

Global Economic Costs of Residential Fire: A Systematic Review

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Abstract

Each year, an estimated 300,000 deaths and millions are left with lifelong disabilities due to fire. In both developing and industrialised countries majority of fire-related deaths and injuries occur in residential areas. It is well recognised that the reported number of residential fires and related injuries/deaths and the costs of residential fires significantly underestimates the true burden. This study aims to provide a systematic review of the economic cost of residential fire from a societal perspective.

Five databases, MedLine, EMBASE, CINAHL, EconLit, and Scopus, were searched using a variety of subheadings and free text terms. Search on the databases was conducted from 1 January 1978 to 31 December 2020 for English language publications. In addition, grey literature was reviewed for the same period of published government(s) and other institutional reports. The protocol of the systematic review has been registered by the PROSPERO international prospective register of systematic reviews, reference CRD42021222797.

The selection of studies for inclusion in the review was a two-step process using Covidence software. Step 1: Two reviewers independently reviewed the study title and abstracts to identify all potentially eligible studies meeting the inclusion criteria. Step 2: Two reviewers then independently assess the full text of all the identified potentially eligible studies to determine which studies will be included in the review. Consultations with a third reviewer resolved disagreements in Step 1. Two reviewers performed data extraction independently using a standardised data extraction form developed and managed in Research Electronic Data Capture (REDCap) software.

Two reviewers independently assessed the quality of the included studies applying a customised risk of bias tool which is appropriate to serve the purpose of the research question. The review has developed a risk of bias tool which is a combination of five existing tools, CASP (Critical

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Appraisal Skills Programme cohort study checklist), SIGN (Scottish Intercollegiate Guidelines Network methodology checklist 3: cohort study), JBI (Joanna Briggs Institute RAPid appraisal protocol, risk study), NICE (National Institute for Health and Care Excellence quality appraisal checklist 2012), and NOS (Newcastle-Ottawa Scale quality assessment form for cohort study).

The review searched all five selected databases, merged the results using EndNote, and removed duplicate studies. **Table 1** demonstrates the number of studies found on each database, the number of duplicates removed, and the total number of studies left for screening title and abstract.

Table 1: Databases review results

Databases	No. of studies found primarily	No. of duplicates removed	No. of studies left after deduplication
MedLine	879	16	863
EMBASE	1,393	186	1,207
CINAHL	328	3	325
EconLit	49	2	47
Scopus	3,732	782	2,950
Total	6,381	989	5,392

Of 5,392 studies, a total number of 1024 books, book chapters, and conference proceeding were removed. The rest of 4368 studies were uploaded to Covidence. Covidence removed 875 studies due to duplication with 3493 studies that had to review the title and abstract. Two reviewers screened the title and abstract of 3493 studies and determined 27 studies relevant for full-text review. Two reviewers have reviewed the full texts in Step 2.

The proposed systematic review is the most comprehensive to date. It identified, assessed, and synthesised all published English-language studies on the societal, economic cost of residential fire and associated injury and death. The findings of this systematic review provide the most conclusive evidence to date on the societal, economic cost of residential fire to individuals, business agents and government. The findings are important for different stakeholders in policy and planning processes.

Keywords: Economic costs, residential, fire, injuries and deaths.