The clinical effectiveness of nurse practitioners' management of minor injuries in an adult emergency department: a systematic review

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CRD summary
The authors concluded that there were no statistically significant differences between effectiveness of care of adults by emergency nurse practitioners and junior doctors. The authors conclusions reflected the evidence presented, but the limited number of poor-quality studies meant the conclusions should be viewed with caution. The authors appropriately recommended further high-quality research.

Authors' objectives
To determine the clinical effectiveness of emergency department nurse practitioners in the assessment, treatment and management of minor injuries in adults.

Searching
A number of databases were searched for English-language articles from 1986 onwards (final date not reported). Databases included MEDLINE, CINAHL, EMBASE, PsycINFO, AUSThealth and The Cochrane Library. Some information on search terms was reported. Dissertation Abstracts International, Google and Google Scholar were searched for unpublished studies. Reference lists of identified articles and key journals were scanned for further relevant studies.

Study selection
Any study that evaluated the effectiveness of nurse practitioners in the emergency department in assessment, diagnosis, consultation, treatment, referral and patient education of adult (16 years and over) patients treated for minor injuries was eligible for inclusion. The primary outcome was management of minor injuries, including effect on waiting times, referral to other practitioners or services, return to emergency department within 48 hours, cost reduction and patient satisfaction.

Interventions included emergency nurse practitioners in emergency department or minor injuries unit compared with junior or senior doctors or standard care in emergency department. A number of studies assessed emergency nurse practitioners only. Participants included patients who presented at the emergency department with lacerations, soft tissue injuries, fractures and dislocations or in categories 3 to 5 of the Australian Triage System (where reported).

Two reviewers independently selected studies for inclusion. Disagreements were resolved through discussion or by recourse to a third reviewer.

Assessment of study quality
Validity was assessed using standardised criteria (Joanna Briggs Institute) for experimental studies and observational studies (including descriptive papers). Studies of poor methodological quality (<60% of assessment criteria met) were not included in the analysis.

Two reviewers independently assessed validity of studies; disagreements were resolved through discussion or by recourse to a third reviewer.

Data extraction
Data for relevant outcomes were extracted independently by two reviewers using a standardised form. Disagreements were resolved through discussion.

Data from randomised controlled trials (RCTs) were used to calculate relative risk (RR) and corresponding 95% confidence intervals (CI).
Methods of synthesis
Pooled relative risks and 95% CIs were calculated using a DerSimonian and Laird random-effects model for RCTs. Heterogeneity was assessed using the X² test. Data for other study designs were described narratively.

Results of the review
Nine studies (n>5,471) were included in the review: five experimental studies and four descriptive surveys. The experimental studies comprised two randomised controlled trials (RCTs), one retrospective case series, one before-and-after cohort study and one survey. Only one of the experimental studies (RCT) met all validity criteria. The other experimental studies (which included one RCT) and descriptive studies met only 60% of the criteria.

There were no significant differences in terms of significant errors in care or number of patients followed up for emergency nurse practitioners compared with junior doctors or standard care in accident and emergency departments (two RCTs, n=1,652). There was no evidence of statistical heterogeneity for these analyses.

Data on other outcomes from case series, surveys and descriptive studies were reported.

Authors' conclusions
There were no statistically significant differences between effectiveness of care by emergency nurse practitioners and junior doctors. Findings emphasised the need for high-quality research using appropriate outcome measures in the area of clinical effectiveness of nurse practitioners.

CRD commentary
The review question was clearly defined with appropriate inclusion criteria. Several relevant sources were searched and efforts were made to minimise publication bias. However, restriction to English-language studies only may have meant that some relevant data were missed. Validity was assessed using appropriate criteria. It appeared that only studies that met more than 60% of the criteria were included in analyses, but no details of the assessment were reported and so the reliability of the data could not be assessed. Appropriate steps were taken to minimise reviewer error and bias in the review process. Where appropriate, studies were combined in a meta-analysis and heterogeneity was assessed; other studies were described narratively. The authors' conclusions reflected the evidence presented, but due to the limited number of studies included and their poor methodological quality the conclusions should be viewed with caution. The conclusion that further high-quality research was needed was appropriate.

Implications of the review for practice and research
Practice: The authors stated that the findings of the review supported use of nurse practitioners for management and treatment of minor injuries in adults. However, the number of limited quality studies included in the review make it difficult to draw conclusions regarding the most effective management strategies.

Research: The authors stated that further high-quality research was needed to assess the effectiveness of interventions aimed at effective healthcare in the emergency department, in particular by nurse practitioners. Evaluations of interventions that improved outcomes for presentation to emergency departments and addressed issues of waiting time and congestion were needed. Future research should use appropriate outcome measures (for example, time saving, minimisation of health personnel and reduction in stress for staff) to enable evaluation of feasibility, cost and efficacy of relevant interventions.

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