Predictive value of the clock drawing test: a review of the literature
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CRD summary
The authors concluded that Clock Drawing Test may be a useful tool to identify cognitive decline before more traditional screening tests; however, further studies were needed as the data were sparse and heterogeneous. Given the limitations of the review in terms of reporting, the reliability of the results is uncertain. However, the authors have drawn a very conservative conclusion.

Authors' objectives
To evaluate the Clock Drawing Test as an early screening tool for possible dementia.

Searching
PsycINFO, MEDLINE and EMBASE were searched. Search terms were reported. The search was restricted to articles in English, French, Spanish, Italian or Portuguese. Letters, conference proceedings and case studies were excluded from the review.

Study selection
Eligible studies were those that used either the Clock Drawing Test or a variant to assess cognitive function in participants aged 65 years or more who had no diagnosis of dementia at baseline, no additional psychiatric disorders that may have affected performance on cognitive testing, a Clock Drawing Test score at baseline and longitudinal follow-up.

Screening tools for dementia in addition to the Clock Drawing Test included the Mini-Mental State Exam (MMSE), Dementia rating scale, neuropsychological battery and the depression and functional impairment screen.

Two reviewers independently selected the studies for inclusion in the review.

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

Data extraction
Data extracted included number of participants and assessment times.

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

Methods of synthesis
A brief narrative synthesis was presented. Very limited study details were provided. However, the authors acknowledged that there was significant clinical heterogeneity between the studies in terms of methods used to deliver and score the Clock Drawing Test and methods used to identify cases, population and follow-up period.

Results of the review
Five studies were included in the review (1,310 participants). Follow-up ranged from three and a half years to 10 years. Three studies (857 participants) showed that performance on Clock Drawing Test was worse in participants who went on to develop dementia/cognitive impairment compared to those who did not. One study showed that Clock Drawing Test identified Alzheimer's disease cases in those with Mini-mental State Exam (MMSE) scores of 24 or more. Another study used factor analysis and identified Clock Drawing Test as impacting on cognitive decline.

Authors' conclusions
The Clock Drawing Test may be a useful tool to identify cognitive decline before more traditional screening tests;
however, further studies were needed as the data were sparse and heterogeneous.

**CRD commentary**
The review addressed a clear research question and was supported by appropriate inclusion criteria. The search strategy was adequate and included studies in French, Spanish, Italian and Portuguese, which reduced the risk of language bias. But, there were no attempts to search for unpublished studies, which meant that relevant studies might have been missed. Study validity was not assessed and insufficient individual study details were presented to allow the reader to assess study quality. In the light of reported clinical heterogeneity it was appropriate that the results of the review were presented in a narrative synthesis. The authors concluded that Clock Drawing Test maybe a useful tool to identify decline before more traditional screening tests: however, further studies were needed as the data were sparse and heterogeneous. Given the limitations of the review, the reliability of the results is uncertain. However, the authors draw a very conservative conclusion.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that further studies were needed as the data were sparse

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