Interventions to reduce the incidence of falls in older adult patients in acute-care hospitals: a systematic review
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CRD summary
The authors concluded that some evidence existed for the effectiveness of certain multifactorial interventions for fall prevention in older acute-care patients, particularly those that increased patient education or targeted fall risk factors. Recommendations for further research accurately reflected the limitations presented in this review. The authors' conclusion reflected the evidence presented and their cautious interpretation is likely to be reliable.

Authors' objectives
To evaluate the effectiveness of interventions to reduce the incidence of falls in older patients in acute-care hospital settings.

Searching
MEDLINE, CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, Current Contents, PsycINFO and ProQuest Dissertations and Theses (for unpublished studies) were searched for English-language studies from 1998 to 2008. Reference lists of retrieved articles were searched for additional studies.

Study selection
Randomised Controlled Trials (RCTs) of interventions to assess or minimise the risk of falling compared to standard practice or no intervention in patients aged at least 65 years in acute-care hospitals were eligible for inclusion in the review. The outcome of interest was the number of patient falls in hospital.

The included trials were conducted in Australia, UK and Sweden. Interventions comprised exercise, patient education, Vitamin D supplementation, a targeted risk factor reduction plan and multifactorial programmes. The comparators were usual care, although this was not well defined in all trials. There was substantial variation within the included trials in terms of patient case mix, treatment of study groups, intervention delivery, methods of reporting falls, data analysis techniques, follow-up and definitions of acute care.

Two reviewers selected the studies for inclusion.

Assessment of study quality
Methodological quality of the studies was assessed using Joanna Briggs Institute checklist (JBI SUMARI).

The authors did not state how many reviewers carried out quality assessment.

Data extraction
Data were extracted independently by two reviewers on the number of falls or relative risks (RR) and incidence rate ratios (IRR) along with 95% confidence intervals (CI). Disagreements were resolved by discussion.

Methods of synthesis
Results were synthesised narratively and grouped by the type of intervention examined.

Results of the review
Seven RCTs were included in the review. Two trials were cluster randomised (matched by wards). One trial was double-blinded.

Positive intervention effects were reported in four trials.

A one-to-one patient education package (part of a multifactorial intervention) on risk factors and goal setting for falls
prevention was associated with falls reduction of 8.2 falls per 1,000 participant days compared to control data of 16 falls per 1,000 participant days (one trial, n=226).

A one-year targeted risk factor reduction multifactorial care plan showed a statistically significant reduction in recorded falls (RR 0.79, 95% CI 0.65 to 0.95; one trial: n= eight wards matched with eight community units).

One multidisciplinary multifactorial postoperative programme following femoral neck fracture showed a significantly lower incidence rate ratio (0.38, 95% CI 0.20 to 0.76) and shorter hospital stay (28.0±17.9 days) than the control group (one trial, n=199).

Another multiple intervention programme focusing on rehabilitation showed a statistically significant 30% reduction in falls after 45 days (105 falls in the intervention group compared with 149 in the control group). The relative risk failed to reach statistical significance (one trial, n=626).

There were no significant intervention effects from short term (30 days) Vitamin D and calcium supplementation, a falls prevention exercise programme (included functional movement as part of a multifactorial programme) and a multifactorial intervention that comprised risk assessment, education, medication review, modifications to the environment, an exercise programme and alarms for ambulant patients.

**Authors' conclusions**

There was some evidence that certain multifactorial interventions were more effective than others and that increased patient education or targeting risk fall risk factors may benefit older acute-care patients.

**CRD commentary**

The review question was clear and supported by potentially reproducible inclusion criteria. Several relevant data sources were accessed and attempts were made to minimise publication bias. Language bias could not be ruled out. The review process was reasonably well-reported in terms of study selection and data extraction. The process and results for the quality assessment were less clear. The authors appropriately acknowledged the difficulties in applying blinding and allocation concealment criteria to RCTs in this topic area. Study details were provided in the text. Variability among included trials suggested that the chosen method of synthesis was appropriate. Recommendations for further research accurately reflected the limitations presented in this review.

The authors' conclusion reflected the evidence presented and their cautious interpretation is likely to be reliable.

**Implications of the review for practice and research**

The authors did not state any implications for practice.

**Research**

The authors stated that further well-designed RCTs were needed to distinguish effective interventions for various subgroups of elderly populations in acute-care settings and ascertain the effectiveness of individual components of multifactorial interventions.

**Funding**

Not stated.

**Bibliographic details**


DOI

10.1111/j.1744-1609.2009.00143.x

Original Paper URL

Other publications of related interest

Indexing Status
Subject indexing assigned by CRD

MeSH
Accidental Falls /prevention & control; Aged; Hospital Units; Humans; Risk Assessment; Safety Management

AccessionNumber
12010001378

Date bibliographic record published
28/04/2010

Date abstract record published
15/09/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.