

Low rates of participation and completion of pulmonary rehabilitation in patients with chronic obstructive pulmonary disease in primary health care

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ABSTRACT

Background: Only 6% of patients with chronic obstructive pulmonary disease (COPD) participate in pulmonary rehabilitation programs (PR) and only 50% of those who participate, complete these programs. **Aim:** To determine rates of PR program participation and completion among patients with COPD in Chile. **Material and Methods:** Analysis of a database available at the Ministry of Health, which included data of 277491 patients with COPD (55% females) and their participation in PR programs, between 2014 and 2016. **Results:** Forty percent of patients were over 75 years of age. Participation rates in PR programs ranged from 2.4 to 2.9%. Rates of completion ranged from 26 to 36%. **Conclusions:** There is a low rate of participation in PR programs among patients with COPD. Approximately one third of participants complete these programs. (Rev Med Chile 2018; 146: 1304-1308)

Key words: Chronic Obstructive Pulmonary Disease; Exercise; Primary Health Care; Rehabilitation.

Participación y adherencia a programas de rehabilitación pulmonar en pacientes con EPOC en Chile

Antecedentes: solo el 6% de los pacientes con enfermedad pulmonar obstructiva crónica. (EPOC) participa en programas de rehabilitación pulmonar. (RP) y solo el 50% de los que participan, completan estos programas. **Objetivo:** Determinar los índices de participación y adherencia a programas de RP entre los pacientes con EPOC en Chile. **Material y Métodos:** Análisis de una base de datos disponible en el Ministerio de Salud, que incluía datos de 277,491 pacientes con EPOC (55% mujeres) y su participación en programas de RP, entre 2014 y 2016. **Resultados:** el cuarenta por ciento de los pacientes tenían más de 75 años de edad. Tasas de participación en programas de RP osciló entre 2,4 y 2,9%. Las tasas de finalización oscilaron entre el 26 y el 36%. **Conclusiones:** Existe una baja tasa de participación en programas de RP entre pacientes con EPOC. Aproximadamente un tercio de los participantes completan estos programas.

Palabras clave: Atención Primaria de Salud; Ejercicio; Enfermedad Pulmonar Obstructiva Crónica; Rehabilitación.

Chronic Obstructive Pulmonary Disease (COPD) is a chronic pulmonary condition that affects the quality of life. It is characterized by airflow obstruction, inflammation and emphysema¹. COPD is the third cause of death in the world². Its prevalence is 4-10%³ and 14.5% in Chile⁴.

COPD is considered a systemic inflammatory disease, with a poor correlation between airflow limitation, symptoms and prognosis^{5,6}. Thus, incorporation of resources as PR, that improves tolerance of exercise, function of peripheral muscles, quality of life, and reduces hospitalizations, is needed⁶⁻⁸. Therefore, the Ministry of Health in 2013 adapted a protocol of PR for Primary Health Care which consists on behavioral education and physical training 2 or 3 times a week for 3 months⁹.

Although PR is effective, studies have shown that it is not widely used. In Canada, 1.2% of patients with COPD had access to PR¹⁰. In Spain, 1-2% of hospitalizations by COPD had access to PR¹¹. In the UK, 64% of patients with COPD fulfilled criteria to attend at PR¹², similar to Denmark, where 67% fulfilled criteria¹³, however, solely 6% of patients were referred¹². In France, 86% of patients with COPD had never participated in PR¹⁴. In addition, completion of PR in the UK reaches 40-60% of patients that begin PR^{8,12}. In Canada, 80% of referred patients completed PR¹⁰. However, participation and completion of PR in Chile have not been determined.

Therefore, we aimed to determine participation and completion of patients with COPD in PR, in Chile, 2014-2016.

Methods

Study

A descriptive, observational, retrospective study was designed.

