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Effectiveness of self-management interventions in individuals diagnosed with COPD: an integrative review

Efetividade das intervenções de autogestão em pessoas com diagnóstico de DPOC: uma revisão integrativa

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Abstract

Background: Self-management strategies in Chronic Obstructive Pulmonary Disease (COPD) are driven by the development of skills and confidence in the patient in their ability to self-manage their medications and symptoms, aiming to delay the progression of the disease. **Aim:** Identify the effectiveness of self-management interventions in people diagnosed with COPD. **Methods:** This is an integrative review, with research in the following databases: VHL, LILACS, EMBASE and PUBMED, from 2019 to 2024, without language restrictions. **Results:** 1,102 articles were found, of which 243 studies were eligible and 10 were selected. Predominantly, the studies were randomized clinical trials, carried out in different settings, with interventions that lasted 3 months and post- intervention follow- up of 3 to 12 months. The results highlight the effectiveness of the interventions, which showed benefits in several aspects, such as social function, dyspnea, sustained behavioral changes, reduction in smoking, quality of life, self- management skills and patient activation in relation to their health. These strategies were delivered by multidisciplinary teams through pictograms, manuals, conversation circles, and individual sessions. **Conclusion:** Self-management interventions for COPD have demonstrated effectiveness in improving outcomes related to social functioning, reduction of dyspnea, maintenance of sustained behavioral changes, reduction in smoking habits, enhancement of quality of life, development of self-management skills and self-efficacy, as well as increased patient engagement in managing their health condition.

Keywords: Pulmonary Disease, Chronic Obstructive; Self-Management; Health Behavior; Quality of Life; Dyspnea.

Resumo

Introdução: As intervenções de autogestão na Doença Pulmonar Obstrutiva Crônica (DPOC), são impulsionadas pelo desenvolvimento de habilidades e confiança no paciente em sua capacidade de autogerir seus medicamentos e sintomas, visando retardar a progressão da doença. **Objetivo:** Identificar a efetividade das intervenções de autogestão em pessoas com diagnóstico de DPOC. **Metodologia:** Trata-se de uma revisão integrativa, com pesquisa nas seguintes bases de dados: BVS, LILACS, EMBASE e PUBMED, no período de 2019 a 2024, sem restrição quanto ao idioma. **Resultados:** Identificaram-se 1.102 artigos, sendo 243 estudos elegíveis e 10 selecionados. Predominantemente, os estudos eram ensaios clínicos randomizados, realizados em diversos cenários, com intervenções que duraram 3 meses e acompanhamento pós-intervenção de 3 a 12 meses. Os resultados destacam a eficácia das intervenções, que mostraram benefícios em diversos aspectos, como função social, dispneia, mudanças comportamentais sustentadas, redução do tabagismo, qualidade de vida, habilidades de autogestão e ativação do paciente em relação à sua saúde. A oferta dessas estratégias foram realizadas por diversas especialidades em saúde e em formato de pictogramas, manuais contendo textos, rodas de conversas e individualmente. **Conclusão:** As intervenções de autogestão na DPOC demonstraram-se efetivas nos desfechos de função social, redução da dispneia, sustentação da mudança de comportamento, diminuição do hábito tabagista, aumento da qualidade de vida, desenvolvimento de habilidades e autoeficácia na autogestão, além de maior engajamento no manejo de sua condição de saúde.

Palavras-chave: Doença Pulmonar Obstrutiva Crônica; Autogestão; Comportamentos Relacionados com a Saúde; Qualidade de Vida; Dispneia.

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung condition characterized by persistent breathing issues, including shortness of breath, coughing, excessive mucus production, and sputum, and possible periods of worsening symptoms (exacerbations). These symptoms arise from changes in the airways (such as bronchitis and bronchiolitis) and alveoli (emphysema), leading to continuous, irreversible, and often progressive obstruction of airflow[1].

In 2020, the Brazilian Society of Pulmonology and Phthisiology reported that this health condition affected around 300 million people worldwide, being the third leading cause of death[2]. In the same year, the prevalence of COPD in Brazil reached 19% among adults over 40 years of age, with 23% of cases in the Southeast region[3]. According to the Global Health Estimates conducted by the WHO in 2019, COPD was the sixth leading cause of death in the Brazil and the leading cause of years of life lost due to respiratory diseases[4]. Furthermore, in 2021, COPD stood out as the fifth leading cause of hospitalization in the Brazilian National Health System among patients over 40 years old, with approximately 200,000 hospitalizations[5].

In this context, this chronic condition leads to high rates of loss of functionality and independence, in addition to causing disability. This manifests as difficulty in performing everyday activities, known as Activities of Daily Living (ADL), which range from simple tasks to more complex activities that require greater functional independence, categorized as Instrumental Activities of Daily Living (IADL). These limitations restrict social participation, directly impacting the HRQoL (Health-Related Quality of Life), mortality rate, and disability of these patients[6].

Periods of exacerbation are characterized by a significant worsening of symptoms due to factors that may act alone or in combination, such as respiratory infections and exposure to pollution, among others, contribute negatively to the severity of the clinical picture[1,6]. It is estimated that these episodes lead to around 150,000 to 200,000 hospital admissions each year[7]. This happens because the factors trigger an exacerbated response from the immune system, increasing systemic inflammation and air trapping, causing dyspnea, coughing, and hypersecretion[1].

