A meta-analysis of the effectiveness of occupational therapy for older persons
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Authors' objectives
To assess the effectiveness of occupational therapy in enhancing the psychosocial well-being, daily functioning and physical health of older persons.

Searching
MEDLINE was searched from 1979 to 1994 using the keywords 'occupational therapy' plus 'geriatric', 'gerontic', 'gerontology', 'gerontological', 'elderly', 'elders', 'older' and 'aged'. In addition, seven key journals were searched manually from 1979 to 1994 (details are provided), and reference lists of apparently useful articles were examined for further studies. Studies were included if they were published in a book or journal. No language restrictions were stated.

Study selection
Study designs of evaluations included in the review
Study design was not used as a specific inclusion criteria, as long as the study presented adequate data to enable an effect size estimate to be calculated.

Underlying the inclusion of all study designs was the specification that: pre-test and post-test studies were excluded from the analysis when the outcome variable would be expected on theoretical grounds to improve over time; single-group pre-test post-test designs are not typically associated with systematic, upwardly biased effect sizes in gerontic and geriatric literature; only effect sizes corresponding to occupational therapy versus control were included when it was also possible to calculate effect sizes solely on a pre-test post-test change in therapy condition; and the associations between study design and outcome were quantitatively assessed.

Studies were included if: they had at least four patients with a mean age of at least 60 years; they had a sufficiently detailed quantitative evaluation of the effectiveness of occupational therapy to permit one or more effect size calculations; and one or more of the study's effectiveness outcome variables corresponded to a practice of potential interest to policy makers.

Specific interventions included in the review
Occupational therapy approaches including activity groups, life review therapies, sensory techniques, and multistrategy programmes. Intervention duration ranged from 1.7 weeks to 35 weeks.

Participants included in the review
People aged at least 60 years receiving an occupational therapy intervention, including residents in seniors apartments, nursing home and hostel residents, psychogeriatric ward patients, community-based Parkinson's disease sufferers, rehabilitation patients following cerebrovascular accident, confused nursing home residents, persons attending nutrition site, patients with stroke-related spastic hemiplegia, patients with hypertonus, geropsychiatric in-patients with schizophrenia or organic brain syndrome, and psychogeriatric in-patients with dementia. Patients were from America, Canada, Great Britain, Ireland and Australia.

Outcomes assessed in the review
Outcomes included social activation and adaptive behaviour, depression, psychosomatic complaints, psychological complaints, life satisfaction, ego integrity, receptivity to people and objects, functional autonomy, finger dexterity, reduction in physical and motor symptoms, activities of daily living (ADL), household activities, economic resources, perceptions of health, reduction in spasticity, reduction in hypertonus, feeding responses, hygienic skills, improved attitude and mental functioning, depression and self-esteem.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.
Assessment of study quality
The authors do not report the criteria used to assess validity, or how the validity assessment was performed.

Data extraction
One author coded all study design variables and two authors independently calculated the appropriate effect size estimates.

Methods of synthesis
How were the studies combined?
Separate effect size estimates were generated for each relevant outcome measure within each study. Then, separately within each study, the mean of all corresponding effect size estimates was calculated and used as the primary unit of analysis. In addition, within each study, a single effect size estimate specific to each represented outcome variable domain (specifically, activities of daily living, i.e. functional, physical or psychosocial) was obtained by calculating the mean of all effect sizes within each category. Effect size estimates were calculated on the basis of F, Z, t, paired-t or r-statistics, with probit transformations used for dichotomous outcome variables. Adjustment for sample size bias was undertaken using Hedges’ correction procedure (see Other Publications of Related Interest no.1), and attenuation for measurement unreliability was carried out using the procedure of Hunter et al. (see Other Publications of Related Interest no.2).

Studies were combined through the calculation of unweighted and sample size (treatment condition) weighted means and 90% confidence intervals (CIs). Stauffer’s procedure for combining Z-values (see Other Publications of Related Interest no.3) was used to determine the overall probability of the cumulative result for occupational therapy and results within subdivisions.

How were differences between studies investigated?
Zero-order Pearson product-moment correlations with effect size were calculated to assess the effects of the diverse population, settings and treatment approaches.

Results of the review
Fourteen studies (395 patients) were included, although 15 comparative outcomes (408 patients) were assessed: of these, 6 (248 patients) were randomised experimental versus control group studies with pre-testing and post-testing, 5 (67 patients) were single-group pre-test post-test studies, 1 study (60 patients) was of a nonequivalent control group, 1 (10 patients) was a multiple baseline and intervention study, 1 (19 patients) was a correlation study, and 1 (4 patients) was a single patient multiple baseline and intervention assessment.

For all studies, the mean estimated effect sizes (MES) showed that occupational therapy had significant positive effects, whether unweighted (MES 0.51, 90% CI: 0.27, 0.75; Z=4.74, P<0.001) or weighted (MES 0.45, 90% CI: 0.24, 0.56). The fail-safe N revealed that 110 non-sampled studies averaging no effect would be needed to overturn the significant cumulative outcome.

The overall unweighted and weighted MES for therapy were significant for ADL-daily functioning outcomes (unweighted MES 0.67, 90% CI: 0.08, 1.26; Z=3.79, P<0.001; weighted MES 0.41, 90% CI: 0.16, 0.66), and psychosocial well-being outcomes (unweighted MES 0.37, 90% CI: 0.20, 0.54; Z=4.25, P<0.001; weighted MES 0.43, 90% CI: 0.25, 0.61). In addition, the MES remained significant when the cases were limited to randomised control group designs (unweighted MES 0.40, 90% CI: 0.14, 0.66; Z=3.11, P<0.001; weighted MES 0.44, 90% CI: 0.19, 0.69). The unweighted MES was also significant for physical outcomes (MES 0.32, 90% CI: 0.09, 0.55; Z=2.16, P<0.05), but the weighted MES was unreliable (MES 0.16, 90% CI: -0.10, 0.42).

Authors’ conclusions
Occupational therapy services for older persons produce positive results across a wide range of treatment contexts. The conclusion is thought to be unaffected by the inclusion of studies with weaker designs and publication bias.

CRD commentary
This systematic review provides a detailed discussion of participants, interventions, outcomes, search strategy and the
statistical methods used. In contrast, the review lacks discussion of validity criteria or the processes by which decisions of relevance, judgements of validity and data extraction are undertaken; such exclusions prevent an assessment of the effects of bias in the inclusion, extraction and interpretation of the primary studies. Unfortunately, the question addressed appears very general and the primary studies included are very diverse in participants, interventions and outcomes. Thus, the review provides very limited useful evidence for policy makers to act upon. The conclusion of the review points to the effectiveness of occupational therapy for older persons, but it would be more appropriate to direct research on the effectiveness of particular treatments towards specific conditions or patient groups.

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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.