

# Quality of Life of Patients in an Integral Chronic Obstructive Pulmonary Disease Program in Bogotá – Colombia

## Calidad de vida de pacientes de un programa integral de enfermedad pulmonar obstructiva crónica en Bogotá (Colombia)

Received: 09/02/2023 | Accepted: 18/08/2023

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### ABSTRACT

**Introduction:** Chronic Obstructive Pulmonary Disease (COPD) affects multiple dimensions of the quality of life of patients. **Objective:** To describe the perception of quality of life of a group of patients from a comprehensive COPD care program at an ambulatory primary care institution in Bogotá, Colombia. **Methodology:** Cross-sectional study, carried out in patients with severe and very severe COPD ( $n = 1066$ ), to whom the Saint George (SG) questionnaire was applied to assess quality of life. The statistical analysis was carried out by means of Parametric statistics to establish the quantitative correlation of the population at admission and at control. **Results:** 52.6% were men; median age: 74 years, with improvement in the global quality of life score (SG) of 8.46 points after 12 months of entering at program (55.68 versus 47.22;  $p < 0.001$ ). The dimensions with significant changes were those of symptoms and impact ( $p < 0.001$ ); no clinically significant changes were observed in the activity dimension ( $p = 0.07$ ). **Conclusions:** The improvement in the global quality of life score of the SG questionnaire of the patients who entered a comprehensive COPD care program confirms the importance of an interdisciplinary approach within the framework of a structured and multimodal program to optimize their quality of life.

### Keywords

pulmonary disease chronic obstructive; signs and symptoms respiratory; quality of life; patient reported outcome measures; comprehensive health care; ambulatory care facilities.

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*How to cite:* Rodríguez-Torres FP, Giraldo-Leiva D, Arias-Guzmán J. Quality of life of patients in an integral chronic obstructive pulmonary disease program in Bogotá – Colombia. Univ. Med. 2023;64(3). <https://doi.org/10.11144/Javeriana.umed64-3.epoc>

### RESUMEN

**Introducción:** La enfermedad pulmonar obstructiva crónica (EPOC) ocasiona afectaciones en múltiples dimensiones de la calidad de vida de los pacientes. **Objetivo:** Describir la percepción de calidad de vida de

un grupo de pacientes de un programa de atención integral de EPOC de una institución de cuidado primario ambulatorio en Bogotá (Colombia). **Metodología:** Estudio transversal, realizado en pacientes con EPOC severo y muy severo (n = 1066), a quienes se les aplicó el Cuestionario Saint George (SG) para evaluar su calidad de vida. El análisis estadístico se llevó a cabo por medio de estadística paramétrica para establecer la correlación cuantitativa de la población al ingreso y al año de estancia en el programa. **Resultados:** el 52,6% son hombres; edad mediana: 74 años; mejoría en el puntaje global de calidad de vida (SG) de 8,46 puntos después de 12 meses de ingresar al programa (55,68 versus 47,22;  $p < 0,001$ ). Las dimensiones con cambios significativos fueron las de síntomas e impacto ( $p < 0,001$ ). En la dimensión actividad no se observaron cambios con significancia clínica ( $p = 0,07$ ). **Conclusiones:** La mejoría en el puntaje global de calidad de vida del cuestionario SG de los pacientes que ingresaron a un programa de atención integral de la EPOC confirma la importancia de un abordaje interdisciplinario en el marco de un programa estructurado y multimodal para optimizar su calidad de vida.

**Palabras clave**

enfermedad pulmonar obstructiva crónica; signos y síntomas respiratorios; calidad de vida; medición de resultados informados por el paciente; atención integral de salud; instituciones de atención ambulatoria.

**Introduction**

Chronic obstructive pulmonary disease (COPD) is a generic term to describe chronic lung diseases causing airflow limitation (1), whose prevalence in Latin America ranges from 19.7% in Uruguay to 7.8% in Mexico (2).