Population

National database of patients with COPD in treatment in Primary Health Care, obtained from Health Statistics and Information Department (DEIS), was used. Registers of patients with COPD between 2014-2016, and patients that attended and completed PR were included. Diseases different of COPD and activities in other programs of rehabilitation were excluded.

Measures

Variables were collected from an on line database, which included: patients with COPD in treatment, participation in PR, attendance assessment, age, gender, year of register and localization of patients. Attendance assessment was obtained in categories "completion" and "drop-out", being drop-out an attendance inferior to 17 sessions. Age in years was obtained in categories 40-54, 55-64, 65-74, and 75+. Localization of patients was determined in two dimensions: "region" and "Service of Health".

Statistic analysis

Measurement of the variables participation in PR, and attendance assessment was performed by absolute and relative frequency, depending on age, gender, year of register and localization.

Shapiro-Wilk Test was used to determine distribution of data at national level. For parametric

Table 1. Demographic characterization of patients with COPD in treatment, Chile, 2014-2016

Variable	Year		
	2014 n (%)	2015 n (%)	2016 n (%)
Age (years)			
40-54	7,297 (9.0)	7,951 (8.5)	8,171 (7.9)
55-64	16,058 (19.8)	18,411 (19.7)	20,493 (19.9)
65-74	26,192 (32.3)	30,224 (32.3)	32,707 (31.8)
75+	31,563 (38.9)	36,876 (39.5)	41,547 (40.4)
Gender			
Female	44,363 (54.7)	51,393 (55.0)	56,474 (54.9)
Male	36,747 (45.3)	42,070 (45.0)	46,444 (45.1)

