





ORIGINAL ARTICLE

Knowledge about chronic obstructive pulmonary disease in patients with different levels of physical activity

Conhecimento sobre doença pulmonar obstrutiva crônica em pacientes de diferentes níveis de atividade física

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ABSTRACT

The aim of this study was to identify and compare the level of knowledge about chronic obstructive pulmonary disease in active, sedentary and severely inactive individuals. This is a cross-sectional study with individuals with chronic obstructive pulmonary disease. A clinical evaluation form, the Bristol COPD Knowledge Questionnaire, and pedometers (step counter) were used for data collection. Of the 75 individuals evaluated, 70.7% were severely inactive. There was a low level of knowledge about chronic obstructive pulmonary disease ($48.51 \pm 9.08\%$), and it was found that active, sedentary and severely inactive individuals have a similar level of knowledge about the disease ($50.19 \pm 11.18\%$ vs $46.48 \pm 8.16\%$ vs $48.79 \pm 9.06\%$, $p=0.68$). It is concluded, therefore, that individuals with active, sedentary and severely inactive chronic obstructive pulmonary disease have similar and reduced knowledge about the disease.

Descriptors: Pulmonary Disease, Chronic Obstructive; Exercise; Knowledge.

RESUMO

O objetivo deste estudo foi identificar e comparar o nível de conhecimento sobre a doença pulmonar obstrutiva crônica em indivíduos ativos, sedentários e severamente inativos. Trata-se de um estudo transversal com indivíduos com doença pulmonar obstrutiva crônica. Para a coleta de dados, foi utilizada uma ficha de avaliação clínica, o *Bristol COPD Knowledge Questionnaire* e pedômetros (contador de passos). Foram avaliados 75 indivíduos, 70,7% são severamente inativos. Verificou-se um baixo nível de conhecimento sobre a doença pulmonar obstrutiva crônica ($48,51 \pm 9,08\%$), e constatou que indivíduos ativos, sedentários e severamente inativos apresentam o nível de conhecimento sobre a doença semelhante ($50,19 \pm 11,18\%$ vs $46,48 \pm 8,16\%$ vs $48,79 \pm 9,06\%$, $p=0,68$). Conclui-se, portanto, que indivíduos com doença pulmonar obstrutiva crônica ativos, sedentários e severamente inativos apresentam conhecimento semelhante e reduzido sobre a doença.

Descritores: Doença Pulmonar Obstrutiva Crônica; Exercício Físico; Conhecimento.

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INTRODUCTION

Patient education is an important element in the care and treatment of chronic diseases⁽¹⁾. For chronic obstructive pulmonary disease (COPD), education means motivating, engaging and guiding patients to positively adapt their behavior; addressing risk factors, including smoking cessation and vaccination; and making proper use of inhalation devices. Education also fosters the maintenance or increasing of physical activity and develops skills to better manage the disease⁽²⁾.

Thus, health education favors the patient's active participation in health care and the self-management of COPD, through changes in lifestyle⁽³⁾. It also provides knowledge about physical and psychological changes caused by the disease, which encourages treatment adherence⁽¹⁾.

One of the key actions of the treatment is enabling the individual to maintain higher levels of daily physical activity; that is, staying active. Factors such as progressive dyspnea on exertion and low oxidative capacity of skeletal muscle⁽²⁾, in addition to hypoxemia, which turns aerobic metabolism into anaerobic metabolism, contribute to reduced levels of exercise⁽⁴⁾. These lower levels of daily physical activity are worrying, as physical inactivity is a strong predictor of mortality in this population. Regular exercise, on the other hand, is a protective factor that reduces the risk of exacerbation and reduces the number of hospital admissions⁽⁵⁻⁷⁾.

However, it is not known whether the level of daily physical activity in patients with COPD is related to the individual's greater knowledge of the disease. Thus, this study aims to identify and compare the level of knowledge about COPD in active, sedentary and severely inactive individuals.

METHODS

This is a cross-sectional study conducted with individuals with COPD who are followed-up with by a pulmonologist and/or physiotherapist at a Pulmonology clinic in Goiânia, GO.

The sample calculation was based on the Brazilian population, the number of 71 individuals was estimated for an observed power of 80% and $\alpha=0.05$, considering a standard deviation of eight, as demonstrated in another study⁽⁸⁾.

