

The Survey on Adherence Rate of Breathing Exercises and Relationship with Quality of Life in Patients with Chronic Obstructive Pulmonary Disease

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Abstract

Objective: Determine the percentage of patients who adhere to breathing exercises (puffy-lip breathing, diaphragmatic breathing) and the relationship between adherence with breathing exercises and quality of life.

Methods: A cross-sectional descriptive study was performed on 100 patients with chronic obstructive pulmonary disease indicated in the general department of the Tay Nguyen Regional General Hospital and District 11 Hospital in 4 months from December 2020 to April 2021.

Results: The percentage of patients who adhered to breathing exercises was determined to be very low, 16%. The relationship between adherence to breathing exercises and quality of life was statistically significant ($P=0.000$). The average score of quality of life of the group that adhered to breathing exercises was lower than that of the group that did not adhere to breathing exercises ($18.50 < 27.77$).

Conclusion: The rate of adherence to breathing exercises in patients with chronic obstructive pulmonary disease is 16%. For patients who adhere to breathing exercises, Chronic Obstructive Pulmonary Disease (COPD) will affect their quality of life less than patients who do not adhere to breathing exercises.

Keywords: Adherence • Breathing exercises • Chronic obstructive pulmonary disease • Quality of life

Introduction

Adherence is 'the extent to which a person's behaviour corresponds to agreed-upon recommendations from a healthcare provider' that is a key determinant of health care outcomes. Includes medication, dietary restriction, and/or appropriate lifestyle change [1]. and non-adherence is the leading cause of treatment failure in chronic diseases. Adherence to treatment in patients with COPD is considered key in the treatment and management of the disease. But according to WHO, the rate of adherence in COPD is relatively low [2]. As a result, the patient's quality of life and respiratory status is reduced. Many studies have shown that breathing exercises have a great role in the management of COPD: improve gas exchange, improve lung function, improve quality of life, save energy [3]. However, in Vietnam, there are currently no authors or studies that refer to the issue of adherence with breathing exercises, so we started conducting the study "The survey on adherence rate of breathing exercises and relationship with quality of life in patients with chronic obstructive pulmonary disease".

Methods

Time and place of study

From December 2020 to April 2021.

Study design

A cross-sectional descriptive study.

Research subjects

Inclusion criteria: Patients diagnosed with COPD were prescribed breathing exercises by their doctors, had not participated in any breathing training program before and agreed to participate in the study.

Exclusion criteria: Patients with thoracic trauma, or recent thoracic surgery. Patients are unable to cooperate: psychosis, cognitive delay, dementia. healthy

Sample size: Apply the formula to calculate the estimated sample size according to the ratio:

$$n = \frac{z^2_{1-\alpha/2} - Xp(1-p)}{d^2}$$

Including

Type 1 error, $\alpha(\alpha)=0.05$

$$Z_{1-\alpha/2} = Z_{0.975} = 1.96$$

(Z: value from the normal distribution)

Because no research documents have been found on the rate of adherence with breathing exercises in patients with chronic obstructive pulmonary disease both at home and abroad $p = 0.5$

Allowed error $d = 0.1$

$$n = 97$$

To select a feasible sample size for collection, we choose a sample size $n = 100$

The method of data collection

Step 1: Review and approve the research ethics file by the ethics committee of the University of Medicine and Pharmacy in Ho Chi Minh City and the place where the samples were taken.

Step 2: Make a list of patients, patients who are in inpatient treatment at the internal departments of the two hospitals where the samples are taken have been diagnosed with COPD and assigned to practice breathing. Then through the head nurse of the hospital, make a list of patients by day.

Step 3: Approach each patient and choose a convenient time during the day to ensure the patient has time to rest to explain the purpose of the study. When the subject consents, have the patients participating in the study sign a written consent to participate in the study.

Step 4: Direct interview with the patient and answer questions if any.

Step 5: Train 42 nurses on breathing exercises (puffy-lip breathing and diaphragmatic breathing) so that caregivers can better understand the steps in breathing exercises according to checklists and assessment methods after 5 days of patients breathing exercises. Previously, the nurse knew breathing exercises and instructed the patient to practice breathing as prescribed by the doctor.

Step 6: The nurse guides the patient to practice breathing according to the checklist in the guidelines for diagnosis and treatment of chronic obstructive pulmonary disease of the Ministry of Health in 2018 (Decision No. 2866/QĐ-BYT). Patients will be trained for 5 days in the hospital.

Step 7: The nurse will evaluate the adherence with breathing exercises after 5 days with the checklist of breathing exercises (Decision No. 2866/QĐ-BYT) and practice for 5 days. Use the CAT scale to assess the patient's quality of life. The researcher collects the checklist, checks the raw data fully supplemented, sends greetings, thanks.

Step 8: Input data into data management and analysis software. From there, the results are presented and discussed.

Data collection tool

-Adherence: measured by 2 values including the checklist of breathing exercises and the number of days of practice.

+Adherence: when the patient has fully and correctly performed the steps in the checklist of 2 exercises of pursed-lip breathing and diaphragmatic breathing (Decision No. 2866/QĐ-BYT) and practised breathing for 5 days at the same time.

+Non- Adherence: wrong practice ≥ 1 step or not enough steps or not enough time 5 days to practice.

-CAT quality of life scale: the CAT scale includes 8 questions with problems of cough, sputum production, shortness of breath, chest heaviness, activity, social communication, sleep and health. Each question will have a scale from 0 (no influence) to 5 (severe influence). The overall average score is calculated by adding together the scores of 8 questions. The total score ranges from 0 to 40. The lower the total score, the better the quality of life.

Data analysis and processing

After data collection, data will be entered and analyzed using SPSS 20.0 software. Descriptive statistics calculate the frequency and proportions of variables. Use Fisher's exact test, T-test to determine the relationship between adherence and quality of life.

