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[Intervention Review]

Self-management interventions for people with chronic obstructive pulmonary disease

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ABSTRACT

Background

Self-management interventions help people with chronic obstructive pulmonary disease (COPD) to acquire and practise the skills they need to carry out disease-specific medical regimens, guide changes in health behaviour and provide emotional support to enable them to control their disease. Since the 2014 update of this review, several studies have been published.

Objectives

Primary objectives

To evaluate the effectiveness of COPD self-management interventions compared to usual care in terms of health-related quality of life (HRQoL) and respiratory-related hospital admissions.
To evaluate the safety of COPD self-management interventions compared to usual care in terms of respiratory-related mortality and all-cause mortality.

Secondary objectives

To evaluate the effectiveness of COPD self-management interventions compared to usual care in terms of other health outcomes and healthcare utilisation.
To evaluate effective characteristics of COPD self-management interventions.

Search methods

We searched the Cochrane Airways Trials Register, CENTRAL, MEDLINE, EMBASE, trials registries and the reference lists of included studies up until January 2020.

Selection criteria

Randomised controlled trials (RCTs) and cluster-randomised trials (CRTs) published since 1995. To be eligible for inclusion, self-management interventions had to include at least two intervention components and include an iterative process between participant and healthcare provider(s) in which goals were formulated and feedback was given on self-management actions by the participant.

Data collection and analysis

Two review authors independently selected studies for inclusion, assessed trial quality and extracted data. We resolved disagreements by reaching consensus or by involving a third review author. We contacted study authors to obtain additional information and missing outcome data where possible. Primary outcomes were health-related quality of life (HRQoL), number of respiratory-related hospital admissions, respiratory-related mortality, and all-cause mortality. When appropriate, we pooled study results using random-effects modelling meta-analyses.

Main results

We included 27 studies involving 6008 participants with COPD. The follow-up time ranged from two-and-a-half to 24 months and the content of the interventions was diverse. Participants' mean age ranged from 57 to 74 years, and the proportion of male participants ranged from 33% to 98%. The post-bronchodilator forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) ratio of participants ranged from 33.6% to 57.0%. The FEV1/FVC ratio is a measure used to diagnose COPD and to determine the severity of the disease. Studies were conducted on four different continents (Europe (n = 15), North America (n = 8), Asia (n = 1), and Oceania (n = 4); with one study conducted in both Europe and Oceania).

Self-management interventions likely improve HRQoL, as measured by the St. George's Respiratory Questionnaire (SGRQ) total score (lower score represents better HRQoL) with a mean difference (MD) from usual care of -2.86 points (95% confidence interval (CI) -4.87 to -0.85; 14 studies, 2778 participants; low-quality evidence). The pooled MD of -2.86 did not reach the SGRQ minimal clinically important difference (MCID) of four points. Self-management intervention participants were also at a slightly lower risk for at least one respiratory-related hospital admission (odds ratio (OR) 0.75, 95% CI 0.57 to 0.98; 15 studies, 3263 participants; very low-quality evidence). The number needed to treat to prevent one respiratory-related hospital admission over a mean of 9.75 months' follow-up was 15 (95% CI 8 to 399) for participants with high baseline risk and 26 (95% CI 15 to 677) for participants with low baseline risk. No differences were observed in respiratory-related mortality (risk difference (RD) 0.01, 95% CI -0.02 to 0.04; 8 studies, 1572 participants ; low-quality evidence) and all-cause mortality (RD -0.01, 95% CI -0.03 to 0.01; 24 studies, 5719 participants; low-quality evidence).

We graded the evidence to be of 'moderate' to 'very low' quality according to GRADE. All studies had a substantial risk of bias, because of lack of blinding of participants and personnel to the interventions, which is inherently impossible in a self-management intervention. In addition, risk of bias was noticeably increased because of insufficient information regarding a) non-protocol interventions, and b) analyses to estimate the effect of adhering to interventions. Consequently, the highest GRADE evidence score that could be obtained by studies was 'moderate'.

