Telephone-based patient self-management program might be effective in reducing osteoarthritis-related pain

Synopsis


**Question:** What are the comparative effects of telephone-based self-management support, health education materials (attention control), or usual care for primary care patients with hip or knee osteoarthritis (OA)? **Design:** A randomised clinical trial with equal assignment to three intervention groups. **Setting:** Primary care clinic, USA. **Participants:** Men and women with a physician diagnosis of hip or knee osteoarthritis, and persistent, current symptoms. Exclusion criteria included other rheumatologic conditions, psychoses, dementia, or being on a waiting list for arthroplasty. Randomisation of 523 participants allocated 174 to self-management, 175 to health education, and 174 to usual care. **Interventions:** The self-management intervention included two main components: providing educational materials and exercises, and helping participants develop goals and action plans related to osteoarthritis management. Participants received written and audio versions of osteoarthritis self-management educational materials and exercises, and were asked to identify and write down goals and corresponding action plans related to their osteoarthritis symptoms and management. A health educator called participants monthly by telephone for 12 months to discuss key points from the educational modules and the participant’s goals and action plans. Participants in the health education group received written and audio materials regarding common health problems, as well as related screening recommendations. The health educator also called participants monthly for 12 months to review key points from the educational modules, and assess whether participants were being screened appropriately. **Outcome measures:** The main outcome was the pain subscale of the Arthritis Impact Measurement Scales-2 (AIMS2). Secondary outcomes included the AIMS2 physical function and affect subscales, the Arthritis Self-Efficacy Scale (ASES), and a 10-cm pain visual analog scale (VAS) measured at 12 months follow up. **Results:** 461 (90%) participants completed the study. The mean AIMS-2 pain score (range 0–10) in the self-management group was 0.4 points lower (95% CI –0.8 to 0.0) than in the usual care group, and 0.6 points lower (CI –1.0 to –0.2) than in the health education group. The only significant differences between the groups in secondary outcome measures were for ASES in favour of self-management over health education (0.4 points, 95% CI 0.0 to 0.8) and VAS-pain in favour of self-management over health education (−1.0 point, 95% CI −1.5 to −0.5) and usual care (−1.1 point, 95% CI −1.6 to −0.6). Health care use did not differ across the groups. **Conclusion:** In patients with knee and hip OA, an entirely telephone based self-management support program resulted in modest improvements in pain as compared to general health education and usual care.

Commentary

Osteoarthritis is a condition characterised by pain, disability and impaired quality of life. It is one of the leading causes of pain and disability for the adult population worldwide, and the prevalence is increasing mainly due to the growing proportion of elderly and overweight. The present study represents a timely and important contribution in relation to this large public health challenge. Self-management is recommended as a core treatment for hip and knee OA. Recent meta-analyses show significant, but very small, effect sizes in improving pain and function. For telephone interventions, effect sizes are comparable (Zhang 2010). This trial is well conducted, has sufficient power, and includes an attention-control group with 12 months follow-up. The intervention effects, however, are small. Choosing the AIMS2 pain subscale as primary outcome could be debated. First, as the intervention aimed to enhance self-efficacy, the ASES might have been a more appropriate primary outcome. Second, it is a composite score including different constructs (sleep, pain, stiffness). Third, the threshold for clinical important difference for this score is not known. It is interesting that the highest difference in pain scores was found comparing the self-management group with the attention-control group, and not the usual care group. However, this lack of ‘attention effect’ is not addressed in the discussion. Potentially, the health education interventions increased attention towards screening and awareness of potential health problems resulting in adverse effects. This study includes a relevant, low cost, feasible self-management support intervention. Telephone-based interventions are particular suitable for trials in rural areas and for older persons with mobility limitations. As this study mainly included men (93% of sample) who were overweight, further studies are warranted before the results can be generalised to a larger population.

**Nina Østerås, Rikke H Moe and Linda Fernandes**

National Resource Center for Rehabilitation in Rheumatology, Diakonhjemmet Hospital, Norway

**Reference**

Supervised aerobic and resistance exercise improves glycaemic control and modifiable cardiovascular risk factors in people with Type 2 diabetes mellitus

Synopsis


Question: Does an intensive exercise program improve glycaemic control, physical activity, and modifiable cardiovascular risk factors in patients with Type 2 diabetes mellitus? Design: Randomised, controlled trial with concealed allocation and blinded outcome assessment. Setting: 22 diabetic outpatient clinics in Italy. Participants: The trial included sedentary patients with Type 2 diabetes. Any conditions limiting or contraindicating physical activity were exclusion criteria. Randomisation of 606 participants allocated 303 to the intervention group and 303 to a comparison group. Interventions: Both groups received structured individual counselling every 3 months over 12 months, which consisted of encouragement and strategies to achieve recommended levels of physical activity. In addition, the intervention group participated in an intensive exercise program. The 12 month exercise program consisted of 150 minutes per week in 2 sessions of progressive aerobic and resistance exercises supervised by an exercise specialist. Outcome measures: The primary outcome was the reduction in HbA1c (glycosylated haemoglobin) at 12 months. Secondary outcome measures were physical activity, and a range of cardiovascular risk factors including waist circumference, blood pressure, and coronary heart disease risk scores. Results: 563 participants (93%) completed the study. The median exercise training attendance was 80%. At 12 months, the reduction in HbA1c was significantly more in the exercise group by 0.30% (95% CI 0.10 to 0.49). At 12 months, total physical activity improved significantly more in the exercise group than in the comparison group by 10 MET-h/wk (95% CI 8.6 to 11.6). Waist circumference had decreased more in the exercise group than in the comparison group by 3 cm (95% CI 2.9 to 4.4), systolic blood pressure had reduced more in the exercise group than the comparison group by 4.2 mm Hg (95% CI 1.6 to 6.9), and the coronary heart disease risk score had reduced more in the exercise group than in the comparison group by 3.1 units (95% CI 2.0 to 4.0). Conclusion: Exercise was effective in improving glycaemic control, increasing physical activity, and improving cardiovascular risk profile in sedentary people with Type 2 diabetes mellitus, providing benefits over and above individual counselling.