Given this scenario, self-management of symptoms, medications, lifestyle changes, and smoking cessation have all been increasingly emphasized in the treatment of this condition. The aim is to empower individuals with the diagnosis to manage their symptoms, preventing adverse outcomes such as exacerbations, serious complications, loss of functional capacity, hospitalizations, and worsening quality of life[1,8].

Self-management interventions for COPD include health education about the disease and developing patients' skills so that they can manage their medications, symptoms, and exacerbations and adopt a healthy lifestyle, incorporating exercise and smoking cessation. The goal is to slow disease progression, improve functionality, reduce disability, increase HRQoL, and prevent exacerbations, reinforcing that behavior change is driven by the patient's confidence in their ability to engage in self-management. Healthcare professionals must be aware of these strategies and the best way to implement them, as they will be responsible for health education and empowerment. Therefore, this study aimed to conduct an integrative review of the effectiveness of self-management interventions in people diagnosed with COPD.

METHODS

This is an integrative review that gathers and critically analyzes different types of studies, evaluating their strengths and weaknesses to reach reliable conclusions and identify gaps in knowledge[9]. The research followed the recommendations of Dhollande et al.[10,11], as follows:

1) Defining the research question with acronyms helps the researcher structure and delimit the question clearly, objectively, and specifically, understanding the key elements of the research.
2) Detail the search strategy to ensure that results are reproducible, considering the particularities of the databases and the correct use of Boolean operators.
3) Critically evaluate the results to ascertain whether they are appropriate and of sufficient quality to be included in the study. This evaluation should be reviewed as a team, and any disagreements should be discussed until consensus is reached.
4) Summarize the results in a flowchart, including identification, screening, and inclusion steps, ensuring a transparent and comprehensive review[10].
5) Extraction and reduction of data by creating an extraction table to summarize the results of the search performed.
6) Critical analysis of the extracted data for writing the results.
7) Conclusions and implications of the research, highlighting the relevance, clinical implications, and limitations of the study conducted.

In addition to following the steps mentioned above, the following were also considered: Formulation of the research question, eligibility criteria for article selection, study variables, search strategy, article selection, data extraction and analysis, and the ethical aspects of this research.

Formulation of the research question

The Evidence-Based Practice (EBP) approach suggests that clinical problems be defined by the acronym PICO: Patient, Intervention, Comparison, and Outcomes. These four elements are essential for developing a well-defined

and objective research question. A well-structured question helps the researcher to identify the necessary information and directs the search for evidence in databases in a focused manner[12]. For this reason, the PICO strategy was selected to guide the question that contemplates this research, which was developed as follows:

P (population): patients diagnosed with DPOC.

I (intervention): health self-management skills.

C (control): not applicable, as this study does not aim to compare interventions.

O (outcomes): HRQoL, dyspnea, disability, activities of daily living (ADL), sedentary behavior, physical activity, and exacerbations.

This leads to the following question: How effective are self-management interventions in patients diagnosed with COPD?

Eligibility criteria

- Inclusion criteria: articles published between 2019 and 2024 resulting from quantitative research, such as Randomized Clinical Trials, case-control studies, quasi-experimental studies, and all types of literature reviews, with full text available and no language restrictions.
- Exclusion criteria: studies that only described the self-management intervention and either did not evaluate its effectiveness or did not address the topic.

Outcome variables

QUALITY OF LIFE, relief from dyspnea, reduction in disability, activities of daily living (ADL), reduction in sedentary behavior, physical activity, and exacerbations.

Search strategies

The search was conducted using the terms described above, identifying controlled descriptors in the Health Sciences Descriptors (DeCS)/Medical Subject Headings (MeSH) via the Virtual Health Library (VHL) and the Embase thesaurus (EMTREE) contained in the EMBASE database. The keywords were combined using the Boolean operators OR and AND. The search was conducted from April to August 2024 in the BVS, LILACS, EMBASE, and PUBMED metabases. Example of the final search strategies (Chart 1).

Articles selection

The results were obtained from PUBMED and EMBASE databases and then exported to Rayyan, a program that removes duplicates and helps screen titles and abstracts. After eliminating duplicates and applying the eligibility criteria, the titles and abstracts were reviewed. Two researchers (APOO and GMM) conducted the screening independently and selected the studies for full reading. Disagreements were resolved by a third researcher (VPL). Once the selection was completed, the data were extracted by downloading and reading the full text.

Data extraction and analysis

Data extraction tables for the selected articles were created (Charts 2 and 3), with analysis carried out by the team and any discrepancies resolved with a third reviewer (VPL). This collaborative approach ensured consistency in data extraction and analysis.

Spreadsheets were created in Microsoft Excel 2019 containing data such as the article title, author, year of publication, location, study objective, and sample size. A second spreadsheet focused on the main information from the study interventions, including: age of participants, inclusion and exclusion criteria, intervention, length of intervention, outcomes assessed, and study conclusion.

Ethical issues

As this is a review study using publicly available data, without the involvement of human subjects, review by the Ethics and Research Committee was waived.

RESULTS

A total of 1,102 publications were retrieved from the databases. After excluding 317 duplicates, a total of 785 studies remained. The eligibility criteria were then applied, resulting in the exclusion of 542 studies. The titles and abstracts of the remaining 243 articles were read, excluding 231 articles. Thus, 12 studies were considered eligible for inclusion. However, two articles were not included because they were not available in full, resulting in ten articles included in this integrative review (Figure 1). The authors were contacted, but there was no response.

