REHABILITATION NURSING ON THE SELF-MANAGEMENT OF THE ELDERLY PERSON WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A RAPID REVIEW

ENFERMAGEM DE REABILITAÇÃO NA AUTOGESTÃO DA PESSOA IDOSA COM DOENÇA PULMONAR OBSTRUTIVA CRÓNICA: UMA REVISÃO RÁPIDA

ENFERMERÍA DE REHABILITACIÓN EN EL AUTOMANEJO DEL ANCIANO CON ENFERMEDAD PULMONAR OBSTRUCTIVA CRÓNICA: UNA REVISIÓN RÁPIDA

Cláudia Moura[1] 🆔; António Lista[2] 🆔; Ana Lúcia João[2] 🆔; Albertina António[3] 🆔; Florbela Bia[2] 🆔

[1] *Unidade Local de Saúde Arrábida, Hospital de São Bernardo, Setúbal, Portugal*
[2] *Departamento de Enfermagem, Universidade de Évora, Évora, Portugal*
[3] *Unidade Local de Saúde Médio Tejo, Hospital Rainha Santa Isabel, Torres Novas, Portugal*

Corresponding Author: António Lista, antonio.lista@uevora.pt

ABSTRACT

Introduction: Chronic Obstructive Pulmonary Disease (COPD) is one of the leading causes of mortality worldwide, with a significant impact on quality of life. Self-management is crucial for controlling the disease, reducing exacerbations, and decreasing hospital admissions. The aim of this study is to identify the gains attributable to Rehabilitation Nursing care in empowering self-management in elderly individuals with COPD.

Methodology: A Rapid Literature Review (RLR) was conducted, including four randomized clinical trials (RCTs) and two quasi-experimental studies, obtained from EBSCOhost between 2018 and 2023.

Results: This study analyzed self-management interventions in 505 elderly individuals with COPD (mean age 70.6 years, 66.9% male). Most studies presented a low risk of bias. The interventions, including physical and cognitive rehabilitation, educational programs, and technology-based interventions, resulted in improvements in quality of life, well-being, functionality, self-management, self-efficacy, and self-care, with sustained gains in patient knowledge and activation. Additionally, significant improvements were observed in physical symptoms, such as dyspnea, and emotional symptoms, such as anxiety.

Conclusion: Our review highlights the central role of Rehabilitation Nursing in empowering the elderly for effective COPD self-management. The implementation of these interventions improves disease management, autonomy, and quality of life for patients. These interventions show great potential for reducing costs associated with exacerbations and hospitalizations, promoting a patient-centered, integrated, holistic, and personalized approach, essential for economic sustainability and better health outcomes.

DESCRIPTORS: Rehabilitation Nursing; COPD; Elderly; Self-Management; Quality of Life.

RESUMO

Introdução: A Doença Pulmonar Obstrutiva Crónica (DPOC) é uma das principais causas de mortalidade a nível mundial, com um impacto significativo na qualidade de vida. A autogestão é crucial para controlar a doença, reduzir exacerbações e diminuir internamentos hospitalares. O objetivo deste estudo é identificar os ganhos sensíveis aos cuidados de Enfermagem de Reabilitação na capacitação para a autogestão de idosos com DPOC.

Metodologia: Foi realizada uma Revisão Rápida de Literatura (RRL), incluindo quatro ensaios clínicos randomizados (RCTs) e dois estudos quase-experimentais, obtidos na EBSCOhost entre 2018 e 2023.

Resultados: Este estudo analisou intervenções de autogestão em 505 idosos com DPOC (idade média de 70,6 anos, 66,9% homens). A maioria dos estudos apresentou baixo risco de viés. As intervenções, incluindo reabilitação física e cognitiva, programas educacionais e baseados em tecnologia, resultaram em melhorias na qualidade de vida, bem-estar, funcionalidade, autogestão, autoeficácia e autocuidado, com ganhos sustentados em conhecimento e ativação do paciente. Além disso, foram observadas melhorias significativas em sintomas físicos, como dispneia, e emocionais, como ansiedade.

Conclusão: A nossa revisão destaca o papel central da Enfermagem de Reabilitação na capacitação de idosos para uma autogestão eficaz da DPOC. A implementação destas intervenções melhora a gestão da doença, a autonomia e a qualidade de vida dos pacientes. Estas intervenções mostram grande potencial para reduzir custos associados a exacerbações e hospitalizações, promovendo uma abordagem centrada no idoso, integrada, holística e personalizada, essencial para a sustentabilidade económica e melhores resultados de saúde.

DESCRITORES: Enfermagem em Reabilitação; DPOC, Idosos; Autogestão, Qualidade de Vida.

RESUMEN

Introducción: La Enfermedad Pulmonar Obstructiva Crónica (EPOC) es una de las principales causas de mortalidad a nivel mundial, con un impacto significativo en la calidad de vida. El automanejo es crucial para controlar la enfermedad, reducir las exacerbaciones y disminuir las hospitalizaciones. El objetivo de este estudio es identificar los beneficios atribuibles a los cuidados de Enfermería de Rehabilitación en la capacitación para el automanejo en personas mayores con EPOC.

Metodología: Se realizó una Revisión Rápida de la Literatura (RRL), que incluyó cuatro ensayos clínicos aleatorizados (ECA) y dos estudios cuasi-experimentales, obtenidos de EBSCOhost entre 2018 y 2023.

Resultados: Este estudio analizó intervenciones de automanejo en 505 personas mayores con EPOC (edad media de 70,6 años, 66,9% hombres). La mayoría de los estudios presentó un bajo riesgo de sesgo. Las intervenciones, que incluyen rehabilitación física y cognitiva, programas educativos e intervenciones basadas en tecnología, resultaron en mejoras en la calidad de vida, bienestar, funcionalidad, automanejo, autoeficacia y autocuidado, con ganancias sostenidas en conocimiento y activación del paciente. Además, se observaron mejoras significativas en síntomas físicos, como la disnea, y emocionales, como la ansiedad.

Conclusión: Nuestra revisión destaca el papel central de la Enfermería de Rehabilitación en la capacitación de las personas mayores para un automanejo eficaz de la EPOC. La implementación de estas intervenciones mejora la gestión de la enfermedad, la autonomía y la calidad de vida de los pacientes.

Estas intervenciones muestran un gran potencial para reducir los costos asociados con las exacerbaciones y hospitalizaciones, promoviendo un enfoque centrado en el paciente, integrado, holístico y personalizado, esencial para la sostenibilidad económica y mejores resultados en salud.

DESCRIPTORES: Enfermería de Rehabilitación; EPOC; Ancianos; Automanejo; Calidad de Vida.

INTRODUCTION

In recent years, there has been a significant increase in average life expectancy globally. As of 2021, the estimated global average life expectancy at birth was 71 years (1). In Portugal, however, the observed value exceeded the global average, with an average age of 80.72 years (2). With this increase in population aging, there has also been an observed rise in the prevalence of comorbidities, including chronic diseases (3). These chronic diseases result in physical and cognitive declines, therefore, the aging process is often associated with frailty (4). Each of these diseases carries ramifications for an individual's quality of life, encompassing facets such as functional, social, productivity, and health-related costs (5). Chronic illnesses exert a profound psychosocial impact and pose a considerable challenge for individuals, as their health status undergoes permanent alteration following the onset and diagnosis of such conditions (6).

Among chronic diseases, COPD has a high burden across the globe. According to Global Initiative for Chronic Obstructive Lung Disease (GOLD), COPD is a complex pulmonary disease characterized by chronic respiratory symptoms such as dyspnea, activity limitation, cough, and sputum production resulting from abnormalities in the airways and alveoli, leading to persistent and progressive airway obstruction (7).

According to data from the World Health Organization (WHO), Chronic Obstructive Pulmonary Disease (COPD) was the fourth most prevalent cause of death in 2021 (8). Recent projections indicate a 23% increase in the global number of cases among individuals aged 25 years or older between 2020 and 2050, with an estimated 600 million people expected to be affected by COPD worldwide by 2050 (9). The burden of COPD is anticipated to grow more significantly among women and in low- and middle-income regions (9). In older adults, COPD is a common condition, as aging leads to progressive deterioration of lung function, including structural changes that impair gas exchange and immunological alterations that predispose to infections (10). Furthermore, COPD is often underdiagnosed due to the nonspecific nature of its symptoms and significant limitations in the use of spirometry in primary care settings (11,12). Although preventable and treatable through modifiable factors such as smoking and environmental exposures, COPD is characterized by exacerbations, which are episodes of worsening respiratory symptoms that frequently require hospitalization. These exacerbations result in significant economic costs, reduced quality of life, and accelerated disease progression, therefore, the primary goal in treating the disease is symptom control to reduce the risk of exacerbations (7). The latest GOLD guidelines for COPD management encompass education for self-management, smoking cessation, risk factor management, proper inhalation technique, pharmacotherapy, and comorbidity management (7).

The recent COVID-19 pandemic has also introduced significant challenges for COPD patients, who face increased risks and vulnerabilities(13). Furthermore, the long-term consequences of COVID-19 infection in COPD patients after recovery are not yet fully understood. However, a recent prospective study in Hong Kong (14) concluded that after recovering from COVID-19, there was a worsening in the control of COPD symptoms, characterized by increased dyspnea, a higher frequency of severe exacerbations, and greater respiratory mortality among patients who had severe COVID-19. Even those with mild to moderate COVID-19 experienced symptomatic deterioration.

Against this backdrop, and taking into account the growing prevalence of multimorbidity, especially in the elderly (15), there is an increase in the costs associated with healthcare (16), leading to growing concern about the management of chronic symptoms (17,18). In this sense, the management of these symptoms is important, offering a possible solution to address this issue, facilitating the preservation and guarantee of the quality of life and functionality of individuals (17,18).

Self-management is a comprehensive and sometimes ambiguous concept defined as *"the intrinsically controlled ability of an active, responsible, informed and autonomous individual to live with the medical, role, and emotional consequences of his chronic condition(s) in partnership with his social network and the healthcare provider(s)"* (19). This concept is also intrinsically linked to self-efficacy, self-care, self-regulation and the individual's education and counselling (6,17,18). In the field of nursing, five key self-management processes have been identified: problem-solving, decision-making, resource utilization, collaboration with healthcare providers, and initiating action(20).

Effective self-management requires the adoption and adaptation of behaviours in response to changes in health status; in other words, it is not permanent but is constantly evolving in response to the realities faced, such as changes in the disease state or sudden increases in symptom intensity (21). This can be achieved through education and training, allowing for the establishment of routines that incorporate

changes in health behaviours aligned with medical prescriptions into daily life activities (22).

