

Characteristics of effective self-management interventions in patients with COPD: individual patient data meta-analysis

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Table S1: Search syntax in PubMed.

<p>("pulmonary disease, chronic obstructive"[MeSH Terms] OR COPD[Title/Abstract] OR "chronic obstructive pulmonary disease"[Title/Abstract] OR "chronic obstructive airway disease"[Title/Abstract] OR "chronic airflow obstruction"[Title/Abstract] OR "chronic obstructive lung disease"[Title/Abstract] OR "chronic bronchitis"[Title/Abstract] OR bronchitis[Title/Abstract] OR emphysema[Title/Abstract] OR "lung emphysema"[Title/Abstract] OR "pulmonary emphysema"[Title/Abstract])</p> <p>OR "heart failure"[MeSH Terms] OR CHF[Title/Abstract] OR HF[Title/Abstract] OR "congestive heart failure"[Title/Abstract] OR "chronic heart failure"[Title/Abstract] OR "chronic cardiac failure" [Title/Abstract] OR "congestive cardiac failure"[Title/Abstract] OR "heart failure"[Title/Abstract] OR "cardiac failure"[Title/Abstract] OR "heart decompensation"[Title/Abstract]</p> <p>OR "diabetes mellitus, type 2"[MeSH Terms] OR "insulin resistance"[MeSH Terms] OR DMII[Title/Abstract] OR DM2[Title/Abstract] OR "type 2 diabetes"[Title/Abstract] OR "type ii diabetes"[Title/Abstract] OR "diabetes mellitus type 2"[Title/Abstract] OR NIDDM[Title/Abstract] OR "noninsulin dependent diabetes mellitus"[Title/Abstract] OR "non insulin dependent"[Title/Abstract] OR "noninsulin dependent"[Title/Abstract] OR noninsuldependent[Title/Abstract] OR non-insulin-dependent[Title/Abstract] OR "impaired glucose tolerance"[Title/Abstract] OR "insulin resistance"[Title/Abstract] OR "glucose intolerance"[Title/Abstract])</p>
<p>AND (self-management[MeSH Terms] OR self-care[MeSH Terms] OR patient-education[MeSH Terms] OR "behavior therapy"[MeSH Terms] OR self-manag*[Title/Abstract] OR self-car*[Title/Abstract] OR self-monitor*[Title/Abstract] OR self-administration[Title/Abstract] OR self-medication[Title/Abstract] OR educate[Title/Abstract] OR educated[Title/Abstract] OR education[Title/Abstract] OR educating[Title/Abstract] OR educational[Title/Abstract] OR instructed[Title/Abstract] OR instruction[Title/Abstract] OR instructions[Title/Abstract] OR instructional[Title/Abstract] OR trained[Title/Abstract] OR "action plan*"[Title/Abstract] OR patient-educat*[Title/Abstract] OR patient-cent*[Title/Abstract] OR patient-focus*[Title/Abstract] OR "behavior therapy"[Title/Abstract] OR "behaviour therapy"[Title/Abstract] OR empowerment[Title/Abstract])</p>
<p>AND ("randomized controlled trial"[MeSH Terms] OR "randomised controlled trial"[MeSH Terms] OR "controlled clinical trial"[MeSH Terms] OR "random allocation"[MeSH Terms] OR "evaluation studies"[MeSH Terms] OR "intervention studies"[MeSH Terms] OR "randomized controlled trial"[Title/Abstract] OR "randomised controlled trial"[Title/Abstract] OR "controlled clinical trial"[Title/Abstract] OR "clinical trial"[Title/Abstract] OR "random allocation"[Title/Abstract] OR intervention[Title/Abstract] OR trial[Title/Abstract] OR trials[Title/Abstract] OR random[Title/Abstract] OR randomized[Title/Abstract] OR randomised[Title/Abstract] OR randomization[Title/Abstract] OR randomisation[Title/Abstract] OR randomizing[Title/Abstract] OR randomising[Title/Abstract] OR randomly[Title/Abstract] OR allocate[Title/Abstract] OR allocated[Title/Abstract] OR allocating[Title/Abstract] OR allocation[Title/Abstract])</p>

Table S2: Baseline characteristics of patients included in individual patient data meta-analysis and published data of eligible studies that did not participate.

Characteristic	Individual patient data of included studies (n=3282)	Published data of non-participating studies (n=1076)
Sex		
<i>Male</i>	65.6%	77.8%
<i>Female</i>	34.5%	22.3%
Age	68.1 ± 9.6	67.3
FEV1%pred	47.7 ± 18.9	45.6
Dyspnoea		
<i>Low level of breathlessness</i>	44.7%	No comparable data published
<i>High level of breathlessness</i>	55.3%	No comparable data published
Level of education		
<i>Primary education or below</i>	38.9%	44.6%
<i>Secondary education</i>	44.6%	46.1%
<i>Higher education</i>	16.6%	9.3%
Current smoker	28.6%	26.5%

Table S3: Programme characteristics of the self-management interventions included in individual patient data meta-analysis and published data of eligible studies that did not participate.

