Original Research
Patient Burden and Insights in COPD: A Survey Analysis

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***Running Head*: Patient Survey of COPD Experience**

***Keywords*:** chronic obstructive pulmonary disease; patient survey; symptom burden; quality of life; treatment journey

***Abbreviations*:** COPD, chronic obstructive pulmonary disease; HCP, health care practitioner**;** EHR, electronic health record**;** ICS, inhaled corticosteroids

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This article has an online supplement.

ABSTRACT

Background: Chronic obstructive pulmonary disease (COPD) affects millions of people and is associated with significant morbidity and mortality. Patients experience a high symptom burden with impacts on quality of life, which have not been well quantified.

Methods: Phreesia's PatientInsights quantitative survey was offered during the month of January 2025 to patients with COPD during their check-in process for healthcare provider (HCP) visits. The survey comprised 28 questions. Survey question categories included COPD symptom experience and impact, and the treatment journey of patients with COPD. The survey also sought to identify potential communication gaps between patients and HCPs that might hinder effective COPD management.

Results: Of 1,615 patients surveyed, most (59%) were female; the majority identified as White (82%). A total of 39% of patients had experienced COPD for over 7 years at the time the survey was conducted, and 25% reported experiencing symptoms all 30 days in a typical month. A large proportion (64%) said that COPD had a moderate-to-great impact on their daily lives. Only 45% of patients had detailed discussions about their COPD with their HCPs. Among patients who had not tried/were currently not on any maintenance medications (n=339), the leading reasons included that their COPD was not severe enough, and that their HCP had not recommended it. Among patients who had tried maintenance medications, the majority (77%) indicated that they would be willing to try another therapy.

Conclusions: Improvements in patient–HCP communication are needed to achieve more effective, timely COPD management.

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common lung disease that causes persistent yet dynamic airflow obstruction[1] due to chronic inflammation of the respiratory tract, airway remodeling, and excessive mucus production.[2-5] In the US, COPD affects 16 million people and is listed as the fourth leading cause of death.[6] COPD is a highly underdiagnosed disease, as more than 50% of adults with impaired pulmonary function are not aware that they have COPD.[7] Current pharmacotherapy for COPD consists of bronchodilators to open the airways and inhaled corticosteroids (ICS) to reduce airway inflammation.[5] Select patient phenotypes may be eligible for treatment to reduce exacerbations with roflumilast or azithromycin.[5] Even when treated with these therapies, patients experience persistent worsening of symptoms and recurring exacerbations, significantly impacting their quality of life.[8,9]

Studies have shown that patient–provider discussions are essential for achieving more effective and timely management of COPD, as effective communication can lead to more accurate symptom reporting, better adherence to treatment plans, and improved overall disease management to prevent future exacerbations and hospitalizations.[10,11] Furthermore, the Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2025 Report emphasizes the importance of selecting optimal inhaler therapy based on patient needs and of regularly reassessing handling techniques.[5] Therefore, efforts to build a greater understanding and awareness of patients' perceptions of COPD and their interactions with their healthcare providers (HCPs) are warranted in order to better manage treatment and outcomes in this large patient population.

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The Phreesia PatientInsights survey leverages aggregated information collected with consent on an electronic intake platform to deliver customized surveys to key patient populations. Phreesia is used across a variety of healthcare organizations, including doctor's offices, specialty practices, hospitals, and health systems. Over 4,000 healthcare organizations use Phreesia across all 50 states, which totals to 150 million patient visits annually. For this study, the survey aimed to collect self-reported insights from patients with COPD to explore their symptom experience and impact. The survey also sought to identify gaps in patients' knowledge of COPD and their abilities to communicate effectively with their HCPs about their symptoms. Finally, this survey analysis explored COPD patients' treatment journeys, particularly concerning maintenance medications and experiences with treatment devices.

METHODS

Study overview

In January 2025, Phreesia conducted a quantitative survey of patients diagnosed with COPD. The survey was conducted for 20 days to allow adequate sample sizes for questions only shown to select patients. Respondents had to indicate their COPD diagnosis to proceed with the survey; those who did not select COPD as a condition they had been diagnosed with were excluded from the survey.