In the same vein, the effectiveness of self-management interventions and their relationship with health status has already been demonstrated. These interventions, particularly for people with COPD, are associated with improvements in Health-Related Quality of Life, a lower likelihood of hospital admissions, and are unlikely to cause harm (23).

In this context, the empowerment of elderly individuals with COPD for self-management is strongly associated with Rehabilitation Nursing, as the discipline's interventions aim to optimize function and reduce disability in individuals with various health conditions, enhancing their ability to live, work, and learn effectively in their environment (24). Additionally, it adopts a person-centered approach, specifically oriented towards management through education, functional activity training, physical exercise training, and psychosocial support (25). Previous results from Rehabilitation Nursing interventions in this area have shown significant improvements in physical and psychosocial aspects, such as enhanced physical health and walking capacity, increased QoL, and reduced anxiety and depression levels following self-management programs (26).

Conducting this study is crucial in light of the current global demographic aging trend, the projected increase in the prevalence of chronic obstructive pulmonary disease (COPD) among the elderly (9), which frequently leads to hospitalizations due to exacerbations, and the largely unexplored effects of the COVID-19 pandemic on this patient population (27). Understanding the role of Rehabilitation Nursing in supporting self-management for these individuals is vital for improving their quality of life, reducing hospital readmissions, optimizing healthcare resources, and enhancing the efficiency of care. By identifying effective strategies and interventions, this study seeks to contribute to the development of evidence-based practices that enable elderly COPD patients to manage their condition more effectively, thereby improving their overall well-being and functionality. To address the research objective, the following question was posed: "What are the gains sensitive to Rehabilitation Nursing care in the self-management of elderly individuals with COPD who have been hospitalized due to disease exacerbation?".

METHODS

DESIGN

A rapid review of peer-reviewed literature was conducted. This methodology aims to simplify systematic review methods to produce a review while maintaining a sufficiently rigorous synthesis process to support health policy-making (28). There has been a growing number of rapid reviews published in recent years, as this type of study uses this methodology as a way to synthesize evidence to quickly provide information to decision-makers, such as health planners, service providers, policymakers, and patients (29). In this context, we used the methodological guidelines provided by the World Health Organization's practical guide (28) in conducting this type of study, along with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (30,31). This review is registered in Prospero under the registration number CRD42023475838.

OBJECTIVE AND RESEARCH QUESTION

The first stage involved clearly defining the scope of the review, including the research question and objectives. The objective of this review was to identify the gains sensitive to Rehabilitation Nursing care in empowering elderly individuals with COPD for self-management during hospitalization due to disease exacerbation. To address the research objective, the following question was posed: "What are the gains sensitive to Rehabilitation Nursing care in the self-management of elderly individuals with COPD who have been hospitalized due to disease exacerbation?".

SEARCH STRATEGY

We searched the databases Medline Complete, CINAHL Complete, Nursing & Allied Health Collection: Comprehensive, and Mediclatina through the EBSCOhost platform in March 2024, with a research period defined between January 2018 and December 2023, and study languages in Portuguese or English. We also manually searched the reference lists of included studies and relevant review articles. The research was guided by the following keywords: Rehabilitation; Nurs*; COPD or Chronic Obstructive Pulmonary Disease; and Self-management or Self-care. These keywords were validated using the Health Sciences Descriptors (DeCs), which are aligned with the Medical Subject Headings (MeSH) system. Truncation was employed to ensure the inclusion of results for both "nurse" and "nursing." Subsequently, the Boolean equation formulated was: Rehabilitation AND (self-management OR self-care) AND nurs* AND (COPD OR chronic obstructive pulmonary disease). According to the research objective, it was found that both the "and" and "or" Boolean operators yielded highly accurate results.

ELIGIBILITY CRITERIA

A literature search was conducted to identify studies on the Rehabilitation Nursing intervention aimed at empowering self-management in elderly individuals with COPD who experienced hospitalization episodes due to disease exacerbation. We

opted for the PICO(S) methodology from the Joanna Briggs Institute (JBI) (32), selecting studies that included a population of individuals aged 65 years or older with COPD. The interventions focused on empowering self-management through Rehabilitation Nursing. Studies that compared these interventions with standard care or another comparison group and assessed health gains, specifically related to the improvement of self-management abilities, were included. Randomized clinical trials and quasi-experimental studies, published between 2018 and 2023, in English or Portuguese, were considered. We excluded studies involving individuals with conditions unrelated to COPD, interventions outside the scope of Rehabilitation Nursing, or those that did not address self-management, as well as studies without a comparison group. Additionally, observational studies, descriptive studies, qualitative studies, systematic reviews, opinion articles, non--peer-reviewed articles, non-indexed articles, and those published before 2018 were excluded. Inclusion and exclusion criteria are described in Table 1.

| PICO(S)	Inclusion Criteria	Exclusion Criteria
Population	Individuals aged 65 years or older; Individuals with COPD;	Individuals with conditions other than COPD
Intervention	Intervenções de Enfermagem de Reabilitação na capacitação para a autogestão	nterventions that do not fall within the scope of Rehabilitation Nursing; Interventions that do not address the domain of self-management
Comparison	Having a comparison group	Studies without a comparison group
Outcomes	Health gains related to the improvement of self-management abilities, associated with rehabilitation nursing interventions	Health gains not associated with rehabilitation nursing interventions
Studies	Randomized Controlled Trials; Quasi-Experimental Studies; Articles published from 2018 to 2023; Articles available in English and Portuguese language;	Observational studies; Descriptive studies; Qualitative studies; Systematic reviews; Opinion papers; Non-peer-reviewed articles and non--indexed articles; Articles published before 2018.

SELECTION OF STUDIES, DATA COLLECTION AND MANAGEMENT

The research strategy process is presented in the PRISMA flowchart (Figure 1) (33,34). All references identified through the search strategy were exported to Mendeley software, and duplicates were removed. Initially, 49 articles were analyzed to assess their inclusion in the study. The selection of studies was conducted independently by two researchers (CM and FB), who reviewed titles and abstracts according to the inclusion criteria, resulting in the retention of 11 articles. In cases of uncertainty regarding the relevance of a study, the article was retained for a full-text review. The selected articles were then subjected to a comprehensive review to confirm their eligibility. At this stage, 5 articles were excluded for not meeting the inclusion criteria, primarily related to study design and the population studied. One article, although meeting the criteria, was retracted by the journal in which it was published, and another was excluded for not presenting results compatible with the research objectives. Any doubts regarding the inclusion of a study were discussed with a third reviewer (AL), leading to its inclusion or exclusion from the review. At the end of this process, 6 studies were included, of which 4 were randomized controlled trials (RCTs) and 2 were quasi-experimental studies. This step ensured

that only the most relevant studies were included in the synthesis. The phases of identifying potential articles, screening by title and abstract, determining eligibility, and final inclusion are detailed, with the number of articles included/excluded at each stage (Figure 1).

Figure 1 – PRISMA flow chart of research strategy process
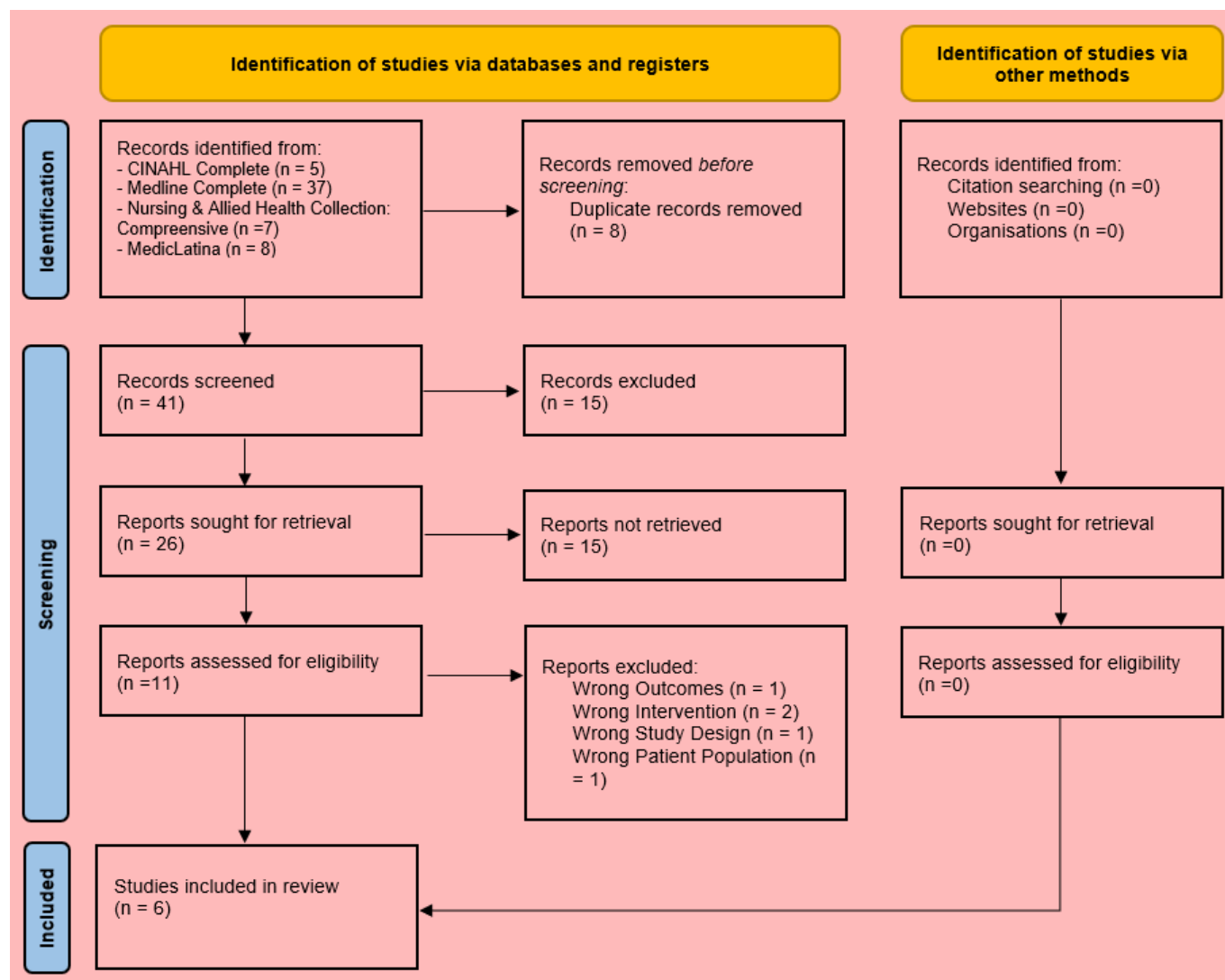
DATA EXTRACTION

Data extraction from the included studies was primarily conducted by CM, with support from FB on complex extraction issues, following the rapid review approach (28). In guiding the global extraction procedures, we adhered to the methods described in the Cochrane Handbook for Systematic Reviews of Interventions (35). To ensure consistency in the extraction process, standardized data extraction tables were created. Both authors performed a peer review of the extraction process, and any uncertainties were resolved through discussion with a third (AL) and a fourth reviewer (AJ). FB conducted the final review of the data extraction. The variables extracted included: authors, year of publication, study objectives, study location, study design, participant selection criteria, sample characteristics, outcome assessment and measures used, description of the intervention and comparison group, implementation of the intervention, sample size, outcome results, and study conclusions.

