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[Intervention Review]

Community-based interventions for the prevention of burns and scalds in children

Cathy Turner¹, Anneliese Spinks², Roderick J McClure³, Jim Nixon⁴

¹School of Nursing, University of Queensland, Herston, Australia. ²School of Medicine, Griffith University, Meadowbrook, Australia.

³Accident Research Centre, Monash University, Victoria, Australia. ⁴Department of Pediatrics and Child Health, University of Queensland, Herston, Australia

Contact address: Anneliese Spinks, School of Medicine, Griffith University, University Drive, Meadowbrook, Queensland, 4031, Australia. anneliese.spinks@csiro.au, a.spinks@griffith.edu.au.

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ABSTRACT

Background

Burns and scalds are a significant cause of morbidity and mortality in children. Successful counter-measures to prevent burn and scald-related injury have been identified. However, evidence indicating the successful roll-out of these counter-measures into the wider community is lacking. Community-based interventions in the form of multi-strategy, multi-focused programmes are hypothesised to result in a reduction in population-wide injury rates. This review tests this hypothesis with regards to burn and scald injury in children.

Objectives

To assess the effects of community-based interventions, defined as coordinated, multi-strategy initiatives, for reducing burns and scalds in children aged 14 years and under.

Search methods

We searched the Cochrane Injuries Group's specialised register, CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO, National Research Register and the Web of Knowledge. We also handsearched selected journals and checked the reference lists of selected publications. The searches were last updated in May 2007.

Selection criteria

Included studies were those that reported changes in medically attended burn and scald-related injury rates in a paediatric population (aged 14 years and under), following the implementation of a controlled community-based intervention.

Data collection and analysis

Two authors independently assess studies for eligibility and extracted data. Due to heterogeneity between the included studies, a pooled analysis was not appropriate.

Main results

Of 39 identified studies, four met the criteria for inclusion. Two of the included studies reported a significant decrease in paediatric burn and scald injury in the intervention compared with the control communities. The failure of the other two studies to show a positive result may have been due to limited time-frame for the intervention and/or failure to adequately implement the counter-measures in the communities.

Authors' conclusions

There are a very limited number of research studies allowing conclusions to be drawn about the effectiveness of community-based injury prevention programmes to prevent burns and scalds in children. There is a pressing need to evaluate high-quality community-based intervention programmes based on efficacious counter-measures to reduce burns and scalds in children.

It is important that a framework for considering the problem of burns and scalds in children from a prevention perspective be articulated, and that an evidence-based suite of interventions be combined to create programme guidelines suitable for implementation in communities throughout the world.

PLAIN LANGUAGE SUMMARY

Insufficient evidence so far to support the community approach to burns and scalds prevention

Multi-strategy, community-based interventions are widely promoted for reducing injury rates. The efficacy of this approach is difficult to assess and there have been few research studies of good quality. The current review sought to review studies evaluating the success of community-based programmes specifically intended to reduce burn and scald injury in children. Only four studies were identified that met the inclusion criteria and two of these found a reduction in rates of burns and scalding. More high-quality research studies are needed in this area, therefore, to support the continued use of the community approach.

BACKGROUND

Description of the condition

Burns and scalds to children under the age of 14 years comprise a large proportion of emergency department presentations in several countries (Ansari-Lari 2003; Calder 2002; Chien 2003; Laloë 2002; Quayle 2000). Children who are not fatally injured by their burns and scalds are often left disfigured or disabled for life and must endure lengthy, painful hospital stays and rehabilitation periods (Herndon 1986).

Children under the age of five years have the highest risk of death from burn injury (Morrow 1996) and increased risk of burn-related hospitalisation (Chien 2003; Laloë 2002; Zeitlin 1993). Epidemiological studies conducted in a number of countries show children in this age group to have the highest burn incidence rate (Bang 1997; Fukunishi 2000; Lari 2002; Mahaluxmivala 1997; Wilkinson 1998; Zeitlin 1993), with an annual incidence rate of up to 220 hospitalisations per 100,000 (HIC 1999). In the five years and under age group, scalds are typically responsible for 50% of thermal injuries presenting to the emergency departments, and are more likely to lead to hospitalisation than burns of any other type (Hockey 2001; Laloë 2002; Ray 1995).

Aetiological studies show that burns and scalds in younger children typically occur in the home and are caused by commonly used items, such as saucepans, kettles, taps, stoves, hot beverages,

irons and heaters (Banco 1994; Hockey 2001; Zeitlin 1993). Burn injuries that occur at home account for over 80% of all childhood burn injuries in developed countries (Zeitlin 1993) and over 90% of all childhood burn injuries in developing countries (Bang 1997; Lari 2002).

