Does attendance at a multidisciplinary outpatient rehabilitation program for people with Parkinson's disease produce quantitative short term or long term improvements? A systematic review

Johnston M, Chu E

CRD summary
This review concluded that there was limited evidence to suggest short-term benefits in gait, step length, speech, depression and quality of life after multidisciplinary outpatient rehabilitation programmes for Parkinson's disease patients, but that these benefits were not maintained after four to six months. Given the very limited evidence of variable quality, the authors' conclusions should be treated with caution.

Authors’ objectives
To evaluate the effectiveness of attendance at outpatient or community-based multidisciplinary rehabilitation programmes for people with Parkinson's disease.

Searching
MEDLINE, EMBASE, PsycINFO, CINAHL and the Cochrane Library, were searched from inception to August 2008 for publications in English; search terms were reported. Bibliographies of each retrieved article were handsearched.

Study selection
Studies that evaluated outpatient multidisciplinary rehabilitation programmes (with input from more than one allied health therapist or nurse) for people diagnosed with Parkinson's disease were eligible for inclusion. To be eligible, attendance had to be for more than one session, the programme duration had to be limited to three months, and measurement of outcomes had to be both pre- and post-intervention. Studies of inpatient or home-based programmes and studies of Parkinson-like syndromes were excluded.

Eligible outcomes were health-related quality of life or functional or physical measures.

Interventions in all the studies included physiotherapy. Other interventions included occupational therapy, speech therapy, social work, specialist Parkinson's disease nurse, and nurse-psychologist. Intervention duration was six hour sessions once a week for six weeks, 13 two-hour sessions, or eight sessions (two per week for four weeks). All patients had diagnosed Parkinson's disease; some had no cognitive impairment; some had stable Parkinson's disease, or mild to moderate Parkinson's disease requiring no medication adjustment during the study. The control groups in the RCTs had inactive or no treatment. The age of participants ranged from a median of 68 years to a mean of 73.1 years; the proportion of men ranged from 58 to 75% (where reported). There was inconsistency and heterogeneity in individual study methods. Gait was measured in all studies but using different methods.

Two independent reviewers performed the study selection, with disagreements resolved by discussion.

Assessment of study quality
Methodological quality was assessed by two reviewers independently using the PEDro 10-point scale for the internal and external validity of clinical trials, with discrepancies resolved by discussion.

Data extraction
Studies were divided into short-term and long-term studies depending on when outcomes were measured. Consequently, study details and outcome results were summarised in two tables.

Two reviewers performed the extraction, with discrepancies resolved by discussion.

Methods of synthesis
A narrative synthesis was performed due to heterogeneity and the few relevant studies that were identified. Outcomes were also analysed in terms of level of evidence based on Tulder’s approach.

**Results of the review**

Four studies were identified (n=288 participants), including two RCTs (n=24 and n=137 participants) and two observational before-after studies (n=9 (pilot study) and n=118 participants). The larger RCT was of good quality (PEDro score 8) and the smaller RCT of moderate quality (score 6); the larger before-after study was of moderate quality (score 4) and the pilot study of poor quality (score 3). The two RCTs measured long-term outcomes and both had higher drop-out rates (30% and 48%) than the short-term studies. Participant drop-out ranged from 18 to 48%. Follow-up was immediately post intervention or from four to six months.

**Short-term outcomes** (two before-after studies): Immediately post-intervention, both studies showed a significant gain in gait speed (p=0.025 and p=0.026) and step length (p=0.001 and p=0.031) in patients with Parkinson's disease. The larger study found a significant improvement in speech (p<0.001), depression (p=0.029) and health-related quality of life (p=0.029). The pilot study found no significant changes in balance, depression, posture, or daily living activity level. The larger study found no significant changes in patient anxiety, or in carer anxiety, depression or health-related quality of life.

**Long term outcomes** (two RCTs): Both trials found no significant difference in gait, speech or hand function in patients with Parkinson's disease for intervention or control groups. The smaller trial found no significant difference in tremor, posture or rigidity. The larger study found no significant difference in mobility (stand/sit/walk test). The larger study found a deterioration for the intervention group versus controls for Parkinson's disease disability level (p=0.03), general health (p=0.002), mental health (p=0.019), physical status (p=0.046, measured by the short-form 36-item health survey), and also a worsening of the carer strain index (p=0.045).

There were some differences in results reported in the tables and text.

**Authors' conclusions**

There was limited evidence to suggest short-term gains in outcomes for people with Parkinson's disease attending multidisciplinary outpatient rehabilitation programmes but, over a four to six-month period, these gains were no longer significant. Overall, there was very limited high-level evidence available to show whether these programmes produced effective (short-term or long-term) outcomes for Parkinson's disease. Further research is needed.

**CRD commentary**

The review addressed a well-defined question for participants, interventions, study design and relevant outcomes. Relevant databases were searched. However, only studies published in English were included and unpublished studies were not considered, so relevant studies may have been missed. Efforts were made to reduce error and bias throughout the study process.

The criteria used for assessing study quality were suitable for clinical trials, but may not have been applicable for observational studies. Relevant study details were reported. A narrative synthesis was provided since few studies were identified and these were heterogeneous. However, data provided in the tables was not identical to that provided in the text. The authors reported that both the larger studies recruited participants from the same group of patients for short-term and long-term outcomes. In their conclusions, the authors tended to concentrate on the positive outcomes and did not comment on the negative outcomes.

In view of the very limited evidence of variable quality, the authors' conclusions should be treated with caution.

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

**Practice**: The authors suggested that to maintain the initial benefits of the interventions, there should be follow-up monitoring, support and revision therapy sessions, which should be tailored to the individual needs of the patient and their families.

**Research**: The authors identified a need for studies with different models, content, timing, and style of delivery of
multidisciplinary programmes for people with Parkinson’s disease. Studies should also determine whether programmes providing ongoing support, or less intensive but more frequent therapy, are effective in improving or maintaining health-related quality of life for Parkinson's disease patients and their families. Future studies should also: assess falls, balance and balance confidence; assess the staging or severity of Parkinson's disease in study participants; and consider the fact that the condition of patients with Parkinson’s disease is likely to deteriorate over a six-month period.

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