Postprint Version	1.0
Journal website	http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006543/abstract
Pubmed link	
DOI	10.1002/14651858.CD006543

Multidisciplinary rehabilitation and monodisciplinary rehabilitation for visually impaired adults

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ABSTRACT

This is the protocol for a review and there is no abstract. The objectives are as follows:

The objective of this review is to assess the effectiveness of monodisciplinary and multidisciplinary rehabilitation programmes in improving quality of life in visually impaired adults.

BACKGROUND

In 2002, the number of visually impaired people worldwide was estimated at 161 million: 37 million were categorised as blind and 124 million as having low vision (Resnikoff 2004). It has been calculated that between 1& and 2% of the visually impaired live in developed countries (Limburg 2005). More than 82% of all blind people were 50 years or older (Resnikoff 2004). The number of visually impaired elderly will increase significantly in the coming decades because of the aging population.

The main cause of visual impairment and blindness in people aged 65 or older is age-related macular degeneration. Other important causes of visual impairment and blindness are diabetic retinopathy and glaucoma. In most cases, there is no cure, and visual acuity will remain stable or will deteriorate progressively. In addition, visual impairment affects many social and work-related aspects of patients' lives, including computer work and driving.

Description of the condition

There are many definitions for visual impairment or blindness given in the literature. We will adopt the World Health Organization (WHO) criteria, because these are the most widely used around the world (WHO 1992). Visual impairment is defined as best corrected visual acuity of the better eye less than 0.3 or visual field defects within 30 degrees of fixation. Blindness is defined as visual acuity less than 0.05 or visual field defects within 10 degrees of fixation. However, ophthalmologists in regular practices and rehabilitation centres agree that some people with visual acuity

less than 0.5 but greater than 0.3 also experience problems with reading and other daily activities though they are not visually impaired according to WHO criteria (de Boer 2005).

Description of the intervention

Low vision rehabilitation is a professional form of rehabilitation that aims to teach people to cope with their visual disabilities in daily life. There are two widely used types of rehabilitation: firstly, monodisciplinary care provided, for example, by low vision optometrists; and secondly, multidisciplinary low vision services, provided, for example, at rehabilitation centres or hospitals (Burggraaff 2005). Optometric care consists of assessing visually impaired people's visual function and asking about the major problems they encounter in daily life. They are then informed about low vision aid(s) that could be helpful and receive instruction on their use. Most optometrists work in hospitals and some work in commercial firms.

The multiple disciplinary rehabilitation approach teaches individuals how to cope with a visual handicap in daily life and during work. Individual and group sessions with social workers or psychologists, training in use of aids and low vision software, and leisure time or vocational activities are important aspects of this form of rehabilitation. Multidisciplinary low vision services are non-commercial organisations.

How the intervention might work

People with visual impairment are often referred to low vision rehabilitation services and optometrists which aim to improve functioning and independence and thus enhance their quality of life (Nilsson 1990; Raasch 1997).

Why it is important to do this review

Until the 1980s, there have been several outcome studies in the field of low vision rehabilitation (Harper 1999; Scott 1999). Most of these studies have focused on objective tasks or specific measures of functional ability such as reading speed, or patient satisfaction with the services and the frequency and type of low vision aids used. These measures may not capture all important facets of an individual's state (Scott 1999). Therefore, a more comprehensive outcome measure such as health-related quality of life is needed to measure the outcome of low vision rehabilitation. Another important reason for measuring health-related quality of life is the growing interest of governments and health insurance companies in these outcome measures as parameters for quality of care (Massof 2001; Stelmack 2001).

The increase in attention for the concept of vision-related quality of life has led to the publication of several studies that aim to describe this concept. However, quality of life is not used often to estimate the effect of low vision rehabilitation.

To date, there has not been a systematic review of the evidence for the effectiveness of the various rehabilitation programmes in improving the quality of life of visually impaired adults.