The selected articles (Chart 2) were published in English and produced in Sweden[13,14], the Netherlands, Belgium, Luxembourg, and the United Kingdom[15], Taiwan[16], Turkey[17], Guizhou[18], Australia[19], Korea[20], and Canada[21]. The interventions were carried out in primary health care centers[13,14], in intensive care units[16], in hospitals and at home[17], in all health care settings[19], in hospitals[18,20], and three without specification of the setting[8,15,21]. The most prevalent study design was Randomized Clinical Trials[13,14,17,18,20], followed by Systematic Reviews of randomized clinical trials[8,19], Systematic Review with Meta-analysis[15], Prospective and quasi-experimental study[16], and Prospective cohort feasibility study before and after[21].

Regarding the year of publication, the studies were distributed as follows: two publications in 2019[13,14], three in 2020[15-17], two in 2021[8,18], and one in each of the years 2022[19], 2023[20], and 2024[21]. Regarding sample size, the clinical trials ranged from 40 to 162 participants. In the systematic reviews, the primary studies had samples ranging from 23 to 1,447 participants, a prospective quasi-experimental study with 55 participants, and a prospective before-and-

Chart 1. Search strategy used in the PUBMED, BVS, LILACS, MEDLINE, and EMBASE databases.

Date	Database	Final search strategy	Number of results
08/10/2024	PUBMED	"pulmonary disease, chronic obstructive"[MeSH Terms] OR "Chronic Obstructive Lung Disease"[All Fields] OR "Chronic Obstructive Pulmonary Diseases"[All Fields] OR "COAD"[All Fields] OR "COPD"[All Fields] OR "Chronic Obstructive Airway Disease"[All Fields] OR "Chronic Obstructive Pulmonary Disease"[All Fields] OR "Chronic Airflow Obstructions"[All Fields] OR "Chronic Airflow Obstruction"[All Fields] AND "Health Behavior"[MeSH Terms] OR "Health Behaviors"[All Fields] OR "Health Related Behavior"[All Fields] OR "Health-Related Behaviors"[All Fields] OR "behavior therapy methods*"[All Fields] OR "counseling methods*"[All Fields] OR "health knowledge attitudes practice*"[All Fields] OR "risk reduction behavior*"[All Fields] OR "self management*"[All Fields] OR "behavior therapy methods*"[All Fields] OR "pulmonary rehabilitation"[All Fields] OR "behavior change techniques"[All Fields] OR "health behavior counseling"[All Fields] OR "outcome assessment health care"[All Fields] OR "Self Care"[All Fields] AND "Activities of Daily Living"[MeSH Terms] OR "ADL"[All Fields] OR "Daily Living Activities"[All Fields] OR "Daily Living Activity"[All Fields] OR "Chronic Limitation of Activity"[All Fields] OR "Sedentary Behavior"[MeSH Terms] OR "Sedentary Behaviors"[All Fields] OR "Sedentary Lifestyle"[All Fields] OR "Physical Inactivity"[All Fields] OR "Lack of Physical Activity"[All Fields] OR "Sedentary Time"[All Fields] OR "Sedentary Times"[All Fields] AND "Quality of Life"[MeSH Terms] OR "Life Quality"[All Fields] OR "Health Related Quality Of Life"[All Fields] OR "HRQOL"[All Fields] OR "quality of life*"[All Fields] OR "healthy lifestyle*"[All Fields] OR "Dyspnea"[MeSH Terms] OR "Shortness of Breath"[All Fields] OR "Breath Shortness"[All Fields] OR "Breathlessness"[All Fields]	597
08/10/2024	BVS	"pulmonary disease, chronic obstructive" OR "Chronic Obstructive Lung Disease" OR "COPD" OR "Chronic Airflow Obstructions" OR "Chronic Airflow Obstruction" AND "Health Behavior" OR "Health Behaviors" OR "Health Related Behavior" OR "Health-Related Behaviors" OR "pulmonary rehabilitation" OR "Risk Reduction Behavior" OR "Risk Reduction" OR "health behavior counseling" OR "self management" AND "Activities of Daily Living" OR "ADL" OR "Daily Activities" OR "Chronic Activity Limitation" AND "Sedentary Behavior" OR "Sedentary Behaviors" OR "Sedentary Lifestyle" OR "Sedentary Lifestyles" OR "Physical Inactivity" OR "Sedentary" OR "Sedentary Time" AND "Quality of Life" OR "Health Related Quality Of Life" OR "HRQOL" OR "Life Quality" AND "Dyspnea" OR "Breath Shortness" OR "Breath Shortnesses" OR "Breathlessness" OR "Shortness of Breath"	0
08/10/2024	LILACS	Same strategy used in the VHL database	0
08/10/2024	EMBASE	('chronic obstructive lung disease' OR 'chronic airflow obstruction' OR 'chronic airway obstruction' OR 'chronic obstructive bronchopulmonary disease' OR 'chronic obstructive lung disorder' OR 'chronic obstructive pulmonary disease' OR 'chronic obstructive pulmonary disorder' OR 'chronic obstructive respiratory disease' OR 'chronic pulmonary obstructive disease' OR 'chronic pulmonary obstructive disorder' OR 'copd' OR 'lung chronic obstructive disease' OR 'lung disease, chronic obstructive' OR 'obstructive chronic lung disease' OR 'obstructive chronic pulmonary disease' OR 'obstructive lung disease, chronic' OR 'pulmonary disease, chronic obstructive' OR 'pulmonary disorder, chronic obstructive') AND ('behavior, health' OR 'behaviour, health' OR 'health behaviour' OR 'health promoting behavior' OR 'health promoting behaviour' OR 'health related behavior' OR 'health related behaviour' OR 'health behavior' OR 'risk reduction behavior' OR 'risk reduction behaviour' OR 'risk reduction' OR 'lung rehabilitation' OR 'pulmonary rehabilitation' OR 'health behavior counseling' OR 'self management') AND ('activities of daily living' OR 'activity, daily living' OR 'ADL (activities of daily living)' OR 'daily living activity' OR 'daily life activity' OR 'sedentary behavior' OR 'sedentary behaviour' OR 'sedentary life style' OR 'sedentary lifestyle') AND ('health related quality of life' OR 'HRQL' OR 'life quality' OR 'quality of life' OR 'breathing difficulties' OR 'breathing difficulty' OR 'breathlessness' OR 'difficult breathing' OR 'difficult respiration' OR 'dyspneas' OR 'dyspneic syndrome' OR 'dyspnoea' OR 'dyspnoeae' OR 'dyspnoeas' OR 'lung dyspnea' OR 'lung dyspnoea' OR 'shortness of breath' OR 'dyspnea')	505