In Colombia, the reported prevalence is between 5.13% and 8.9% (3,4), and constitutes the third and fourth causes of death in men and women over 65 years of age, respectively (5). This chronic disease, which occurs with episodes of exacerbations, has a high in-hospital mortality rate (up to 43% per year) and affects the quality of life of patients, families, and caregivers (6); in addition, it represents a significant economic impact on the healthcare systems, including work absenteeism, which accounts for at least 50% of the direct costs related to the disease (7,8).

*Health-related quality of life* has been relevant in recent years, with different conceptual approaches (9,10,11). The perception of well-being or the effect of a chronic disease on the different dimensions of life (physical,

psychological, social) and in the context of the particular context of each person (family, social, cultural, economic, and environmental) have been identified as key elements, so it is important to systematically evaluate this indicator as part of the comprehensive approach to the COPD patient, to broaden the understanding of how the disease can affect the physical and mental health of the sufferer, and to enable therapeutic perspectives (12).

Multiple studies have shown varying degrees of impairment of quality of life in patients with COPD as a consequence of the pathophysiological processes inherent to the disease (13,14,15,16). Interdisciplinary approaches through structured multimodal programs have shown a reduction in the number of hospitalizations and exacerbations that have optimized the control of the disease and the perception of quality of life in its different dimensions, which has led to a decrease in the costs of care within the healthcare system (17,18). In this sense, it is necessary to characterize COPD patients, including quality of life measurements that allow adjusting and orienting the provision of services to their health conditions.

The aim of this article is to describe the perception of quality of life of a group of patients belonging to a COPD comprehensive care program in an outpatient healthcare institution in the city of Bogotá (Colombia).

**Methodology**

This was a descriptive, cross-sectional, analytical study in a population of patients belonging to a program for the comprehensive care of patients with severe and very severe COPD in an outpatient healthcare institution in Bogotá (Colombia).

The program was born in an outpatient primary care center in 2010 as a model of person-centered care from a biopsychosocial and interdisciplinary approach, led by family medicine and conformed by a health team made up of different disciplines: general

medicine, family medicine, Pneumology, sports medicine, nutrition, nursing, psychology, and respiratory therapy. Its objective is to provide comprehensive care to patients with severe and very severe COPD through a structured program that includes patient education, nutritional and psychological support, specialized medical management, pharmacological and non-pharmacological therapy, physical conditioning, and periodic follow-ups, seeking to reduce the morbidity and mortality rate, hospitalizations, and exacerbations, and to improve their quality of life.

We reviewed 1066 medical records of patients active in the program between 2010 and 2019 and assessed their quality by means of the Saint George (SG) questionnaire at program entry and at one year of permanence. The sample size was not calculated since all patients in the program were included.

The quality of life was assessed by means of the SG questionnaire (19), validated in Spanish (20,21,22), with reproducible and well-defined psychometric characteristics, which contains 50 questions divided into 3 dimensions: symptoms, activity, and impact. The first refers to the frequency and severity of respiratory symptoms; the second is related to the limitation of physical activities due to dyspnea; and the third is associated with the psychosocial effects of the disease. The scores range from 0 to 100, with higher scores indicating a deterioration in quality of life. The change in score with clinical significance (improvement) is 4 units (23,24).

Data were collected in the Excel® program and included demographic variables (age and sex), clinical variables (diagnosis of COPD, exposure, and spirometry results), and perceptions of quality of life (SG questionnaire). The ratio variables were described in maximum and minimum values, and, according to their statistical distribution, in averages and standard deviations, or medians, and interquartile ranges. The associated factors were explored through contingency tables and the calculation of prevalence ratios, where the statistical analysis was performed by means of parametric statistics through a paired t-test, and nonparametric for

asymmetric variables with the Wilcoxon paired t-test by the R program.

The research was approved by the Institutional Ethics Committee and complies with the national regulatory framework of Resolution 8430 of 1993, which establishes that it is research without risk.