In order to develop an understanding of the most effective healthcare interventions for visually impaired patients, and to work towards the development of integrated and effective care, it is necessary to draw on all forms of relevant scientific evidence. An essential step in this process is to collect and analyse the evidence from quantitative, comparative studies. This review will assess the available quantitative evidence on the effectiveness of rehabilitation in improving the quality of life of visually impaired patients.

We will synthesise quantitatively all the available literature on health-related quality of life (HRQOL) after rehabilitation for visually impaired adults. We will seek to characterise the overall effect of rehabilitation on various domains of HRQOL, including physical health, psychological health, social functioning and the ability to perform activities of daily living, and to assess the effect of rehabilitation on scores from the most commonly used vision-related QOL instruments. We will include studies that compare interventions for visually impaired adults with a control group/ intervention.

OBJECTIVES

The objective of this review is to assess the effectiveness of monodisciplinary and multidisciplinary rehabilitation programmes in improving quality of life in visually impaired adults.

METHODS

Criteria for considering studies for this review

Types of studies

We will include randomised controlled trials (RCTs) and quasi-randomised trials.

Types of participants

We will include studies on quality of life (QOL) of people, aged 18 years or older, of either sex, with irreversible visual impairment. We define irreversible visual impairment as low vision of at least six months' duration and/or chronic diseases such as diabetic retinopathy, age-related macular degeneration or glaucoma. Studies that included patients with irreversible visual impairment as well as other chronic diseases will only be included if separate data on patients with severe visual impairment are reported.

Types of interventions

We will include trials that have compared multidisciplinary rehabilitation with monodisciplinary rehabilitation and no rehabilitation. We will include trials that have compared different types of low vision rehabilitation. We will also include trials that have compared different parts of multidisciplinary rehabilitation with monodisciplinary rehabilitation.

Types of outcome measures

PRIMARY OUTCOMES

The primary outcomes for this review are generic health-related quality of life (HRQOL) and vision-related quality of life.

We will evaluate studies that assess quality of life using validated one or multidimensional questionnaires. Examples of generic HRQOL questionnaires include the SF-36 and EQ-5D while examples of vision-related quality of life questionnaires include the VF-14 (Steinberg 1994), NEI-VFQ (Mangione 1998) and LVQOL (Wolffsohn 2000).

Self-reported questionnaires filled by the individual, a relative or independent rater

will be considered eligible for inclusion. The questionnaires used will have had to have been validated in terms of reliability (the extent to which a test effectively measures the underlying concept correctly), validity (the extent to which a test measures the underlying concept), and sensitivity to change.
Studies using questionnaires designed for a specific study without validation will not be included.
The primary outcome will be assessed as:
Short term: outcomes up to six months after finishing the rehabilitation programme.
Long term: outcomes more than six months after finishing the rehabilitation programme.

SECONDARY OUTCOMES

Satisfaction with the use of low vision aids.
Score in psychological questionnaires that evaluate, for example, depression.
Participant's perception of the effect of rehabilitation on participation in society after rehabilitation.
The secondary outcomes will be assessed as:
Short term: outcomes up to six months after finishing the rehabilitation programme.
Long term: outcomes more than six months after finishing the rehabilitation programme.

Adverse outcomes

We will report all adverse outcomes reported in the trials.

Search methods for identification of studies

Electronic searches

We will search the Cochrane Central Register of Controlled Trials (CENTRAL),which includes the Cochrane Eyes and Vision Group Trial Register, in The Cochrane Library, MEDLINE, EMBASE, PsycINFO, CINAHL, Sociofile and The Association for Research in Vision and Ophthalmology (ARVO) meeting extracts. There will be no language or date restrictions in the searches.
We will use the following strategy to search MEDLINE and adapt it for the other databases:
#1 Search "Eye Diseases"[MeSH] OR "Visually Impaired Persons"[MeSH]
#2 Search "Rehabilitation"[MeSH] OR "rehabilitation"[Subheading] OR "Rehabilitation Centers"[MeSH] OR "Occupational Therapy"[MeSH] OR "Psychotherapy"[MeSH] OR "Optometry"[MeSH] OR "Canes"[MeSH] OR "Lenses"[MeSH]
#3 Search (randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] OR clinical trial [pt] OR clinical trials [mh] OR "clinical trial" [tw] OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind* [tw])) OR "latin square" [tw] OR placebos [mh] OR placebo* [tw] OR random* [tw] OR research design [mh:noexp] OR comparative study [mh] OR evaluation studies [mh] OR follow-up studies [mh] OR prospective studies [mh] OR cross-over studies [mh] OR control* [tw] OR prospectiv* [tw] OR volunteer* [tw]) NOT (animal [mh] NOT human [mh])
#4 Search #1 AND #2 AND #3