Study participation and survey administration

The survey was offered to Phreesia platform users who had a diagnosis and/or treatment of COPD indicated in their electronic health record (EHR). The survey was administered digitally to individuals after the check-in process for their doctor's appointment using the Phreesia

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platform. Individuals using the Phreesia platform are presented with an optional HIPAA authorization. The information of those who consented was analyzed, and those who qualified were given the opportunity to complete the survey. Respondents had to sign an additional consent to start the survey. Participation was voluntary, and respondents who began the survey could exit it at any time.

Survey design

The survey, which comprised a total of 28 questions, used single-choice, multiple-choice, and slider question/answer formats. Some questions were intentionally shown only to certain respondents depending on their selections within the survey. Respondents were required to answer every question before continuing, and a "decline to answer" response option was included for every question. Partial responses were collected and included in the study. Demographic data were derived from a patient's EHR to allow for the segmentation of survey results by sex, age, race, and ethnicity. "Decline to answer" options for each question were excluded from the results. The study was reviewed by an institutional review board (IRB; #00000971) and was determined to be exempt from IRB oversight. Study participants provided informed consent prior to completing the survey. The full survey and IRB exemption letter can be found in the online supplemental material.

Sampling technique

The sampling technique was a combination approach that included elements of random sampling, convenience, and volunteer sampling. Only patients who had visits between January 6 and 26, 2025, limited to practices utilizing Phreesia, had the opportunity to participate in the

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survey. Patients from across the US had the opportunity to participate; although the survey was not restricted geographically, it was dependent on where these patient check-ins were taking place. The study did not have predetermined demographic quotas.

Statistical methods

Categorical variables were summarized using frequency and percentages, and continuous variables were summarized using mean (standard deviation [SD]). Between-group comparisons were made using chi-square tests to assess group differences at the 95% confidence level, with P <0.05 considered significant.

RESULTS

Survey sample demographics

The survey was offered to 31,903 patients diagnosed with COPD who checked in for any medical appointments during the specified timeframe. Of these patients, 4,537 consented yes to the survey, resulting in a response rate of 14.2%. In total, the survey was completed by 1,615 patients. Overall patient demographics collected from each patient's EHR are shown in **Table 1**. Most patients were female (59%) and identified as White (82%). The mean (SD) patient age was 65 (13) years.

Symptom experience

At the time of the survey, 39% of patients had experienced COPD symptoms for more than 7 years (**Table 2**). Additionally, 43% of patients reported experiencing symptoms for at least 24

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days in a typical month, and 25% of patients experienced symptoms for all 30 days of the month. Dyspnea was identified as the most disruptive symptom by 33% of patients, followed by fatigue (19%), cough (16%), and phlegm (13%). Other symptoms not specified in the survey were experienced by 6% of patients.

Impact on quality of life

A total of 64% of patients reported a moderate-to-great impact of COPD on their daily lives (**Figure 1A**). Additionally, 50% reported a moderate-to-great impact on their emotional health (**Figure 1B**). Younger patients (aged 45-64 years) were much more likely to report a moderate-to-great impact on their emotional health (63% versus 43% of those aged ≥65 years). Moreover, 36% of patients reported that their COPD had impacted their ability to work, and 15% of patients had lost their job due to COPD (**Figure 1C**). Patients currently on maintenance medication were more likely to report a higher impact of COPD on their daily lives (68%) and emotional health (52%) compared to those not on maintenance medications (53% and 39%, respectively), while those not on maintenance medications for their COPD were more likely to report that COPD had minimal impact on their daily lives and emotional health (**Table S1**). Associations between demographic variables and key survey responses on the COPD impact on quality of life are detailed in **Table S2**.

HCP interactions

Survey findings highlighted a need for improved communication between patients and their HCPs. Only 45% of patients engaged in detailed discussions about their COPD symptoms with their HCPs (**Figure 2A**). Indeed, 22% of patients provided little or no detail when describing

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their COPD symptoms to their main HCPs that treated their COPD, which could lead to awareness gaps for HCPs that could hinder comprehensive care. Patients aged 45-64 years used a greater level of detail than patients aged ≥65 years (49% versus 42%, respectively; P<0.05). Additional results support the finding that a patient's knowledge level about their COPD remains low (**Figure 2B**). A total of 35% of patients expressed having a limited or no understanding of COPD. Patients who identified as Black (46% versus 35% of patients who identified as White; P<0.05) and patients aged 45-64 years (41% versus 33% of those aged ≥65 years; P<0.05) were more likely to have limited or no understanding of their COPD. Associations between demographic variables and key survey responses on patient-HCP interactions are detailed in **Table S2**.