## Results

Of the participating patients, 52.6% were men, mostly older adults (Table 1). A higher male distribution was found in patients with severe and very severe COPD (50.4% and 55.8%, respectively).

**Table 1.**  
Age and gender distribution of patients admitted to the severe and very severe COPD program (n = 1066)

	Men		Women	
	n = 561	52.6%	n = 505	47.4%
<b>Age</b>				
Minimum	43		45	
Maximum	97		97	
Median	74		73	
<b>Range</b>				
	n	%	n	%
40-44	2	0.4	0	0
45-49	3	0.5	5	1
50-54	4	0.7	8	2
55-59	17	3.0	25	5
60-64	48	8.6	49	10
65-69	97	17.3	64	13
70-74	135	24.1	109	22
75-79	100	17.8	113	22
80-84	89	15.9	84	17
85-89	52	9.3	37	7
≥90	14	2.5	11	2.2

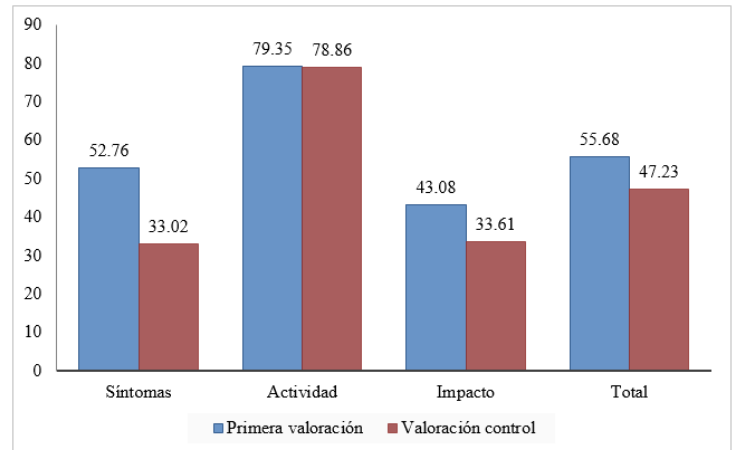
Regarding the relation to the results of the SG questionnaire, a decrease of 19.7 points was

found in the symptoms dimension compared with the score calculated from the first assessment, similar to what was found in the impact dimension, with a difference of 9.4 points between the two assessments. In the activity dimension, there was no significant change in scores between the two assessments (Table 2).

**Table 2.**  
Comparison of Saint George questionnaire scores on symptom, activity, and impact dimensions between baseline and control assessment

	Initial assessment	Control assessment
<b>Dimension: symptoms</b>		
Minimum	2.32	0.0
Maximum	97.7	88.7
Average	52.7	33
Median	51.8	32.1
Mode	36.5	25.4
Standard deviation	20	15.4
<i>p</i>	29.8 (<0.001)	
<b>Dimension: activity</b>		
Minimum	0.0	0.0
Maximum	100	100
Average	79.3	78.8
Median	85.6	85.6
Mode	92.5	92.5
Standard deviation	16.7	15.8
<i>p</i>	(= 0.07)	
<b>Dimension: impact</b>		
Minimum	1.6	0.0
Maximum	91	69.67
Average	43	33.6
Median	42.3	34.1
Mode	42.3	30.3
Standard deviation	14	11.4
<i>p</i>	22.2 (<0.001)	

The overall score of the SG questionnaire shows a decrease ( $t [1065] = 22.168; p < 0.001$ ) between measurement at admission (mean = 55.68) and control (mean = 47.22), at symptom and impact level ( $t [1065] = 29.84; p < 0.001$ ), ( $t [1065] = 22.16; p < 0.001$ ), respectively. In relation to the disease activity score, no significant difference was found between the means at entry (79.84) and at one year in the program (78.85); ( $p = 0.07$ ), as shown in Figure 1.



