The effect of electroconvulsive therapy on autobiographical memory: a systematic review

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CRD summary
The review investigated whether electroconvulsive therapy (ECT) had an effect on autobiographical memory. The effect seemed to be short lived, and was probably greater if bilateral or sine-wave ECT was used rather than unilateral or brief-pulse ECT. Given limitations in the review process and the small size of the studies included in the review, the results had limited validity.

Authors' objectives
To determine the effect of electroconvulsive therapy (ECT) on autobiographical memory impairment.

Searching
MEDLINE, PubMed, PsychINFO, ScienceDirect and Web of Knowledge were searched (1980 to 2007) using keywords listed in the review. A handsearch of the bibliographies of identified studies was conducted. The reviewers did not state whether any language restriction was applied to the search.

Study selection
Studies of patients undergoing ECT that included subjective or objective measures of autobiographical memory were eligible for inclusion.

All patients in the included studies had depression, major depression or a schizo-affective disorder; some were medication-free and others were on pharmacotherapy. Studies investigated unilateral and/or bilateral ECT, high and/or low dose ECT and brief pulse and/or sine wave ECT. The mean number of ECT treatments, where stated, ranged from 5.9 to 27. Autobiographical memory was measured using one or more of the following scales: Duke Personal Memory Questionnaire; Squire Subjective Memory Questionnaire; Autobiographical Memory Interview (full and short form); Personal and Impersonal Memory Test; Structured Interview Guide for the Hamilton Depression Rating Scale; ECT Retrograde Amnesia and Perception Scale; and individual and proxy self-rated measures.

One author made decisions regarding the selection of the primary studies.

Assessment of study quality
The authors did not state that they assessed validity, but commented on potential for bias and confounding in their narrative synthesis.

Data extraction
The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
The authors grouped studies according to certain characteristics and combined the results in a narrative synthesis.

Results of the review
Fifteen studies (1,243 participants) were included in the review: nine randomised double-blind trials (661 participants); five cohort studies (562 participants); and one cross-sectional study (20 participants). Most studies were small: only one had more than 100 participants.

Effect of ECT on memory: most studies found that the effects of ECT on personal memory were short-lived (months), although three studies described persistent effects up to several years post-ECT.

Effect of ECT technique on memory: most studies showed that bilateral ECT has a greater detrimental effect on autobiographical memory than unilateral ECT, and that sine-wave ECT is more detrimental than brief pulse ECT. Harm
can be minimised by ensuring the dosage is titrated to the patient's seizure threshold.

Effect of patient characteristics and memory loss: a non-randomised study found a greater memory loss in women compared to men, but no effect of age or premorbid IQ on memory loss. A randomised trial found greater memory loss in patients with lower pre-treatment Mini Mental State Examination scores.

Authors' conclusions
Further research was required to investigate the effect of ECT on memory loss, controlling for the effects of depression.

CRD commentary
The review addressed a broad research question, and hence few inclusion criteria were specified. This, combined with the use of only one reviewer to select studies for review, meant that errors or bias could have been introduced during the review process.

The search covered a range of databases. Although the authors did not state whether any language restriction was applied to the search, all of the included studies were published in English. This suggests a possibility of language bias in the review.

Although a narrative synthesis was appropriate given the heterogeneity in the measures of interventions and outcomes, the review was more a description of individual studies rather than the authors making an attempt to synthesise the evidence. Although the authors made comments on the quality of the individual studies, no attempt was made to focus the results on the high-quality studies.

The authors highlighted the importance of controlling for the effect of depression, but did not acknowledge that, since the majority of the evidence came from randomised controlled trials, no confounding was likely so long as the randomisation procedure and allocation concealment were performed adequately. Therefore, the authors' conclusion seemed unfounded.

Given limitations in the review process and the small size of the studies included in the review, the results had limited validity. The authors' conclusions were suitably conservative.

Implications of the review for practice and research
Practice: the authors stated that right unilateral rather than bilateral ECT should be administered, and that patient characteristics including seizure threshold, sex and pre-ECT cognitive performance should be considered prior to administration of ECT.

Research: the authors stated that further research with controls for the direct effect of depression was required.

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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.