Profile of Pneumopathic Elderly Persons Admitted to a Pulmonary Rehabilitation Center

João Simão de Melo-Neto[1]
Ana Elisa Zuliani Stroppa-Marques[2]
Fabiana de Campos Gomes[3]

Abstract

Introduction: Pneumopathies are defined as a group of respiratory diseases. Physiotherapy centers are a conventional treatment option which can help prevent and treat various pulmonary conditions. *Objective*: To characterize elderly persons with pneumopathies admitted for pulmonary rehabilitation. *Methods*: 84 elderly persons were admitted for pulmonary rehabilitation. Patients diagnosed with pulmonary disease and aged ≥60 years were included in the study. The following variables were analyzed: gender, age, marital status, profession, medical diagnosis, main medical complaint, associated diseases, and cardiovascular risk factors. *Results*: The most common lung disease is chronic obstructive pulmonary disease (COPD) (26.2%). Women showed a greater association with asthma [odds ratio (OR)=5.875; p=0.010]. Dyspnea was the most prevalent main complaint among this population (50%). Among the main complaints, difficulty walking was more associated with men (OR=2.85; p=0.055). Strokes were the main disease most commonly associated with pneumopathies (12.1%). Women had a greater association with other diseases (OR=5.34, p=0.068), especially when two diseases were presented simultaneously with lung disease (OR=2.32, p=0.041). Among the risk factors, physical inactivity (OR=3.33), alcohol consumption (OR=0.046) and history of smoking (OR=3.00) were significantly associated with men, while depression (OR=5.67) was significantly associated with women. Women exhibited a 3.28 greater association between allergies and pneumopathies than men (p=0.013). The practice of physical activity was more associated with women (OR=3.89; p=0.03). Osteoporosis was more prevalent among elderly women with pulmonary disease (OR=10.75; p<0.0001), and was also significantly associated with a history of smoking (OR=4.31; p=0.009). *Conclusion:* The most frequent diagnosis, main complaint and associated disease were COPD, dyspnea and strokes, respectively. Elderly woman exhibited a greater association with the diagnosis of bronchial asthma, and more diseases associated with lung disease. Physical inactivity, difficulty

[1] Faculdade Ceres - FACERES, Departamento Morfofuncional. São José do Rio Preto, SP, Brasil.

[2] Instituto Municipal de Ensino Superior de Catanduva - IMES – Catanduva. Catanduva, SP, Brasil.

[3] Universidade Estadual Paulista - UNESP, Departamento de Fisioterapia e Terapia Ocupacional. Marília, SP, Brasil.

Correspondence
João Simão de Melo-Neto
E-mail: joaosimao03@hotmail.com

walking, and a history of alcohol consumption and smoking are more associated with men, while depression, the presence of allergies, regular physical activity and osteoporosis are more associated with women. Thus, the results demonstrate that these individuals have specific characteristics.

INTRODUCTION

Life expectancy has increased significantly in recent years and with it the goal of healthy and successful aging and good quality of life. Yet disorders related to aging affect elderly individuals, requiring improved treatment and increased knowledge of this population.[1]

Pneumopathies are defined as a set of respiratory system diseases and include acute infections, chronic or pleural lung diseases and respiratory tract malignancies.[2] They are a major global cause of morbidity, and represent approximately 16% of hospitalizations in Brazil.[3] It has been noted that patients with pulmonary disease who are admitted for rehabilitation are mostly elderly.[4]

Within this context, respiratory therapy centers have emerged as conventional treatment centers that help prevent and treat various lung conditions such as airway obstruction, pulmonary hypersecretion, changes in lung ventilation, physical deconditioning and dyspnea. However, there are few studies that characterize lung disease among elderly persons in pulmonary rehabilitation centers.[4]

Studies that characterize different populations are essential and of great importance as they provide relevant knowledge about these individuals and enable national healthcare guidelines be developed or restructured in order to meet the particular needs of a specific population.[4]

Therefore, the present study aimed to characterize elderly people with lung disease admitted to a pulmonary rehabilitation center.

