Meta-analysis of nonpharmacological interventions for neuropsychiatric symptoms of dementia

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CRD summary
Caregiver interventions could significantly reduce behavioral and psychological symptoms in people with dementia, in addition to caregiver's negative reactions to these symptoms. Pooled effect estimates appeared relatively small, particularly for the outcome related to caregiver's reactions. Potential risk of performance bias and the choice of synthesis methods mean reliability of the conclusions is unclear.

Authors' objectives
To evaluate the effectiveness of community-based non-pharmacological interventions delivered through family caregivers for managing behavioral and psychological symptoms of dementia.

Searching
MEDLINE, EMBASE, PsycINFO and Scopus were consulted from 1985 to July 2010 to identify studies in English from peer-reviewed journals. Search terms were reported.

Study selection
High-quality randomised or pseudorandomised controlled studies that evaluated non-pharmacological interventions to manage behavioural and psychological symptoms of dementia involving family caregivers were eligible. Studies were eligible if they included more than five participants with a diagnosis related to dementia. The primary caregiver had to be a family member living with the person with dementia. Studies had to report outcomes relevant to the frequency or severity of behavioral and psychological symptoms of dementia, or caregiver reactions or distress attributed to these symptoms. Care recipients with schizophrenia or bipolar disorder and respite care interventions were excluded.

Studies generally used multiple types of intervention. A wide range of interventions for caregivers were included, which were classed as skills training, education, activity planning and environmental redesign, enhancing support, self-care techniques and others. Interventions lasted from six weeks to 24 months. Most involved multiple interventions delivered individually at home. A wide variety of outcomes were assessed (such as stress, distress, bother and upset associated with behavioural dementia symptoms, self-efficacy or confidence in managing these symptoms). Most were self-reported rather than directly observed.

The authors did not state whether study selection was done in duplicate.

Assessment of study quality
Quality of the studies was rated using the National Health and Medical Research Council criteria, taking into account design characteristics such as the use of randomisation and control groups.

Two reviewers independently assessed the methodological quality of the studies.

Data extraction
Outcomes data were extracted to calculate mean differences and 95% confidence intervals.

The authors did not state whether data extraction was done in duplicate.

Methods of synthesis
Standardized mean differences were calculated between treatment and control groups or between pre- and post-treatment assessments using meta-analysis. A random-effects model was used for most of the pooled estimates. Heterogeneity was assessed (tests not specified). Publication bias was assessed using a funnel plot.

Results of the review
Twenty-three studies were included (3,279 pairs of patients and caregivers). Of those, 16 were classed as randomised controlled trials (RCTs). The other seven trials were classed as pseudo-randomised as they did not clearly report randomisation methods or did not adequately conceal group allocation. Follow-up duration ranged from three to 24 months.

Non-pharmacological interventions were associated with a statistically significant improvement in symptom outcomes (SMD 0.34, 95% CI 0.20 to 0.48; 17 studies) and in caregivers’ reactions to these symptoms (SMD 0.15, 95% CI 0.04 to 0.26; 13 studies).

No study reported adverse effects. Authors reported that funnel plots did not show evidence of publication bias.

**Authors’ conclusions**
The review concluded that caregiver interventions could significantly reduce behavioral and psychological symptoms in people with dementia as well as the caregiver's negative reactions to these symptoms.

**CRD commentary**
The review question and inclusion criteria were clear. Several bibliographic sources were searched. Only studies published in English were reported, so some relevant studies may have been missed. The authors reported appropriate measures to minimise error and bias for the quality assessment of the studies, but not at study selection and data extraction stages of the review.

Results of the quality assessment were reported. Most included studies were found to be appropriately randomised. Risk of performance bias was not assessed. However, blinding of participants and study personnel appeared unlikely given the nature of the interventions, so the risk of performance bias could not be ruled out. A relatively large number of trials were included. A wide range interventions and outcomes were assessed, making the appropriateness of pooling uncertain. Statistical heterogeneity was assessed but specific results were not reported.

Pooled effect estimates appeared relatively small, particularly for the outcome relating to caregiver's reactions. This, in addition to the potential risk of performance bias and the choice of synthesis methods, means that the reliability of the conclusions is unclear.

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

**Practice:** The authors stated that interventions that are multi-component, tailored to the needs of the caregiver and the person with dementia, and delivered at home with periodic follow-ups should be adopted. They stated a preference for trying non-pharmacological approaches first and avoiding or delaying the use of medications due to potential serious side effects and high attrition.

**Research:** The authors stated that questions about the optimal duration, frequency, and setting of interventions, as well as information about cost-benefit and delay in institutionalizations should be addressed. They noted that reporting of data to allow comparative analysis should be complemented by at least one follow-up to test the sustainability of treatment effects.

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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.