W, & Hare, R.D. (1988). Meta-Ethnography: Synthesizing Qualitative Studies. Los Angeles, CA: SAGE,

[18] Britten, N., Campbell, R., Pope, C., Donovan, J., Morgan, M., & Pill, R. (2002). Using meta ethnography to synthesize qualitative research: a worked example. *Journal of health services research & policy*, 7(4), 209-215.

[19] Campbell, R., Pound, P., Pope, C., Britten, N., Pill, R., Morgan, M., & Donovan, J. (2003). Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. Social science & medicine, 56(4), 671-684.

[20] Malpass, A., Shaw, A., Sharp, D., Walter, F., Feder, G., Ridd, M., & Kessler, D. (2009). "Medication career" or "moral career"? The two sides of managing antidepressants: a meta-ethnography of patients' experience of antidepressants. *Social science & medicine*, 68(1), 154-168.

[21] Mull, D. S., Agran, P. F., Winn, D. G., & Anderson, C. L. (2001). Injury in children of low-income Mexican, Mexican American, and non-Hispanic white mothers in the USA: a focused ethnography. *Social science & medicine,* 52(7), 1081-1091.

[22] Brannan, J. E. (1992). Accidental poisoning of children: Barriers to resource use in a black, low-income community. *Public Health Nursing*, 9(2), 81-86.

[23] Murphy, L. M. B. (2001). Adolescent mothers' beliefs about parenting and injury prevention: results of a focus group. *Journal of Pediatric Health Care*, 15(4), 194-199.

[24] Hendrickson, S. G. (2008). Maternal worries, home safety behaviors, and perceived difficulties. *Journal of nursing scholarship,* 40(2), 137-143.

[25] Brussoni, M., Towner, E., & Hayes, M. (2006). Evidence into practice: combining the art and science of injury prevention. *Injury prevention*, 12(6), 373-377.

[26] Carr, S. (2005). Peer educators-contributing to child accident prevention. Community Practitioner, 78(5), 174.

[27] Roberts, H., Curtis, K., Liabo, K., Rowland, D., DiGuiseppi, C., & Roberts, I. (2004). Putting public health evidence into practice: increasing the prevalence of working smoke alarms in disadvantaged inner city housing. *Journal of epidemiology and community health,* 58(4), 280-285.

[28] Gibbs, L., Waters, E., Sherrard, J., Ozanne-Smith, J., Robinson, J., Young, S., & Hutchinson, A. (2005). Understanding parental motivators and barriers to uptake of child poison safety strategies: a qualitative study. *Injury prevention*, 11(6), 373-377.

[29] National Institute for Health and Clinical Excellence. Methods for Development of NICE Public Health Guidance. London: National Institute for Health and Clinical Excellence, 2006

[30] Dixon-Woods, M., Booth, A., & Sutton, A. J. (2007). Synthesizing qualitative research: a review of published reports. *Qualitative Research,* 7(3), 375-422.

[31] Olsen, L., Bottorff, J. L., Raina, P., & Frankish, C. J. (2008). An ethnography of low-income mothers' safeguarding efforts. *Journal of safety research,* 39(6), 609-616.

[32] Rychetnik, L., Frommer, M., Hawe, P., & Shiell, A. (2002). Criteria for evaluating evidence on public health interventions. *Journal of epidemiology and community health*, 56(2), 119-127.