

ENVIRONMENTAL CHANGE TO REDUCE CHILD INJURY IN LOW AND MIDDLE INCOME COUNTRIES:



A SYSTEMATIC REVIEW

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BACKGROUND

Injuries sustained in the home are a significant contributor to the burden of death and disabilities among young children especially those living in Low and Middle Income Countries (LMICs).

Many childhood unintentional injuries occurs in the home.

Hazardous living environments, e.g., poor housing infrastructure, use of open fires are examples of major risk factors for child injury in low income settings.

OBJECTIVE

The objective of this review was to identify and evaluate the effectiveness of environmental change interventions to reduce child injuries and injury hazards in the home in LMICs.

METHOD

Six electronic databases were searched for randomized controlled trials (RCTs) and controlled before and after (CBA) studies of environmental change interventions designed to reduce child injuries and home hazards in LMICs.

Reference lists of included studies were hand searched.

Studies were selected by a researcher using a structured approach PICOS.

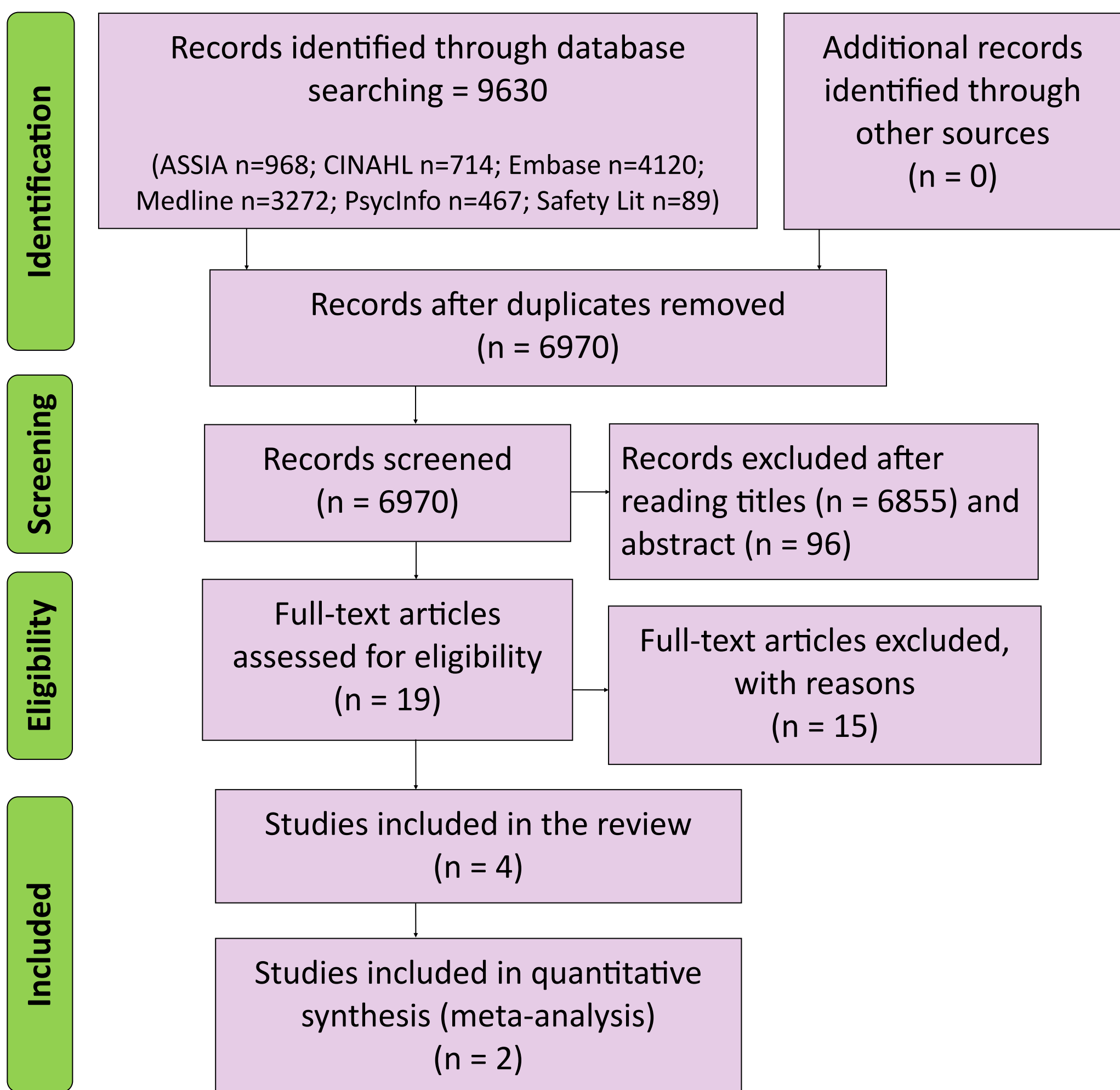
Narrative synthesis and where possible, meta-analysis, was conducted using RevMan 5.