Caption: PubMed: Public/Publisher; BVS: Virtual Health Library; LILACS: Latin American and Caribbean Health Sciences Literature; MEDLINE: Medical Literature Analysis and Retrieval System Online; Embase: Excerpta Medica Database.

Source: elaborated by the authors.

after cohort feasibility study with 30 participants, with one study not specifying the sample size[8].

The characterization of the populations and interventions in the studies (Chart 3) showed a predominance of males[13,15,17-20], with only one study reporting a predominance of females[16]. The age ranged from 60 to 81 years. The interventions lasted three months, with post-intervention follow-up ranging from three to 12 months. Of the nine studies, eight used usual care as a control group for their intervention[8,13-18,20].

The predominant outcomes after the intervention were self-efficacy and self-care skills in patients; sustained behavior change (physical activity and smoking cessation); symptoms of dyspnea and fatigue; HRQoL, COPD exacerbations, and number of hospitalizations/readmissions. Statistically significant results included social function[13], chronic disease self-management skills in COPD patients, and sustained behavior change following intervention implementation[17,18]. In addition, there was improvement in HRQoL and self-efficacy after hospital discharge, and dyspnea two months after

Chart 2. Characterization of the selected studies.

Author	Title	Country	Study design	Objective	Sample size	Participants' age	Values of FEV_1/ FVC, FEV_1% pred	Scenario
Smalley et al.[8]	Can self-management programmes change healthcare utilization in COPD?: A systematic review and framework analysis.	Unspecified	Systematic review of randomized clinical trials.	Assess the ability of self-management programs to change the healthcare-seeking behaviors of patients with COPD.	Sample size varying between 40 and 743 patients.	Unspecified	Unspecified	Unspecified
Zakrisson et al.[13]	A complex intervention of self-management for patients with COPD or CHF in primary care improved performance and satisfaction concerning their own selected activities; A longitudinal follow-up.	Sweden	Multicenter randomized controlled trial.	Assess the effects of a self-management intervention in PHC* for patients with COPD** or CHF¨ ¨.	162 participants	Average age between 71 and 74 years old	FEV1/FVC@ < 0.70 and FEV1% < of predicted after bronchodilation	Primary Healthcare Centers
Luhr et al.[14]	Effects of a self-management programme on patient participation in patients with chronic heart failure or chronic obstructive pulmonary disease: A randomized controlled trial.	Sweden	Multicenter randomized clinical trial.	Describe the effects of a self-management program on the preferences and experiences of participation of patients with COPD or CHF in PHC.	118 participants	Average age between 72 and 74 years old.	FEV1/FVC@ < 0.70 and FEV1% < 80% of predicted.	Primary Healthcare Centers
Shaw et al.[15]	Are COPD self-management mobile applications effective? A systematic review and meta-analysis.	Netherlands and the United Kingdom	Systematic review and meta-analysis.	Synthesize and evaluate evidence on the effectiveness of mobile applications compared to usual care in people with COPD.	1.447 participants	≥60 years	The average of FEV1% predicted varied between 47.6% and 48.9%.	Unspecified
Liou et al.[16]	Improving self-care efficacy and quality of life with a self-management program among patients with chronic obstructive pulmonary disease: A quasi-experimental study.	Taiwan	Prospective and quasi-experimental study.	Investigate the effectiveness of a self-management program on self-care effectiveness and health-related HRQoL in patients with COPD.	55 participants	Above 30 years old	Unspecified	ICU# of a healthcare center

Caption: **HRQoL =** (Health-Related Quality of Life); **PHC*** = Primary Health Care; **COPD**** = Chronic Obstructive Pulmonary Disease; **CHF¨ ¨** = Congestive Heart Failure; **ICU#** = Intensive Care Unit; **EBIP&** = Education-Based Intervention Program; **FEV1/FVC@**= Ratio between forced expiratory volume in one second and forced vital capacity; **FEV1**% = Forced Expiratory Volume in One Second.

Source: elaborated by the authors based on the studies selected for this study.

Chart 2. Continued...