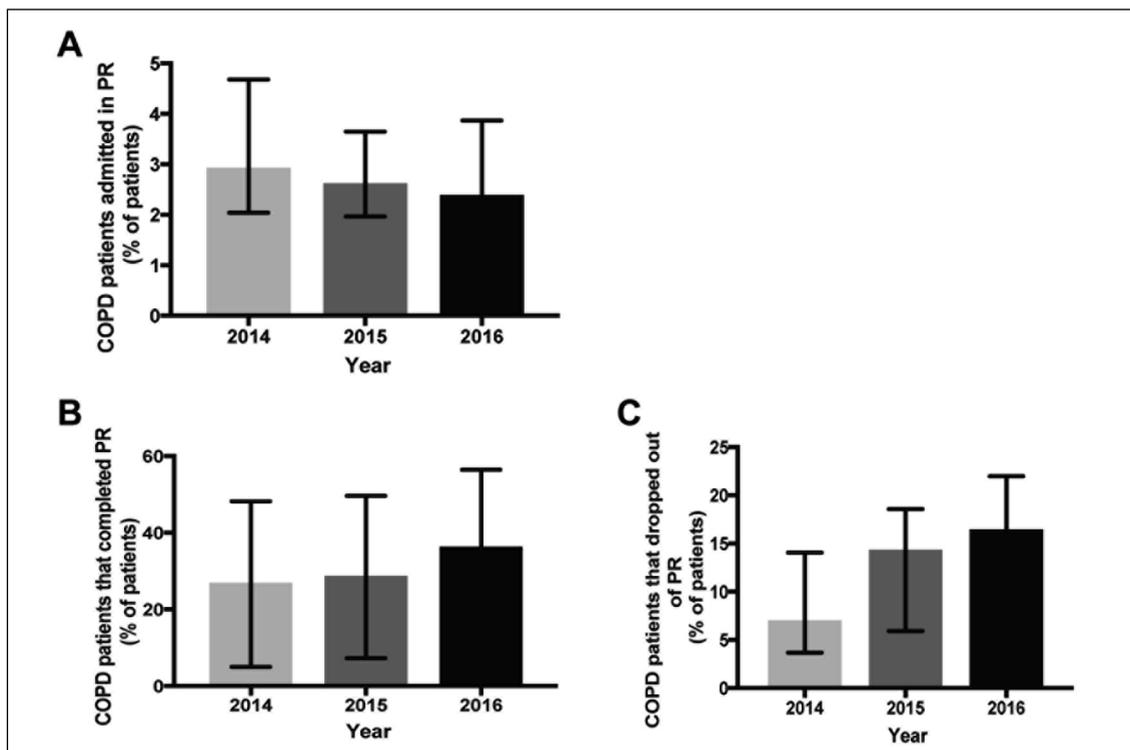


Figure 1: Participation, completion and drop-out of PR at national level. **A.** Percentage of patients with COPD that participated in PR at national level depending on year of register. Data is presented as median and interquartile range. **B.** Percentage of patients with COPD who completed PR at national level depending on year of register. Data is presented as mean \pm SD. **C.** Percentage of patients with COPD who dropped out of PR at national level depending on year of register. Data is presented as median and interquartile range. All of data were calculated from percentage of patients with COPD admitted, who completed and who dropped out of PR in every region, therefore $n=15$.

data, mean \pm standard deviation were used. For nonparametric data, median and interquartile range were used.

Outliers were deleted by software, specifically percentages of participation in PR over 15%, considering the maximum participation reported (14%)¹⁴.

Analyses were performed by SPSS 24 Software (IBM Corporation, Armonk, NY, USA) and Prism GraphPad 7.0 Software (GraphPad Software Inc, San Diego, CA, USA).

Results

Patients with COPD in treatment between 2014-2016 were mainly 75+ years, female.

To characterize the population of patients with COPD, frequency of patients depending on age and gender was determined. A higher frequency

in 75+ in 2014-2016 was observed (38.9, 39.5 and 40.4%, respectively), and a higher frequency of female patients in 2014-2016 was observed (54.7, 55.0 and 54.9%, respectively) [Table 1].

Percentage of patients with COPD that participated in PR between 2014-2016 was 2.9-2.4% at national level.

Considering the total of patients admitted in PR related to total of patients with COPD in treatment, at national level, we observed that 2.9% of patients with COPD participated in PR (IR= 2.0-4.7%) in 2014, 2.6% (IR= 2.0-3.6%) in 2015, and 2.4% (IR= 1.5-3.9%) in 2016 [Figure 1A].

The highest percentages of patients that participated in PR were observed in the north of Chile, with the highest percentage in Arica and Parinacota region in 2015 (9.5%) [Figure 2] and Arica Service of Health in 2015 (9.5%) (data not shown).