The following inclusion criteria were adopted: individuals of both sexes, over the age of 40, diagnosed with COPD based on spirometric criteria, with clinical stability of the disease (without exacerbations) in the month prior to the study and who signed the Term of Free and Informed Consent (ICF). Exclusion criteria were: individuals over the age of 85 (classified as very elderly, according to the Institute for Applied Economic Research - IPEA), patients with neurological, neuromuscular or orthopedic diseases that prevented

walking without assistance, patients with decompensated cardiovascular disease, cancer diagnosis, Heart Failure, according to the functional classification of the New York Heart Association (NYHA) grades III and IV, history of acute myocardial infarction (AMI) in the last three months, and users of cardiac pacemakers. Individuals unable to perform any of the evaluations and who had an exacerbation of the disease during the data collection period were removed from the study. Non-probabilistic sampling of the convenience sample was used.

Data collection took place from January to December 2017 after the participants signed the ICF. A clinical evaluation form, the Bristol COPD Knowledge Questionnaire (BCKQ), was used to assess knowledge about the disease and pedometers (step counters) to assess daily physical activity.

After the questionnaires were applied, Yamax Digiwalker SW-700 pedometers were fixed at the waist level of the individuals for four consecutive days. Participants were instructed not to change their daily routine. They were to remove the pedometer for bathing and sleeping (without turning it off), put it back on when getting up the next day, and after completing four days of use, record the number on the device's display and the time in a step diary.

The research followed the guidelines of resolution 466/2012 and was approved by the Ethics Committee of the Pontifical Catholic University of Goiás, PUC Goiás (CAAE no. 61577016.3.0000.0037).

Instruments

The clinical evaluation form contained the following data: age, pack-year, height, spirometric data, number of exacerbations in the last year, sex, date of birth, marital status, occupation, education level, smoking, home oxygen use and presence of associated cardiovascular disease.

The Bristol COPD Knowledge Questionnaire (BCKQ) assesses the knowledge of patients with COPD⁽⁹⁾. It is an instrument adapted and validated for Brazilian culture⁽¹⁰⁾, composed of 65 questions divided into 13 topics that address topics ranging from concept and symptoms to pharmacological treatment. Three response options are provided: "True", "False" and "I don't know". The score is given by assigning a point to each correct answer and the final score is given as a percentage of correct answers. It was applied in the form of an interview.

Pedometers are motion sensors used to quantify levels of daily physical activity through number of steps taken. They are usually worn at the waist and respond to the vertical acceleration of the hip during walking⁽¹¹⁾. For data analysis, the average number of steps over the four evaluation days was considered, with individuals who did not reach the minimum of 4,580 steps/day being classified as severely

inactive; those whose average ranged between 4,581 and 9,999 steps/day were classified as sedentary; and those who reached an average above 10,000 steps/day were classified as active⁽¹²⁾. No specific value was found in the literature for individuals with COPD, so the parameter for healthy adults was used.

Data analysis

To verify the normal distribution of the data, the Kolmogorov-Smirnov test was used. In the descriptive analysis, continuous variables were represented by mean and standard deviation and categorical variables were represented by absolute frequency (n) and relative frequency (%).

To compare the three groups (active, sedentary and severely inactive) the ANOVA test was used because it is a normal distribution. Pearson's correlation test was used to assess the correlation between number of steps and knowledge of the disease.

The significance value adopted was <0.05.

RESULTS

According to the analysis of the medical records, 130 individuals were selected, after applying the study's exclusion and withdrawal criteria, 75 participants were evaluated, according to the flowchart presented in Figure 1.

The average age of participants was 72.84 ± 7.47 years. According to the level of physical activity, 10.66% were active, 18.67% sedentary and 70.67% severely inactive. The average weight of the individuals evaluated was 69.24 ± 12.75 kg. The other sociodemographic and clinical characteristics are presented in Table 1.

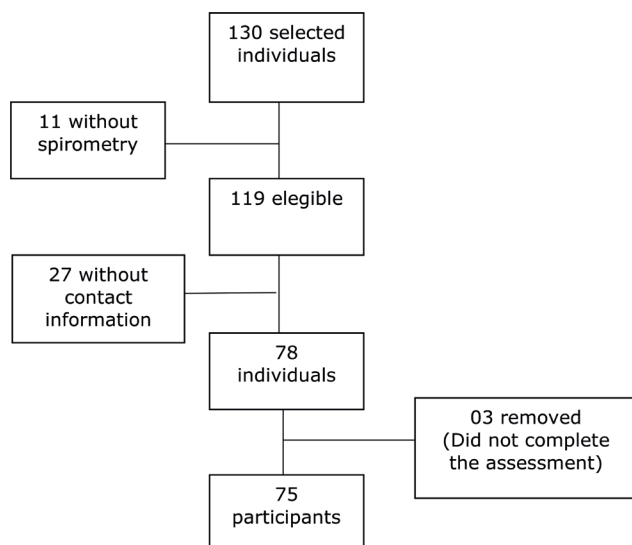


Figure 1. Flowchart of study participants.