Author	Title	Country	Study design	Objective	Sample size	Participants' age	Values of FEV_1/ FVC, FEV_1% pred	Scenario
Cevirme and Gokcay[17]	The impact of an Education-Based Intervention Program (EBIP) on dyspnea and chronic self-care management among chronic obstructive pulmonary disease patients. A randomized controlled study.	Turkey	Pre-test-post-test randomized controlled trial.	Investigate the effect of EBIP&, led by a team of nurses, on individuals with COPD.	40 participants	60 to 66 years old.	FEV1% between 50% and 79%.	University Hospital and patients' homes.
Wang et al.[18]	A mobile health application to support self-management in patients with chronic obstructive pulmonary disease: a randomized controlled trial.	Guizhou	Randomized, controlled, blinded clinical trial.	Investigate the effects of a mobile health application for smartphones in patients with COPD.	78 participants	Unspecified	Unspecified	Hospital ward
Shnaigat et al.[19]	Effectiveness of patient activation interventions on chronic obstructive pulmonary disease self-management outcomes: A systematic review.	Australia	Systematic review of randomized clinical trials.	Evaluate the effect of COPD self-management interventions guided by patient activation.	Sample size varying between 23 and 763 patients.	Between 64 and 74 years old.	Unspecified	In all healthcare settings
Choi et al.[20]	Effect of self-management education using pictogram-based content of health information on outcomes in Korean patients with chronic obstructive pulmonary disease: A randomized controlled trial.	Korea	Randomized Clinical Trial.	Evaluate the impact of our pictogram-based self-management education on symptom experience, self-efficacy, adherence to self-management, and health-related quality of life among patients with COPD.	66 participants	Age equal to or higher than 40 years old.	Unspecified	Respiratory outpatient clinic at a university hospital.
Wu et al.[21]	Feasibility of a wearable self-management application for patients with COPD at home: a pilot study.	Canada	Prospective cohort feasibility study before and after.	Determine whether patients with COPD will use a purpose-built smartphone and smartwatch app to help manage their COPD and, if so, identify the effects on their self-management.	Convenience sample of 30 participants.	Age equal to or higher than 40 years old.	Unspecified	Unspecified

Caption: **HRQoL =** (Health-Related Quality of Life); **PHC*** = Primary Health Care; **COPD**** = Chronic Obstructive Pulmonary Disease; **CHF¨ ¨** = Congestive Heart Failure; **ICU#** = Intensive Care Unit; **EBIP&** = Education-Based Intervention Program; **FEV1/FVC@**= Ratio between forced expiratory volume in one second and forced vital capacity; **FEV1**% = Forced Expiratory Volume in One Second.

Source: elaborated by the authors based on the studies selected for this study.

Chart 3. Synthesis of the interventions and results of the selected studies.

Author	Intervention (Experimental Group)	Intervention (Control Group)	Intervation length	Outcomes assessed	Instruments	Result
Smalley et al.[8]	Self-management interventions in patients with COPD.	Usual care	Unspecified	-Hospitalization; -Readmissions; -HRQoL; -Mortality.	Based on the results of the articles, an analysis was performed based on the theory of behavior change (TDF) to evaluate the outcomes.	There were no significant results in any of the outcomes.
Zakrisson et al.[13]	Usual healthcare self-management intervention (identifying and addressing issues raised by participants, as well as training self-management skills)	Usual health care	Three months of follow-up of the population up to one year after the intervention	-Self-efficacy regarding dyspnea and physical exercise; -Symptoms of dyspnea; -Functionality regarding fatigue; -General health status; -Emotional symptoms; -HRQoL.	-PSEFSM -S-ESES; -mMRC; -FIS; -SF-36. -HADS; -COPM; -6MWT.	Statistically significant social function according to SF-36
Luhr et al.[14]	Usual healthcare self-management intervention (identifying and addressing issues raised by participants, as well as training self-management skills.	Usual health care	Three months of follow-up of the population up to one year after the intervention	-Functionality; -Capacity; -Functional limitations due to fatigue; -Self-efficacy regarding exercise and fatigue; -Health; - Patient participation.	A set of questionnaires developed by the authors to evaluate the outcomes, based on Patient Preferences for Patient Participation (the 4Ps)	There was no significant difference in any of the outcomes.
Shaw et al.[15]	Interventions in which patients with COPD received a mobile device containing a program that performed a specific function related to COPD and personal health.	Usual care	Range from two weeks to one year	-COPD exacerbations; -Physical function; -HRQoL; -Dyspnea and fatigue; physical activity; -Self-efficacy; -Anxiety and depression.	-Patient report according to exacerbations; -Shuttle walking test; 6MWT'; -SF-12; SF-36; CCQ; SGRQ; -Chronic Respiratory Disease Questionnaire; mMRC; -CRQ; MFI; FACIT-F; -Accelerometers; pedometers; Moderate Physical Activity Questionnaire; Activity Questionnaire; -Not reported for self-efficacy; -HADS.	There was no statistically significant difference in any of the outcomes.