Description of the intervention

A number of successful interventions have been demonstrated to reduce the risk of thermal injury for children within their homes. These include the installation of smoke alarms (DiGiuseppi 1998), education of children and families (Harre 2000), flame-resistant sleep-wear (Schieber 2000) and regulation of hot water temperatures below 49°C (Fallat 1993; Feldman 1978). These interventions are either single counter-measures administered in a research setting under highly regulated conditions, or legislative changes made at policy level with no documented account of associated translation and dissemination activities. Evaluations of the former are largely individual-level, randomised controlled trials that measure the efficacy of the intervention, rather than the effectiveness of its use in the community under normal conditions. Evaluations of the latter are usually simple time-series analyses of outcomes over the period of legislative change, and provide low-level evidence of causal association.

How the intervention might work

It has been hypothesised that sustained reductions in injury rates measured at the population level require the implementation of injury prevention counter-measures in the context of multi-strategy, multi-focused community level programmes, which use a combination of social and physical environmental interventions in the context of community-directed activity (Moller 1991). With the development of burden-of-injury-based policies, national public health agendas are identifying the prevention of burns and scalds in children as a priority area and community-based child injury prevention programmes are increasingly being expected to include strategies to address the problem of burns and scalds in children amongst their activities (DHAC 2001; Mathers 1999; Qld Health 2000).

The community-based approach is characterised by a shared ownership of the injury problem and its solution between experts and community members, and joint responsibility for determining appropriate interventions (Moller 1991). Appropriate evaluation of the effectiveness of these programmes requires community level analysis and, while several studies of this kind exist, we are not aware of any comprehensive reviews which systematically examine the results of these studies and synthesise findings into a summary statement of current knowledge in the area.

Why it is important to do this review

The aim of the current review is to examine the literature, with a view to supporting practitioners aiming to achieve childhood prevention targets now being written into health policy throughout the world.

OBJECTIVES

To assess the effects of community-based interventions for reducing burns and scalds in children aged 14 years and under.

METHODS

Criteria for considering studies for this review

Types of studies

Controlled community trials.

Types of participants

Children aged 14 years and under.

Types of interventions

Community-based interventions to reduce burns and scalds in children, defined as co-ordinated, multi-strategy initiatives targeted at families with children aged 14 years and under, within the entire community or a large part of a community.

Strategies to increase the ownership and functioning of smoke detectors have already been subject to a Cochrane review (DiGiuseppi 2003) and will not, therefore, be included for the current review.

Types of outcome measures

Medically attended injury rates from burns or scalds in children aged 14 years and under.

Search methods for identification of studies

Electronic searches

The following electronic databases were searched:

- Cochrane Injuries Group's specialised register (searched May 2007).
- CENTRAL (*The Cochrane Library*, Issue 2, 2007)
- MEDLINE WebSPIRS (1966 to 2007, May week 1)
- EMBASE Rehabilitation and Physical Medicine (1993 to 2007, week 19)
- CINAHL (1982 to 2003)
- PsycINFO (1966 to 2007, May week 2)
- National Research Register (Issue 2, 2007)
- Web of Knowledge (Social Science Citation Index, May 2007)

The original search strategies were based on the terms listed below. The full search strategies for the most recent search update are listed in [Appendix 1](#).

child* OR adolescent OR infan*

AND

communit* OR population

AND

strateg* OR intervention* OR prevent* OR program* OR campaign*

AND

burn* OR scald* OR fire OR thermal inj* OR smoke detector OR smoke alarm.

Searching other resources

Handsearches

The following journals were handsearched:

- *Injury Prevention* (1995 to 2007)
- *Accident Analysis and Prevention* from (1974 to 2007)
- *Journal of Burn Care and Rehabilitation* (1981 to 2007)
- *International Journal of Injury Control and Safety Promotion* (2001 to 2007)
- *Burns* (2000 to 2007)

Snowballing

References of selected studies and relevant reviews were hand-checked to find additional studies. The Science Citation Index was also used.

Data collection and analysis

Selection of studies

Abstracts from electronic searches, handsearched journals, reference checks and unpublished studies identified through personal contact with content experts were screened for eligibility by an experienced author. The full texts of potentially relevant studies were retrieved and independently assessed by two authors against the inclusion criteria. Differences in opinion were resolved by discussion amongst all authors.

Data extraction and management

Data were independently extracted from the included studies by two authors using standardised forms.