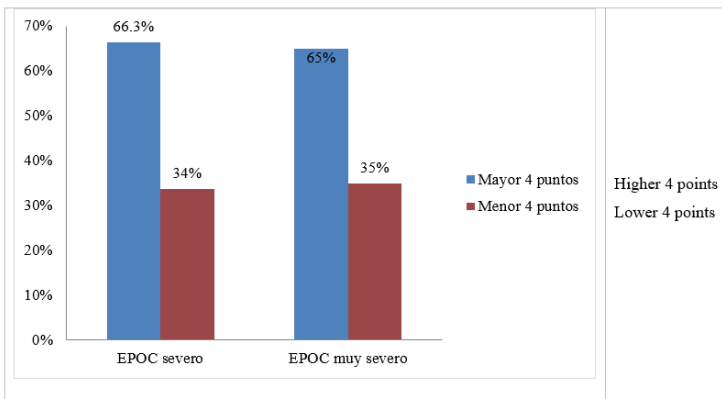
**Figure 1.**  
Comparison of the Saint George questionnaire total score and dimensions between the first assessment and the control assessment

Symptoms Activity Impact Total.  
First assessment Control assessment

Likewise, a decrease in the total score between initial assessment and control of 8.5 points was found, to the point of reaching clinical and statistical significance ( $p < 0.001$ ), as shown in Table 3, with an improvement in both groups according to COPD severity (Figure 2).

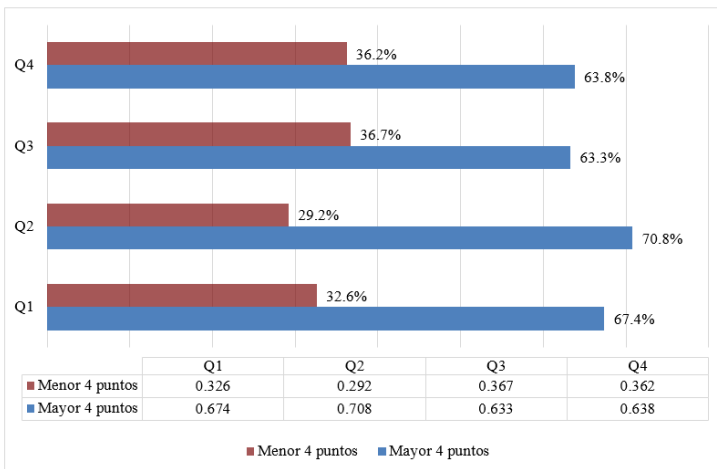
**Table 3.**  
Comparison of the total score of the Saint George questionnaire between the initial assessment and the control

Total score	Initial assessment	Control assessment
Minimum	8.8	8.1
Maximum	92.1	77.5
Average	55.7	47.2
Median	56.5	48.3
Mode	64.3	56.4
Standard deviation	13.2	11.7
<i>p</i>	(22.2) < 0.001	



**Figure 2.**  
Comparison of the change in the total score of the Saint George questionnaire between the first assessment and the control assessment  
Severe COPD. Very severe COPD

Figure 3 contrasts the change by age, where clinical improvement is observed in the different age groups.



**Figure 3.**  
Comparison of change in the Saint George questionnaire total score with clinical significance between the two assessments according to the interquartile age distribution  
Lower 4 points. Higher 4 points

## Discussion

This article presents the results of the evaluation of the quality of life of a group of patients with severe and very severe COPD belonging to a comprehensive COPD care program at an outpatient primary care center in Bogotá

(Colombia). Most of the patients were older adults, with a median age of 74 years, similar to that reported by other authors and in accordance with the natural history of the disease. (25,26,27,28). Likewise, a greater proportion of men residing in urban areas was found, which coincides with Cáceres-Rivera et al. (29), in the study carried out in Bucaramanga (Colombia); however, it contrasts with the findings of other national studies (28,30), in which a greater proportion of women was identified. This leads to the need for more local studies to better characterize the prevalence of COPD and its possible variation by sex in relation to other possible environmental factors, such as exposure to wood smoke, which may be more frequent in women in rural areas.