Study	Year recruitment	Standardised training	Multidisciplinary team	Peer contact	Keeping logs	Goal-setting	Problem-solving	Support allocation	Easy telephone access	Action plan with prescription
<i>Studies included in individual patient data meta-analysis</i>										
Gallefoss et al. 1999 ¹	1994	X	X	X	X					X
Bourbeau et al 2003 ²	1998	X	X				X		X	X
Monninkhof et al. 2003 ³	1999	X	X	X	X		X	X	X	X
Coultas et al. 2005a ⁴	2000	X								
Coultas et al. 2005b ⁴	2000	X								
McGeoch et al. 2006 ⁵	2002	X								X
Bischoff et al. 2012a ⁶	2004	X					X		X	X
Bischoff et al. 2012b ⁶	2004									
Effing et al. 2009a ⁷	2004	X	X	X	X	X	X	X	X	X
Effing et al. 2009b ⁷	2004	X	X	X	X	X	X	X	X	X
Effing et al. 2009c ⁷	2004	X	X	X	X	X		X		
Rice et al. 2010 ⁸	2004	X		X					X	X
Casas et al. 2006 ⁹	2005	X	X				X	X	X	X
Zwar et al. 2012 ¹⁰	2006	X	X			X				X
Bucknall et al. 2012 ¹¹	2007	X			X		X	X	X	X
Nguyen et al. 2013a ¹²	2007			X	X	X	X	X		
Nguyen et al. 2013b ¹²	2007			X	X	X	X	X		
Taylor et al. 2012 ¹³	2007	X		X		X	X	X		
Trappenburg et al. 2011 ¹⁴	2008				X					
Total (N=19 interventions)		15	8	9	9	7	10	9	8	11
<i>Eligible studies that did not participate</i>										
Watson et al. 1997 ¹⁵	1992	X	X						X	X
Rea et al. 2004 ¹⁶	1999		X			X	X		X	X
Ninot et al. 2011 ¹⁹	2002			X	X		X			
Wakabayashi et al. 2011 ²⁰	2004	X	X							X
Khdour et al. 2009 ¹⁸	2006									
Fan et al. 2012 ²¹	2007	X		X						X
Wood-Baker et al. 2006 ¹⁷	not reported							X	X	X
Total (N=7 interventions)		3	3	2	1	1	2	1	3	5

X: characteristic present in intervention.

Table S4: Sensitivity analysis on main outcomes by including published main effects of eligible studies without available individual patient data.

	Effect	Primary analysis (individual patient data only)			Pooled analysis of individual patient data and published effects		
		Stu- dies	Pa- tients	Effect size (95% CI)	Stu- dies	Pa- tients	Effect size (95% CI)
<i>Health-related quality of life</i>							
6 months	SMD	9	1876	0.05 (-0.05;0.15)	13	2346	0.08 (-0.09;0.17)
12 months	SMD	10	2663	0.08 (0.00;0.16)	14	3503	0.08 (0.01;0.15)
<i>All-cause hospitalisation</i>							
Time-to-first-event	HR	4	1559	0.80 (0.69;0.93)	5	1985	0.83 (0.72;0.95)
6 months	RR	6	2034	0.81 (0.67;0.97)	Not possible to pool published data		
12 months	RR	5	1817	0.84 (0.73;0.96)	7	2378	0.84 (0.67;1.05)
<i>Respiratory-related hospitalisation</i>							
Time-to-first-event	HR	6	1872	0.79 (0.66;0.94)	7	2298	0.83 (0.70;0.97)
6 months	RR	8	2347	0.87 (0.69;1.09)	Not possible to pool published data		
12 months	RR	9	2426	0.77 (0.64;0.93)	11	2987	0.78 (0.67;0.92)
<i>Mortality</i>							
Time-to-event	HR	7	2120	1.02 (0.76;1.37)	8	2546	1.19 (0.91;1.56)
6 months	RR	9	2490	1.06 (0.62;1.82)	10	2763	1.01 (0.75;1.35)
12 months	RR	7	2182	1.04 (0.64;1.69)	11	3055	1.30 (0.88;1.90)

CI: confidence interval, HR: hazard ratio, RR: risk ratio, SMD: standardised mean difference.

Table S5: Risk of bias assessment of studies included in individual patient data meta-analysis.

Study	Random concealed allocation to treatment	Intention-to-treat analysis	Absence of other sources of bias*	Comment
Bischoff et al. 2012 ⁶	Low risk	Low risk	Low risk	
Bourbeau et al. 2003 ²	Low risk	Low risk	Low risk	
Bucknall et al. 2012 ¹¹	Low risk	Low risk	High risk	Selective drop-out (for health-related quality of life outcomes).
Casas et al. 2006 ⁹	Low risk	Low risk	High risk	Baseline differences between intervention arms.
Coultas et al. 2005 ⁴	Low risk	Unclear risk	Unclear risk	
Effing et al. 2009 ⁷	Unclear risk	Unclear risk	Low risk	
Gallefoss et al. 1999 ¹	Low risk	Unclear risk	Low risk	
McGeoch et al. 2006 ⁵	Unclear risk	Unclear risk	High risk	Baseline differences between intervention arms.
Monninkhof et al. 2003 ²	Unclear risk	Low risk	Low risk	
Nguyen et al. 2013 ¹²	Low risk	Low risk	Low risk	
Rice et al. 2010 ⁸	Low risk	Unclear risk	Low risk	
Taylor et al. 2012 ¹³	Low risk	Unclear risk	Unclear risk	
Trappenburg et al. 2011 ¹⁴	Low risk	Unclear risk	Low risk	
Zwar et al. 2012 ¹⁰	Low risk	Low risk	High risk	Loss-to-follow-up.

Studies were assessed based on published reports.

*E.g., high drop-out rates, risk of contamination, baseline imbalances between intervention arms.

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