ASSESSMENT OF METHODOLOGICAL QUALITY OF THE STUDIES

All included articles were analyzed for risk of bias relevant to the research methodology. The interpretation of the critical appraisal followed the guidelines issued by the JBI (36–38). JBI's critical appraisal tools are recognized as reliable for assessing bias risk across various research designs, including randomized clinical trials and quasi-experimental studies (37,38). A straightforward cutoff scoring criterion was selected, with the study authors determining that a score of at least 10 'Yes' responses on the JBI tool for RCTs (37) and a score of at least 8 'Yes' responses on the JBI tool for quasi-experimental studies (38) would indicate a low risk of bias for the studies to be included. Only the randomized controlled trials exhibited issues related to bias risk. The most common problems encountered were in the domain of Intervention/Exposure Administration, particularly regarding the blinding of participants and outcome

assessors. Although it is possible to conceal procedures in intervention trials using creative methods, maintaining this concealment remains a significant challenge (39). Table 2 details the synthesis of the conducted evaluation. In both checklists, the available responses are "Yes," "No," and "Unclear."

JBI CRITICAL APPRAISAL CHECKLIST FOR RANDOMIZED CONTROLLED TRIALS

Study ID	Selection and allocation			Administration of intervention/ exposure			Assessment, detection, and measurement of the outcome			Participant retention	Statistical conclusion validity			Overall appraisal	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13		
Benzo & McEvoy, 2019 (40)	Y	Y	Y	Y	U	U	U	Y	Y	Y	Y	Y	Y	10/13	Low Risk of Bias
Kilic et al., 2021 (41)	Y	Y	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	10/13	Low Risk of Bias
Chang & Dai, 2019 (42)	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	11/13	Low Risk of Bias
Park et al., 2020 (43)	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	11/13	Low Risk of Bias

JBI CRITICAL APPRAISAL CHECKLIST FOR QUASI-EXPERIMENTAL STUDIES

Study ID	Temporal precedence	Selection and allocation	Confounding factors	Administration of intervention/ exposure	Assessment, detection, and measurement of the outcome			Participant retention	Statistical conclusion validity	Overall appraisal	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9		
M. Park et al., 2021 (44)	Y	Y	Y	Y	Y	Y	Y	Y	Y	9/9	Low Risk of Bias
Liou et al., 2023 (45)	Y	Y	Y	Y	Y	Y	Y	Y	Y	9/9	Low Risk of Bias

SYNTHESIS OF THE EVIDENCE

Given the rapid nature of this review and the heterogeneity of the included randomized controlled trials and quasi-experimental studies, a narrative synthesis of the evidence was conducted. Thematic analysis was used to identify common themes and key concepts across the studies. Quantitative data from the randomized controlled trials and quasi-experimental studies were presented descriptively, reflecting the variability in study designs, interventions, and outcome measures. Although ethical approval was not required for this rapid review, all procedures adhered to ethical guidelines for conducting literature reviews, ensuring transparency, rigor, and minimizing bias in the selection and analysis of the randomized controlled trials and quasi-experimental studies. A data extraction table was developed to guide the standardized and systematic extraction of specific information from each study. A refined version of the extraction table is presented in Table 3.

Table 3 - Summary of Data Extraction from Included Studies

Study Identification	Design	Sampling	Aim & Intervention	Comparation	Main Outcomes
Park et al., 2021 (44) (South Korea) Effects of a cognitive rehabilitation programme on cognitive function, self-management and quality of life in patients with chronic obstructive pulmonary disease	Quasi-Experimental Study	**n:** 60 participants **Mean Age:** 70 ± SD 7.50 **Sex:** Male 49 (81.7%) Female 11 (18.3%)	**Aim: To** investigate effects of a cognitive rehabilitation programme on cognitive function, self-management and quality of life in patients with COPD. **Intervention:** The intervention was a two-week cognitive rehabilitation program with six 30-minute sessions, aimed at enhancing cognitive functions, self-management, and quality of life in COPD patients. It targeted attention, memory, language, visuospatial perception, executive function, and problem-solving.	Standard care	- The cognitive rehabilitation program significantly improved cognitive function, self-management, and quality of life in COPD patients compared to the control group. - No significant improvements were observed in the control group. - The study supports the usefulness of cognitive rehabilitation interventions to promote cognitive function, self-management, and quality of life in COPD patients.
Liou et al., 2023 (45) (Taiwan) The effectiveness of an unsupervised home-based pulmonary rehabilitation with self-management program in patients with chronic obstructive pulmonary disease	Quasi-Experimental Study	**n:** 70 participants **Mean Age:** 81 ± SD 11.7 **Sex:** Male 52 (74.4%) Female 18 (25.6%)	**Aim:** To assess the effectiveness of an unsupervised home-based pulmonary reha- bilitation with self-management program in patients with COPD. **Intervention:** The intervention involved a self-management program with an educational component consisting of 7 modules: medication knowledge, adherence to prescribed therapy, dietary recommendations, respiratory rehabilitation exercises, adaptation of daily routines, and symptom control. Participants received in-person education and training from a nurse, with instructions provided to both participants and their family members before hospital discharge	Standard care	- The unsupervised home-based pulmonary rehabilitation with self-management program improved dyspnea and self-efficacy in the experimental group compared to the control group. - Both groups showed improvements in quality of life, but there was no significant difference between the experimental and control groups. - The short-term unsupervised home-based program had benefits, but the long-term effects require further study.

Study Identification	Design	Sampling	Aim & Intervention	Comparation	Main Outcomes
Benzo & McEvoy, 2019 (40) (Minnesota, USA) Effect of Health Coaching Delivered by a Respiratory Therapist or Nurse on Self-Management Abilities in Severe COPD: Analysis of a Large Randomized Study	RCT	**N:** 215 participants **Mean Age:** 68 ± SD 9.5 **Sex:** Male: 97 (45.1%) Female: 118 (54.9%)	**Aim:** to investigate the effects of health coaching delivered by a respiratory therapist or a nurse compared with guideline-based usual care on self-management abilities in COPD. **Intervention:** The intervention was a health coaching program for COPD patients, starting with an in-person session after hospital discharge, followed by weekly telephone sessions for three months, and then monthly sessions. The initial two-hour session covered self-management, goal setting, and action planning, utilizing motivational interviewing to emphasize patient autonomy and encourage behaviors important to the patient. The focus was on exploring current self-management practices and setting future goals.	Standard Care	Health coaching delivered by a respiratory therapist or nurse improved self-management abilities in COPD patients after hospital discharge. These improvements were statistically significant at 6 months but were not sustained at 12 months.
Kilic et al., 2021 (41) (Turkey) Comparing the effects of self-management and hospital-based pulmonary rehabilitation programs in COPD patients	RCT	**n:** 58 participants **Mean Age:** 69.1 ± SD 9.7 **Sex:** Male: 52 (89.7%) Female: 6 (10.3%)	**Aim:** To compare the effects of self-management and hospital-based Pulmonary Reabilitation programs in COPD patients **Intervention:** The 12-week rehabilitation program divided participants into two groups: a Hospital-Based Pulmonary Rehabilitation (HBPR) group and a Self-Management Pulmonary Rehabilitation (SMPR) group, both trained by a specialized nurse. The program began with a presentation on COPD and the use of respiratory techniques in daily activities. The HBPR group attended weekly 3-hour sessions, including 45 minutes of supervised exercise. In contrast, the SMPR group trained under the nurse's supervision for three days during the first week and were subsequently reassessed via telephone.	Hospital-based Pulmonary Rehabilitation (HBPR) vs. Self-Management Pulmonary Rehabilitation (SMPR)	Pulmonary function, dyspnea, quality of life, and 6MWT distance improved significantly more in the hospital-based pulmonary rehabilitation (HBPR) group compared to the self-management pulmonary rehabilitation (SMPR) group. Cognitive function improved significantly in both the HBPR and SMPR groups, with no significant difference between them. Pulmonary rehabilitation (PR) is effective in improving functional ability, quality of life, cognitive function, and anxiety in COPD patients, with the HBPR program being more effective than the SMPR program.

Study Identification	Design	Sampling	Aim & Intervention	Comparation	Main Outcomes
Chang & Dai, 2019 (42) (Taiwan) The efficacy of a flipping education program on improving self-management in patients with chronic obstructive pulmonary disease: a randomized controlled trial	RCT	**n:** 60 participants **Mean Age:** 72.0 ± SD 1.5 **Sex:** Male: 55 (91.7%) Female: 5 (8.3%)	**Aim:** To examine the efficacy of a flipping education program on improving self-management in patients with COPD. **Intervention:** The intervention implemented a 3-month self-management program based on Motivating, Self-learning, Action Plan Verbalizing, and Action Taking (MSRAA). Initially, the nurse motivated participants to learn about COPD self-management through a brochure and motivational interviews. After engaging in self-learning, participants attended a reflection session and verbalized their action plans, facilitating discussions about self-management and helping them create a customized action plan.	Standard Care	The flipping education program on self-management improved patients' disease knowledge, self-efficacy, and activation levels compared to the control group. It also reduced the impact of COPD symptoms on patients compared to the control group. There was no significant difference in unexpected medical care between the two groups.
Park et al., 2020 (43) (Korea) Evaluating the effect of a smartphone app-based self-management program for people with COPD: A randomized controlled trial	RCT	**n:** 42 participants **Mean Age:** 67.8 ± SD 10.3 **Sex:** Male: 33 (78.6%) Female: 9 (21.4%)	**Aim:** To examine the effect of a 6-month, smartphone app-based self-management program for people with COPD. **Intervention:** The intervention is a 6-month program where participants use a smartphone application designed around self-management principles. The app's development was based on enactive mastery experiences, vicarious experiences, verbal persuasion, and physical and emotional state. Participants were taught strategies for symptom control and guided to set physical activity goals. The intervention included education, physical exercise, self-monitoring, and social support components. Both the experimental and control groups received education and physical exercise sessions during the program's first month.	Standard care	The smartphone app-based self-management program significantly improved self-care behavior, physical activity, and exercise capacity in the experimental group. The experimental group saw significant gains in self-care behavior, 6-minute walk test distance, activity levels, and self-efficacy for exercise. The control group showed no significant changes in these outcomes over the 6-month period.