A standardised data extraction form was prepared according to Cochrane Handbook for Systematic Reviews of Interventions (Higgins and Green, 2011).

Risk of bias (RoB) was measured by: Effective Practice and Organization of Care (EPOC) tool for the CBA study and, for three RCTs, the RoB for Cochrane reviews.

SELECTION OF THE STUDIES

Figure1: Prisma flow diagram



MAIN RESULTS

Table 1: Description of the included studies

| Included studies | | Intervention | | | Outcomes | | | | |
|------------------|-------|----------------------|-----------------------|-------------------|-----------------|----------------------|-------------------|-----------------|--------------|
| Author | Types | Home in- spection | Safety edu- cation | Safety devices | Burn hazards | Poisoning hazards | Fall haz- ards | Poison cases | Safe home |
| Krug (1994) | CBA | | ✓ | ✓ | | | | ✓ | |
| Swart (2008) | RCT | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Odendaal (2009) | RCT | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Rehmani (2010) | RCT | ✓ | ✓ | | | ✓ | ✓ | | ✓ |

4 studies were included in the review. 1 study (CBA) reported child injury and 3 studies (RCTs) home hazards.

In the CBA study, child resistant containers were effective in reducing the incidence of paraffin ingestion by 47% (p = 0.022) during and by 50% (p = 0.015) after the intervention.

A pooled meta-analysis of 2 RCTs found that a multifactorial intervention (home inspection, safety education and safety devices) reduced post intervention mean scores for poisoning hazards (MD -0.77; 95% CI -1.36, -0.19) and burn related unsafe practices (MD -0.37; 95% CI -0.66, -0.09) but not for fall, electrical and paraffin burn hazards.

1 RCT: Home inspection and safety education reduced the post-intervention mean scores for fall hazards (MD -0.5; 95% CI -0.66, -0.33) but not for ingestion.

Figure 2. Forest plot of comparison: Environmental change intervention Versus Control, outcome: Poisoning hazards.

