Age-related macular degeneration and low-vision rehabilitation: a systematic review

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CRD summary
This review concluded that additional randomised controlled trials, with similar intervention comparisons and outcome measures, are needed to form stronger conclusions for the most effective low-vision rehabilitation interventions for individuals with age-related macular degeneration. The possibility of missed studies, possible bias and selective reporting in the review suggests the reliability of the authors’ conclusions is unclear.

Authors' objectives
To investigate rehabilitation techniques in patients with low vision secondary to age-related macular degeneration.

Searching
PubMed, CINAHL, EMBASE, EBM Reviews, PsycINFO and the Cochrane Library were searched between 1980 and 2006 for studies in English. References of relevant systematic reviews were scanned and other sources (not specified) were handsearched.

Study selection
Randomised controlled trials (RCTs) and non-randomised study designs (cohort, case control and case series) of rehabilitation interventions in adults (at least 19 years old) with age-related macular degeneration, low vision or visual impairment were eligible for inclusion.

In the included studies, the interventions included prism spectacles, rehabilitation programmes for low vision, self-management programmes, low-vision devices, and different light levels and the interventions involved individuals, groups or families. A wide range of outcome measures were reported.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Methodological quality was assessed using the Downs and Black quality assessment checklist, composed of 27 questions, with maximum possible score of 28 for randomised studies, and 25 for non-randomised studies; a score of 26 to 28 was considered excellent, 20 to 25 good, 15 to 19 fair and 14 or below was considered poor.

Studies were also classified according to study design.

Evidence levels were assigned (fully described in the report): 1a very strong; 1b strong; 2a moderately strong; 2b limited; 2c weak; 3 consensus; and 4 conflicting.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
Data were extracted for vision and health related outcomes, overall functioning and quality of life (QOL), activities of daily living (ADL), outcomes relating to visual acuity, reading performance, reduction of glare, enhancement of contrast sensitivity, and ability to detect objects in the individuals path.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
The studies were synthesised narratively. Meta-analyses were not performed due to heterogeneity in the interventions, outcomes and study designs used. The studies that supported the strongest conclusions were reported in the review.
Results of the review
Seventy-two studies met the original inclusion criteria. Thirty-two studies (that supported the strongest conclusions) were included in the review (n=6,207 patients; range 12 to 4,077). Ten were RCTs (n=1,231 patients), two cohort studies (n=4,174 patients) and twenty were case series (n=802 patients). Quality scores ranged from 12 to 28.

Standard low-vision rehabilitation programmes, conventional in-clinic assessments and optical devices were found to be effective ways of managing and living with vision loss. Areas of unmet needs included determining the most effective types of orientation and mobility programs and devices that were most effective, and developing methods of matching assistive technologies with the individuals visual and environmental requirements.

Authors’ conclusions
Additional randomised controlled trials, with similar intervention comparisons and outcome measures, are needed to form stronger conclusions for the most effective low-vision rehabilitation interventions for individuals with age-related macular degeneration.

CRD commentary
The inclusion criteria were clear in terms of participants and study design, but none were stated for intervention and outcomes. Only studies in English language were included and it appeared that unpublished studies were not sought, so language and publication bias could not be ruled out. The review processes were not described in terms of numbers of reviewers involved, so the risk of reviewer errors and/or bias was unclear.

The quality of the primary studies was assessed using appropriate criteria; the results of this were taken into consideration in the analysis. The review was prone to selective reporting, as only the studies that supported the strongest conclusions were included in the analysis. Narrative synthesis appeared appropriate given the heterogeneity between studies.

The possibility of missed studies, possible bias and selective reporting suggests the reliability of the authors’ conclusions is unclear.

Implications of the review for practice and research
Practice: The authors did not state any recommendations for practice.

Research: The authors stated that more randomised controlled trials and controlled trials with similar interventions and outcomes for low-vision rehabilitation and age-related eye conditions are needed.

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