RESULTS

POPULATION CHARACTERISTICS

The research spanned across various countries, such as South Korea, Taiwan, Minnesota (USA), Turkey, and China, reflecting a broad geographical scope in studying self-management interventions for COPD patients. The study involved a diverse participant pool, ranging from 42 to 215 individuals, totaling 505 overall. Considering participants with age equal to or greater than 65 years, our study presented an age range between 47.2 and 104.4 years, with a mean age (± SD) of 70.6 ± 10.2 years. Demographically, the sample was predominantly composed of males (66.9%) compared to females (33.1%). Our findings are corroborated by specific prevalence data stratified by sex, revealing a greater prevalence of COPD among men (46).

QUALITY OF EVIDENCE

The risk of bias assessment was conducted using the JBI critical checklist for randomized controlled trials (RCTs) and quasi-experimental studies. The evaluated RCTs (40–43) showed a low risk of bias, with scores ranging from 10/13 to 11/13. All studies demonstrated robustness in participant selection and allocation, indicating proper randomization and allocation concealment. However, some uncertainties were identified in the administration of interventions, particularly in the studies by Benzo & McEvoy (40) and Kilic et al. (41), where certain information was not clearly reported. Despite these uncertainties, the studies exhibited good control in outcome assessment and detection, with a low risk of bias in participant retention and the validity of statistical conclusions. In the quasi-experimental studies, M. Park et al. (44) and Liou et al. (45) also showed a low risk of bias, achieving scores of 9/9. These studies adequately ensured temporality, participant selection, and allocation, in addition to controlling confounding factors and consistently administering the interventions. The rigorous approach to outcome assessment and detection contributed to minimizing biases. The overall risk of bias analysis indicates that the included studies generally present a low risk of bias, which reinforces the reliability of the evidence in this review. However, the identified uncertainties in specific aspects, such as intervention administration, suggest caution when interpreting certain results.

INTERVENTIONS CHARACTERISTICS AND DESCRIPTION

The interventions in the studies were diverse and heterogeneous; however, they all shared the common goal of improving the self-management abilities of elderly individuals with COPD through Rehabilitation Nursing interventions, among other health domains.

Two studies employed motor rehabilitation interventions (40,45), and one study used cognitive rehabilitation interventions (44). Three studies opted for an integrated approach, combining these interventions (41–43).

The settings in which the interventions were conducted varied, including the home environment (42,44), the hospital environment (40), and transitional care settings between hospital and home (43,45). It is worth noting the study by Kilic et al. (41), which utilized two experimental groups: one group received the intervention at home, while the other received the intervention in a hospital setting.

In the analyzed studies, various resources were utilized to support the rehabilitation of patients with Chronic Obstructive Pulmonary Disease (COPD), combining different approaches to optimize outcomes. The telephone was a key resource (40,41,45) in providing continuous support and monitoring, enabling regular follow-up with patients, ensuring adherence to rehabilitation and self-management programs, and offering a direct channel for resolving questions or adjusting care as needed. Additionally, technology played a significant role in some studies. Park et al. (43) used a mobile application for remote patient monitoring, bidirectional communication, and the provision of interactive educational content. This technology allowed patients to follow exercise routines and monitor symptoms in real-time. Moreover, educational materials such as manuals and CDs were provided in several studies (41,42,45) and served as a continuous source of information, helping patients to apply the learned techniques and better manage their condition at home.

INTERVENTIONS DETAILS

In the study by Park et al. (44), the researchers adapted and implemented a home-based cognitive rehabilitation program for COPD patients with mild cognitive impairment, originally developed for post--stroke patients. The program was delivered at home and online, consisting of six 30-minute sessions administered over a period of two weeks, focusing on six specific areas: attention, memory, language, visuospatial perception, executive function, and problem-solving. Before starting the intervention, the study participants received education on the prevalence and risk factors of cognitive impairment in COPD, as well as a detailed description of the program's objectives and process. The intervention was conducted by a cognitive rehabilitation nurse.

Liou et al. (45) implemented a combined home-based self-management and pulmonary rehabilitation program (HBPR) aimed at improving COPD management and quality of life. This program included education in seven key areas: knowledge about COPD, medication adherence, dietary recommendations, pulmonary rehabilitation (PR) exercises,

lifestyle changes, and symptom management. The intervention began during hospitalization, with in--person guidance from nurses, including training in breathing exercises, muscle strengthening, and endurance exercises. Before discharge, educational resources (CD-ROM) were provided for continued home care. After discharge, patients continued the exercises at home, recorded their daily activities in specific diaries, and received biweekly phone calls for three months for monitoring and support. The control group patients received only the self-management program, similar to the experimental group, but without the PR component. After discharge, they performed daily exercises at home and recorded their activities in diaries but without the practical training or additional support provided by the HBPR. Furthermore, they did not receive telephone follow-ups to monitor or adjust the intensity of the exercises.

In the study by Benzo & McEvoy (40), the authors implemented an intervention involving a health coach (respiratory therapist or nurse) who met with patients in person at least once after hospital discharge, followed by weekly phone sessions during the first 3 months and then monthly sessions. The initial in-person session lasted about 2 hours and covered concepts of self-management, goal setting, and action planning. Subsequent sessions followed the principles of motivational interviewing, focusing on empowering the individual to adopt health-promoting behaviors, even if not directly related to their pulmonary condition. The control group received usual care based on guidelines and was referred to conventional PR.

Kilic et al. (41) implemented a 12-week PR program for two groups of COPD patients, supervised by a rehabilitation nurse. The hospital-based pulmonary rehabilitation group (HBPR) participated in supervised sessions three times a week, with each one-hour session including warm-up exercises, limb strengthening exercises, diaphragmatic breathing exercises, and stretching for relaxation. Patients were provided with an educational booklet and a CD to continue the exercises outside of the sessions. The self-management pulmonary rehabilitation group (SMPR) began the program with three days of supervised exercises during the first week, learning the same exercises as the HBPR group and receiving the same educational materials. After the first week, both groups were instructed to continue the exercises at home for 45 minutes, three times a week, without direct supervision, with progress monitored via telephone. Before starting the exercises, all patients participated in individual educational sessions on COPD, breathing techniques, relaxation, and coughing exercises, with instructions on how to apply these in daily activities.

The study by Chang & Dai (42) implemented a flipped education program for self-management (MSRAA) in elderly COPD patients living at home. Over three months, the experimental group received a differentiated intervention focused on active self-management. The MSRAA program consisted of several stages: initially, the nurse used motivational interviewing techniques to encourage participants to learn about self-management through a booklet; participants then studied the material independently, with nursing follow-up calls to check understanding and schedule discussions; subsequently, the nurse helped participants reflect and create personalized action plans, including breathing techniques, smoking cessation, environmental control, infection prevention, medication use, and physical exercises. In the final stage, the nurse conducted regular telephone interviews to monitor progress, motivate participants, record difficulties, and discuss solutions. The control group received conventional education, which consisted of receiving only one--way instructions provided by nurses, without reflection or discussion about the disease.

Park et al. (43) analyzed the impact of a smartphone-assisted self-management program (SASMP) on COPD patients. The experimental group received the intervention, while the control group did not. Based on Bandura's social cognition and self-efficacy theories, the SASMP provided education on self-management and techniques for setting and achieving exercise and physical activity goals, with step-by-step support. Participants in the experimental group used an app to record symptoms, exercises, and access educational materials, as well as to share experiences in message groups, receiving support and positive feedback. The program included videos on bronchodilators and physical exercises, and encouraged the use of pedometers to increase physical activity. Both groups participated in four education and exercise sessions conducted by a nurse and a physiology specialist, focusing on strength training and guidance for home exercises. The experimental group monitored their exercise practices through the app, and the research team sent alerts and provided additional support in case of symptom worsening. Communication between participants and the team was encouraged through the app. The team also conducted monthly follow--ups with the control group.

INTERVENTIONS EFFECTS

Apresentamos agora os resultados de ganhos em saúde da intervenção de Enfermagem de Reabilitação na capacitação para a autogestão de pessoas idosas, agrupando os domínios de resultados (Table 4).

Self-Management, Self-Efficacy, Self-Care, Knowledge, And Patient Activation

In the analyzed studies, the results in the self-management domain indicate significant improvements

in 5 of the 6 included studies. Park et al. (44) reported an increase in self-management capacity after 4 weeks (F = 16.71; p < 0.001), while Benzo & McEvoy (40) observed significant improvements in self-management capacity at 6 months, with an increase in the mean score compared to the control group (p = 0.02). Benzo & McEvoy (40) also noted that, after 6 months, health coaching was identified as an independent predictor of significant improvement in self-management (OR = 1.95; 95% CI: 1.01–3.79). On the other hand, Liou et al. (45) observed an increase in patients' confidence in avoiding or managing dyspnea by managing risk factors after 3 months (B = 0.664, p < 0.01). They also found that self-efficacy was a predictor of overall clinical status at 3 months (B = -0.862, p < 0.001). Regarding self-efficacy, Chang & Dai (42) reported medium effect improvements after 1 month (Cohen's d = 0.441, p < 0.001) and small effects after 3 months (d = 0.138, p = 0.005). Park et al. (43) also observed that the experimental group showed a significant improvement in self-efficacy for maintaining exercise, increasing physical activity, and reducing sedentary time immediately after the intervention (p < 0.05), which was sustained at 6 months (p < 0.05). Park et al. (43) further noted improvement in self-care behavior compared to baseline, immediately after the intervention (p < 0.05) and maintained after 6 months (p < 0.05). In the specific domain of knowledge, Chang & Dai (42) found a significant improvement in knowledge about COPD, with a large effect size after 1 month (Cohen's d = 0.904; p < 0.001) and a medium effect after 3 months (Cohen's d = 0.525; p = 0.036). Chang & Dai (42) also assessed patient activation, including the knowledge, skills, and confidence needed to manage a disease. In this regard, the level of patient activation showed a significant increase, with a medium effect after 1 month (Cohen's d = 0.483; p = 0.002) and sustained at 3 months (Cohen's d = 0.403; p = 0.004).