METHOD

A retrospective, nonrandomized exploratory study was performed of elderly patients with lung diseases. The sample consisted of 84 patients admitted for pulmonary rehabilitation in the cardiopulmonary physical therapy department of a medical college in the city of São José do Rio Preto, from March 2002 to December 2010. Patients with a diagnosis of lung disease and aged 60 years or older were included in the survey. During admission to the medical college, patients underwent triage and were forwarded to the Cardiorespiratory Physiotherapy sector. Patients with incomplete admissions records were excluded.

For data collection a specific form based on the data included on the admissions form was created. The following variables were analyzed: gender, age, marital status, profession, medical diagnosis, chief health complaint, associated diseases and the cardiovascular risk factors presented by patients. The cardiovascular risk factors analyzed were: diabetes mellitus (DM), systemic arterial hypertension (SAH), sedentary lifestyle (no regular physical activity), alcohol consumption (constant alcohol intake reported by the patient), depression (with use of medication) and history of smoking ("yes", "no", "passive" and "ex-smoker"). The presence of allergies, regular physical activity (≥ three times/week), dependent mobility and a medical diagnosis of osteoporosis were also evaluated.

Descriptive and inferential statistics were used for data analysis. Descriptive results were expressed as mean, standard deviation (±), and absolute and

relative frequencies. Welch's unpaired t-test was used to compare age between men and women and to verify the similarity between the groups, while Odds Ratio (OR) was calculated with the Chi-squared test to compare the variables. A significance level of $p \leq 0.05$ was adopted. Statistical analysis was performed using the Instat program (version 3.0; GraphPad, Inc., San Diego, CA, USA).

This study was approved by the Ethics Research Committee of the Instituto de Moléstias Cardiovasculares (Institute of Cardiovascular Diseases Committee) (IMC/SP), under Protocol. No. 015.08.010. Data was cataloged using a registration code only to preserve the privacy of patients.

RESULTS

The sample consisted of 84 patients (49 men and 35 women) with a median age of 72 (60-94) years. The sample showed similarities in terms of age, as shown in Table 1. About 61% of the elderly persons were married and 56% were retired (Table 1). Men were more associated with being married (OR=2.97; p=0.009) and retired (OR=2.05; p=0.055).

With regard to medical diagnosis, five patients presented two associated pneumopathies (Table 2). The most common lung disease was COPD (26%). Women were more associated with asthma (OR=5.875; p=0.010).

Table 1. Age range/marital status/occupation of elderly patients with pneumopathies. São José do Rio Preto, São Paulo, 2012.

Age Range	Male n=49 (%)	Female n=35 (%)	Total n=84 (%)
60-69 years	18 (36.7)	12 (34.3)	30 (35.7)
70-79 years	16 (32.7)	18 (51.4)	34 (40.5)
≥80 years	15 (30.6)	05 (14.3)	20 (23.8)
Average age (years)	73.71±8.33	72.14±7.97	p=0.194
Marital Status			
Married/Civil Union	35 (71.4)	16 (45.7)	51 (60.7)
Divorced	03 (6.1)	03 (8.6)	06 (7.1)
Single	02 (4.1)	03 (8.6)	05 (6)
Widowed	09 (18.4)	13 (37.1)	22 (26.2)
Profession			
Retired	31 (63.3)	16 (45.7)	47 (55.9)
Civil Construction	03 (6.1)	-	03 (3.6)
From home	-	12 (34.3)	12 (14.2)
Domestic worker	-	02 (5.7)	02 (2.4)
Business man/woman	02 (4.1)	-	02 (2.4)
Farm worker	03 (6.1)	01 (2.9)	04 (4.8)
Driver	02 (4.1)	-	02 (2.4)
Teacher	-	02 (5.7)	02 (2.4)
Other *	08 (16.3)	02 (5.7)	10 (11.9)

* Different professions that exhibited only one occurrence in their category.

Table 2. Medical diagnosis/main health complaint of pneumopathic elderly persons. São José do Rio Preto, São Paulo, 2012.

