A review of the cognitive effects of electroconvulsive therapy in older adults

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CRD summary
This review investigated electroconvulsive therapy and cognitive function in depressed older people. The authors found that effect of electroconvulsive therapy on cognition in elderly patients was unclear. Although the authors' conclusions reflected the data presented, the poor quality of primary studies and possible error and bias in the review suggested that the conclusions may not be reliable.

Authors' objectives
To investigate the impact of electroconvulsive therapy (ECT) on cognitive functioning in depressed older people.

Searching
MEDLINE and PsychINFO were searched for studies written in English (search terms were reported). Reference lists were examined for further studies.

Study selection
Studies that examined cognition in the elderly (with a minimum mean age of 60 and no individual aged less than 50 years) in the context of electroconvulsive therapy were eligible for inclusion. The included studies were conducted mostly in the USA and published in the 1990s. Patients' mean age ranged from 57.2 to 80 years. Few details of electroconvulsive therapy treatment were available from the primary studies, but included studies investigated unilateral or bilateral electrode placement or a mixture of both where this information was available. Study design varied. Most studies appeared to be observational studies without a control group. Over half the included studies used the Mini Mental State Examination (MMSE) or the Mattis Dementia Rating Scale (MDRS) global screening tests to assess cognitive function. Other studies used a variety of methods to assess the following: arousal and orientation; information processing speed and working memory; language, learning and memory; and executive function and visuospatial skills.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

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

Methods of synthesis
The studies were presented in a narrative synthesis grouped by outcome measure. Tables of primary study details were available for examination of between-study differences.

Results of the review
Twenty seven studies were included in the review (n was unclear, but more than 1,063 participants).

The results of studies that used tests of global cognitive functioning were mixed: five studies reported improvements in Mini Mental State Examination and Mattis Dementia Rating Scale scores after electroconvulsive therapy; four studies reported no change. Limitations to these studies were reported. Evidence of arousal and orientation from the included studies suggested that unilateral rather than bilateral electrode placement during a course of electroconvulsive therapy may reduce the risk of interictal disorientation. No difference in information processing speed or changes in language (general word knowledge and object naming) were detected when comparing pre- and post-treatment levels.
No treatment-related changes on working memory, executive function or visuospatial skills were found.

**Authors' conclusions**
The effect of electroconvulsive therapy on cognition in elderly patients was unclear. Further research with more critically selected methods was needed.

**CRD commentary**
The research question was broad with no inclusion criteria for outcomes and study design, which may have led to subjective decisions when selecting studies. The authors did not report any attempts to search for unpublished studies and only included English language papers, so publication or language bias could have been introduced into the review. The review process was not described, so it was not known whether precautionary measures were taken to reduce the possibility of reviewer error and bias. Validity of the included studies was not assessed, so it was not known how reliable the studies were. Most included primary studies appeared to be of poor methodological quality and poorly reported with few participant details included. Although the authors' conclusions reflected the data presented, the poor quality of primary studies and possible error and bias in the review suggested that the conclusions may not be reliable.

**Implications of the review for practice and research**
Practice: The authors stated that clinicians should regularly administer brief focused cognitive tests before, during and after treatment to monitor progress.

Research: The authors stated that research participants should be well-described to permit study comparison and researchers should assess all stages of memory if possible.

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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.