Cognitive Functioning, Mental And Emotional Well-Being

In terms of cognitive function, Park et al. (44) reported a significant improvement in the intervention group after 4 weeks (F = 32.53; p < 0.001). Liou et al. (45) observed improvements in various mental and emotional parameters. The authors noted a significant increase in patients' confidence to manage dyspnea in intense emotional situations after 1 month (B = -0.331; p = 0.044) and a significant improvement in patients' mental status (B = 1.811; p < 0.001), maintained up to 2 months (B = 0.655; p = 0.025). In the study by Kilic et al. (41), the HBPR group showed a significant reduction in anxiety levels (state), measured by the State-Trait Anxiety Inventory (STAI), after 12 weeks of intervention (Z = -2.874; p = 0.004). However, the SMPR group did not show this change.

Quality Of Life And Impact Of The Disease

Regarding quality of life (QoL), Park et al. (44) observed a significant increase after 4 weeks (F = 13.99; p < 0.001). Both groups in the study by Kilic et al. (41) showed significant improvements in quality of life after 12 weeks. Both the HBPR group and the SMPR group demonstrated substantial improvements in quality of life scores, with Z values ranging from -2.491 to -3.815 and p ≤ 0.001. Chang & Dai (42) did not assess QoL but evaluated the impact of COPD following their intervention program. They found a significant reduction in the overall impact of COPD, particularly in symptoms, 1 month after the intervention in the experimental group (Cohen's d = 0.426; p = 0.011), but this reduction did not persist at 3 months (Cohen's d = 0.172; p = 0.180).

Functional Ability And Physical Activity

In the study by Kilic et al. (41), the HBPR group showed significant improvement in Forced Vital Capacity (FVC) after 12 weeks (Z = -3.500; p = 0.006) and in Forced Expiratory Volume in the First Second (FEV1) (Z = -3.500; p = 0.002). In the SMPR group, significant improvement in FEV1 was observed after 12 weeks (Z = -2.764; p = 0.004), while the improvement in FVC after 12 weeks was not statistically significant. Additionally, the authors assessed functional ability using the Six-Minute Walk Test (6MWT), noting significant improvements in both groups after the 12-week intervention. The HBPR group showed substantial improvement, with Z = -4.497 and p < 0.001. The SMPR group also demonstrated significant improvement after 12 weeks (Z = -2.874; p = 0.005). Park et al. (43) also reported significant increases in physical activity and functional ability. In this study, there was an improvement in the distance walked (6MWT) by the experimental group immediately after the intervention (p < 0.05), with this improvement sustained after 6 months (p < 0.05). Furthermore, the experimental group showed an increase in the percentage of time spent in moderate to vigorous physical activity, immediately after the intervention (p < 0.05) and at 6 months (p < 0.05), as well as an increase in total activity counts at the same evaluations (p < 0.05).

Physical Symptoms And Disease Management

Liou et al. (45) observed a significant improvement in dyspnea during physical activity over time. At 3 months, the reduction in the severity of dyspnea was notable, with a significant decrease in the proportion of patients experiencing grade 4 dyspnea, dropping from 48.5% at the beginning of the study to 6.1% (p < 0.05). Similarly, the HBPR group in the study by Kilic et al. (41) demonstrated a significant reduction in dyspnea after 12 weeks of intervention (Z = -4.474; p < 0.001). The SMPR group also showed a significant improvement in dyspnea after 12 weeks, although to a lesser extent (Z = -2.392; p = 0.017).

Table 4 – Summary of health gains from included studies

Study	Outcome	Instrument	Statistic	p-Value	Timepoint	Effect
Park et al., 2021	Cognitive Function	MVCI	F = 32.53	p < 0.001	4 weeks	←
	Self-Management	Flinders PIH	F = 16.71	p < 0.001	4 weeks	←
	Quality of Life	HINT-8	F = 13.99	p < 0.001	4 weeks	←
Liou et al., 2023	Dyspnea	MRC Dyspnea	Reduction from 48.5% to 6.1%	p < 0.05	3 months	→
	Intense Emotional Arousal	CSES	B = - 0.331	p = 0.044	1 month	←
	Physical Effort	CSES	B = 0.796	p < 0.001	3 months	←
	Behavioral Risk Factors	CSES	B = 0.664	p < 0.01	3 months	←
	Total Self-Efficacy	CSES	B = 0.528	p = 0.017	3 months	←
	Functional Status	CCQ	B = 0.811	p = 0.017	1 month	←
	Mental Status	CCQ	B = 1.811	p < 0.001	1 month	←
	Mental Status	CCQ	B = 0.655	p = 0.025	2 months	←
	Predicted Self-Efficacy	CSES	B = - 0.277	p < 0.001	3 months	←
	Predicted Clinical Status	CCQ	B = - 0.862	p < 0.001	3 months	←
Benzo & McEvoy, 2019	Self-Management	CRDQ (Mastery Domain)	OR = 1.95 (95% CI: 1.01–3.79)	p = 0.02	6 months	←

Study		Outcome	Instrument	Statistic	p-Value	Timepoint	Effect
Kilic et al., 2021	HBPR Group	Dyspnea	Modified Borg	Z = -4.474	p < 0.001	12 weeks	→
		Quality of Life	SGRQ	Z = -2.491 to -3.815	p ≤ 0.001	12 weeks	←
		Functional Ablity	6MWT	Z = -4.497	p < 0.001	12 weeks	←
		Lung Function (FVC)	PFT	Z = -3.500	p = 0.006	12 weeks	←
		Anxiety (State)	STAI	Z = -2.874	p = 0.004	12 weeks	→
	SMPR Group	Dyspnea	Modified Borg	Z = -2.392	p = 0.017	12 weeks	→
		Quality of Life	SGRQ	Z = -2.491 a -3.815	p ≤ 0.001	12 weeks	←
		Functional Ablity	6MWT	Z = -2.874	p = 0.005	12 weeks	←
		Lung Function (FEV1)	PFT	Z = -2.764	p = 0.004	12 weeks	←
Chang & Dai, 2019		Disease Knowledge	COPD-Q	Cohen's d = 0.904	p < 0.001	1 month	←
		Disease Knowledge	COPD-Q	Cohen's d = 0.525	p = 0.036	3 months	←
		Self-Efficacy	PRAISE	Cohen's d = 0.441	p < 0.001	1 month	←
		Self-Efficacy	PRAISE	Cohen's d = 0.138	p = 0.005	3 months	←
		Patient Activation	PAM	Cohen's d = 0.483	p = 0.002	1 month	←
		Patient Activation	PAM	Cohen's d = 0.403	p = 0.004	3 months	←
		Impact of COPD (Overall)	CAT	Cohen's d = 0.426	p = 0.011	1 month	→
		Self-Efficacy for Maintaining Exercise	SEMCD	not provided	p < 0.05	6 months	←
Park et al., 2020		Self-Care	ACOSBI	not provided	p < 0.05	6 months	←
		Functional Ablity	6MWT	not provided	p < 0.05	6 months	←
		Time in Moderate to Vigorous Physical Activity	ActiGraph	not provided	p < 0.05	6 months	←

Legend of Signs and Abbreviations: ⬆ *- Increa-se;* ⬇ *- Reduction; HBPR: Hospital-Based Pulmonary Rehabilitation; SMPR: Self-Management Pulmonary Rehabilitation; MVCI: Mini-Mental State Examina-tion Cognitive Impairment Scale; Flinders PIH: Flin-ders Program™ - Partners in Health Scale; HINT-8: Health-Related Quality of Life Instrument with 8 Items; MRC: Medical Research Council Dyspnea Scale; CSES: COPD Self-Efficacy Scale; CCQ: Clinical COPD Questionnaire; CRDQ: Chronic Respiratory Di-sease Questionnaire; SGRQ: St George's Respiratory Questionnaire; 6MWT: 6-Minute Walk Test; COPD-Q: Chronic Obstructive Pulmonary Disease Knowledge Questionnaire; PRAISE: Patient-Reported Outcomes and Self-Efficacy in COPD; PAM: Patient Activation Measure; CAT: COPD Assessment Test; ACOSBI: Al-berto Chronic Obstructive Pulmonary Disease Self--care Behavior Inventory; ActiGraph: Device used to measure physical activity and sleep; MVPA: Mode-rate to Vigorous Physical Activity; SEMCD: Self-Effi-cacy for Managing Chronic Disease Scale; PFT: Pul-monary Function Test; FVC: Forced Vital Capacity; FEV1: Forced Expiratory Volume in 1 Second; STAI: State-Trait Anxiety Inventory.*

Legend of Statistical Notations: F: F-value ob-tained from analysis of variance (ANOVA); B: Uns-tandardized coefficient from regression analysis; t: t-value obtained from t-test; Z: Z-value obtained from Mann-Whitney U test or similar; OR: Odds Ratio; p: p-value indicating statistical significance.

DISCUSSION

This rapid review examines the health gains resul-ting from empowering self-management in elderly individuals with COPD through rehabilitation nur-sing interventions, based on six clinical trials. To our knowledge, this is the first systematic literature review addressing this specific topic, highlighting its innovative nature and adding evidence within the field of Rehabilitation Nursing, as well as in Nursing and healthcare in general.

All studies included in this review were conducted in elderly populations, often with multimorbidity, living in high-income countries. Although most ca-ses of COPD are identified in low- and middle-inco-me countries (47), investigating self-management programs that may be cost-effective (48) will allow for generalization and add value to research on re-ducing the burden of COPD globally (47).

The results obtained were clear, statistically sig-nificant, and clinically relevant in crucial health indicators, especially considering the impact on a vulnerable, frail population at high risk of mor-tality, such as elderly individuals with COPD (49). Firstly, the improvement in self-management abi-lities would be the most likely outcome we would find in this review. This was evidenced in three

studies (40,44,45), with improvements observed in the short and medium term (4 weeks, 3 months, and 6 months). According to Korpershoek et al. (50), self-management behaviors before, during, and after COPD exacerbations allow for better control over symptom fluctuations and reduce the impact of exacerbations.

In the same vein, the short- and medium-term im-pact on improving self-efficacy, a recognized media-ting variable of self-management (51), was another important outcome in this domain, evidenced in three studies (42,43,45). This variable corresponds to an individual's assessment of their ability to suc-cessfully perform a task in a given situation (52). In this regard, both the improvement in self-mana-gement abilities and in the self-efficacy of patients with COPD can have effects not only at an indivi-dual level but also on care management outcomes, particularly in the domain of health economics, through increased treatment adherence, decreased recurrence of exacerbations, delayed disease pro-gression, and reduced health resource consump-tion (45,53,54).