Authors' conclusions

Self-management interventions for people with COPD are associated with improvements in HRQoL, as measured with the SGRQ, and a lower probability of respiratory-related hospital admissions. No excess respiratory-related and all-cause mortality risks were observed, which strengthens the view that COPD self-management interventions are unlikely to cause harm. By using stricter inclusion criteria, we decreased heterogeneity in studies, but also reduced the number of included studies and therefore our capacity to conduct subgroup analyses. Data were therefore still insufficient to reach clear conclusions about effective (intervention) characteristics of COPD self-management interventions. As tailoring of COPD self-management interventions to individuals is desirable, heterogeneity is and will likely remain present in self-management interventions.

For future studies, we would urge using only COPD self-management interventions that include iterative interactions between participants and healthcare professionals who are competent using behavioural change techniques (BCTs) to elicit participants' motivation, confidence and competence to positively adapt their health behaviour(s) and develop skills to better manage their disease. In addition, to inform further subgroup and meta-regression analyses and to provide stronger conclusions regarding effective COPD self-management interventions, there is a need for more homogeneity in outcome measures. More attention should be paid to behavioural outcome measures and to providing more detailed, uniform and transparently reported data on self-management intervention components and BCTs. Assessment of outcomes over the long term is also recommended to capture changes in people's behaviour. Finally, information regarding non-protocol interventions as well as analyses to estimate the effect of adhering to interventions should be included to increase the quality of evidence.

PLAIN LANGUAGE SUMMARY

Self-management for people with chronic obstructive pulmonary disease

Review question

We looked at the current evidence on the effects of self-management interventions for people with chronic obstructive pulmonary disease (COPD). In particular, we assessed their effectiveness on health-related quality of life (HRQoL) and hospital admissions related to COPD. We also wanted to assess whether self-management interventions are safe by evaluating the number of deaths.

Background
COPD is a common and long-term lung condition that slowly worsens over the years, and causes symptoms such as breathlessness, coughing, wheezing and increased sputum (mucus) production. This leads to loss of well-being (also known as reduction in HRQoL) in people with COPD. Self-management interventions encourage people to develop the skills and behaviours they need to successfully manage their disease, and the emotional and practical issues that may go along with it. In this update, we reviewed the current evidence on the effects of self-management on HRQoL, hospital admissions related to COPD, deaths from any cause and related to COPD, as well as other health outcomes.

Search date
We searched for studies up until January 2020.

Study characteristics
We included 27 studies, involving 6008 participants, that evaluated the effectiveness and safety of COPD self-management interventions. The average age of the participants ranged between 57 and 74 years. Between 33% to 98% of the participants in the studies were male. Studies were conducted on four different continents (15 in Europe, eight in North America, one in Asia, and four in Oceania; with one study conducted in both Europe and Oceania). All studies had control groups of participants who received usual care – that is, care typical for people with COPD. The studies lasted between two-and-a-half to 24 months.

Key results
Self-management interventions improved HRQoL in people with COPD compared to usual care, but this did not reach a clinically meaningful improvement. The number of participants with at least one hospital admission related to COPD was reduced amongst those who participated in a self-management intervention. We found no difference in number of deaths between self-management and usual care groups, which strengthens the view that COPD self-management interventions are unlikely to cause harm. We have been strict about only including studies that met our definition of a COPD self-management intervention. Despite this, the studies were still quite different from one another in terms of the intervention components used, duration of the self-management intervention and the study populations. It should be noted, that heterogeneity in future interventions will be inevitable as individual tailoring of self-management interventions is desirable; it will never be a 'one size fits all' intervention.

Quality of the evidence
Our confidence in the evidence for the main findings in this review ranged from ‘very low’ to ‘moderate’, due to the nature of the COPD self-management intervention – none of the studies prevented participants and personnel from knowing what treatment the participants were getting. Additionally, none of the studies provided detailed information about the extent to which participants adhere to the self-management intervention or whether any further treatments were given during the course of the study. Consequently, study evidence could not be graded higher than ‘moderate’ in any of the studies.