Caption: HRQoL: (Health-Related Quality of Life); **TDF** = Theoretical Domain Framework; **SGRQ** = Saint George Respiratory Questionnaire; **PSEFSM** = Perceived Self-Efficacy Scale for Fatigue Self-Management; **S-ESES** = Swedish Exercise Self-Efficacy Scale; **HADS** = Hospital Anxiety and Depression Scale; **mMRC** = Modified MRC Scale; **FIS** = Fatigue Impact Scale; **COPM** = Canadian Occupational Performance Measure; **6MWT** = Six-Minute Walk Test; **SF-12 =** 12-item summary survey; **SF-36 =** 36-item summary survey; **MRC** = Medical Research Council Dyspnea; **CSES = COPD** Self-Efficacy Scale; **CCQ** = Clinical Course Questionnaire; **BDI** = Baseline Dyspnea Index; **SCMP-G** = Self-Care Management Scale; **CAT = COPD** Assessment Test; **CSMS** = Self-Management Behavior; **CDSES-K** = Chronic Disease Self-Efficacy Scale; **CRQ** = Chronic Respiratory Questionnaire; **MFI** = Multidimensional Fatigue Inventory; FACIT-F = Functional Assessment of Chronic Illness Therapy-Fatigue; **PAM** = Patient Activation Measure; **PRAISE** = Pulmonary Rehabilitation Adapted Index of Self-Efficacy; **BMI** = body mass index.

Source: elaborated by the authors based on the studies selected for this study.

Chart 3. Continued...

Author	Intervention (Experimental Group)	Intervention (Control Group)	Intervation length	Outcomes assessed	Instruments	Result
Liou et al.[16]	Self-management program with an instruction manual that includes symptom management.	Usual treatment for patients with COPD. After admission, educate patients about the symptoms of COPD and adherence to treatment prescriptions	After discharge from the hospital, follow-up continued for three months	-Dyspnea; -Self-efficacy; -HRQoL.	-MRC; -CSES; -CCQ.	Statistically significant results in HRQoL, Self-efficacy (after hospital discharge) by CSES, and in Dyspnea (two months after discharge) by MRC.
Cevirme and Gokcay[17]	Education-Based Intervention Program (EBIP) consisting of hospital education, home visits + education and monitoring, an instruction manual, and telephone guidance.	Routine care and treatment	Three months	-Dyspnea; -Self-management skills; -Hospitalizations; -Change in BMI; -Changes in lung function.	-BDI; -SCMP-G; -Form developed by the authors. -BMI; -Spirometry.	Statistically significant improvement in dyspnea by BDI and in self-management skills by SCMP-G.
Wang et al.[18]	Mobile device containing a health app for self-management and usual care in COPD. Training was provided before discharge.	Usual care, including health education, such as advice on maintaining physical activity three to five times a week, use of medications, and prescription of oxygen therapy by a respiratory nurse at discharge	At the third, sixth, and twelfth months after the intervention	-Self-management behavior, - HRQoL, -Sustained behavior change, including physical activity and smoking cessation.	-CSMS; -CAT; -Questionnaire developed by the authors on physical activity and smoking	Statistically significant improvement for: -Improvement in HRQoL in both groups at three, six, and 12 months by CAT; -Self-management behavior over 12 months by CSMS; -Sustained behavior change at three, six, and 12 months by questionnaire; -Reduction in smoking after one year and reduction in the number of cigarettes smoked per day by questionnaire.

Caption: HRQoL: (Health-Related Quality of Life); **TDF** = Theoretical Domain Framework; **SGRQ** = Saint George Respiratory Questionnaire; **PSEFSM** = Perceived Self-Efficacy Scale for Fatigue Self-Management; **S-ESES** = Swedish Exercise Self-Efficacy Scale; **HADS** = Hospital Anxiety and Depression Scale; **mMRC** = Modified MRC Scale; **FIS** = Fatigue Impact Scale; **COPM** = Canadian Occupational Performance Measure; **6MWT** = Six-Minute Walk Test; **SF-12 =** 12-item summary survey; **SF-36 =** 36-item summary survey; **MRC** = Medical Research Council Dyspnea; **CSES = COPD** Self-Efficacy Scale; **CCQ** = Clinical Course Questionnaire; **BDI** = Baseline Dyspnea Index; **SCMP-G** = Self-Care Management Scale; **CAT = COPD** Assessment Test; **CSMS** = Self-Management Behavior; **CDSES-K** = Chronic Disease Self-Efficacy Scale; **CRQ** = Chronic Respiratory Questionnaire; **MFI** = Multidimensional Fatigue Inventory; FACIT-F = Functional Assessment of Chronic Illness Therapy-Fatigue; **PAM** = Patient Activation Measure; **PRAISE** = Pulmonary Rehabilitation Adapted Index of Self-Efficacy; **BMI** = body mass index.

Source: elaborated by the authors based on the studies selected for this study.

Chart 3. Continued...

Author	Intervention (Experimental Group)	Intervention (Control Group)	Intervation length	Outcomes assessed	Instruments	Result
Shnaigat et al.[19]	Self-management interventions based on the principle of patient activation.	No comparison group. The study aims to compare the interventions screened.	Some of the selected studies performed follow-up after self-management intervention between three and 24 months	-Physical activity; - Mental health (depression, anxiety); -Patient activation and self-efficacy in self-management; -Hospitalizations and emergency visits, -QoL.	-6MWT; Shuttle Walking Test; -HAD; -PAM; PRAISE; -CAT; SGRQ; -Not specified for hospitalizations and emergency visits	Statistically significant results in patient activation and self-efficacy in self-management by PRAISE
Choi et al.[20]	Self-management education based on pictograms provided through 30-minute individualized sessions.	Traditional education provided through text-based pamphlets	Throughout the period in the outpatient clinic and follow-up two months after discharge	-Symptom experience, -Self-efficacy, -Adherence to self-management, -QoL.	-The Symptom Experience Scale; -CDSES-K; -The self-care scale; -SGRQ.	Statistically significant results in self-efficacy by CDSES-K
Wu et al.[21]	App that provides monitoring and recording of heart rate, oxygen saturation, activity, cough, educational resources for COPD, including video exercises for pursed-lip breathing, and an action plan for COPD in which patients can enter their action plan when an exacerbation, letterheads of medications and motivational messages encouraging participation	None. The study aimed to compare the intervention group before and after	6 months	-Adherence to the app, -Self-management behavior, -QoL, -Clinical control of the disease, -Self-efficacy, -Dyspnea.	-Determined by the time of use recorded by the application itself, -CRQ, through the change in the Mastery subsection, -CRQ and SGRQ, -CCQ, -CSES, -MRC	Statistically significant results in reduction of self-efficacy by CSES