Assessment of risk of bias in included studies

The investigation of methods used in the implementation of community trials is a new field of exploration in injury research and few instruments to assess methodological quality are available. Traditional quality scoring was not undertaken. However, a quality assessment process was performed independently by two authors. This process was based on four of the seven criteria used for the quality assessment for controlled before and after designs, as described in Data Collection Checklist, developed by the Cochrane Effective Practice and Organisation of Care Review Group (EPOC). The criteria chosen are those that are relevant to community trial designs and specifically gauge the appropriateness of: baseline measurements, characteristics of the control site, protection against contamination between sites, and reliability of outcome measures.

Data synthesis

Data were available as measures of association (for example, odds ratios, relative risks) linking programme interventions and changes in injury rates.

Meta-analysis was not appropriate, due to the heterogeneous nature of community-based studies including duration of intervention and follow-up, characteristics of the intervention and population demographics.

RESULTS

Description of studies

See: [Characteristics of included studies](#); [Characteristics of excluded studies](#).

A total of 39 studies were considered for the review, of which only four met the criteria for inclusion ([Guyer 1989](#); [MacKay 1982](#); [Peleg 2005](#); [Ytterstad 1995](#)).

The remaining 35 studies were excluded for the following reasons: the definition of a community-based intervention was not satisfied ($n = 9$); no injury outcomes were assessed ($n = 12$); the study reported injury outcomes for all ages and it was not possible to separate outcomes for children alone ($n = 2$); and no appropriate community control was used for comparison ($n = 10$).

[Guyer 1989](#)

This was a report of the evaluation of the Statewide Childhood Injury Prevention Program (SCIPP) implemented in nine cities in Massachusetts, USA from September 1980 to June 1982. The programme consisted of five separate injury projects that sought to reduce the incidence of burns, falls in the home, motor vehicle traffic injuries, poisonings and suffocations in children aged five years and under. School and community burn prevention education, based on 'Project Burn Prevention' was one of these five injury projects. The total population of the nine intervention cities was 138,810. Five communities, with a combined population of 146,866 served as a control. Demographic characteristics of the intervention and control communities were reported in an earlier publication ([Gallagher 1984](#)) and were similar for age composition, density, family size, ethnicity, housing characteristics, family income, poverty levels and education. The study also reported that communities were matched on characteristics related to hospital usage patterns, local paediatricians, school districts and boards of health. The intervention itself was educationally focussed, delivering the 'Project Burn Prevention' curricula through a variety of media including schools, libraries, fire and police authorities and day care centres. Both control and intervention communities were exposed to safety messages delivered outside the programme both before and during the intervention period.

[MacKay 1982](#)

The study evaluated Project Burn Prevention, a school and media education campaign. The project was implemented from October 1977 to May 1978 in two communities within the Boston Standard Metropolitan Statistical Area (SMSA) - Lynn (population 78,000), and Quincy (population 91,000). The intervention itself was delivered through three channels: the mass media (television, radio, newspapers), schools (in Lynn only) and community organisations (in Quincy only). The content of the educational advice covered first aid for burns and prevention of scalds, flame and smoke injuries, electrical burns and contact burns. The advice targeted both behavioural and environmental changes, including the use of safety products, such as smoke detectors and non-flammable clothing. There were two separate control comparisons used. The first was a comparison between two additional communities within the Boston SMSA, Salem and Saugus, which also received the mass media element of the intervention. The second was a comparison between two communities who received no intervention which were part of the Springfield SMSA: Holyoke and South Hadley.

Peleg 2005

This study compared rates of hospitalisation for burn related injuries in Israeli communities which had implemented a burn prevention programme with those with no programme. Questionnaires were mailed to 70 organisations including universities, government agencies and volunteer organisations to determine intervention and control communities as well as to elicit details of the types of interventions that had been implemented. A 70% response rate was achieved which provided details on 16 injury prevention programmes throughout Israel. These programmes were delivered by the Ministries of Education and Health, hospitals, municipalities, health funds and non-profit organisations. The various interventions consisted of on-on-one guidance sessions, group training sessions, distribution of reading materials and the distribution of safety accessories. The study authors report that some interventions were multi-faceted, however do not provide further information in this regard. Results (hospitalisation rates) are reported separately for infants and toddlers (four years and under) and school-aged children (5 to 14 years). There were 15 communities (total 1998 population 70,200) with interventions targeting parents of infants and toddlers which were compared with 76 non-intervention localities (1998 population 211,700). School-aged children were targeted in 14 Jewish communities compared with 11 non-intervention Jewish communities. The number of non-Jewish intervention and non-intervention communities with school-aged children prevention programmes was not reported.