	Male n=49 (%)	Female n=35 (%)	Total n=84 (%)
Medical Diagnosis			
Asthma	02 (4.1)	06 (17.1)	08 (9.5)
Atelectasis	01 (2)	01 (2.9)	02 (2.4)
Bronchiectasis	01 (2)	04 (11.4)	05 (6)
Lung cancer	03 (6.1)	01 (2.9)	04 (4.8)
COPD	14 (28.6)	08 (22.9)	22 (26.2)
Rib fracture	02 (4.1)	01 (2.9)	03 (3.6)
Pulmonary hypoventilation	14 (28.6)	05 (14.3)	19 (22.6)
Lobectomy	01 (2)	01 (2.9)	02 (2.4)
Pneumonia	08 (16.3)	06 (17.1)	14 (16.7)
Others[a]	06 (12.2)	04 (11.4)	10 (11.9)
Total occurrences	52	37	89
Main Health Complaint			
Tiredness	09 (18.4)	04 (11.4)	13 (15.5)
Difficulty walking	11 (22.4)	03 (8.6)	14 (16.7)
Dyspnea	24 (49)	18 (51.4)	42 (50)
Lumbago	03 (6.1)	04 (11.4)	07 (8.3)
Paresthesia	02 (4.1)	01 (2.9)	03 (3.6)
Secretions	07 (14.3)	01 (2.9)	08 (9.5)
Cough	07 (14.3)	06 (17.1)	13 (15.5)
Others[b]	11 (22.4)	14 (40)	25 (29.8)
Total occurrences	74	51	125

a: Medical diagnoses that occurred only once per category; b: Main health complaints that occurred less than three times per category.

Dyspnea was the most prevalent main health complaint among this population (50%). Around 29 individuals had two associated complaints and six individuals had three, totaling 125 complaints. Among the main complaints, difficulty in walking was most associated with elderly men (OR=2.85; p=0.055).

Cerebrovascular accidents (CVA) were the main disease associated with these pneumopathies (12%) (Table 3). About 26 of the elderly persons had two diseases associated with the pneumopathies and six had three, totaling 89 associated diseases. Women were more associated with other diseases (OR=5.34, p=0.068), especially when they had more than two associated lung pathologies (OR=2.32; p=0.041).

With regard to risk factors, physical inactivity was present among 85.7% of subjects, followed by a history of smoking (66.7%) (Table 4). Among the risk factors, physical inactivity, alcohol consumption and a history of smoking were significantly more associated with men; while depression was more associated with women (Table 4).

History of smoking, presence of allergies, dependent mobility, physical activity and osteoporosis are described in Table 5. Women had a 3.28 times greater association between allergies and lung disease than men (p=0.013). Physical activity was more associated with women (OR=3.89; p=0.03). Osteoporosis was more prevalent among elderly women with pneumopathies (OR=10.75; p<0.0001) and was significantly associated with smoking (OR=4.31; p=0.009).

Table 3. Associated illnesses exhibited by elderly pneumopathy suffererers. São José do Rio Preto, São Paulo, 2012.

	Male n=49 (%)	Female n=35 (%)	Total n=84 (%)
Associated diseases			
Heart arrhythmia	03 (6.1)	02 (5.7)	05 (6)
Stroke (CVA)	09 (18.4)	02 (5.7)	11 (13.1)
Migraine	01 (2)	03 (8.6)	04 (4.8)
Rheumatism	02 (4.1)	03 (8.6)	05 (6)
Fibromyalgia	-	04 (11.4)	04 (4.8)
Gastritis	02 (4.1)	04 (11.4)	06 (7.1)
Lumbago	04 (8.2)	04 (11.4)	08 (9.5)
Hypothyroidism	01 (2)	03 (8.6)	04 (4.8)
Parkinson	03 (6.1)	03 (8.6)	06 (7.1)
Others*	21 (42.9)	15 (42.9)	36 (42.9)
Total number of occurrences	46	43	89

* Associated illnesses that occurred less than three times per category.

Table 4. Risk factors presented by elderly pneumopathy sufferers. São José do Rio Preto, São Paulo, 2012.

Risk factors	Male (n=49)	Female (n=35)	Total (n=84)	OR	p (χ^2)
Diabetes *Mellitus*	14 (28.6%)	05 (14.3%)	19 (22.6%)	2.40	0.061
Systemic arterial hypertension (SAH)	27 (91.8%)	17 (48.6%)	44 (52.4%)	1.30	0.277
Sedentary lifestyle	45 (53.6%)	27 (77.1%)	72 (85.7%)	3.33	0.029*
Alcohol consumption	11 (22.4%)	03 (8.6%)	14 (16.7%)	3.09	0.046*
Depression	07 (14.3%)	17 (48.6%)	24 (28.6%)	5.67	>0.001*
Smoking history	36 (73.5%)	20 (57.1%)	56 (66.7%)	3.00	0.013*
Total occurrences	140	89	229		

OR (Odds Ratio): Level of association between gender and risk factors; *Significant association between gender and the presence of a cardiovascular risk factor in elderly sufferers of pneumopathies, evaluated by chi-squared test (χ^2).