#5 Search #1 AND #2 Limits: Randomized Controlled Trial
#6 Search "Rehabilitation"[MeSH] OR "rehabilitation"[Subheading] OR "Rehabilitation Centers"[MeSH] OR "Occupational Therapy"[MeSH] OR "Psychotherapy"[MeSH] OR "Optometry"[MeSH] OR "Canes"[MeSH]
#7 Search #1 AND #6 AND #3
#8 Search #1 AND #6 Limits: Randomized Controlled Trial
#9 Search randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh]
#10 Search #1 AND #6 AND #9
#11 Search #10 NOT #8
#12 Search "Health Status Indicators"[MeSH] OR "Quality of Life"[MeSH] OR "Questionnaires"[MeSH] OR "Activities of Daily Living"[MeSH] OR "Treatment Outcome"[MeSH]
#13 Search #1 AND #6 AND #12
#14 Search #10 OR #13
We will use the following strategy to search ARVO meeting abstracts:
In Text/Abstract/Title:
#1 rehabilitation OR "rehabilitation services" OR "occupational therapy"
#2 "rehabilitation service" OR psychotherapy OR canes OR "mobility training"
#3 #1 OR #2
#4 "low vision" OR visual impairment" OR "visual disorder" OR blindness
#5 #3 AND #4
#6 "quality of life" OR QOL OR HRQOL OR "activities of daily living"OR ADL OR "treatment outcome" OR "health status" OR "well being"
#7 #5 AND #6
#8 "randomized controlled trial OR controlled clinical trial OR "clinical trial" OR "random allocation"
#9 #7 AND #8

Searching other resources

We will search the reference lists of relevant articles to find additional trials. The Science Citation Index and SCOPUS will be used to find articles that cite relevant articles. We will contact authors of relevant trials to identify further published and unpublished reports. We will handsearch Visual Impairment Research from 1999 to date, and the proceedings of the International Society for Low Vision Research and Rehabilitation (ISLRR) congresses from 1999 to date for relevant trials. We will also handsearch the Journal of Visual Impairment and Blindness from 1977 issue 1 to 1977 issue 6 - all other issues are incorporated in EMBASE.

Data collection and analysis

Selection of studies

Two review authors working independently will assess the titles and abstracts resulting from the electronic searches. Full copies of all relevant trials will be obtained and assessed according to the 'Criteria for considering studies for this review' outlined above. Only trials meeting these criteria will be assessed for methodological quality.
The review authors will not be masked to any trial details when making their

assessments. Disagreements about whether a trial should be included will be resolved by discussion and consensus. In cases where additional information is needed before we can decide whether or not to include a trial, we will attempt to obtain this information from the study authors.

Data extraction and management

Two review authors working independently will extract data using a form developed by the Cochrane Eyes and Vision Group. Any discrepancies will be resolved by discussion. We will contact trialists to obtain missing data where necessary. Data will be double-entered into RevMan 4.2 to check for errors.