Ytterstad 1995

Burns in small children less than five years of age were a priority area targeted for intervention by the Harstad Injury Prevention Study. Harstad, a Norwegian city with 22,000 inhabitants, initiated a broad focussed injury prevention study in 1987, modelled on the World Health Organization (WHO) Manifesto for Safe Communities which states that "All human beings have an equal

right to health and safety" (WHO 1999). The Safe Communities concept, originating in Sweden, has been adopted in many countries around the world, as a model for harnessing community enthusiasm and effort to enhance safety and reduce injury. The intervention consisted of educational advice for both the prevention of burn and scald injuries and immediate first aid treatment. A range of methods were used to convey the messages, including one-on-one counselling sessions by public health nurses and at health fairs and shopping malls as well as through local media. Environmental interventions in the form of reduced hot tap water thermostat settings (to 55°C) and cooker safeguards were strongly promoted. Vendors of electrical cookers were targeted by educational interventions also. Two controls were used for comparison: six municipalities surrounding Harstad which were increasingly exposed to the same interventions; and a separate community, Trondheim, located 1000 km away from Harstad, with a population of 134,000 inhabitants. Although Trondheim was a much larger city than Harstad, the authors reported similar demographic characteristics regarding age structure of the population, income levels, employment base and other socioeconomic factors. The control communities had been exposed to national child safety programmes, but did not receive the local community-based intervention.

Risk of bias in included studies

Four of seven criteria outlined in the Data Collection Checklist described by the Cochrane EPOC Review Group were used to establish the methodological quality of included studies. These four criteria were:

- availability of baseline measurements
- appropriate choice of control
- protection against contamination between intervention and control site
- reliability of outcome measures.

All four of the included studies provided both baseline measurements and reliable, hospital recorded injury outcome measures. In the Ytterstad study, however, the outcome data were obtained from a routine surveillance database, the accuracy of which was not provided.

Two of the studies (Guyer 1989; MacKay 1982) chose appropriate control communities for comparison, however the control communities for the third and fourth studies were selected because of the availability of comparable outcome data (Ytterstad 1995) or by default of having not implemented a burn injury prevention program in the study time-frame (Peleg 2005). In the Norwegian study, the control community was six times the size of the intervention community. Despite this, population distribution and socioeconomic characteristics for the two communities were reportedly similar (Ytterstad 1995). In the Israeli study (Peleg 2005), the proportion of non-Jewish communities was higher in the localities

with no intervention aimed at toddlers and infants (41 / 76) than in the intervention communities (2 / 15). This implies a socioeconomic differential between intervention and control sites which the authors attempted to rectify by reporting results separately for low and high socioeconomic communities.

Both [Ytterstad 1995](#) and [MacKay 1982](#) ensured adequate protection against contamination between the control and intervention sites. In the [Guyer 1989](#) study, however, various injury prevention initiatives that were concurrently conducted outside the programme may have led to misclassification of exposure to safety messages. The study authors report that it was not possible to either eliminate or estimate the magnitude of this confounding effect. They report that pre-intervention telephone surveys revealed that both control and intervention communities had been exposed to childhood safety messages prior to the intervention. Similar telephone surveys conducted post-intervention revealed that the intervention communities had a three-fold higher level of exposure to safety messages, but the control communities had also had an increase in exposure of about two-fold. [Peleg 2005](#) reported that five of the 16 interventions identified by their project were state (nation) wide, however they continue to analyse and report results according to communities that did and did not receive an intervention. No explanation is provided as to how communities were allocated to intervention or control status when it may be presumed the whole country received some level of intervention.

Effects of interventions

Two of the four included studies reported a decrease in childhood injury rates due to burns and scalds as a result of the intervention ([Peleg 2005](#); [Ytterstad 1995](#)). The effects are summarised in [Table 1](#).

[Guyer 1989](#)

In the Massachusetts Statewide Childhood Injury Prevention Program, the burn prevention component was estimated via telephone surveys to have reached only 10% of the target community. Burn-related injury incidence in children five years and under increased in both the intervention and control communities during the intervention period, compared with baseline. This increase was greater in the control communities: the incidence rose from 52.56 per 10,000 person years to 59.68 in the intervention community, and from 75.01 to 106.03 in the control communities. Higher baseline incidence in the control communities was reflective of lower socioeconomic characteristics in these areas. The calculated SES adjusted odds ratio for a burn injury post versus pre-intervention in the intervention communities compared to the control communities was 1.26 (95% confidence interval (CI) 0.84 to 1.90).

