The clinical effectiveness and cost-effectiveness of home-based, nurse-led health promotion for older people: a systematic review

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CRD summary
The authors concluded that home-based, nurse-led health promotion could offer clinical benefits for important dimensions of health, but it was unclear which components of the interventions contributed to these benefits. The evidence presented was not convincing, and there was potential for bias in the review process, suggesting that the authors' conclusions may not be reliable.

Authors' objectives
To assess the clinical and cost-effectiveness of home-based, nurse-led health promotion interventions, for older people, in the UK, with long-term medical or social needs.

Searching
Twelve databases or registries, including MEDLINE, EMBASE, and DARE, were searched for articles in English, from 2001 to March 2011. Search strategies were reported. Relevant systematic reviews were manually searched for relevant data.

Study selection
Eligible for inclusion were randomised controlled trials (RCTs). Trials had to assess the effects of structured home-based nurse-led health promotion interventions for older people (over 75 years old or vulnerable people over 70 years old), with long-term medical or social needs, who were at risk of admission to hospital, or residential or nursing care. Interventions had to be delivered at home, in the UK. Eligible trials had to compare interventions with standard care, which could be joint health and social assessment, or health promotion delivered in a different setting or not delivered by a nurse. The outcomes of interest were hospital admission, admission to residential or nursing care, mortality, morbidity, falls, accidents, deteriorating health status, and patient satisfaction.

Some included trials were of patients with comorbidities, including chronic heart failure, Parkinson's disease, venous leg ulcers, and stroke. The mean age of patients ranged from 71.9 to 83 years. Where reported, the percentage of male patients ranged from 25.6 to 57.6. Three trials reported the percentage of elderly patients who were living alone; range 33.2 to 46.1. The aims of the health promotion were to slow or prevent further deterioration or complications from comorbidities, to prevent falls, to provide screening, or for rehabilitation. The interventions included, nurses providing education or counselling, written materials, pain control, and medication. Some trials provided training for nurses. Where reported, the number of home visits made by nurses varied. Intervention duration ranged from four weeks to four years. Control groups received usual care, managed by their general practitioner, once the patient was discharged from hospital, without a home visit from a nurse. Some trials reported the patients' independence in daily life, measured using the Barthel Index.

One reviewer screened studies for inclusion and uncertainties were resolved by discussion with the rest of the research team.

Assessment of study quality
Trial quality was assessed using the Cochrane Risk of Bias tool, with criteria for randomisation and allocation concealment, blinding, baseline comparability, loss to follow-up, and intention-to-treat analysis.

The authors did not state how many authors assessed quality.

Data extraction
The outcome data were extracted, by one reviewer, on an intention-to-treat basis. Where possible, the data were extracted to calculate odds ratios and 95% confidence intervals. Otherwise, significance levels were extracted. Trial authors were contacted for additional data, where necessary.
Methods of synthesis
Where meta-analysis was appropriate, a random-effects model was used to pool the odds ratios and 95% confidence intervals. Statistical heterogeneity was assessed using $I^2$. Sensitivity analyses were undertaken, but it was unclear on what basis trials were excluded. Where meta-analysis was not appropriate, the data were presented in a narrative synthesis.

Results of the review
Eleven trials, with 5,761 patients (calculated as 5,850; range 51 to 1,859), were included in the review. Six trials were at a low risk of bias, three were at a medium risk, one was at a high risk, and one was unclear. There was a discrepancy between the text and table for the number of trials reported for each level of bias; the information from the table is given here.

Mortality: Home-based, nurse-led health promotion interventions statistically significantly reduced the risk of death, compared with controls (OR 0.80, 95% CI 0.68 to 0.95; eight trials; with no significant statistical heterogeneity $I^2=9\%$). Sensitivity analyses did not significantly alter the findings.

Falls: There was no statistically significant difference between treatment groups, in the number of falls, and there was evidence of statistical heterogeneity ($I^2=89\%$; four trials).

Independence: Results were contradictory (four trials). Two trials reported significant differences in favour of the intervention, and the other two reported no significant differences between groups.

Other outcomes were measured in only one or two RCTs, and these results were reported.

Cost information
Another systematic review was undertaken to assess the cost-effectiveness of the interventions, and the results were fully reported.

Authors’ conclusions
Home-based, nurse-led health promotion could offer clinical benefits for important dimensions of health, but it was unclear which components of the interventions contributed to these benefits.

CRD commentary
A comprehensive literature search was undertaken. The search was restricted to studies in English, but this was appropriate, as only evidence for the UK was sought. Study selection and data extraction were not performed in duplicate, and it was unclear how quality assessment was undertaken, which means that reviewer error and bias cannot be ruled out.

The authors acknowledged the presence of clinical and methodological heterogeneity across trials, and went some way to account for this in the data synthesis. The trials were generally reported to be at medium-to-low risk of bias, but it was unclear how this overall level of risk was determined as it did not seem to be consistent across the trials. There were no significant differences between the treatment groups for most outcomes. The results for mortality were statistically significant, but the effect was small, making it unclear if the difference was clinically relevant.

The summary results from the trials, and the potential for bias in the review, suggest that the authors’ conclusions may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that home-based nurse-led health promotion, in the UK, had implications for nurse training, composition and frequency of nurse home visits, and targeting of people with the capacity to benefit from the intervention.

Research: The authors stated that future research was needed to determine the value of health promotion for older people, taking into consideration how the interventions should be targeted, implemented and evaluated. It should also assess the costs of the interventions.
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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.