Caption: HRQoL: (Health-Related Quality of Life); **TDF** = Theoretical Domain Framework; **SGRQ** = Saint George Respiratory Questionnaire; **PSEFSM** = Perceived Self-Efficacy Scale for Fatigue Self-Management; **S-ESES** = Swedish Exercise Self-Efficacy Scale; **HADS** = Hospital Anxiety and Depression Scale; **mMRC** = Modified MRC Scale; **FIS** = Fatigue Impact Scale; **COPM** = Canadian Occupational Performance Measure; **6MWT** = Six-Minute Walk Test; **SF-12 =** 12-item summary survey; **SF-36 =** 36-item summary survey; **MRC** = Medical Research Council Dyspnea; **CSES = COPD** Self-Efficacy Scale; **CCQ** = Clinical Course Questionnaire; **BDI** = Baseline Dyspnea Index; **SCMP-G** = Self-Care Management Scale; **CAT = COPD** Assessment Test; **CSMS** = Self-Management Behavior; **CDSES-K** = Chronic Disease Self-Efficacy Scale; **CRQ** = Chronic Respiratory Questionnaire; **MFI** = Multidimensional Fatigue Inventory; FACIT-F = Functional Assessment of Chronic Illness Therapy-Fatigue; **PAM** = Patient Activation Measure; **PRAISE** = Pulmonary Rehabilitation Adapted Index of Self-Efficacy; **BMI** = body mass index.

Source: elaborated by the authors based on the studies selected for this study.

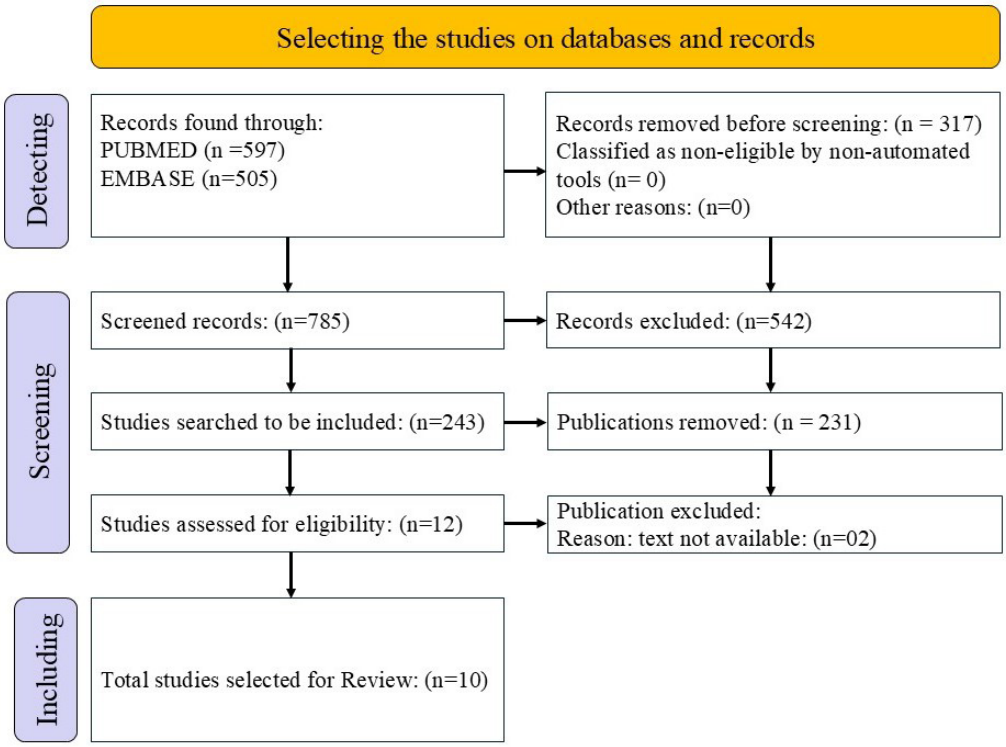

Figure 1. Flowchart of the sampling composition according to the criteria of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020.

Source: elaborated by the authors based on the studies selected for this study.

discharge[16,19,20]. In contrast, only one study found a reduction in the latter outcome[21]. Smalley et al.[8], Luhr et al.[14], and Shaw et al.[15] found no statistically significant results.

DISCUSSION

This literature review showed that self-management interventions were effective in terms of social function, dyspnea, promoting sustained behavior change, smoking reduction, HRQoL, skills, and patient activation regarding their health condition. However, the findings on self-efficacy were inconsistent. The interventions varied significantly between specialties and used different instruments, some of which are neither specific to the condition being studied or did not follow a uniform consensus on the components of the interventions.

