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REVIEW ARTICLE

Interventions to reduce accidents in childhood: a systematic review☆

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KEYWORDS
Injuries;
Accidental injuries;
Childhood;
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Abstract
Objective: To review the literature on interventions planned to prevent the incidence of injuries in childhood.
Source of data: The PubMed, Web of Science, and Bireme databases were searched by two independent reviewers, employing the single terms *accidents*, *accident*, *injuries*, *injury*, *clinical trial*, *intervention*, *educational intervention*, and *multiple interventions*, and their combinations, present in the article title or abstract, with no limits except period of publication (2006–2016) and studies in human subjects.
Synthesis of data: Initially, 11,097 titles were located. Fifteen articles were selected for the review. Eleven were randomized trials (four carried out at the children's households, five in pediatric healthcare services, and two at schools), and four were non-randomized trials carried out at the children's households. Four of the randomized trials were analyzed by intention-to-treat and a protective effect of the intervention was observed: decrease in the number of risk factors, decrease in the number of medical consultations due to injuries, decrease in the prevalence of risk behaviors, and increase of the parents' knowledge regarding injury prevention in childhood.
Conclusion: Traumatic injuries in childhood are amenable to primary prevention through strategies that consider the child's age and level of development, as well as structural aspects of the environment.
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PALAVRAS-CHAVE
Acidentes;
Lesões acidentais;
Infância;
Estudos experimentais

Intervenções para redução de acidentes na infância: revisão sistemática

Resumo

Objetivo: Revisar a literatura sobre intervenções voltadas à prevenção de acidentes na infância.
Fonte dos dados: As bases PubMed, Web of Science e Bireme foram rastreadas por dois revisores independentes, utilizando os termos *accidents, accident, injuries, injury, clinical trial, intervention, educational intervention e multiple interventions*, e suas combinações, presentes no título ou resumo do artigo, sem limites, exceto o período de publicação (2006-2016) e estudos realizados em humanos.
Síntese dos dados: Foram localizados inicialmente 11.097 títulos. Foram selecionados 15 artigos para esta revisão, dos quais 11 eram ensaios randomizados (quatro realizados em domicílios, cinco em serviços de saúde e dois em escolas) e quatro, ensaios não randomizados realizados em domicílios. Quatro dos estudos randomizados foram analisados por intenção de tratar e mostraram efeito favorável da intervenção: redução de fatores de risco para acidentes, diminuição do número de atendimentos médicos por acidentes, menor frequência de comportam entos de risco e maior conhecimento dos pais sobre prevenção de acidentes na infância.
Conclusão: As lesões traumáticas na infância são passíveis de prevenção primária por meio de estratégias que levem em conta a idade e o nível de desenvolvimento da criança, bem como aspectos estruturais do ambiente.
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Introduction

Accidents are a global health problem and the leading cause of death in children and young adults in almost all countries.[1] It is a growing problem, involving years of potential life lost, as it affects mostly the younger population.[2] Most childhood accidents include traffic accidents, falls, burns, drownings, poisonings, and intoxications,[3] ranging from temporary physical incapacity to more severe and permanent sequelae, or even death.[4] Data from the Brazilian Ministry of Health regarding the years 2013 and 2014 showed that 122,000 injured children were hospitalized in Brazil; in all age groups, the main cause was accidents involving falls.[5] A total of 4578 children, aged between 0 and 14 years, died of accidents and R$ 83 million were spent by the Brazilian Unified Health System to cover expenses with the victims.[5]

Childhood accidents result from an interaction between genetic, behavioral, and environmental factors, as well as parental characteristics.[6–8] A study carried out in southern Brazil showed that accidents occur more frequently in boys.[9] Effective preventive measures include a wide range of approaches. A model proposed by the World Health Organization in 2008 includes: (a) prevention of new injuries (primary prevention); (b) reduction of injury severity (secondary prevention); and (c) decreased frequency and severity after an injury (tertiary prevention).[1]

Given the high incidence and severe potential morbidity of the accidents, this study aimed to review the literature in search of interventions aimed at their prevention.

Methods

A systematic review was carried out in the international databases PubMed and Web of Science, as well as in the Latin American and Caribbean database (Bireme). The terms used in the search were: accidents, accident, injuries, injury, clinical trial, intervention, educational intervention and multiple interventions, and their combinations, present in the article title or abstract. In the Web of Science and Bireme databases, which did not allow selecting the studied population by age, the following terms were added: newborn, child, infant, and preschool. The last search update was performed on December 9, 2016. After limiting the search for articles regarding studies with human subjects only, the number of identified publications was over 20,000 articles. Thus, the search limitation of articles published in the last 10 years was added. The eligibility criteria included: experimental studies, carried out with children and/or adolescents aged 0–18 years, with aiming to prevent the occurrence of accidents in childhood/adolescence, published from January 2006 onwards. Articles on interventions to prevent accidents in physical education classes, during the practice of sports (such as riding a bicycle, scooter), in traffic, or during activities capable of causing specific traumatic injuries (such as nose or limb fractures), were excluded after reading the titles.

The literature review was independently carried out by two reviewers, from the search in the databases, to the reading and selection of titles, abstracts, and full articles. At the end of the selection, disagreements were settled by consensus between the two reviewers. All references to the selected articles were verified to find other studies eligible for this review that had not been retrieved during the previous process. The references of systematic reviews and meta-analyses published on the topic were also reviewed.

Information was extracted from the articles selected for the review, regarding year and country of publication, participants' selection criteria, who applied the intervention, who underwent the intervention, losses to follow-up,

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