Community-based pulmonary rehabilitation is effective for people with chronic obstructive pulmonary disease (COPD)

Synopsis


Question: Does community-based pulmonary rehabilitation improve quality of life, respiratory exacerbations, exercise performance, and lung function in people with COPD? Design: Randomised, controlled trial with concealed allocation and blinded outcome assessment. Setting: Two hospitals in The Netherlands. Participants: People with COPD (GOLD Stages 2 or 3) and impaired exercise capacity (< 70% of predicted peak work during incremental cycle ergometry). Prior rehabilitation and major co-morbidities were exclusion criteria. Randomisation of 199 participants allotted 102 to an intervention group and 97 to a control group. Interventions: All participants had their medications optimised before randomisation. Over 4 months, the intervention group visited a local physiotherapist twice a week for 30-minute intensive exercise training (endurance cycling and walking, upper and lower limb strength/endurance exercises). They were instructed to do the exercises for 30 minutes twice daily at home and to walk and cycle outside. They also completed an individualised education program using a booklet and, if required, received smoking cessation counselling (minimal intervention strategy) and 4 visits from a diettian for counselling and supplements. This was followed by a 20-month maintenance program, involving monthly visits to the physiotherapist for monitoring and encouragement. After an exacerbation, participants were allowed 6 extra training sessions over 3 weeks. Extra dietitian and nursing appointments were made if indicated. The control group participants received brief smoking cessation advice and advice to eat more if malnourished, from their respiratory physician. Outcome measures: The primary outcomes were the St George's Respiratory Questionnaire (SGRQ) total score and the number of exacerbations. Secondary outcomes were SGRQ domain scores, the modified Medical Research Council (MRC) dyspnoea scale, a cycle endurance test, the six-minute walk test distance (6MWD), strength of respiratory and limb muscles, fat-free mass, and lung function. At 24 months, perceived effectiveness of care was rated on a 5-point Likert scale. Results: Follow-up was 93% at 4 months and 79% at 24 months. At 4 months, improvement in SGRQ score was significantly better in the intervention group by 4.2 points (95% CI 3.9 to 4.5), but exacerbations did not significantly differ, RR 1.01 (95% CI 0.57 to 1.79). Other outcomes that were significantly better in the intervention group were SGRQ activity and impact scores, MRC score, cycle endurance time, peak work, 6MWD, handgrip force, and fat-free mass. At 24 months, SGRQ, cycle endurance time, and 6MWD remained significantly better in the intervention group and exacerbations remained not significantly different. The intervention was perceived as significantly more effective. Conclusion: Community-based pulmonary rehabilitation is effective for people with COPD.

Commentary

COPD is the third leading cause of ‘burden of disease’ in Australia behind ischaemic heart disease and stroke (Mathers et al 1999). Pulmonary rehabilitation has proven efficacy in managing people with moderate-to-severe COPD (Ries et al 2007). While COPD is usually not diagnosed until it is moderately advanced, a survey conducted in France (Roche et al 2008) has indicated that even people with mild COPD suffer from significant dyspnoea and reduced quality of life. Thus, it is appropriate to evaluate the effects of pulmonary rehabilitation in people with milder COPD. The study by van Wetering et al (2009) claims to investigate the value of pulmonary rehabilitation in people with ‘less advanced’ COPD who have impairment in exercise capacity. The study is well designed and believable being a single blinded, randomised controlled study with an acceptable drop-out rate. However, the eligibility criteria excluded people with ‘less advanced’ COPD in terms of lung function. The study recruited people with COPD in GOLD stages II (FEV1/FVC < 0.7, 50% ≤ FEV1 < 80% predicted) and III (FEV1/FVC < 0.7, 30% ≤ FEV1 < 50% predicted), which equate to moderate and severe COPD. It would have been more novel to recruit people with mild COPD (GOLD stage I) who have some impairment to exercise capacity.

The study’s short-term results confirm the results of previous RCTs, with improvements in quality of life and exercise capacity following four months of rehabilitation compared to usual care. The results particularly support the effectiveness of community rehabilitation programs run by physiotherapists. Unfortunately, the results are difficult to extrapolate to all clinical environments where rehabilitation programs may only have the resources to run for a two-month period. Although treatment benefits were still evident as significant between-group differences at 24 months, the maintenance strategy used was not sufficient to maintain exercise capacity and quality of life at the levels seen at the end of the 4-month program. Further studies evaluating more intensive maintenance programs in the community are required.

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References