[MacKay 1982](#)

The Project Burn Prevention curricula implemented in Boston did not reduce the rate of burn injuries. However, this may have been reflective of the fact that the intervention lasted only eight

months. Results indicated that the community-initiated intervention implemented in Quincy may have brought about a moderate and temporary reduction in burn injuries during the programme compared with before the programme (relative risk [RR] 0.8; 90% CI 0.7 to 1.0). This effect reduced in the 12 months post-intervention (RR 0.9; 90% CI 0.8 to 1.1). There was no effect of intervention for burns following the intervention programme for the school-initiated programme in Lynn (RR 1.1; 90% CI 1.0 to 1.2) or the control communities: Salem and Saugus with media campaign (RR 1.0; 90% CI 0.9 to 1.3); Holyoake and South Hadley (RR 1.0; 90% CI 0.8 to 1.1).

[Peleg 2005](#)

The infant and toddler hospitalisation rate for burn related injuries decreased significantly by 25% in intervention communities from 1.39 / 1000 to 1.05 / 1000 population while the hospitalisation rate remained unchanged at 1.26 / 1000 ($P = 0.03$) in non-intervention communities. The reduction was greater in high socioeconomic status (SES) intervention communities (29%) compared to low SES intervention communities (20%). There were no significant changes in burn related hospital admissions among school-aged children in either intervention (31% reduction ns) or non-intervention (21% reduction n.s.) communities.

[Ytterstad 1995](#)

Results from the Harstad Injury Prevention Study were published in both 1995 and 1998, at seven years and ten years post-initiation of the intervention. In 1995, a decrease of 52.9% for burn injury rates was reported in the intervention community (from 52.4 to 24.7 per 10,000 person years). This was compared to a decrease of 14.1% in the six surrounding municipalities, and an increase of 9.9% in Trondheim, the control community located 1000 km away. The calculated relative risk of burn injury in the intervention community was 0.47 ($P = 0.045$). The incidence changes were not significant in either of the two control groups.

In 1998, the burn and scalds incidence had decreased further to 57.5% in the intervention community compared to baseline (RR 0.49, $P = 0.04$). The incidence rate had also decreased further in the surrounding six municipalities by 40.1% (ns) and had increased again in Trondheim by 18.1% (ns) compared with baseline. The severity of thermal injuries also showed a downward shift with no injuries caused by tap water scalding or receptacles pulled from stoves in the final four years of data collection.

DISCUSSION

Despite an extensive search of the literature, only four studies were identified that fulfilled the selection criteria. Two of the studies used sound methodology with contemporary comparison communities, strong measures of injury outcome and appropriate statistical analysis ([Guyer 1989](#); [MacKay 1982](#)) and neither of these studies showed the community-based intervention to be effective in reducing burn and scald injuries in children. The results of the

two studies which did report a reduction in burn injuries for young children need to be considered in the context of specific methods used (Peleg 2005; Ytterstad 1995).

There are a number of issues that may weaken the conclusions of both the Peleg and Ytterstad studies. Peleg 2005 retrospectively assigned communities to intervention and control status depending on whether or not they had been exposed to an injury prevention campaign with a burn prevention component during the study timeframe. This introduced an element of self-selection by individual communities into their intervention status which may have produced a systematic bias into the subsequent results. There was no attempt to match intervention and control community characteristics, and the authors report a much higher proportion of poorer, non-Jewish communities in the non-intervention group. It was also reported that the interventions differed between the various communities, however there was limited information available about what each one entailed.

In the Harstad study, the reported incidence of burn injury fluctuated considerably over the ten-year follow-up period (Ytterstad 1995). The linear regression analysis used to demonstrate statistically significant change over time did not model the social level confounders and did not take into account changing demographic characteristics of the denominator population. Furthermore the analysis would have been sensitive to the arbitrary time points chosen as boundaries of the period under review. One additional aspect that was not taken into consideration was that given the community level unit of intervention, adjustment for cluster effects in the variance estimates should have been included.

Ten community-based intervention studies were excluded from the review, because they did not have a control community as part of their evaluation study design (Argenio 1996; Cagle 2006; Clark 1992; Elberg 1987; Erdmann 1991; Fallat 1993; NSW Health 1998; Shani 1998; Sheller 1995; Sheller 1998). They all showed a positive effect on reducing burn injury outcomes for children, however, the lack of control community use in these studies means that it is not possible to attribute the reduction in injury rates solely to the intervention because other possible confounding factors were not taken into consideration.

A further twelve community-based studies were excluded because they did not assess injury outcomes as part of their evaluation (Ballesteros 2005; Corrarino 2000; Gorman 1985; Hammond 1990; Harre 2000; Hwang 2006; Katcher 1987; Macarthur 2003; Maguina 2004; Schmeer 1986; Victor 1988; Waller 1993).