Positive results were also observed in self-care behaviors (43). Since self-care is a central compo-nent of Nursing and particularly of Rehabilitation Nursing (55,56), and knowing that the concept of self-management shares common theoretical sour-ces, models, and frameworks with the concept of self-care, the holistic and versatile nature of the Rehabilitation Nurse's intervention is understood, impacting any of the components while simulta-neously affecting the other (57).

An increase in knowledge about COPD was also ob-served (42), with a large effect size after 1 month and a medium effect after 3 months, demonstrating the vital role that literacy plays in effective self--management and that this variable can maintain positive results in the medium term. Knowledge about COPD is higher in patients with a higher le-vel of education and in those who participate in educational sessions (58). Furthermore, patients with more detailed knowledge report greater sa-tisfaction and a higher quality of life (58). Indivi-duals with COPD often have knowledge gaps that hinder their understanding of their own symptoms, making it difficult to identify exacerbation occur-rences and, consequently, take appropriate actions (22). In the same vein, individuals with chronic di-seases who can manage their symptoms exercise better control over their expectations and concerns regarding the disease, thereby reducing risk factors (59). All the studies we included had educational components such as in-person educational sessions (40,41,43,45), the use of physical educational mate-rials (41,45), digital educational resources (43,44), or interactive and reflective education (40,42), rein-forcing the importance of including this component for these populations. Despite discussing elderly

individuals, we emphasize the use of digital technologies as a way to facilitate support for the self-management of these patients. A smartphone-based application program can be easily utilized by elderly individuals with chronic diseases and produces results such as improved quality of life and increased exercise capacity (60). Thus, the development of digital platforms focused on elderly individuals with COPD can enhance engagement in self-management through evidence-based interventions (61). Additionally, it can offer a diverse range of interventions with proper guidance, which can facilitate health behavior change and improve self-management in various treatment contexts (61).

Patient activation was another robust outcome we found. This corresponds to the active participation of patients in the care process and includes the knowledge, skills, and confidence to manage their disease, making it an essential element of care quality (62). In this variable, an increase in activation among individuals with COPD was observed, with a medium effect after 1 month and maintained at 3 months (42). Elderly patients with chronic diseases often require support in this area to ensure that interventions are tailored and centered around them (63). On the other hand, person-centered care provided by nurses is a strong predictive factor with a significant effect on patient activation (64).

The use of health coaching in one study (40) was also relevant, especially in this context. The authors identified coaching as an independent predictor of significant improvement in self-management, and self-efficacy as a predictor of the overall clinical status of the individual at 3 months. In fact, due to the breadth of their role and expertise in promoting health, Rehabilitation Nurses are highly qualified professionals to implement health coaching in various areas, such as self-management and self-care, including the prevention and management of chronic diseases and the recovery from acute situations (65), knowing that this can positively influence individual clinical status.

Another important aspect of our study related to cognitive rehabilitation interventions and psychosocial interventions in patients with COPD. Recent studies have demonstrated that COPD is associated with a multifactorial decline of the nervous system, leading to cognitive dysfunction present in most individuals with COPD, with deficits in executive functions, memory, and attention, which impact quality of life, hospitalization, and survival (66,67). Furthermore, COPD patients who experience more intense or frequent dyspnea and cough often exhibit depressive symptoms, which are associated with reduced sleep quality, lower energy and motivation, and concentration problems, affecting cognitive function. In addition to depressive symptoms, the impact of dyspnea frequently manifests in emotions such as anxiety (68). A large proportion of participants express emotions such as anxiety and panic related to COPD, which impact their daily lives (69). Other studies associate the presence of anxiety and depression with a higher incidence of exacerbations requiring hospital admission (70,71), indicating an increased risk of mortality for individuals (71). Additionally, the duration of exacerbations is significantly negatively influenced by anxiety (70). Thus, three included studies (41,44,45) led to improvements in cognitive function, enhanced control over intense emotional arousal, improvements in mental state, and a reduction in momentary anxiety. These results align with others found in the literature regarding self-management empowerment programs led by nurses that improve anxiety (54) and quality of life for individuals (72–74). In line with the results presented here is a Cochrane systematic review on self-management interventions for people with COPD (23). Interventions that integrated components of behavioral change, education, home exercises, and medication were preferred. Subgroup analysis regarding anxiety (1647 individuals) and depression (1653 individuals) concluded a significant reduction in levels of chronic depression and anxiety. Additionally, in another large-scale study (734 patients), the authors concluded that the inclusion of pulmonary rehabilitation and self-management in this population, with components of exercise, education, and interventions for depression and anxiety, significantly reduced levels of chronic depression and anxiety (75).

Quality of Life (QoL) is one of the health dimensions with the greatest impact when addressing COPD (11,76,77). Factors such as socioeconomic status, disease stage, and accessibility to healthcare are associated with better QoL in individuals with COPD (78). In addition to these, some authors point to exacerbations as the factor with the greatest influence on the deterioration of Health-Related Quality of Life (HRQoL) in patients with COPD (79). Overall, rehabilitation programs led by rehabilitation nurses have demonstrated significant improvements in the quality of life (QoL) of participants. Rehabilitation programs, both online cognitive rehabilitation and supervised pulmonary rehabilitation, resulted in significant improvements in participants' quality of life (QoL) (41,44). Furthermore, an intervention focused on the impact of COPD significantly reduced symptoms after one month, although this improvement was not sustained after three months (42). Actionable behaviors promoted by rehabilitation nurses, such as self-management empowerment and pulmonary rehabilitation, have a direct correlation with improved quality of life (QoL) for these patients, demonstrating a significant optimizing role compared to usual care (23,80).

We also observed that the included studies had a positive impact on the functional ability and physical activity of elderly individuals with COPD. As

people age, the loss of functionality becomes irreversible (10,81), so COPD creates a compounded effect of worsening the overall condition of the elderly person. In this population, the goal of treatment is to prevent further pulmonary deterioration and manage symptoms and complications associated with the disease (11,82,83). The included studies demonstrated improvements in functional ability (6MWT) and pulmonary function (FVC and FEV1) (41), an increase in physical activity in the medium term (43), and improvements in physical effort and functional status after the intervention (45). These results are relevant, knowing that physiologically, COPD produces an inflammatory response and obstruction of the airways, leading to a decrease in forced expiratory volume (FEV) and tissue destruction, resulting in airflow limitations and ineffective gas exchange (82). Thus, there is clear evidence in the literature that both supervised long-term pulmonary rehabilitation programs and self-management programs significantly improve the functional ability of patients with COPD (75,84,85).

Lastly, regarding the management of COPD symptoms, such as dyspnea, its reduction was a significant outcome in two of the studies we included (41,45). Dyspnea is the most common and often the most debilitating symptom of COPD (86). To avoid exertional dyspnea, many patients become sedentary, leading to muscle deconditioning, social isolation, and psychological sequelae (87). The benefits of managing and reducing dyspnea are closely related to potential exacerbations and the need for acute healthcare, which is why rehabilitation programs are effective. These are associated with a reduced risk of hospital readmission within the first 30 days (88), and when these programs last longer, the rates of rehospitalization are even further reduced (89).

CONCLUSION

This rapid review examined the empowerment for self-management of elderly individuals with COPD through Rehabilitation Nursing interventions, highlighting the crucial role of programs developed and implemented by nurses in improving various health indicators relevant to this population. Elderly individuals with COPD face numerous challenges in managing their disease, such as shortness of breath, reduced exercise tolerance, and frequent exacerbations. With aging and multimorbidity, the pathological profile of these individuals becomes even more complex and unpredictable, creating significant challenges for healthcare systems (15,90).

In this context, rehabilitation nurses play a fundamental role by providing education, counseling, and planning and implementing holistic, patient-centered care plans, aiming to empower elderly individuals to take control of their health and effectively manage their symptoms. Empowering these individuals

brings numerous benefits and can have a significant impact on health. Effective symptom management by elderly patients with COPD can reduce exacerbations and hospital admissions, resulting in better health outcomes and greater cost-effectiveness of care.

Despite some limitations, our results indicate that self-management empowerment programs, complemented by other interventions from Rehabilitation Nurses, significantly improve key variables for the elderly population, such as quality of life, physical, mental, and emotional well-being, and functionality. Additionally, these interventions enhance self-management skills, self-efficacy, self-care, knowledge, and patient activation, helping to more effectively manage emotions such as anxiety and adverse symptoms like dyspnea, while also increasing capacity and physical activity.

The included studies presented a low risk of bias, reinforcing the robustness of the evidence regarding the benefits of these interventions. The delivery of these programs by rehabilitation nurses also facilitates the process of social, professional, and familial readaptation and reintegration. However, few studies mentioned the involvement of caregivers or family members through collaborative approaches between them and healthcare professionals. We consider it essential for future research to explore this dimension to assess the potential impact of this perspective on COPD management outcomes and satisfaction with care.

Another point to consider is the lack of evidence on the impact of self-management empowerment in COPD patients recovering from COVID-19, although studies suggest that these individuals are more susceptible to developing severe forms of the disease and experiencing poorer clinical outcomes (13).

Regarding the limitations of our study, we highlight the temporal limitation of the research and the restricted number of databases consulted. This may have excluded relevant studies that could impact the conclusions. Additionally, some of the analyzed studies were conducted during the COVID-19 pandemic, which may have influenced data such as hospitalizations and mortality. Despite these limitations, this review provides solid evidence on the intervention of Rehabilitation Nursing in empowering the elderly.

BIBLIOGRAPHIC REFERENCES

1.   Worldbank. Life expectancy at birth, total (years) . 2022.

2.   ESPERANÇA DE VIDA À NASCENÇA DIMINUIU EM TODAS AS REGIÕES DO CONTINENTE [Internet]. 2019. Available from: www.ine.pt

3.   Chowdhury SR, Chandra Das D, Sunna TC, Beyene J, Hossain A. Global and regional prevalence of multimorbidity in the adult population in community settings: a systematic review and meta-analysis. EClinicalMedicine. 2023 Mar 1;57.

4. Duarte YA de O, Nunes DP, de Andrade FB, Corona LP, de Brito TRP, Dos Santos JLF, et al. Frailty in older adults in the city of São Paulo: Prevalence and associated factors. Revista Brasileira de Epidemiologia. 2018;21.

5. Lukman NA, Leibing A, Merry L. Self-Care Experiences of Adults with Chronic Disease in Indonesia: An Integrative Review. Int J Chronic Dis. 2020 Aug 25;2020:1–17.

