EFFECTS OF OUTPATIENT PULMONARY REHABILITATION ON LUNG FUNCTION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: AN INTEGRATIVE REVIEW

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ABSTRACT

INTRODUCTION: Chronic obstructive pulmonary disease (COPD) is a condition characterized by persistent airflow limitation accompanied by progressive airway obstruction. COPD is a significant cause of death globally, associated with reduced quality of life and hospitalization. Pulmonary rehabilitation (PR) is based on specific therapies to improve the patient's condition. It is an important factor in COPD cases as it relates to lung function, which assesses forced expiratory volume in the first second (FEV1) and forced vital capacity (FVC) using a spirometer. **OBJECTIVE:** To demonstrate the effects of outpatient pulmonary rehabilitation on lung function in patients with COPD. **METHODOLOGY:** Based on the objective, 7 original articles were chosen, selected through a search in the PubMed (Public Medline), VHL (Virtual Health Library), and SciELO (Scientific Electronic Library Online) databases, found using the Boolean operator "and", utilizing the Health Science Descriptors (DeCS) "Chronic obstructive pulmonary disease", "Rehabilitation" and "Quality of Life". **RESULTS:** The lung function of the sample was an important indicator to measure the effectiveness of outpatient PR, consisting of physical exercises, guidance, and lifestyle changes; however, there were discrepancies between studies. **CONCLUSION:** It is evident that outpatient PR is an important tool in the treatment of COPD, as observed through spirometry measures, where the sample that underwent PR showed improvement or maintenance mainly in FEV1; however, this cannot be taken as an established fact.

Keywords: Chronic Obstructive Pulmonary Disease; Pulmonary rehabilitation; Lung function.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a condition characterized by persistent airflow limitation accompanied by progressive airway obstruction, often accompanied by various clinical manifestations such as dyspnea, cough, and sputum[1]. The prevalence of respiratory diseases has been increasing, among which COPD is a significant cause of death globally, associated with mortality, morbidity, reduced quality of life, and hospitalization[2-4].

In COPD, pulmonary rehabilitation (PR) is an important factor in reducing exacerbations, clinical symptoms, mortality, and morbidity, in addition to improving the patient's lung function, which is based on the measurement of forced expiratory volume in the first second (FEV1) and forced vital capacity (FVC) of the patient using a spirometer, being important for diagnostic criteria of COPD[2,5]. From this

comprehensive intervention, specific therapies such as physical exercise practice and lifestyle changes, but not limited to these, are a way to proceed with treatment[5].

In this sense, this integrative review aims to gather studies to demonstrate the effects of outpatient pulmonary rehabilitation on lung function in patients with COPD.

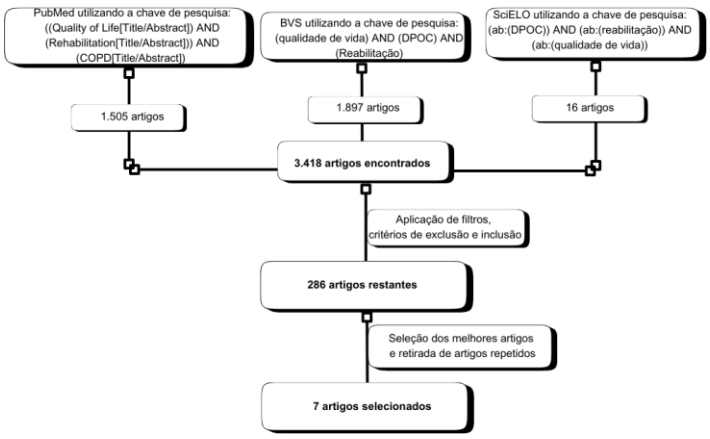
METHODOLOGY

Only original articles were chosen, selected through a search in the PubMed (Public Medline), VHL (Virtual Health Library), and SciELO (Scientific Electronic Library Online) databases, resulting in a total of 3,418 articles, found using the Boolean operator "and", utilizing the Health Science Descriptors (DeCS) "Chronic obstructive pulmonary disease", "Rehabilitation" and "Quality of Life".

Among the filtering criteria, it is important to mention the exclusion of studies that were case reports, those not published in the last 5 years, and including only clinical trials.

After applying filters, 286 articles remained, which underwent manual filtering, selecting the most robust articles that related to the guiding question, removing duplicates, leaving 7 articles at the end. The entire selection process is illustrated in the flowchart below.