Table 5. Events presented by elderly sufferers of pneumopathies. São José do Rio Preto, São Paulo, 2012.

	Male	Female	Total
History of smoking			
Ex-smoker	30	09	39-
Passive smoker	01	05	06
Smoker	05	06	11
Allergy	10	16	26
Dust	04	08	12
Medications	03	07	10
Others	03	01	04
Dependent mobility	09	05	14
Practices physical activity	09	04	13
Osteoporosis	21	06	28

DISCUSSION

We previously observed a prevalence of pneumopathies among elderly patients.[4] With population aging, the installation of such diseases and a change in the health profile of the population can be identified, with chronic diseases and their morbidities being most prevalent, requiring the direct use of health services.[5] It is therefore important to study this population specifically, given the high prevalence of this condition and associated socioeconomic costs.

COPD was the most pneumopathy and a history of smoking was one of the main risk factors, with the latter being more associated with men. The same results were previously observed in individuals from different age groups.[4] Tobacco has been found to increase the risk of developing COPD, although there is also a need for individual susceptibility for a pathological condition to be installed.[6] Among the Brazilian population, morbidity and mortality rates from COPD have been increasing in the last twenty years, which is a worrying scenario considering that the disease is preventable. It is therefore important to invest in anti-smoking policies.[7,8]

Dyspnea was the main health complaint. According to the American Thoracic Society,[9] this term refers to respiratory distress of varying intensity diagnosed from the subjective experience of the individuals. It is based on behavioral and physiological responses that are influenced by the environment, psyche and physiological factors.[9]

Elderly women were more associated with a diagnosis of bronchial asthma, a result also found in other studies.[10-13] Recognition of this pathological condition improves the diagnosis and notification process and optimizes diagnostic tests for these patients, as well as reducing errors during admission.[12] There is a significant association between asthma and allergies in women,[14] explaining the greater association identified between these two clinical profiles and women.

A sedentary lifestyle was the main cardiovascular risk factor presented by the patients, with men more associated with sedentary lifestyles and difficulty walking, and women exhibiting greater physical activity. Physical inactivity is a characteristic factor of some lung diseases and a risk factor for the worsening of symptoms, and consequently a marker for health condition.[15] Greater life expectancy is expected within this context.

Strokes were the most frequent disease among patients admitted for pulmonary rehabilitation. Lung diseases such as pneumonia and pulmonary embolism are prevalent post-stroke complications, directly related to immobility.[16] Therefore, early physical therapy in a hospital environment is of fundamental importance.

Depression was more prevalent in elderly persons with lung disease. This result has also been observed in the general elderly population and is related to the decline in physical function and a poor quality of life.[17] Another prevalent chronic disease in women is osteoporosis.[17] In the present study, it was observed that osteoporosis was also associated with a history of smoking, a result also found in another article.[18] Smoking reduces bone mineral density due to changes in estradiol, serum *parathyroid* and vitamin D levels, altering calcium absorption in the digestive system and the renewal of bone cells.[19]

During the development of the research, it was noted that analysis based on medical records hinders data collection, as it leads to a loss of individuals included in the study due to failures during the admission assessment. However,

the results of the study proved to be extremely important, especially given the lack of studies on the theme. We suggest that future prospective studies that evaluate the effectiveness of prevention and treatment programs for elderly patients are carried out based on the results of the present study.

CONCLUSION

The most frequent main diagnosis and health complaint were COPD and dyspnea, respectively. Elderly women were more associated with the diagnosis of bronchial asthma and other diseases associated with pneumopathies. Strokes were the disease most associated with pulmonary illness. Physical inactivity, difficulty walking, alcohol consumption and a history of smoking history were more associated with men, while depression, presence of allergies, physical activity and osteoporosis were more associated with women. The present study highlights the need for investment in prevention and health promotion among the elderly, as well as new treatment protocols and the improvement of physiotherapy treatments that can result in a better quality of life for these patients.

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