6. Amosun SL. Self-Management in Chronic Illness in the Elderly. In: Self-Management in Chronic Illness [Internet]. Cham: Springer International Publishing; 2021. p. 113–23. Available from: https://link.springer.com/10.1007/978-3-030-69736-5_8

7. Global Initiative for Chronic Obstructive Lung Disease. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease (2024 Report) [Internet]. 2024 [cited 2024 Aug 23]. Available from: goldcopd.org/digital-gold-report/

8. World Health Organization. The top 10 causes of death [Internet]. 2024 [cited 2024 Aug 23]. Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

9. Boers E, Barrett M, Su JG, Benjafield A V., Sinha S, Kaye L, et al. Global Burden of Chronic Obstructive Pulmonary Disease Through 2050. JAMA Netw Open. 2023;6(12):E2346598.

10. Schneider JL, Rowe JH, Garcia-de-Alba C, Kim CF, Sharpe AH, Haigis MC. The aging lung: Physiology, disease, and immunity. Cell [Internet]. 2021 Apr;184(8):1990–2019. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0092867421002907

11. Cortopassi F, Gurung P, Pinto-Plata V. Chronic Obstructive Pulmonary Disease in Elderly Patients. Clin Geriatr Med. 2017;33(4):539–52.

12. AL Wachami N, Guennouni M, Iderdar Y, Boumendil K, Arraji M, Mourajid Y, et al. Estimating the global prevalence of chronic obstructive pulmonary disease (COPD): a systematic review and meta-analysis. BMC Public Health. 2024;24(1):1–16.

13. Awatade N, Wark P, Chan A, Mamun S, Mohd Esa N, Matsunaga K, et al. The Complex Association between COPD and COVID-19. J Clin Med [Internet]. 2023 May 31;12(11):3791. Available from: https://www.mdpi.com/2077-0383/12/11/3791

14. Kwok WC, Chau CH, Tam TCC, Lam FM, Ho JCM. Outcomes among patients with chronic obstructive pulmonary disease after recovery from COVID-19 infection of different severity. Sci Rep [Internet]. 2024;14(1):10–8. Available from: https://doi.org/10.1038/s41598-024-64670-9

15. Skou ST, Mair FS, Fortin M, Guthrie B, Nunes BP, Miranda JJ, et al. Multimorbidity. Nat Rev Dis Primers. 2022;8(1).

16. Wu J, Su J, Ansah JP, Chiu CT. Projecting the chronic disease burden among the adult population in the United States using a multi-state population model.

17. Grady PA, Gough LL. Self-Management: A Comprehensive Approach to Management of Chronic Conditions. Public Health. 2014;104:25–31.

18. Cravo A, Attar D, Freeman D, Holmes S, Ip L, Singh SJ. The Importance of Self-Management in the Context of Personalized Care in COPD. Vol. 17, International Journal of COPD. Dove Medical Press Ltd; 2022. p. 231–43.

19. Van de Velde D, De Zutter F, Satink T, Costa U, Janquart S, Senn D, et al. Delineating the concept of self-management in chronic conditions: a concept analysis. BMJ Open [Internet]. 2019 Jul 16;9(7):e027775. Available from: https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2018-027775

20. Lorig KR, Holman HR. Self-management education: History, definition, outcomes, and mechanisms. Annals of Behavioral Medicine [Internet]. 2003 Aug;26(1):1–7. Available from: https://academic.oup.com/abm/article/26/1/1-7/4630312

21. Effing TW, Vercoulen JH, Bourbeau J, Trappenburg J, Lenferink A, Cafarella P, et al. Definition of a COPD self-management intervention: International expert group consensus. European Respiratory Journal. 2016 Jul 1;48(1):46–54.

22. Qama E, Rubinelli S, Diviani N. Factors influencing the integration of self-management in daily life routines in chronic conditions: a scoping review of qualitative evidence. BMJ Open. 2022 Dec 30;12(12).

23. Schrijver J, Lenferink A, Brusse-Keizer M, Zwerink M, van der Valk PD, van der Palen J, et al. Self-management interventions for people with chronic obstructive pulmonary disease. Cochrane Database of Systematic Reviews [Internet]. 2022 Jan 10;2023(3). Available from: http://doi.wiley.com/10.1002/14651858.CD002990.pub4

24. World Health Organization. Rehabilitation Competency Framework. Geneva; 2020.

25. Wade DT. What is rehabilitation? An empirical investigation leading to an evidence-based description. Vol. 34, Clinical Rehabilitation. SAGE Publications Ltd; 2020. p. 571–83.

26. Helvaci A, Gok Metin Z. The effects of nurse-driven self-management programs on chronic obstructive pulmonary disease: A systematic review and meta-analysis. J Adv Nurs. 2020;76(11):2849–71.

27. Awatade NT, Wark PAB, Chan ASL, Mamun SA Al, Mohd Esa NY, Matsunaga K, et al. The Complex Association between COPD and COVID-19. Vol. 12, Journal of Clinical Medicine. Multidisciplinary Digital Publishing Institute (MDPI); 2023.

28. Tricco A, Langlois E, Straus S. Rapid reviews to strengthen health policy and systems: a practical guide. Geneva; 2017.

29. Tricco AC, Khalil H, Holly C, Feyissa G, Godfrey C, Evans C, et al. Rapid reviews and the methodological rigor of evidence synthesis: A JBI position statement. Vol. 20, JBI Evidence Synthesis. Lippincott Williams and Wilkins; 2022. p. 944–9.

30. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. BMJ (Online) [Internet]. 2009;339(7716):332–6. Available from: http://dx.doi.org/doi:10.1136/bmj.b2535

31. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ [Internet]. 2021 Mar 29;372:n71. Available from: https://www.bmj.com/lookup/doi/10.1136/bmj.n71

32. Aromataris E, Lockwood C, Porritt K, Pilla B, Jordan Z, editors. JBI Manual for Evidence Synthesis [Internet]. JBI; 2024. Available from: https://jbi-global-wiki.refined.site/space/MANUAL

33. Moher D, Liberati A, Tetzlaff J, Altman DG, Antes G, Atkins D, et al. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. Vol. 6, PLoS Medicine. Public Library of Science; 2009.

34. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. Vol. 372, The BMJ. BMJ Publishing Group; 2021.

35. Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al. Cochrane handbook for systematic reviews of interventions. Cochrane Handbook for Systematic Reviews of Interventions. 2019. 1–694 p.

36. Aromataris Edoardo, Munn Zachary, Joanna Briggs Institute. JBI manual for evidence synthesis. Joanna Briggs Institute; 2020.

37. Barker TH, Stone JC, Sears K, Klugar M, Tufanaru C, Leonardi-Bee J, et al. The revised JBI critical appraisal tool for the assessment of risk of bias for randomized controlled trials. JBI Evid Synth. 2023 Mar 1;21(3):494–506.

38. Barker TH, Habibi N, Aromataris E, Stone JC, Leonardi-Bee J, Sears K, et al. The revised JBI critical appraisal tool for the assessment of risk of bias for quasi-experimental studies. JBI Evid Synth. 2024 Mar 30;22(3):378–88.

39. Wartolowska K, Beard D, Carr A. Blinding in trials of interventional procedures is possible and worthwhile. Vol. 6, F1000Research. Faculty of 1000 Ltd; 2017.

40. Benzo R, McEvoy C. Effect of Health Coaching Delivered by a Respiratory Therapist or Nurse on Self-Management Abilities in Severe COPD: Analysis of a Large Randomized Study. Respir Care. 2019 Sep;64(9):1065–72.

41. Kilic B, Cicek H, Avci M. Comparing the effects of self-management and hospital-based pulmonary rehabilitation programs in COPD patients. Niger J Clin Pract [Internet]. 2021;24(3):362. Available from: https://journals.lww.com/10.4103/njcp.njcp_165_20

42. Chang YY, Dai YT. The efficacy of a flipping education program on improving self-management in patients with chronic obstructive pulmonary disease: A randomized controlled trial. International Journal of COPD. 2019;14:1239–50.

43. Park SK, Bang CH, Lee SH. Evaluating the effect of a smartphone app-based self-management program for people with COPD: A randomized controlled trial. Applied Nursing Research [Internet]. 2020;52(September 2019):151231. Available from: https://doi.org/10.1016/j.apnr.2020.151231

44. Park MO, Oh HS, Seo WS. Effects of a cognitive rehabilitation programme on cognitive function, self-management and quality of life in patients with chronic obstructive pulmonary disease. Int J Nurs Pract. 2021;27(4):1–11.

45. Liou HL, Lai ZY, Huang YT, Chu WT, Tsai YC, Chen MS, et al. The effectiveness of an unsupervised home-based pulmonary rehabilitation with self-management program in patients with chronic obstructive pulmonary disease. Int J Nurs Pract. 2023;29(6):1–11.

46. Ntritsos G, Franek J, Belbasis L, Christou MA, Markozannes G, Altman P, et al. Gender-specific estimates of COPD prevalence: A systematic review and meta-analysis. International Journal of COPD. 2018;13:1507–14.

47. Adeloye D, Song P, Zhu Y, Campbell H, Sheikh A, Rudan I. Global, regional, and national prevalence of, and risk factors for, chronic obstructive pulmonary disease (COPD) in 2019: a systematic review and modelling analysis. Lancet Respir Med. 2022;10(5):447–58.

48. Dritsaki M, Johnson-Warrington V, Mitchell K, Singh S, Rees K. An economic evaluation of a self-management programme of activity, coping and education for patients with chronic obstructive pulmonary disease. Chron Respir Dis. 2016;13(1):48–56.

49. Lahousse L, Ziere G, Verlinden VJA, Zillikens MC, Uitterlinden AG, Rivadeneira F, et al. Risk of Frailty in Elderly With COPD: A Population-Based Study. Journals of Gerontology - Series A Biological Sciences and Medical Sciences. 2016;71(5):689–95.

50. Korpershoek YJG, Vervoort SCJM, Nijssen LIT, Trappenburg JCA, Schuurmans MJ. Factors influencing exacerbation-related self-management in patients with COPD: A qualitative study. International Journal of COPD. 2016;11(1):2977–90.

51. Aljasem LI, Peyrot M, Wissow L, Rubin RR. The Impact of Barriers and Self-Efficacy on Self-Care Behaviors in Type 2 Diabetes. Diabetes Educ [Internet]. 2001 May 3;27(3):393–404. Available from: http://journals.sagepub.com/doi/10.1177/014572170102700309

52. Waddington J. Self-efficacy. ELT Journal [Internet]. 2023 May 18;77(2):237–40. Available from: https://academic.oup.com/eltj/article/77/2/237/6979364

53. Yi QF, Yang GL, Yan J. Self-Efficacy Intervention Programs in Patients with Chronic Obstructive Pulmonary Disease: Narrative Review. International Journal of COPD. 2021;16(December):3397–403.