The strengths of this review are that it examines for the first time the evidence-base justifying what has become a widely adopted approach to burns injury prevention in children, that is, community-based interventions, and enables this evidence to be judged on its merits. While much research has been conducted identifying efficacious counter-measures to reduce burn and scald injury (DiGuseppi 1998; DiGuseppi 2003; Fallat 1993; Feldman

1978; Harre 2000; Schieber 2000), there appears to be insufficient evidence relating to the combination of these interventions in the context of a community-based approach. There remains a gap between 'what we know works' in childhood burns and scalds injury prevention and 'how to make it work' in a real world setting. There is a paucity of research evidence from which to develop a set of evidence-based guidelines for practitioners implementing community-based programmes of activity in this area.

It is unlikely that positive publication bias has influenced the results of this review, as both positive and negative findings that met the inclusion criteria were located. The review does raise the question as to why there are only four evaluations of community-based injury programmes to prevent burns and scalds in children that have assessed injury outcomes and included a contemporary control community as a comparison in their study design.

Based on the studies excluded in this review it would appear that historically community-based programmes in this area have been of poor evaluation methodology or have not evaluated burn injury outcomes at all. The lack of attention given to evaluation methodology may be due to the paucity of funds made available for the evaluation component of community-based programmes and/or the prevailing attitudes that process evaluation only is necessary if counter-measures, which have been shown to be efficacious under research conditions, are used in the programme; and that evaluation of programmes against injury outcomes are not always possible due to long lead-times and relatively rare injury outcomes (Gallagher 2000). It is probably timely, given recent advances in the field of health promotion, to consider the validity of this conventional attitude.

AUTHORS' CONCLUSIONS

Implications for practice

There is a paucity of research studies in the literature from which practitioners can draw an evidence-base regarding the effectiveness of community-based injury prevention programmes to prevent burns and scalds in children. There is a need for practitioners to implement high-quality community-based intervention programmes, based on what research has shown to be efficacious counter-measures to reduce burns and scalds in children in research settings.

Implications for research

There is a clear need to direct future research on developing the evidence from a variety of community contexts to achieve population level improvements in burns/scalds injury outcomes. Comprehensive and methodologically rigorous evaluations that include quality measure of injury outcomes and a contemporary community control as part of the study design should be expected of any

new programmes undertaken. It is important that a framework for considering the problem of burns and scalds in children be articulated from a prevention perspective. Also, an evidence-based suite of interventions should be combined to create programme guidelines suitable for implementation (with local adaptations) in communities throughout the world.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Guyer 1989

Methods	Controlled before-and-after study evaluating a community-based intervention
Participants	Intervention: nine cities in Massachusetts (total pop 139,810) Control: five communities (total pop 146,866) matched on demographic characteristics
Interventions	“Statewide Childhood Injury Prevention Program (SCIPP)” consisting of five individual intervention programmes targeting a range of injuries in children. The project was implemented from September 1980 to June 1982. Burn and scald injuries were targeted by “Project Burn Prevention” curricula, an education campaign delivered through schools and the community
Outcomes	Age-specific injury rates for: a) 12 months pre-intervention b) 22 months during the intervention (post-intervention period too brief to analyse)
Notes	

MacKay 1982

Methods	Controlled before-and-after study evaluating a community-based intervention
Participants	Intervention: two communities within the Boston Standard Metropolitan Statistical Area (SMSA) - Lynn (pop 78,000), and Quincy (pop 91,000) Control 1: two communities within the Boston SMSA which received mass media education only - Salem and Saugus Control 2: two communities within the Springfield SMSA - Holyoke and South Hadley
Interventions	“Project Burn Prevention” Education delivered from October 1977 to May 1978 through three channels: 1. mass media (television, radio, newspapers) - implemented in Lynn, Quincy, Salem and Saugus 2. schools - Lynn only 3. community organisations - Quincy only
Outcomes	Burn and scalds incidence and severity (from death records and hospital discharge summaries and emergency department logbooks of 19 hospitals) for the six communities for: a) 4 years prior to intervention b) 8 months during intervention c) 12 months after the intervention
Notes	

Peleg 2005

Methods	Controlled before-and-after study comparing changes in injury rates in communities without and without burn and scald prevention campaigns
Participants	Intervention: 15 Israeli communities (13 Jewish, 2 non-Jewish) (1998 population: 70200) Control: 76 communities (35 Jewish, 41 non-Jewish) (1998 population 211700) Note - communities with an injury prevention campaign implemented prior to 1988 or which began in 2000 were excluded
Interventions	Any childhood injury prevention program with a burn/scald prevention component implemented during 1988 and 1989
Outcomes	Burn and scald injury rates retrieved from the Central Database of Hospitalizations. Results are reported separately for infants and toddlers (0-4 years) and school-aged children (5-14 years)
Notes	