When comparing knowledge about COPD at different levels of physical activity (active, sedentary and severely inactive) there was no statistically significant difference (Table 2).

There was no correlation between the number of steps and knowledge of the disease (p= 0.32).

Table 1. Sociodemographic and clinical characteristics of the study participants. Goiânia, GO, Brazil, 2018.

Variable	N (%)	Mean And Standard Deviation	P
Sex			
Male	41 (54.7)		
Female	34 (45.3)		
Age		72.84 ± 7.47	
Height		1.64 ± 0.07	
Education			
Up To Primary School	39 (52.0)		
Secondary School Completed Or Post-Secondary	36 (48.0)		
Marital Status			
Married/Union	56 (67.4)		
Single/Widowed	19 (25.3)		
Home Oxygen			
Yes	13 (17.3%)		
No	62 (82.7%)		
Smoking			
Smoker	6 (8.0%)		
Ex-Smoker	59 (78.7%)		
Non-Smoker	10 (13.3%)		
Pack-Year		43.31 ± 37.2	
Severity Of Copd			
Mild	3 (4.0)		
Moderate	51 (68.0)		
Severe	19 (25.3)		
Very Severe	2 (2.7)		
Cardiovascular Disease			
Yes	49 (65.3)		
No	26 (34.7)		

Continue...

Table 1. Continuation.

Variable	N (%)	Mean And Standard Deviation	P
Exacerbations/Year			
None	31 (40.3)		
One	19 (25.3)		
>Two	25 (33.4)		
Mrc		2.22 ± 1.03	
Pedometer	75 (100)	5,189.69 ± 4,011.73	
Active	8 (10.7)	13,708.66 ± 2,851.87	<0.001 ^a
Sedentary	14 (18.6)	6,851.50 ± 1,537.20	<0.001 ^b
Severely Inactive	53 (70.7)	3,464.84 ± 2,505.32	<0.001 ^c
Bckq Total Score (Points)		31.55 ± 5.90	
Bckq Total Percentage (%)		48.51 ± 9.08	
Fev1/Fvc		0.50 ± 0.08	
Fev1 After Bd(L)		149 ± 0.54	
Fev1 After Bd(%)		58.24 ± 15.60	

Data presented as mean and standard deviation.

MRC: medical research council; BCKQ: Bristol COPD Knowledge Questionnaire; FEV1: forced expiratory volume in 1 second; FVC: forced vital capacity; FEV1 after BD(L): forced expiratory volume in 1 second after using bronchodilator in liters; FEV1 after BD(%): forced expiratory volume in 1 second after using bronchodilator in liters as a percentage; a: comparison between active and sedentary; b: comparison between active and severely inactive; c: comparison between sedentary and severely inactive.

DISCUSSION

The present study identified a low level of knowledge about COPD, and verified that active, sedentary and severely inactive individuals have a similar level of knowledge regarding the disease.

A study carried out in Goiania, evaluated the knowledge related to COPD (symptoms and risk factors) of 674 users of primary health care services, and observed that the level of basic knowledge was low in this population: only 16.2% had satisfactory knowledge of the disease⁽¹³⁾. In Spain, in the general population only 17% knew what COPD is⁽¹⁴⁾. The present study was carried out only with patients with

the disease who were professionally monitored, that is, they underwent some type of treatment, and even though they were aware of their disease, there was a low level of knowledge in these individuals. This shows that the lack of knowledge is still high not only in the general population but also in individuals suffering from the disease.

Corroborating the low knowledge about COPD in different cultures, a study carried out in China⁽⁸⁾ also used BCKQ as an assessment tool with the objective of investigating whether the level of knowledge of COPD in conjunction with quality of life and functional capacity are risk factors for anxiety or depression. They observed that the level of knowledge was 46%, while in our study it was 48.51%.

It was observed that the use of audiovisual educational material on the knowledge and self-management of the disease applied in patients with COPD in pulmonary rehabilitation (PR) has effective results, as it increases the understanding of the disease, its implications and symptoms⁽¹⁵⁾.

However, when knowledge about the disease was associated with level of physical activity, there was no relationship between being active and knowing more about the disease. A randomized controlled trial investigated that adding a physical activity counseling program to a PR program results in better daily levels of physical activity. However, they observed that this counseling did not improve physical activity behavior in patients with COPD⁽³⁾.

