Reducing needle stick injuries in healthcare occupations: an integrative review of the literature

Yang L, Mullan B

CRD summary
This review concluded that safety precautions and educational programmes were effective in reducing the risk of needle injuries in health care workers. The review had some methodological limitations and the quality of the evidence was not high. Caution is needed when interpreting the authors' conclusions.

Authors' objectives
To explore the impact of both educational training and safeguarding interventions to reduce accidental needle injuries in health care occupations.

Searching
MEDLINE, PsycINFO, Scopus, CINAHL, and Science Direct were searched for articles, published in English, from 2000 to 2010. Search terms were reported.

Study selection
Studies evaluating needle injury interventions, with both a study and a control group, within the past 10 years, were eligible for inclusion. Both safety equipment and educational training were included.

The included studies considered various interventions: double gloves, blunt needles, and an educational programme. Most of the studies were conducted in departments of surgery or emergency medicine.

The authors did not state how many reviewers selected the studies.

Assessment of study quality
A formal quality assessment was not undertaken, but randomisation, blinding, and the assessment of outcomes were described. The authors did not state how many reviewers assessed these factors.

Data extraction
Data were extracted on the rate of glove perforation, detection rate of glove perforation, evaluation of devices used, changes in knowledge and self-reported universal precautions behaviour, and observed adherence to universal precautions. The authors did not state how many reviewers extracted these data.

Methods of synthesis
A narrative synthesis was undertaken, grouping studies by intervention.

Results of the review
Fourteen studies, with 7,166 participants, were included in the review. This included 10 randomised controlled trials, two cohort studies with no randomisation, one prospective randomised study, and one quasi-experimental study. The sample size ranged from 42 to 2,462 participants. Thirteen studies failed to report the drop-out rate, blinding procedures, and consent rates. Follow-up ranged from two to 21 months, where reported.

Eight out 10 studies that used double gloving, and two out of three studies that used blunt needles found a reduction in glove perforations among health care workers. Education on blood borne pathogens (one study) led to improvements in knowledge and a reduction in self-reported needle injuries.

Authors' conclusions
Safety precautions and educational programmes were effective in reducing the risk of needle injuries in health care workers, but more studies on both interventions together were needed.
CRD commentary
The inclusion criteria were broadly defined and several relevant data sources were searched. There was the potential for language bias as only English-language studies were included. Publication bias was not assessed and cannot be ruled out. The authors did not state if any attempts were made to reduce reviewer error and bias during the review. The quality assessment was not formal, but the authors stated that most studies had methodological limitations. These studies varied in the type of intervention, surgical procedure and location, which the authors acknowledged. They were combined in a narrative, which was appropriate for the type of data.

The review had some methodological limitations and the quality of the evidence was not high. Caution is needed when interpreting the authors’ conclusions.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that more studies were needed to evaluate interventions in nonsurgical settings, such as nursing departments, and for other health care personnel, such as nurses. Further randomised controlled trials and studies of safety precautions and education interventions in surgical settings were also needed.

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