54. Baker E, Fatoye F. Clinical and cost effectiveness of nurse-led self-management interventions for patients with copd in primary care: A systematic review. Int J Nurs Stud [Internet]. 2017 Jun;71:125–38. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0020748917300834

55. Queirós P, Vidinha T, Filho A, Joaquim Pina Queirós P, dos Santos Vidinha TS, de Almeida Filho AJ. Autocuidado: o contributo teórico de Orem para a disciplina e profissão de Enfermagem. Self-care: Orem's theoretical contribution to the Nursing discipline and profession [Internet]. 2014 Nov;4(3):157–64. Available from: http://10.0.49.163/RIV14081

56. Tanaka M. Orem's nursing self-care deficit theory: A theoretical analysis focusing on its philosophical and sociological foundation. Nurs Forum (Auckl). 2022;(August 2021):480–5.

57. Lawless MT, Tieu M, Feo R, Kitson AL. Theories of self-care and self-management of long-term conditions by community-dwelling older adults: A systematic review and meta-ethnography. Soc Sci Med [Internet]. 2021;287(September):114393. Available from: https://doi.org/10.1016/j.socscimed.2021.114393

58. Fischer C, Jörres RA, Alter P, Trudzinski FC, Yildirim Ö, Bals R, et al. Basic Determinants of Disease Knowledge in COPD Patients: Results from COSYCONET. Patient Prefer Adherence. 2022;16(June):1759–70.

59. Yildirim Duman JG. Self-Management of Chronic Diseases: A Descriptive Phenomenological Study. Soc Work Public Health. 2021;36(2):300–10.

60. Chung C, Kim AR, Kim D, Kwon H, Lee SH, Jang IY, et al. Smartphone application-based rehabilitation in patients with chronic respiratory and cardiovascular diseases. Sci Rep. 2024 Dec 1;14(1).

61. Tighe SA, Ball K, Kensing F, Kayser L, Rawstorn JC, Maddison R. Toward a Digital Platform for the Self-Management of Noncommunicable Disease: Systematic Review of Platform-Like Interventions. J Med Internet Res. 2020;22(10):1–22.

62. Hibbard JH, Stockard J, Mahoney ER, Tusler M. Development of the patient activation measure (PAM): Conceptualizing and measuring activation in patients and consumers. Health Serv Res. 2004;39(4 I):1005–26.

63. Blakemore A, Hann M, Howells K, Panagioti M, Sidaway M, Reeves D, et al. Patient activation in older people with long-term conditions and multimorbidity: Correlates and change in a cohort study in the United Kingdom. BMC Health Serv Res [Internet]. 2016;16(1):1–11. Available from: http://dx.doi.org/10.1186/s12913-016-1843-2

64. Chan EY, Glass GF, Cheong RQ, Chin GF, Chng DYJ. Patient Activation and its Predictors in Hospitalized Older Adults in Singapore. Geriatr Nurs (Minneap) [Internet]. 2021;42(2):336–43. Available from: https://doi.org/10.1016/j.gerinurse.2021.01.006

65. Barr JA, Tsai LP. Health coaching provided by registered nurses described: a systematic review and narrative synthesis. BMC Nurs. 2021;20(1).

66. Dodd JW, Getov S V., Jones PW. Cognitive function in COPD. Vol. 35, European Respiratory Journal. 2010. p. 913–22.

67. Dobric A, De Luca SN, Spencer SJ, Bozinovski S, Saling MM, McDonald CF, et al. Novel pharmacological strategies to treat cognitive dysfunction in chronic obstructive pulmonary disease. Pharmacol Ther. 2022 May 1;233:108017.

68. Schuler M, Wittmann M, Faller H, Schultz K. The interrelations among aspects of dyspnea and symptoms of depression in COPD patients – a network analysis. J Affect Disord. 2018 Nov 1;240:33–40.

69. Strang S, Ekberg-Jansson A, Henoch I. Experience of anxiety among patients with severe COPD: A qualitative, in-depth interview study. Palliat Support Care. 2013 Jun 20;12(6):465–72.

70. Yaldizkaya MF, Doğan NÖ, Özturan İU, Yaka E, Yilmaz S, Pekdemir M. Relationship between clinical anxiety and patient outcomes in patients with chronic obstructive lung disease exacerbation in the emergency department. Med Klin Intensivmed Notfmed. 2023 Apr 1;118(3):236–41.

71. Rahi MS, Thilagar B, Balaji S, Prabhakaran SY, Mudgal M, Rajoo S, et al. The Impact of Anxiety and Depression in Chronic Obstructive Pulmonary Disease. Vol. 91, Advances in Respiratory Medicine. MDPI; 2023. p. 123–34.

72. Öztürk BÖ, Alpaydın AÖ, Özalevli S, Güler N, Cimilli C. Self-management training in chronic obstructive lung disease improves the quality of life. Turk Thorac J. 2020;21(4):266–73.

73. Yang J, Lin R, Xu Z, Zhang H. Significance of pulmonary rehabilitation in improving quality of life for subjects with COPD. Respir Care. 2019 Jan 1;64(1):99–107.

74. Dong J, Li Z, Luo L, Xie H. Efficacy of pulmonary rehabilitation in improving the quality of life for patients with chronic obstructive pulmonary disease: Evidence based on nineteen randomized controlled trials. Vol. 73, International Journal of Surgery. Elsevier Ltd; 2020. p. 78–86.

75. Yohannes AM, Casaburi R, Dryden S, Hanania NA. The effectiveness of pulmonary rehabilitation on chronic obstructive pulmonary disease patients with concurrent presence of comorbid depression and anxiety. Respir Med [Internet]. 2022;197(March):106850. Available from: https://doi.org/10.1016/j.rmed.2022.106850

76. Almdabgy EM, Qader A, Binjahlan AA, Alshalawi AM, Albeladi A, Alharbi WS, et al. The Impact of Pulmonary Rehabilitation on Mental Health and Quality of Life in Patients With Chronic Obstructive Pulmonary Disease (COPD): A Narrative Review. Cureus. 2023;15(11).

77. Baker E, Fatoye F. Patient perceived impact of nurse-led self-management interventions for COPD: A systematic review of qualitative research. Int J Nurs Stud. 2019 Mar 1;91:22–34.

78. Ying Y, Khunthason S, Apidechkul T, Nilvarangkul K. Influencing factors of good quality of life among chronic obstructive pulmonary disease patients living in Zhejiang Province, China. Sci Rep [Internet]. 2024;14(1):1–12. Available from: https://doi.org/10.1038/s41598-024-59289-9

79. Esteban C, Arostegui I, Aramburu A, Moraza J, Najera-Zuloaga J, Aburto M, et al. Predictive factors over time of health-related quality of life in COPD patients. Respir Res. 2020;21(1):1–11.

80. Benzo M V., Novotny P, Benzo RP. Adding Granularity of COPD Self-Management to Impact Quality of Life. Chronic Obstructive Pulmonary Diseases. 2022;9(2):277–84.

81. Sieck GC. Physiology in Perspective: Aging and Underlying Pathophysiology. Physiology [Internet]. 2017 Jan;32(1):7–8. Available from: https://www.physiology.org/doi/10.1152/physiol.00035.2016

82. Barnes PJ. Chronic Obstructive Pulmonary Disease. In: Genomic and Personalized Medicine [Internet]. Elsevier; 2013. p. 887–98. Available from: https://linkinghub.elsevier.com/retrieve/pii/B9780123822277000756

83. GOLD. GLOBAL STRATEGY FOR THE DIAGNOSIS, MANAGEMENT, AND PREVENTION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE - 2018 REPORT. Global Obstructive Lung Disease [Internet]. 2018 [cited 2018 May 21]; Available from: http://www.goldcopd.org/uploads/users/files/GOLD_Report_2015_Apr2.pdf

84. Silva L, Maricoto T, Costa P, Berger-Estilita J, Padilha JM. A meta-analysis on the structure of pulmonary rehabilitation maintenance programmes on COPD patients' functional ability. NPJ Prim Care Respir Med. 2022;32(1):1–10.

85. Sharma K, Subba HK, Poudyal S, Adhikari S. Effect of self-management intervention on patients with chronic obstructive pulmonary diseases, Chitwan, Nepal. PLoS One [Internet]. 2024;19(1 January):1–15. Available from: http://dx.doi.org/10.1371/journal.pone.0296091

86. Marciniuk DD, Goodridge D, Hernandez P, Rocker G, Balter M, Bailey P, et al. Managing dyspnea in patients with advanced chronic obstructive pulmonary disease: A Canadian Thoracic Society clinical practice guideline. Can Respir J. 2011;18(2):69–78.

87. Donnell DEO, Milne KM, James MD, Pablo J, Alberto DTJ. Dyspnea in COPD: New Mechanistic Insights and Management Implications. Adv Ther [Internet]. 2020;37(1):41–60. Available from: https://doi.org/10.1007/s12325-019-01128-9

88. Myers LC, Faridi MK, Hasegawa K, Camargo CA. Pulmonary rehabilitation and readmission rates for medicare beneficiaries with acute exacerbation of chronic obstructive pulmonary disease. Chronic Obstructive Pulmonary Diseases. 2021;8(4):427–40.

89. Stefan MS, Pekow PS, Priya A, ZuWallack R, Spitzer KA, Lagu TC, et al. Association between initiation of pulmonary rehabilitation and rehospitalizations in patients hospitalized with chronic obstructive pulmonary disease. Am J Respir Crit Care Med. 2021 Nov 1;204(9):1015–23.

90. OECD. Fiscal Sustainability of Health Systems: How to Finance More Resilient Health Systems When Money Is Tight? [Internet]. Paris: OECD; 2024. Available from: https://www.oecd-ilibrary.org/social-issues-migration-health/fiscal-sustainability-of-health-systems_880f3195-en

ETHICAL DISCLOSURES

Contribuição do(s) autor(es):

Concetualização: FB, ALJ, AL

Investigação: CM, FB, AA, ALJ, AL

Metodologia: AL, FB, ALJ

Administração do projeto: FB, CM

Recursos: CM, FB, Al, AA, ALJ

Supervisão: FB, AL, ALJ

Validação: CM, FB

Visualização: CM, FB, AL

Redação do rascunho original: CM

Redação - revisão e edição: FB, ALJ, AL

Todos os autores leram e concordaram com a versão publicada do manuscrito.

Comissão de Ética:

Não aplicável.

Declaração de consentimento informado:

Não aplicável.

Conflitos de interesse:

Nenhum.

Proveniência e revisão por pares:

Não comissionado; revisto externamente por pares.