In the present study, only 10.7% of the participants were active. Other studies have compared individuals with COPD and healthy sedentary elderly to assess the level of physical activity in daily life, and observed that individuals with COPD are less active, with the majority of them spending most of the day sitting or lying down⁽¹⁶⁾. Lack of will, lack of structure and social influence are difficulties that prevent adherence to the practice of physical activity⁽¹⁷⁾.

A recent study analyzed the influence of stress tolerance on the occurrence of exacerbation during a 12-month follow-up of patients with COPD who underwent a physical training program. It concluded that elderly patients with decreased tolerance to physical activity, even inserted in a physical training program, had a greater number of exacerbations⁽¹⁸⁾. Thus, maintaining satisfactory functional performance, which requires a change in lifestyle, with the practice of physical activity, is an important behavior for reducing symptoms and exacerbations, decreasing hospital admissions and health costs⁽¹⁹⁾.

In the present study, the lowest level of knowledge was found in the bronchodilator and inhaled corticosteroid domains. Another study evaluated the impact of teaching the inhalation technique on the clinical and functional control of patients with asthma and COPD, showing that most patients make mistakes when performing this inhalation practice⁽²⁰⁾. Thus, it is clear that these individuals have a low level of

Table 2. Level of knowledge of COPD in the different groups (active, sedentary and severely inactive). Goiânia, GO, Brazil, 2018.

BCKQ domain	Active (n=8)	Sedentary (n=14)	Severely inactive (n=53)	p
Epidemiology	2.75 ± 1.58	2.21 ± 1.31	2.26 ± 0.90	0.59
Etiology	3.50 ± 1.30	3.50 ± 1.16	3.54 ± 1.02	0.86
Symptoms	4.00 ± 0.92	2.78 ± 1.12	3.47 ± 1.04	0.38
Shortness of breath	2.50 ± 0.75	2.57 ± 1.22	2.13 ± 1.03	0.12
Secretion	2.75 ± 1.28	2.78 ± 1.31	2.84 ± 1.18	0.80
Infection	2.50 ± 1.19	2.07 ± 1.91	2.56 ± 1.04	0.20
Exercise	3.25 ± 1.28	3.28 ± 0.99	3.20 ± 0.84	0.78
Smoking	2.50 ± 0.75	2.78 ± 0.69	2.83 ± 0.82	0.46
Vaccination	2.65 ± 0.74	2.21 ± 0.69	2.33 ± 0.91	0.91
Inhaled bronchodilator	0.75 ± 1.16	0.92 ± 1.14	0.84 ± 0.96	0.95
Antibiotic	3.37 ± 1.06	2.78 ± 1.05	3.05 ± 1.15	0.84
Compressed corticoid	2.00 ± 2.07	1.85 ± 1.16	2.09 ± 1.60	0.64
Inhaled corticoid	0.12 ± 0.35	0.42 ± 0.75	0.52 ± 0.79	0.27
Total score	32.65 ± 7.26	30.21 ± 5.30	31.73 ± 5.88	0.66
Percentage of total	50.19 ± 11.18	46.48 ± 8.16	48.79 ± 9.06	0.67

Data presented as mean and standard deviation.
BCKQ: Bristol COPD Knowledge Questionnaire.

understanding about the pharmacological treatment used for their disease.

In the present study, 48% of individuals with COPD had completed high school or higher. A study carried out with 42 COPD patients at Santa Cruz Hospital, a philanthropic institution in Santa Cruz, RS, observed that 62% of the patients had a low level of education and only 2% had incomplete higher education⁽¹⁵⁾. This shows that the level of education was higher in our study, since the profile of the patients, as it is a private clinic, may be different from public and philanthropic institutions.

The study has some limitations. First, the sample of active individuals was small, but it only reinforces the need for practices aimed at patient education for self-management of COPD. Another limitation is that the study was carried out in a private clinic, which may not reflect the general Brazilian population, however, it represents a large number of patients who use the supplementary health system, which in fact has been little studied. Thus, future studies are suggested with larger samples that also include public institutions.

CONCLUSION

It is concluded that active, sedentary and severely inactive individuals have similar and limited knowledge about COPD. Moreover, the number of active individuals is significantly

less than those who are severely inactive. These are very worrying findings, since staying active is essential for the good management of COPD and knowing about your own disease can be an important step towards adopting healthier lifestyle habits, something that would foster better quality of life and reduced health costs. Therefore, strategies to improve knowledge about COPD and for these individuals to remain active on a daily basis should be prioritized in health actions for this population.

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