Commentary

Obesity and lack of physical activity are major risk factors for the development of Type 2 diabetes, and exercise (along with medication and diet) has long been recognised as one of the three cornerstones of diabetic therapy (Irvine and Taylor 2009). This very large randomized controlled trial provides further high quality evidence that high intensity and progressive exercise can benefit people with Type 2 diabetes.

Although the reduction in HbA1c of 0.30% found in this trial may seem relatively small, any reduction in HbA1c is considered clinically significant as it is likely to reduce the risk of diabetic complications (Stratton et al 2000). We also need to consider that the baseline HbA1c values of the participants in this trial were considered to be only slightly elevated to start with; therefore a reduction of 0.30% in the exercise group allowed participants to achieve the recommended target HbA1c value of less than 7.0% (ADA 2008).

The combined intervention was replicable and feasible as it was held in community-type gyms using readily available equipment (aerobic exercise consisted of either treadmill, step, elliptical, arm or cycle ergometer, and resistance training consisted of chest press, lateral pull-down, squat/leg press, and abdominal exercises) over two sessions per week.

The trial provides evidence that education alone is not adequate to cause sufficient behavioural change to reduce risk factors related to diabetes and cardiovascular disease. It is evident that adults also need a practical component to their learning in order to induce behavioural change that is adequate to obtain results. Exercise is a vital component of diabetes management and this trial is further evidence that structured, supervised exercise sessions get results.

Casey Peiris
La Trobe University and Eastern Health, Melbourne, Australia

References

Patients with chronic obstructive pulmonary disease (COPD) who are not hypoxaemic at rest do not benefit from home oxygen

Synopsis


Question: In patients with COPD and exertional dyspnoea, but without severe hypoxaemia at rest, does domiciliary ambulatory oxygen change dyspnoea, health-related quality of life, mood, or functional status? Design: Randomised controlled trial in which the investigators and participants were blinded to group allocation and the randomisation sequence was concealed prior to allocation. Setting: In the patient’s home with assessments at a tertiary hospital in Victoria, Australia. Participants: People with stable COPD who: (i) were ex-smokers on optimal medical treatment, (ii) had a partial pressure of oxygen in arterial blood > 55 mmHg at rest, and, (iii) reported moderate to severe functional limitation from dyspnoea. Randomisation of 143 patients allocated 68 to the cylinder oxygen group and 75 to the cylinder air group. Interventions: Participants received 12 weeks of either cylinder oxygen (intervention) or cylinder air (control) set at 6 L/min for use during activities of daily living. Both groups were provided with a trolley/stroller to transport cylinders as well as verbal and written instruction to use the cylinders inside and outside the home during activities that caused dyspnoea. Cylinders were identical in appearance and weighed 4.2 kg when full. Outcome measures: The primary outcome was the dyspnoea domain of the Chronic Respiratory Disease Questionnaire (CRDQ). Secondary outcomes included dyspnoea measured by the Baseline/Transitional Dyspnoea Index, health-related quality of life measured by the CRDQ and Assessment of Quality of Life Utility Index, mood disturbance measured by the Hospital Anxiety and Depression Scale, functional exercise capacity measured by the six-minute walk distance, and physical activity measured using a pedometer and self-report. Results: The primary outcome was available for 139 of the enrolled patients. No between-group differences were demonstrated for any outcome. At 12 weeks dyspnoea, mean difference 1.1 units (95% CI −0.9 to 3.1), did not differ significantly between groups. Using domiciliary oxygen for participants with exertional desaturation was not more predictive of changes in dyspnoea than using air. Conclusion: Patients with chronic obstructive pulmonary disease (COPD) who are not hypoxaemic at rest do not benefit from home oxygen.

Commentary

Six previous studies that investigated long-term ambulatory oxygen therapy (AOT) for patients with COPD demonstrated that, on average, AOT did not improve patient outcomes (Liker et al 1975, McDonald et al 1995, Eaton et al 2002, Lacasse et al 2005, Nonoyama et al 2007, Sandland et al 2008). Even after increasing the sample size, Moore et al (2010) showed a similar lack of benefit. Is AOT an ineffective treatment or have we yet to identify those who benefit?

A proportion of patients may ‘respond’ to AOT. However, as the consistent definition of a ‘responder’ has not been established, the range of responders within study samples is large: 56% in Eaton et al (2002) and 7% in Nonoyama et al (2007). Predictors of benefit remain unknown; due partly to small sample sizes, but also because psychological and behavioural barriers (Earnest 2002) potentially outweigh any physiologic benefit of AOT. A low average duration of AOT use (ie, < 2 hours/day) is a common finding.

Until the characteristics of ‘responders’ to AOT are established, clinicians should be sceptical of its benefit. The best course of action may be to assess on a patient-by-patient basis using rigorous methods based on N-of-1 research designs. The cost of such an approach would be offset by the savings associated with providing AOT only to those who benefit from it and use it.

Mika L Nonoyama
Lawrence S Bloomberg Faculty of Nursing and Department of Physical Therapy, University of Toronto, Canada

References