Similar studies have been conducted in Colombia, which have confirmed the deterioration in quality of life in patients with COPD (28,29,30,31,32,33); however, this study provides a significant number of patients (n = 1066), and the application of the SG questionnaire at admission and 12 months after joining a comprehensive COPD care program, and identifies changes in the quality of life perceived by patients before and after joining the program. This information contributes to understanding the impact of programs structured from an interdisciplinary and multicomponent perspective.

The present study found an overall baseline quality of life score through the SG questionnaire of 55.68, higher than the scores reported nationally by Achury-Beltrán and García Peñuela (28), of 36.76; by Posada et al. (32), of 38, and by Betancourt-Peña et al. (33), of 48, which can be explained by the fact that this is a group of patients with criteria for admission to the program with a higher level of severity (severe and very severe COPD).

The finding of improvement (4 or more points) in the global score of the OS questionnaire in the present study, at entry versus with exposure to the program (55.68 versus 47.22;  $p < 0.001$ ), correlates with that reported in other studies, in which a significant improvement in quality of life was found upon entry to

specific comprehensive COPD care programs (34,35,36,37). In Colombia, the study by Bolívar-Grimaldos et al. (30) also indicated an improvement in the overall SG score, from 26.9 to 18.9 at admission and six months after being in a multidisciplinary respiratory care program for COPD patients. The importance of structured programs focused on integral care models, person-centered care, and a biopsychosocial and multidisciplinary approach, which can generate better clinical results, optimization of resources, and patient and family satisfaction, is highlighted (38,39,40).

The quality of life dimensions of the SG scale in which significant improvement was found in this study were the symptoms and impact dimensions, similar to those found in similar studies (41,42). In the activity dimension, no significant change was observed, in contrast to the findings of Bolívar-Grimaldos et al. (30), in which the activity dimension had a greater impact when evaluating the changes in quality of life perceived by patients participating in a comprehensive respiratory care program in the city of Bucaramanga (Colombia). The findings on the greater involvement of the activity domain in the SG scale identified in the present study may be related to factors specific to the participants, such as age, comorbidities, low levels of physical activity, processes inherent to aging, and even to the pathophysiological pulmonary and muscular changes characteristic of the disease (43). Hence, local studies with appropriate designs are needed to better understand the effect of these variables on the quality of life of COPD patients.

As limitations of the present study, it should be mentioned that the type of design may be suboptimal for identifying a causal association between the results obtained regarding the improvement in the quality of life one year after entering the program and the interventions offered by the program; However, it may be a first approximation suggesting such an association, identifying the need for future randomized studies. More local studies are needed to allow a better characterization of COPD patients and facilitate the targeting of interventions within the framework of structured programs.

It also highlights the importance of promoting and strengthening the implementation of structured multimodal programs in primary care settings to ensure that patients with this condition are included in this type of care model.

In addition, as a specific limitation, during the data collection process, it was evident that the last question of the SG questionnaire was not recorded and was not included in the digital format. This limited the complete comparison of the data found for the impact dimension.

## Conclusions

During the course of their disease, COPD patients present alterations in their quality of life. A systematic diagnostic and therapeutic approach is required, including quality of life measurements on a regular basis and within the framework of a structured program with a biopsychosocial and interdisciplinary approach.

The results of this study suggest an improvement in the overall quality of life of patients participating in a COPD comprehensive care program at an outpatient primary care center. This contributes to the need to promote and implement similar programs in other primary care centers in coordination with comprehensive COPD care pathways throughout the country.

## Ethical considerations

This study was approved by the Javesalud Ethics and Research Committee.

## Conflict of interests

No conflicts of interest are declared by the authors.

## Sources of funding

Self-financed study.

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