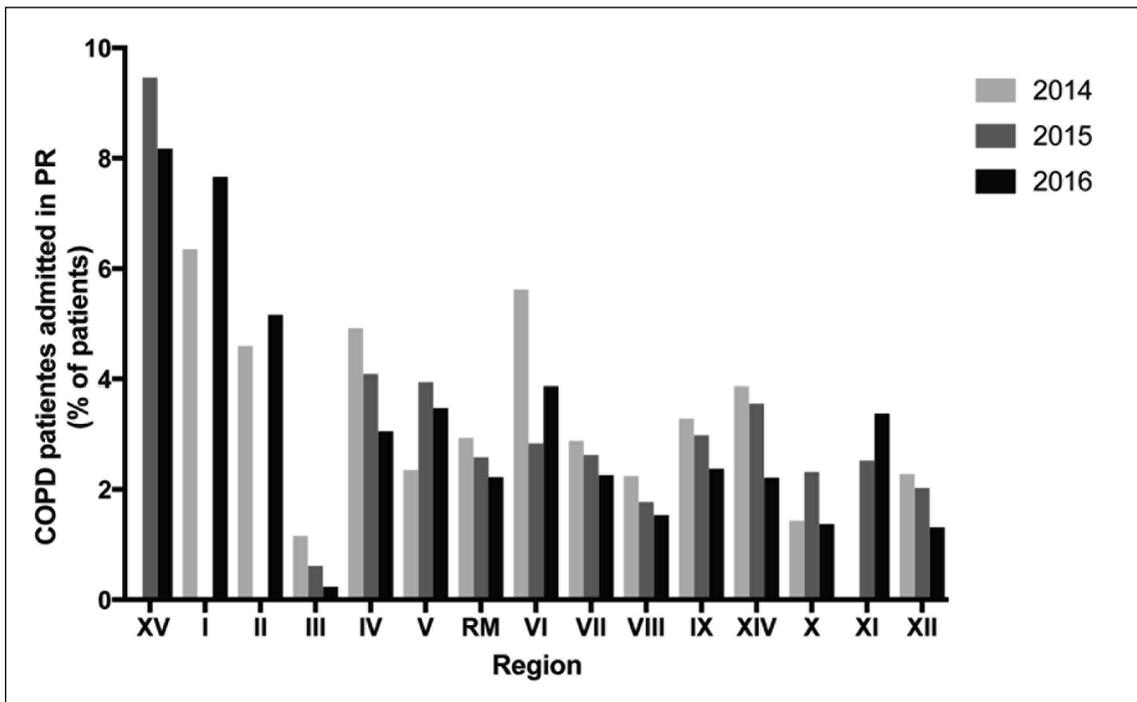


Figure 2. Participation in PR at local level. Percentage of patients with COPD that participated in PR depending on region and year of register. Data represents the relative frequency of patients with COPD admitted to PR in every region.

Percentage of patients that completed PR between 2014-2016 was 26.6-36.1%

Considering the percentage of total of patients that completed or dropped out of PR related to total of patients that participated in PR, at national level, we observed that 26.6±21.6% of patients completed PR in 2014, 28.5±21.2% in 2015, and 36.1±20.4% in 2016 [Figure 1B]. Considering the frequency of patients who dropped out of PR, we observed 6.9% (IR= 3.7-14.1%) in 2014, 14.2% (IR= 5.9-18.6%) in 2015, and 16.4% (IR= 8.5-22.0%) in 2016 [Figure 1C].

Discussion

These findings show that patients with COPD in treatment in Primary Health Care in Chile, between 2014-2016, were mainly 75+ years, female. At national level, the percentage of patients with COPD that participated in PR was 2.9-2.4%, and the percentage of patients that completed PR was 26.6-36.1%.

A study characterized these patients, indicating that 55.4% were female¹⁵, and a study performed

in Chile indicated that 61.1% were > 60 years old¹⁶, which is similar to the current investigation. However, this differs from patients who attend RP, who are 65-74 years and male^{8,12}.

International studies show low rates of referral to PR. In the UK, 6.0% of patients with COPD was referred¹². In France, 14% of patients with COPD had participated in PR¹⁴. This results of participation are higher than the present results. Studies accomplished in Canada and Spain that show 1.2% and 1-2% of access to PR, respectively^{10,11}, were performed 7 and 10 years ago, therefore, they are not current. This finding suggests the necessity of increasing the referral of patients with COPD to PR. Obstacles to refer have not been studied in Chile, therefore, these results support the necessity of studying these factors.

The current investigation showed a decreasing tendency in participation in PR. This could be related to professional training and characteristics of training¹⁷.

A study from the UK reported that 40-60% of patients completed PR^{8,12}, which is higher to our results. In Canada, the reasons of drop-out were

respiratory exacerbations and low rate of satisfaction¹⁰. In Argentina, a low adherence was reported (26.3%) and this was related to socioeconomic variables¹⁸. In Chile, reasons of drop-out have not been studied. These findings suggest the necessity of knowing those factors.

The present study has some weaknesses related to use of retrospective database and low accuracy of statistical registers, however, this information bias would have been reduced by studying total population and careful register. The availability of information related to characteristics of patients who participated in RP was a limitation of this study.

In conclusion, these findings are the first evidence of participation and completion of PR in COPD at national level. These results are relevant because they allow to evaluate the performance, utilisation and adherence to PR, and to focus the efforts towards improving the access.

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