A systematic review of the effects of occupational therapy for persons with dementia: a meta-analysis of randomized controlled trials

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CRD summary
This review concluded that occupational therapy based on sensory stimulation was associated with a small, but statistically significant, improvement in behavioural problems in patients with dementia. As acknowledged by the authors, this conclusion should be interpreted cautiously due to the small number of trials identified and the variation in clinical characteristics of trial participants.

Authors' objectives
To assess the effectiveness of occupational therapy on behavioural problems and depression in patients with dementia.

Searching
MEDLINE, CINAHL, ProQuest and The Cochrane Library were searched up to the end of March 2011; search terms were reported. Eleven occupational therapy-related journals were searched online. Bibliographies of identified articles were screened for additional studies. Only English language studies published as full papers were included.

Study selection
Randomised controlled trials (RCTs) that assessed the effects of a single occupational therapy intervention on behavioural problems and depression in patients with dementia were eligible for inclusion.

In included trials, the mean age of participants ranged from 72 to 84 years; the number of men and women were similar (where reported). All participants were diagnosed with dementia based on DSM (Diagnostic and Statistical Manual of mental disorders) IV. Trials included participants with Alzheimer's disease or participants with Alzheimer's disease or vascular dementia (where reported). Dementia stage was poorly reported and varied across trials. Occupational therapy interventions were classified as sensory stimulation, performing functional task activity, or environmental modification; this classification was based on the International Classification of Functioning, Disability and Health (ICF). The duration of intervention ranged from four weeks to six months; intervention frequency varied. The control groups received standard care/usual activity or no treatment. Measures used to assess behavioural problems and depression varied widely across the included trials (details reported in the paper).

Two reviewers independently assessed studies for inclusion; any disagreements were resolved by discussion.

Assessment of study quality
The methodological quality of the included trials was assessed using the eleven-item PEDro scale, which assessed randomisation, allocation concealment, drop-out rates, and blinding of outcome assessors and physicians. The maximum quality score was 10 (item one related to external validity). Trials with a quality score higher than 5 were classified as high quality.

Two reviewers assessed study quality; any disagreements were resolved by discussion.

Data extraction
Data were extracted on the classification of the occupational therapy intervention, the number of participants in the intervention and control groups, and the mean and standard deviation (standard errors were reported in figures) for each outcome measure in each group. Standardised mean difference, with 95% confidence intervals (CIs) was calculated for each trial and outcome measure.

Two reviewers extracted data including determination the classification of the occupational therapy intervention; any disagreements were resolved by discussion.

Methods of synthesis
Standardised mean differences, with 95% confidence intervals (CIs), were calculated for each class of occupation intervention and each type of outcome measure (behavioural problems and depression).

Statistical heterogeneity was assessed using the $X^2$ test. Where there was evidence of between-trial heterogeneity ($p<0.10$), a random-effects model was used to generate pooled effect estimates.

Publication bias was assessed using a funnel plot and Egger's regression intercept test.

**Results of the review**

 Nine RCTs, with 751 participants (range 24 to 171), were included in the review. Methodological quality scores ranged from 4 to 8; all but two of the included trials met the authors' definition of high quality (scored higher than 5).

Sensory stimulation occupational therapy was associated with a statistically significant improvement in behavioural problems compared with usual care (SMD 0.32, 95% CI 0.04 to 0.59; four RCTs); this was classified as a small effect.

Environmental modification occupational therapies had no significant effect on behavioural problems (two RCTs).

Functional task activity occupational therapies had no significant effect on depression (three RCTs).

No trials were identified that assessed the remaining combinations of occupational therapy classification and outcome type (behavioural problems or depression).

There was no evidence of statistical heterogeneity or publication bias for any of the analyses reported.

**Authors' conclusions**

The authors concluded that occupational therapy based on sensory stimulation was associated with a small, but statistically significant improvement in behavioural problems in dementia patients, but that these conclusions should be interpreted cautiously due to the small number of trials identified.

**CRD commentary**

The review addressed a clearly stated research objective, which was defined by appropriate inclusion criteria. A range of sources were searched for relevant studies, but the restriction to English language studies which were published in full raised the possibility of language and/or publication bias. Measures to minimise error and/or bias were applied throughout the review process.

The methodological quality of included trials was assessed using a published tool, but the results of quality assessment were only reported as summary score, so it was not possible to assess the potential effects of individual components of trial quality upon overall results. The pooled estimates of effect size were of questionable value given the apparent clinical heterogeneity between trials (for example, trials included participants with different types and severity of dementia). The one significant treatment effect reported came from four trials, where only the smallest (24 patients) reported a significant effect.

As acknowledged by the authors, their conclusions should be interpreted cautiously due to the small number of trials identified and the variation in clinical characteristics of trial participants.

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

**Practice:** The authors did not specify any recommendations for clinical practice.

**Research:** The authors stated that further research was needed to confirm their findings and that future studies should report outcomes stratified by type and severity of dementia.

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