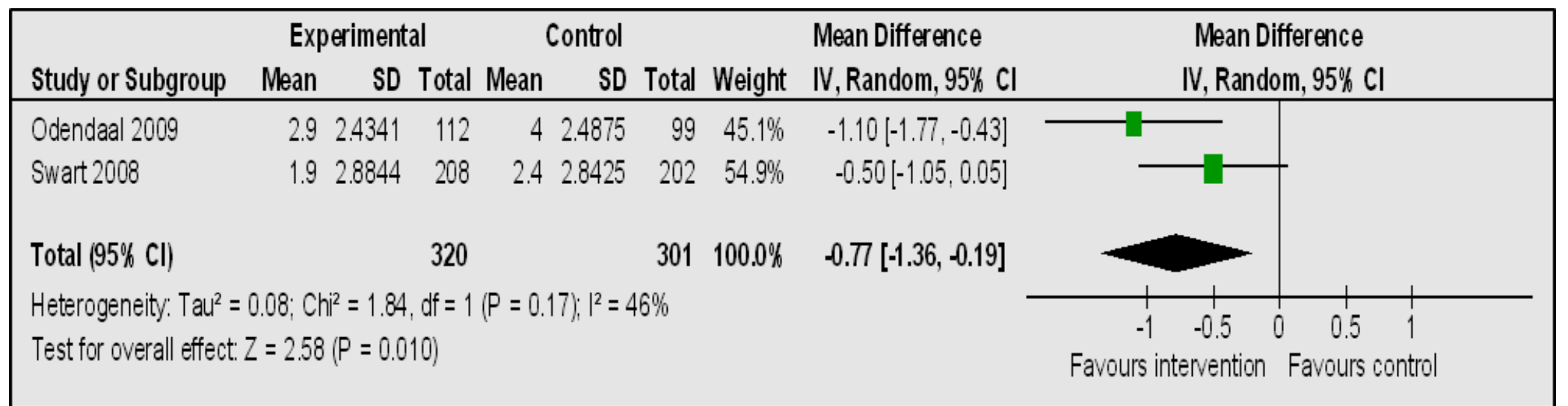
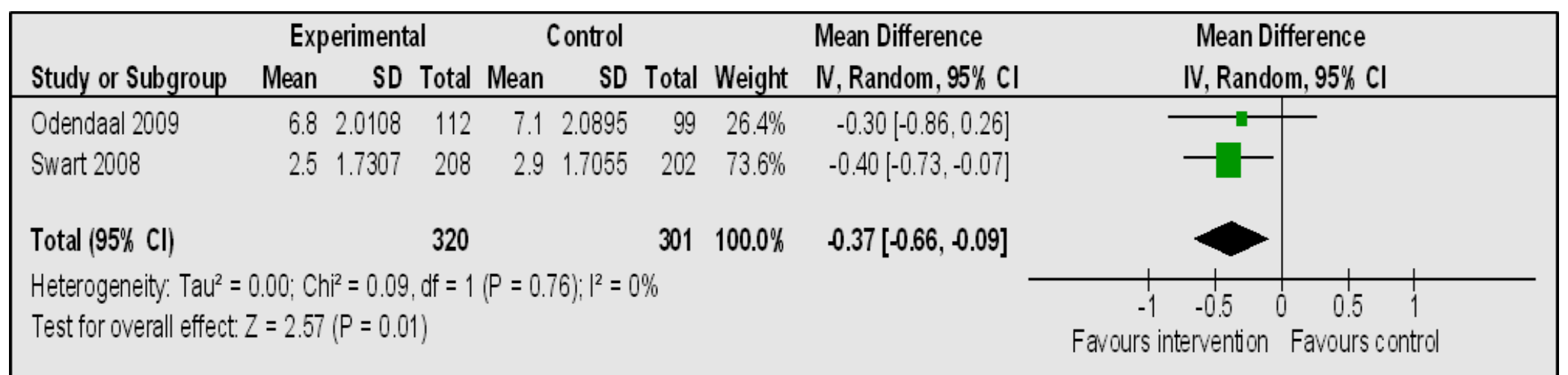


Figure 3. Forest plot of comparison: Environmental change intervention Versus Control, outcome: Burn related unsafe practice.



CONCLUSION

There is limited evidence to determine if environmental change interventions reduce child injuries. Some evidence suggests they may reduce home hazards.

More evidence is needed to show whether or not altering the physical home environment by removing potential hazards reduces injuries.

IMPLICATION FOR MY PHD

This review helped me to develop research tools for my fieldwork: a survey and focus group.

Some environmental change interventions conducted in LMICs were identified and they might be applied/adapted in future work for child injury prevention in Nepal.