Medical ethics

Review and approval of the research ethics file by the ethics committee of the University of Medicine and Pharmacy in Ho Chi Minh City and where to get research data.

This study was approved by the Ethics Committee in Biomedical Research, University of Medicine and Pharmacy, Ho Chi Minh City. HCM No. 822/HDDĐ, November 2, 2020

Informed consent was obtained from study participants.

Results

The study was conducted on 100 patients, the results showed that: The percentage of age group ≥ 60 accounted for the majority (76%) and up to 74% of patients were male. However, the Body Mass Index (BMI) thin and thin accounted for a high proportion (44%). Education level in primary and lower secondary schools accounts for a high proportion of 54.0% and 30.0%, respectively. Farmer occupation accounts for the highest proportion (53%). Officials accounted for the proportion (12%) and pensioners accounted for (12%). Besides, people with a family account for the percentage (72%). Disease duration from 1-5 years accounts for (54%). Disease duration >10 years accounted for the lowest rate (5%). The study also found that 84% of the study subjects had comorbidities.

The adherence rate with pursed-lip breathing exercises in COPD was 79.0%. The rate of adherence with diaphragmatic breathing exercises in COPD was 23.0% and patients practice enough times as indicated with the rate of 51.0%. The rate of adherence with breathing exercises of patients with COPD was low at 16%, non-adherence with breathing exercises accounts for a high rate of 84%.

COPD affects the quality of life from moderate to very severe. Moderate influence (10-20 points) accounts for 22%; severely affected (21-30 points) accounted for 44%; very severely affected (31-40 points), accounting for 32%.

The percentage of patients who adhered to moderate-influenced breathing exercises was the highest (9/16 (56.2%). Instead, the percentage of patients who did not comply with breathing exercises with severe and very severe effects was high (39/84 (46.4%) and (32/84 (38.1%)). the life of the adherence group was lower than that of the non-adherent group (18.50 < 27.77) The relationship between adherence with breathing exercises and quality of life in patients with the chronic obstructive pulmonary disease was statistically significant with $p < 0.05$.

Discussion

Research object characteristics

Research results show that the majority of patients with COPD is 74% higher than female patients, accounting for 26%. Most patients in the age group of 60 years and older account for 76%. This result is consistent with the study of Luong Manh Truong, which concluded that men have higher rates of COPD than women [4] and the research results of Pham Thi Bich Ngoc in 2019 and the study of Liliane PS Mendes in 2018 showed that men accounted for 88% and the average age of COPD was 65 ± 7 [5,6].

Breathing exercise adherence rate

The adherence rate with pursed-lip breathing exercises was lower than that of diaphragmatic breathing exercises. The adherence rate to practice diaphragmatic breathing in COPD is 23.0% and the adherence rate to practice pursed-lip breathing in COPD is 79.0%. Pursed-lip breathing exercises are simpler than diaphragmatic breathing exercises. For the pursed-lip breathing exercise, there are 3 steps, while the diaphragmatic breathing exercise consists of 4 more complicated steps. The mean respiratory rates were 15.0 and 4.32 breaths/min in diaphragmatic breathing, and 12.8 and 3.53 breaths/min is pursed-lip breathing. Oxygen consumption for diaphragmatic breathing is 165.8 ± 22.3 mL O_2 /min, 164.8 ± 20.9 mL O_2 /min for pursed-lip breathing [7].

The rate of adherence to breathing exercises is very low, accounting for 16%. The results of this study are consistent with the results of Ly Cam Hon in 2016 showing that only 11.5% of patients adhered to physical therapy - rehabilitation and 88.5% did not comply [6]. And the 2020 Ierodiakonou study on inhaler adherence and comorbidities in COPD patients showed that 74.1% of COPD patients had poor adherence to treatment, while the majority of them were characterized by intentional non-adherence (69.5%) [8]. Or the study of author Ngo Quy Chau in 2019 on 70 patients with COPD. The rates of non-adherence were: "ignorant" (77.1%), "incoherent" (58.6%) and "intentionally" (55.7%) [9]. But this result is lower than the research result of Nguyen Dinh Phuong. The adherence rate with inhalers is nearly 59%, and the best practice is 48% [10]. The residents of the study sample are in 2 large hospitals in Ho Chi Minh City, with high education levels, stable occupation, so the adherence rate is high. From the results of the study as well as other studies, it can be seen that the adherence rate in patients with COPD is relatively low. It may be due to the severity of the disease, the symptoms occurring or the age, place of residence

Quality of life of patients with COPD

The proportion of patients who did not adhere to breathing exercises that affected their quality of life was very high (46.4%) and (38.1%), respectively. The relationship between adherence to breathing exercises and quality of life in patients with COPD was statistically significant with $p < 0.05$. The average quality of life of the compliant group was lower than that of the non-adherent group (18.50 < 27.77). The results of the study are similar to the results of the author Nguyen Huong Lan as well as the results of the author Ierodiakonou: In the multivariate analysis, the results of COPD had a significant relationship with poor adherence [8,10]. Research results show that treatment adherence has a significant effect on the quality of life. When the patient adheres to treatment, not only improves the health status here, but also improves the patient's lung function, but also improves mobility, spirit, personal care, and quality of life. Thereby reducing the economic burden, treatment costs, dependence on treatment drugs, hospital stay, complications and family support.

Conclusion

The percentage of patients who adhered to breathing exercises was determined to be very low, 16%. The relationship between adherence to breathing exercises and quality of life was statistically significant ($P = 0.000$). The average quality of life of the group that adhered to breathing exercises was lower than that of the group that did not adhere to breathing exercises (18.50 < 27.77).

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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