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## Review

# The effectiveness and cost-effectiveness of first aid interventions for burns given to caregivers of children: A systematic review

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## ARTICLE INFO

## Article history:

Accepted 25 May 2017

Available online xxx

## Keywords:

Burns

Scalds

Child health

Burns first aid

Systematic review

## ABSTRACT

**Objectives:** the effectiveness and cost-effectiveness of burns first-aid educational interventions given to caregivers of children.

**Methods:** Systematic review of eligible studies from seven databases, international journals, trials repositories and contacted international experts.

**Results:** Of 985 potential studies, four met the inclusion criteria. All had high risk of bias and weak global rating.

Two studies identified a statistically significant increase in knowledge after of a media campaign. King et al. (41.7% vs 63.2%,  $p < 0.0001$ ), Skinner et al. (59% vs 40%,  $p = 0.004$ ). Skinner et al. also identified fewer admissions (64.4% vs 35.8%,  $p < 0.001$ ) and surgical procedures (25.6% vs 11.4%,  $p < 0.001$ ).

Kua et al. identified a significant improvement in caregiver's knowledge (22.9% vs 78.3%, 95% CI 49.2, 61.4) after face-to-face education intervention. Ozyazicioglu et al. evaluated the effect of a first-aid training program and showed a reduction in use of harmful traditional methods for burns in children (29% vs 16.1%,  $p < 0.001$ ).

No data on cost-effectiveness was identified.

**Conclusion:** There is a paucity of high quality research in this field and considerable heterogeneity across the included studies. Delivery and content of interventions varied. However, studies showed a positive effect on knowledge. No study evaluated the direct effect of the intervention on first aid administration. High quality clinical trials are needed.

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<http://dx.doi.org/10.1016/j.burns.2017.05.022>

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## 1. Introduction

Burns are a global public health problem. Children and young people are particularly susceptible to burn injury [1], especially infants and pre-school age children [2-4]. Infant and childhood physical and cognitive development means that they rely heavily on caregivers to ensure their safety. This reliance is important as actions and behaviours of the caregiver can impact on the prevention of burn injuries, and the appropriate early first aid of those injuries that do occur. Education of the caregiving population is crucial in the fight against and early management of paediatric burns [5].

Immediate management of the burn injury includes administering correct burns first aid. The aim of which is to stop the burning process, cool the burn, provide pain relief, and cover the burn to reduce the risk of infection [6]. Efficient and appropriate first aid administered within three hours of the injurious event can reduce burn severity, improve the clinical outcome, reduce pain, long-term morbidity [7,8], decrease healthcare costs [9], and provide a strong protective effect for long-term burn-related physical impairments in later life [10]. For these reasons, it is essential that appropriate burns first aid health education is given to the caregiver based on simple, reliable and evidence-based information [11]. In recent years, epidemiological studies have highlighted that awareness, knowledge and practice of burns first aid is low amongst caregivers worldwide [12-15]. As a result, there is often an inadequate mechanism and duration of cooling [16-18], or the application of natural plant therapies, oils, honey, eggs or butter directly to the wound [19]. Many of these traditional and home remedies are self-perpetuating and generational unless interventional education is provided [19].

Confusion over appropriate first aid may be influenced by the varied recommendations and guidelines advocated by different organisations, various media [20,21] and incorrect advice provided by family and friends. The volume of information available on burns first aid is extensive and easily accessible, however its quality, accuracy and completeness can be questioned [20,21].

The culmination of such research suggests a need for educational programs to address these issues. However, a research gap exists in ascertaining the most effective method of intervention delivery. The following systematic review aims to identify published evidence to evaluate the effectiveness and cost-effectiveness of different methods for delivering burns first aid education interventions to caregivers of children across all settings.

## 2. Methods

We searched seven databases including Cochrane Library, MEDLINE, EMBASE, CINAHL, Web of Science, AMED, and ERIC for studies published in any language from inception to 31 July 2016 using both subject headings and key words. We searched three major clinical trials repositories ([Clinicaltrials.gov](http://clinicaltrials.gov) (NIH web); Current controlled trials ([www.controlled-trials.com](http://www.controlled-trials.com)); Australian and New Zealand Clinical Trials Registry (<http://www.anzctr.org.au>); and key journals including Burns; Journal of Burn Care and Research; Paediatrics; Health Education; and Injury Prevention. In addition; we reviewed the reference lists of relevant studies and contacted international panel of experts in this field of research for additional papers.

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