Assessment of risk of bias in included studies

Two review authors working independently will assess trial quality according to the methods set out in Section 6 of the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2006). Five parameters will be considered:
method of allocation to treatment;
allocation concealment;
intention-to-treat analysis;
documentation of exclusions;
completeness of follow up.
Each parameter of trial quality will be graded as A - if adequate; B - if unclear or C - if inadequate.
We will contact study authors for clarification on any item graded B (unclear).
Review authors will not be masked to any trial details during the assessment.
Method of allocation to treatment (selection bias): We will assess whether the sequence of allocation of participants to groups was concealed until after interventions were allocated and what method of allocation was used. Allocation of participants to groups can be done by any approach that appears to offer adequate concealment as long as it is stated that the person who generated the allocation did not administer it.
Masking of providers and outcome assessment (detection bias): In most cases, it is not possible to mask the persons providing rehabilitation.
Performance bias: Performance bias refers to systematic differences in the rehabilitation provided to the participants in the comparison groups other than the intervention under investigation (Higgins 2006).
Intention-to-treat analysis (attrition bias): We will assess whether the rates of follow up and compliance were similar in the groups and if the analysis was performed on an intention-to-treat basis. In addition we will assess whether all participants were included in the analysis regardless of whether their outcomes were actually collected.

Measures of treatment effect

Data analysis will be conducted using Section 8 of the Cochrane Handbook for Systematic Reviews of Interventions (Deeks 2006).
Our goal will be to extract similar outcome data from each study to achieve consistency of results. For the primary outcome measures, we will collect the data as a total score on the quality of life questionnaire and as the subscores on the questionnaire.
We will collect data on use of low vision aids as compliance: continued use of low

vision aids of devices for a minimum of three months after they have been administered. Data on psychological questionnaires will be collected as the total score and subscores on the questionnaires. Participants will be assigned to one of two groups according to the participant's perception of the effect of rehabilitation on participation in society after rehabilitation: (a) participation improved, and (b) participation same or worse compared to baseline.

Dealing with missing data

If data are missing or difficult to interpret from a paper, we will contact the authors for more information.

Assessment of heterogeneity

Before combining the data, we will assess heterogeneity by examining the characteristics of each study. We will use the forest plots of results of the studies, the results of the chi-squared test for statistical heterogeneity and the value of I square (I^2), which estimates the amount of heterogeneity between trials.

Assessment of reporting biases

If sufficient randomised trials are identified, potential publication bias will be examined using a funnel plot (Egger 1997).

Data synthesis

For dichotomous data, results will be expressed as odds ratio estimates or risk ratio estimates (95% confidence interval (CI)). The risk difference or the number needed to treat will be obtained (95% CI). Results will be summarised across studies using the odds ratio or relative risk and/or the risk difference. For continuous data, results will be expressed as weighted mean differences (95% CI). The mean and standard deviation will be obtained; if the data are skewed, the median and inter-quartile range will be obtained. Standard errors will be converted to standard deviations. Where trial results were only reported as mean differences, we will contact investigators to obtain the mean and standard deviation values. Results will be summarised across studies using weighted mean differences (95% CI).

Subgroup analysis and investigation of heterogeneity

If no substantial statistical heterogeneity is detected (i.e. I^2 is less than 50%) and if there is no clinical heterogeneity within the trials, we will combine the results in a meta-analysis using a random-effects model. If there are fewer than three trials, we may use a fixed-effect model.
If substantial statistical evidence of clinical heterogeneity is present, we will not combine study results but will present the results in a tabulated summary.
We will perform the following subgroup analyses on:
severity of low vision: people with no residual vision or light perception only versus people with some residual vision useful to help them performing their daily activities;
age;
different aspects of rehabilitation: mobility training, activities of daily living (ADL) training, psychological and social rehabilitation.

Sensitivity analysis

We will undertake the following sensitivity analyses by repeating the analyses while excluding:
studies of lower methodological quality (scoring C on any parameter of quality);
unpublished studies.

ACKNOWLEDGEMENTS

We are grateful to Hans Ket and Ingrid Riphagen for creating the search strategies and running them. We also thank Catey Bunce, Tianjing Li and Gianni Virgili for their peer review comments on this protocol.