Ytterstad 1995

Methods	Controlled before-and-after study evaluating a community-based intervention
Participants	Intervention: Harstad, Norway (pop 22,000) Control 1: Six municipalities surrounding Harstad Control 2: Trondheim, Norway (pop 134, 000), located 1000 km from Harstad
Interventions	“Harstad Injury Prevention Study” - WHO Safe Communities Specific activities related to burn and scald injury included: - promotion of child safety through local private and public organisations - awareness raising through local media - promotion of tap water thermostat setting at 55°C - promotion of cooker safeguards - public health counselling to increase parent vigilance - promotion of parent skills in first aid
Outcomes	Burns and scalds incidence measured by hospital-based injury recording system for: a) baseline - 19.5 months pre-intervention) b) for seven-year period during the intervention (reported in 1995) c) for 10 year period during the intervention (reported in 1998)
Notes	

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Argenio 1996	No control community used for comparison.
Ballesteros 2005	No injury outcomes assessed.
Cagle 2006	No control community used for comparison.
Clark 1992	No control community used for comparison.
Corrarino 2000	No injury outcomes assessed.
DiGuiseppi 2002	Intervention targeted all ages - injury outcomes are not separated for paediatric population
Eckelt 1985	Not a community based intervention. No injury outcomes assessed
Elberg 1987	No control community used for comparison.
Erdmann 1991	No control community used for comparison.
Fallat 1993	No control community used for comparison.
Gorman 1985	No injury outcomes assessed.
Grant 1992	Not a community based intervention. No injury outcomes assessed
Hammond 1990	No injury outcomes assessed.
Harre 2000	No injury outcomes assessed.
Heinle 1995	Not a community based intervention. No injury outcomes assessed
Hwang 2006	No injury outcomes assessed.
Katcher 1987	No injury outcomes assessed.
Macarthur 2003	No injury outcomes assessed.
Maguina 2004	No injury outcomes assessed.
Mallonee 2000	Intervention targeted all ages - injury outcomes are not separated for paediatric population
Mondozzi 2001	Not a community based intervention. No injury outcomes assessed
NSW Health 1998	No control community used for comparison.

(Continued)

Schmeer 1986	No injury outcomes assessed.
Shani 1998	No control community used for comparison.
Sheller 1995	No control community used for comparison.
Sheller 1998	No control community used for comparison.
Sorensen 1976	Not a community based intervention.
Varas 1988	Not a community based intervention. No injury outcomes assessed.
Victor 1988	No injury outcomes assessed.
Wade 1990	Not a community based intervention. No injury outcomes assessed.
Waller 1993	No injury outcomes assessed.
Webne 1989	Not a community based intervention. No injury outcomes assessed.

DATA AND ANALYSES

This review has no analyses.

ADDITIONAL TABLES

Table 1. Results: measures of association post versus pre-intervention

Study	Result Type	Value	Significance
Guyer 1989	Odds Ratio	1.26	95% CI, 0.84 to 1.90
Mackay 1982	Relative Risk	0.9	90% CI, 0.80 to 1.10
Peleg 2005	Relative Risk	0.76	P = 0.03
Ytterstad 1995	Relative Risk	0.49	P = 0.04

APPENDICES

Appendix I. Search strategy

Cochrane Injuries Group's specialised register

(child* or infan* or toddler* or pre-school* or preschool* or "pre school*" or young* or adolesc* or pediat* or paediat*) and (burn* or scald* or (thermal and injur*)) and (strateg* or prevent* or intervention* or program* or campaign* or (accident* and prevent*))

MEDLINE 2003 to 2007/May week 1

- 1.exp child/
- 2.exp child, preschool/
- 3.exp infant/
- 4.exp adolescent/
- 5.(child\$ or infan\$ or toddler\$ or pre-school\$ or preschool\$ or pre school\$ or young\$ or adolesc\$ or pediat\$ or paediat\$ or minor\$ or boy\$ or girl\$).ab,ti.
- 6.or/1-5
- 7.exp Burns/
- 8.(burn\$ or scald\$).ab,ti.
- 9.(thermal adj3 injur\$).ab,ti.
- 10.or/7-9
- 11.exp Accident Prevention/
- 12.(strateg\$ or prevent\$ or intervention or program\$ or campaign\$).ab,ti.
- 13.(smoke adj3 (alarm\$ or detector\$)).ab,ti.
- 14.or/11-13
- 15.exp Population/
- 16.(community or population).ab,ti.
- 17.15 or 16
- 18.6 and 10 and 14 and 17