Based on the above, social functioning was a positive outcome of self-management interventions, showing that individuals participated more in daily and social activities. Therefore, encouraging sociability is crucial because, as highlighted by Disler et al.[22], social isolation is common in individuals with COPD, mainly due to dyspnea, which can result in problems such as anxiety and depression, which are predictors of mortality[23]. Dyspnea was another favorable outcome, with marked improvements after two months of intervention, as it is one of the main causes of hospitalizations. These findings are corroborated by a systematic review showing that self-management interventions significantly improved dyspnea persisting after two months of intervention[24].

There was a reduction in smoking and sustained behavioral change, that is, an increase in the frequency of physical exercise. Cessation is the main intervention for COPD management, as it directly influences symptoms, reducing the frequency of exacerbations. Adding exercise to the routine of COPD patients is key to improving their cardiorespiratory capacity and muscle strength, since their reduced daily and social activities lead to a sedentary lifestyle and lower exercise tolerance, resulting in symptoms such as dyspnea and exacerbations. Gregersen et al.[25] also found that self-management interventions reduced hospitalizations and health service use, in addition to improving physical activity levels.

In terms of HRQoL, it is common to observe that lung function deteriorates progressively, leading to a gradual decline in physical, emotional, and social health, simultaneously leading to a reduction in this outcome[26]. A 2016 systematic review demonstrated that self-management interventions in COPD were effective in significantly increasing this outcome after 12 months of intervention[27], confirming the findings of this study, which also highlighted this persistence[16,18].

Three studies reported significant improvements Inin skills and self-efficacy in COPD self-management, that persisted from two to twelve months after the intervention. Self-management interventions include acquiring skills

that can improve symptom management, medication adherence, and overall health management for COPD patients, guided by their own concerns and complaints. Self-efficacy, or the patient's confidence in managing their health, is also a key aspect of ensuring effective and appropriate management of the condition. A systematic review with meta-analysis corroborates these findings, showing that interventions were effective in developing self-management skills, increasing HRQoL, and reducing hospitalizations and emergency room visits[28].

Robert Wu et al. reported a significant decrease in the Emotional Arousal subscale of the COPD Self-Efficacy Scale, which directly impacted the reduction of this outcome. There is also evidence that self-efficacy tends to decrease in patients with COPD over time due to symptom exacerbation, disease severity, aging, and other factors[29]. The composition of the sample in the aforementioned study reflects these factors, as it consisted mainly of elderly individuals (with a mean age of 69.8 years) and a mean diagnosis of 9.3 years, which may have contributed to the reduction in this outcome.

The study revealed variability in the implementation of self-management interventions. Among the nine studies analyzed, two used mobile devices with specific programs for COPD[15,18], but only one achieved significant results. The effectiveness of digital interventions remains uncertain, as they showed few significant improvements in the outcomes mentioned[30]. Approaches such as pictogram instructions and health manuals[13,14,16-20], were consistent with the literature, which associates greater engagement in self-management with better clinical outcomes[19], and the promotion of health empowerment through group meetings and individual education. Two studies implemented group interventions in Primary Health Care[13,14] without statistically significant results proving their effectiveness, but with a tendency to reduce anxiety and medical consultations[30]. Regarding responsibility for the interventions, most studies did not specify the professional involved, varying according to the available team. When mentioned, nurses led most cases, with physical therapists being cited in only one study. This highlights the need for further research to assess their role in these interventions[15].

According to data available in Ordinance No. 19 of the Brazilian Ministry of Health, COPD represents an annual cost of approximately R$ 72 million[5]. This study showed that self-management interventions have a direct impact on reducing the number of exacerbations through symptom and medication control and, consequently, on hospitalization rates in this population, which could reduce public health spending.

The limitations of this study include the heterogeneity of the population analyzed, which encompassed not only individuals with COPD but also those with congestive heart failure (CHF), variations in COPD stages and severity, and a wide age range, with a predominance of elderly individuals. The interventions were applied at various levels of complexity, ranging from primary care to intensive care units (ICUs), using diverse methods and addressing different topics, which hindered defining a single model. Also, the diversity of measurement instruments, especially in assessing self-management and effectiveness, undermined the reliability of the results[13,16,17,20].

As strengths, the study highlighted the effectiveness of self-management interventions and pointed out gaps, such as the scarcity of validated instruments aimed at assessing the acquisition of self-management and self-efficacy skills in patients with COPD, the lack of understanding of the role of physical therapists in implementing strategies, and the impact of these practices in terms of public health spending, which are all key issues for further research.

CONCLUSION

The effectiveness of self-management interventions in patients with COPD was shown by improvements in social functioning, reduced dyspnea, sustained behavior change, decreased smoking, increased quality of life, development of self-management skills and self-efficacy, and greater patient activation regarding their health condition. However, further studies are needed to consolidate these conclusions.

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Nothing to declare.

CONFLICT OF INTEREST

Nothing to declare.

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RESEARCH DATA AVAILABILITY

No research data was used. This study consists of a literature review and did not generate or analyze primary research data. All information was retrieved from publicly accessible bibliographic databases, including BVS, LILACS, Embase, and PubMed.

AUTHOR CONTRIBUTIONS

Ana Paula Otoni Ogava: Study design; Methodology; Formal analysis; Investigation; Data curation; Writing—original draft; Writing—review and editing. Gabriela Matoso

Melgaço: Writing—review and editing. Vanessa Pereira Lima: Supervision; Methodology; Writing—review and editing.

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