Figura 1. Fluxograma de seleção de pesquisas



Fonte: Confeccionado pelos autores do estudo.

RESULTS

Seven clinical trials represented in Table 1 were selected, demonstrating the procedures of outpatient pulmonary rehabilitation, i.e., with specific training for the

patient's pulmonary condition, combined with medication, lifestyle changes, and physical exercises in sessions that occurred over the course of the clinical trial.

Tabela 1. Ensaios clínicos que compararam a função pulmonar da amostragem após reabilitação pulmonar ambulatorial

AUTOR	PROCEDIMENTO	RESULTADOS
KO, F. W. *et al*. (2020)[6].	1 ano . Grupo de intervenção: n=63 . Controle: n=60	Não houve mudanças significativas no VEF1 e na CVF, porém houve melhoras significativas no número de hospitalizações devido a exacerbações da DPOC
MA, Y. *et al*. (2022)[7].	1 ano e 2 meses . Grupo experimental: n=39 . Controle: n=33	Aumento da porcentagem de VEF1 e da razão VEF1/CVF, além de uma melhora no perfil imunológico dos pacientes
WANG, G.; CAI, Y. (2022)[8].	6 meses . Experimentação 1: n=16 . Experimentação 2: n=16 . Controle: n=16	Grupo de experimentação 2 recebeu treinamento respiratório, exercícios e intervenção educacional, o grupo 1 não recebeu exercícios e o controle recebeu apenas tratamento clínico normal. Foi analisado a função pulmonar em 3 meses e 6 meses, não havendo mudanças significativas na função pulmonar direta (VEF1 e CVF).
YUDHAWATI, R.; RASJID HS, M. (2019)[9].	12 semanas . Yoga: n=15 . Controle n=15	Grupo que realizava prática de yoga, em sessões 2 vezes na semana com 60 minutos como exercício alternativo, apresentou melhora significante no VEF1
CUI, S. *et al*. (2024)[10].	12 semanas . Medicação individualizada: n=131 . Medicação + exercícios aeróbicos: n=105 . Medicação + exercícios de força: n-92	Houve pequena melhora na função pulmonar dos grupos que realizaram algum tipo de exercício, nos aeróbicos observou-se melhora no VEF1 e CVF quando comparados com aqueles que tomaram apenas a medicação, enquanto no grupo de força se observou apenas aumento de CVF comparado com grupo que utilizou apenas medicação.
LEE, S. W. *et al*. (2022) [11].	8 semanas . Controle: n=6 . Exercício de condução pulmonar: n=6 . Reabilitação pulmonar: n=4	Enquanto não foi observado uma mudança proeminente na VEF1 (Litros), o grupo que realizou reabilitação pulmonar acabou por ter um aumento na razão VEF1/CVF
JIANG, Linhong. *et al*. (2023)[12].	3 meses . Controle: n=22 . Intervenção: n=22	Grupo que recebeu exercícios supervisionados e participou de sessões apresentou melhora significante na VEF1, ao contrário do grupo controle que apresentou redução

Fonte: Confeccionada pelos autores do estudo
Notas: VEF1= Volume expiratório forçado no primeiro segundo. CVF= Capacidade vital forçada. DPOC= Doença Pulmonar Obstrutiva Crônica

Based on the studies, it is important to mention that while WANG, G.; CAI, Y (2022)**[8]** found no significant differences in FEV1 and FVC in both the control group and the 2 intervention groups, JIANG, et al. (2023)**[12]** found improvement in FEV1 in the group that participated in PR activities and a decrease in FEV1 in the group that did not receive specific therapy for the lung; this discrepancy may have occurred due

to differences in how the outpatient treatment was conducted, with different exercises applied in the 2 studies.

At the end of the research, a divergence was found in the improvement of the marker factors of lung function, such as forced expiratory volume in the first second (FEV1) and forced vital capacity (FVC), varying between cases of maintenance of the values found at the beginning and improvement in FEV1 or FVC or in both.

CONCLUSION

Given the above, it is evident that outpatient PR is an important tool in the treatment of COPD, as observed through spirometry parameters, where the sample that underwent PR showed improvement or maintenance mainly in FEV1, while in some studies, groups that did not receive PR showed a decrease in lung function. Thus, the importance of exercises aimed at improving pulmonary function for a better quality of life for patients with COPD is visible; however, due to the limited number of evidences, it is not possible to state that the beneficial effects of PR on lung function in patients with COPD are unanimous.

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