The efficacy of psychologically based interventions to improve anxiety, depression and quality of life in COPD: a systematic review and meta-analysis

Baraniak A, Sheffield D

CRD summary
The review found that the impact of psychological interventions on anxiety, depression and quality of life in the management of patients with COPD remained largely unclear with mixed results from studies of varying quality. Major shortcomings in the evidence base mean that the authors’ conclusions are appropriate and likely to be reliable.

Authors’ objectives
To assess the efficacy of psychologically based interventions on psychological outcomes in patients with chronic obstructive pulmonary disease (COPD).

Searching
MEDLINE, The Cochrane Library, Web of Science, PsycINFO, PsycARTICLES, Index to Theses and Blackwell Synergy were searched up to September 2009 for relevant studies published in English; search terms were reported. Reference lists of included studies and previous reviews and contents pages of key journals published in the previous five years were searched. Authors were contacted for potential unpublished research.

Study selection
Studies that assessing a psychologically based intervention aimed at reducing anxiety and/or depression and/or improving health-related quality of life in patients with a confirmed diagnosis of COPD were eligible for inclusion in the review. Studies of pulmonary rehabilitation and studies that did not contain a psychological component to the intervention or that had participants with comorbidities (such as asthma) were excluded.

In the included studies, mean age of participants ranged from 66 to 72 years. From 31% to 96% of participants were male. Psychological morbidity varied between studies; for three studies, it was not reported whether patients had baseline psychological symptoms. Where reported, most participants had moderate to severe COPD. Psychological interventions included individual or group cognitive-behavioural based therapy (CBT), CBT-based education, individual psychotherapy and taped progressive muscle relaxation training. Durations varied from a single two-hour intervention to 12 weekly sessions. Where reported, interventions were delivered by health professionals. Where interventions were compared to control, control groups included education only, pulmonary rehabilitation and exercise, weekly lab tests and no specific intervention. The tools used to measure psychological outcomes were diverse. Quality of life measures were split into measures of disease-specific and generic quality of life.

It was suggested, but not explicitly stated, that two reviewers undertook study selection.

Assessment of study quality
Studies were assessed for quality and composite scores calculated out of a maximum of 52. Criteria included clear aims, randomisation techniques, allocation concealment, comparability of groups at baseline, blinding of participants and study personnel, eligibility for intervention assessed, description of intervention, attrition, effect size, details of long-term follow-up and sustained change, analysis of confounding variables, power analysis, definition of all outcomes, measurement with reliable tools and provision of results and appropriate statistical analysis. Each criterion was scored as zero (no detail), 1 (partial detail) or 2 (adequate detail).

The authors did not state how many reviewers assessed the included studies for quality.

Data extraction
Data were extracted on the effects of psychologically based interventions on anxiety, depression and quality of life, according to how these were measured in the individual studies.

One reviewer extracted data using a standardised extraction sheet. A second reviewer independently extracted data from

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half of the included studies and reported no discrepancies.

**Methods of synthesis**
Studies were synthesised in narrative format. Meta-analyses were performed, where possible, for within and between-group anxiety, depression and quality of life. The summary effect $r$ and 95% confidence intervals were calculated.

**Results of the review**
Nine studies (523 participants) were included in the review. Four studies were randomised controlled trials (RCTs) with adequate procedures. Two other studies reported that randomisation methods were used to allocate participants. Seven studies had control groups. Blinding was variable: six studies blinded participants, three studies blinded assessors and none blinded study personnel. Only one study reported on the effect size and that a power analysis was performed. One study undertook an analysis of confounding variables. One study reported adequate allocation concealment. None of the studies used intention-to-treat analysis. Attrition appeared to be substantial, with 201 participants lost from a total of 364. The composite scores of the included studies ranged from 21 to 40 out of a maximum of 52 points.

Improvement in anxiety scores was reported in four out of nine studies when pre- and post-intervention scores within groups were compared. Findings were mixed when the intervention was compared with control. Four out of seven studies reported a statistically significant improvement in depression scores when pre- and post-intervention scores within groups were compared, but differences between intervention and control were not significant. Five studies considered quality of life; findings were mixed and unclear.

One of six meta-analyses undertaken was based on pre- and post-intervention anxiety scores of intervention group patients and reported a statistically significant summary effect size ($r$ -0.273, 95% CI -0.42 to -0.14; eight studies). The other five meta-analyses had potential issues from publication bias and heterogeneity.

**Authors’ conclusions**
The impact of psychological intervention in the management of patients with COPD remained largely unclear with mixed results from studies of varying quality. There was some evidence that psychological interventions reduced anxiety, but only when compared within groups.

**CRD commentary**
The review addressed a clear research question. The broad inclusion criteria appeared appropriate. A wide range of relevant sources were searched for studies published in English, so language bias could not be excluded. Explicit attempts were made to find unpublished studies. Data extraction was performed by one reviewer with half of the studies checked by another reviewer; it was suggested, but not clearly stated, that this method was used for study selection. The authors stated neither how many reviewers assessed studies for quality nor how discrepancies were resolved. Thus, reviewer error and bias could not be ruled out during the review processes of selection, data extraction and quality assessment.

Studies were assessed for quality using appropriate criteria. Composite scores of the included studies varied widely. Studies were mostly small and of poor quality. Three studies did not blind participants and six studies did not blind outcome assessors and this may have introduced bias into the review as the outcomes were subjective. Studies varied widely in research design, types of participants, interventions and outcomes. The authors reported both narrative synthesis and meta-analyses, but few details were reported on the methodology of the meta-analyses and this made it difficult to judge the reliability of the results. Two studies were not controlled; results were reported as within-group comparisons between pre and post-intervention as well as comparisons between intervention and control groups.

The authors acknowledged the diversity and shortcomings of the evidence base. Their judgment, that they were unable to reach clear conclusions because of the limitations of the included studies, is appropriate and likely to be reliable.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated a need for high-quality systematic research of psychological interventions in the routine management of patients with COPD. Future studies should include patients with mild to moderate disease, use robust
measures of anxiety, depression and quality of life suitable for a COPD population and aim to evaluate long-term effects in terms of health outcomes and cost effectiveness.

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