EMBASE 2003 to 2007/ week 19

- 1.Child/

2.child, preschool/
 3.Infant/
 4.Adolescent/
 5.(child\$ or infan\$ or toddler\$ or pre-school\$ or preschool\$ or pre school\$ or young\$ or adolesc\$ or pediat\$ or paediat\$ or minor\$ or boy\$ or girl\$).ab,ti.
 6.or/1-5
 7.exp Burn/
 8.(burn\$ or scald\$).ab,ti.
 9.(thermal adj3 injur\$).ab,ti.
 10.or/7-9
 11.exp accident prevention/
 12.(strateg\$ or prevent\$ or intervention or program\$ or campaign\$).ab,ti.
 13.(smoke adj3 (alarm\$ or detector\$)).ab,ti.
 14.or/11-13
 15.exp POPULATION BASED CASE CONTROL STUDY/
 16.exp POPULATION/
 17.exp COMMUNITY PROGRAM/
 18.exp Community Trial/
 19.exp COMMUNITY/
 20.(community or population).ab,ti.
 21.or/15-20
 22.6 and 10 and 14 and 21

CENTRAL 2007, issue 2

#1 MeSH descriptor Child explode all trees
 #2 MeSH descriptor Child, Preschool explode all trees
 #3 MeSH descriptor Infant explode all trees
 #4 MeSH descriptor Adolescent explode all trees
 #5 child* or infan* or toddler* or pre-school* or preschool* or pre school* or young* or adolesc* or pediat* or paediat* or minor* or boy* or girl*
 #6 (#1 OR #2 OR #3 OR #4 OR #5)
 #7 MeSH descriptor Burns explode all trees
 #8 burn* or scald*
 #9 thermal near injur*
 #10 (#7 OR #8 OR #9)
 #11 MeSH descriptor Accident Prevention explode all trees
 #12 strateg* or prevent* or intervention* or program* or campaign*
 #13 smoke alarm*
 #14 smoke detector*
 #15 (#11 OR #12 OR #13 OR #14)
 #16 MeSH descriptor Population explode all trees
 #17 community or population
 #18 (#16 OR #17)
 #19 (#6 AND #10 AND #15 AND #18)
 #20 (#19), from 2003 to 2007

Web of Knowledge (Social Science Citation Index)

1child* or infan* or toddler* or pre-school* or preschool* or pre school* or young* or adolesc* or pediat* or paediat* or minor* or boy* or girl*
 #2 burn* or scald*
 #3 thermal near injur*
 #4 #2 or #3
 #5 #1 and #4
 #6 strateg* or prevent* or intervention* or program* or campaign*
 #7 smoke alarm*

#8 smoke detector*

#9 #6 or #7 or #8

#10 #5 and #9

#11 community or population

#12 #10 and #11

National Research Register 2007, issue 2

#1 (child* or infan*)

#2 (toddler* or pre-school* or preschool* or (pre next school*))

#3 (young* or adolesc* or pediat* or paediat* or minor* or boy* or girl*)

#4 (#1 or #2 or #3)

#5 (burn* or scald*)

#6 (thermal near injur*)

#7 (#5 or #6)

#8 (#4 and #7)

#9 (strateg* or prevent* or intervention* or program* or campaign*)

#10 (smoke next alarm*)

#11 (fire next alarm*)

#12 (smoke next detector*)

#13 (#9 or #10 or #12)

#14 (#8 and #13)

#15 (community or population)

#16 (#14 and #15)

PsycINFO 2003 to 2007/05 week 2

#1 child* or infan* or toddler* or pre-school* or preschool* or pre school* or young* or adolesc* or pediat* or paediat* or minor* or boy* or girl*

#2 MeSH descriptor Burns

#3 (scald* or burn* or thermal) near injur*

#4 #2 or #3

#5 #1 and #4

#6 explode "Accident-Prevention" in MJ,MN

#7 strateg* or prevent* or intervention* or program* or campaign*

#8 #6 or #7

#9 #5 and #8

WHAT'S NEW

Last assessed as up-to-date: 19 July 2007.

Date	Event	Description
14 March 2012	Amended	Additional table linked to text.

HISTORY

Protocol first published: Issue 3, 2003

Review first published: Issue 3, 2004

Date	Event	Description
11 July 2008	Amended	Converted to new review format.
17 July 2007	New search has been performed	August 2007 The searches were updated in May 2007. One new included study (Peleg 2005) and a further six excluded studies were identified - the review has been amended accordingly

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- Injury Prevention and Control (Australia) Ltd., Australia.
- University of Queensland, Australia.

External sources

- No sources of support supplied

INDEX TERMS

Medical Subject Headings (MeSH)

Accident Prevention [*methods]; Burns [*prevention & control]; Community Participation; Program Evaluation

MeSH check words

Child; Humans