REFERENCES

Additional references

Burggraaff 2005 Burggraaff MC, van Nispen RMA, de Boer MR, van Rens GHMB. Optometric and multidisciplinary approaches in prescribing low vision aids. Visual Impairment Research 2005;7:1–8.

de Boer 2005 de Boer MR, Langelaan M, Jansonius NM, Van Rens GH. Evidence-based guidelines on the referral of visually impaired persons to low vision services. European Journal of Ophthalmology 2005;15:400–6.

Deeks 2006 Deeks JJ, Higgins JPT, Altman DG, editors. Analysing and presenting results. In: Cochrane Handbook for Systematic Reviews of Interventions 4.2.6 [updated September 2006]; Section 8. In: The Cochrane Library, Issue 4, 2006.Chichester, UK: John Wiley & Sons, Ltd.

Egger 1997 Egger M, Davey Smith G, Schneider M, Minder CE. Bias in meta-analysis detected by a simple, graphical test.. BMJ 1997;315:629–34.

Harper 1999 Harper R, Doorduyn K, Reeves B, Slater L. Evaluating the outcomes of low vision rehabilitation. Ophthalmic and Physiological Optics 1999;19:3–11.

Higgins 2006 Higgins JPT, Green S, editors. Assessment of study quality. Cochrane Handbook for Systematic Reviews of Interventions 4.2.6 [updated September 2006]; Section 6. In: The Cochrane Library, Issue 4, 2006. Chichester, UK: John Wiley & Sons, Ltd.

Limburg 2005 Limburg H, den Boon JM, HogewegM, Gevers RJ, Keunen JE, ten Hove GT. Avoidable visual impairment in The Netherlands: the project “Vision 2020 Netherlands” of the World Health Organization. Nederlands Tijdschrift voor Geneeskunde 2005;149:577–82.

Mangione 1998 Mangione CM, Berry S, Spritzer K, Janz NK, Klein R, Owsley C, et al.Identifying the content area for the 51- item National Eye Institute Visual Function Questionnaire: result from focus groups with visually impaired persons. Archives of Ophthalmology 1998;2:227–33.

Massof 2001 Massof RW, Rubin GS. Visual function assessment questionnaires. Survey of Ophthalmology 2001;45:531–48.

Nilsson 1990 Nilsson UL. Visual rehabilitation with and without educational training in the use of optical aids and residual vision. A prospective study of patients with advanced agerelated macular degeneration. Clinical Vision Sciences 1990; 6:3–10.

Raasch 1997 Raasch TW, Leat SJ, Kleinstein RN, Bullimore MA, Cutter GR. Evaluating the value of low-vision services. Journal of the American Optometric Association 1997;68:287–95.

Resnikoff 2004 Resnikoff S, Pascolini D, Etya’ale D, Kocur I, Pararajasegaram R, Pokharel GP, et al.Global data on visual impairment in the year 2002. Bulletin of the World Health Organization 2004;82:844–51.

Scott 1999 Scott IU, Smiddy WE, Schiffman J, Feuer WJ, Pappas CJ. Quality of life of low-vision patients and the impact of low vision services. American Journal of Ophthalmology 1999; 128:54–62.

Steinberg 1994

Steinberg EP, Tielsch JM, Schein OD, Javitt JC, Sharkey P, Cassard SD, et al.The VF-14. An index of functional impairment in patients with cataract. Archives of Ophthalmology 1994;112(5):630–8.

Stelmack 2001 Stelmack J. Quality of life of low-vision patients and outcomes of low-vision rehabilitation. Optometry and Vision Science 2001;78:335–42.

WHO 1992 World Health Organization. ICD-10: International statistical classification of diseases and related health problems: tenth revision. Geneva: World Health Organization, 1992.

Wolffsohn 2000 Wolffsohn JS, Cochrane AL. Design of the low vision quality of life questionnaire (LVQOL) and measuring the outcome of low-vision rehabilitation. American Journal of Ophthalmology 2000;130(6):793–802. _ Indicates the major publication for the study