Treatment journey

Among patients who had not tried maintenance medications or who were currently not on any maintenance medications (n=339; 21% of total), 27% said that their COPD was not severe enough, and 27% said that their HCP did not recommend it (**Figure S1**). Although most patients had discussed rescue inhalers and maintenance medications for their COPD, 6% had never discussed these standard treatments (**Figure S2**). A total of 11% of surveyed patients had not tried any maintenance medications, and among those who had tried maintenance medications, 8% were not currently on any. The perception that their COPD was not severe enough and a lack of HCP recommendation were the leading reasons why patients were not on maintenance medications (**Figure 3A**). Among patients who had not tried any medications for their COPD, 71% expressed that they were likely to try maintenance medications; interestingly, 77% of those who had tried maintenance medications were open to exploring new options (**Figure 3B**).

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Among patients who had tried maintenance medications, the primary factor influencing a patient's decision to start was an HCP recommendation, which largely outweighed other factors such as increased frequency of COPD exacerbations or worsening COPD severity (**Figure 3C**). In general, patients with COPD who were on maintenance medications were consistent in taking their medication; however, 35% of patients had missed a dose of their COPD medication in the past few months (**Figure 3D**). Of those who had missed a dose, 61% reported that they "simply forgot to take it," and 16% said that the medications were too costly (**Figure 3E**).

Devices for COPD medication delivery

Of patients who had tried COPD medications, rescue inhalers were the primary type patients had discussed and tried, with the majority of patients aged 45-64 years having tried them (78% versus 71% of patients aged ≥65 years; $P<0.05$). Most patients who had used an inhaler medication did not report issues surrounding the inhaler technique (**Figure 4A**). However, 28% of these patients acknowledged experiencing occasional challenges in breathing quickly or forcefully enough with their inhaler. Patients were less likely to report difficulties following instructions (13%) or coordinating their breathing while using the inhaler (14%). Among patients with COPD who had used a nebulizer at some point, 84% felt confident that the medicine reached their lungs (**Figure 4B**). A total of 63% of patients with COPD were using a nebulizer because of an HCP recommendation; other reasons for usage included feelings of ease of use (15%) or faster relief than a handheld inhaler (22%; **Figure 4C**). However, 25% of patients found cleaning their nebulizer mouthpiece time-consuming (**Figure 4D**).

DISCUSSION

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The Phreesia study underscores the ongoing challenges patients with COPD in the US face, demonstrating the need for comprehensive support and interventions to improve a patient's quality of life. In this PatientInsights survey, patients reported that they continue to endure a great impact of symptoms that disrupt their daily and professional lives and negatively affect their emotional health. Moreover, patients aged 45-64 years versus patients aged ≥65 years reported more impact on their emotional health. Historically, COPD has been approached with a "nihilistic" attitude, likely causing HCPs to set low expectations on what improvements they can expect for their patients.[12] The chronic and progressive nature of COPD may be a roadblock keeping patients from attaining realistic, measurable goals. Moreover, the fact that limited pharmacotherapeutic options exist beyond maximal bronchodilation and ICS may have added to this attitude. As such, there exists a need for additional treatment options and a more unified agreement on treatment goals for COPD between HCPs and patients.

Results from this survey indicate that there are several elements that influence patient decisions with their own care and treatment options. The finding that the majority (77%) of patients who have tried maintenance medications would be willing to try another therapy may indicate that patients may not have known what to expect from their medications or that they may be unsatisfied with their current therapy. Moreover, the majority (71%) of patients who have not tried maintenance medications are open to trying one. Interestingly, patients who were currently on maintenance medications were more likely to report a higher impact of COPD on their daily lives (68%) and emotional well-being (52%) compared to those not on maintenance medications (53% and 39%, respectively). This could be an indication that patients on maintenance medications had more severe COPD, which is supported by another survey question wherein

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27% of patients who had not tried or were not currently on any maintenance medication said that their COPD was not severe enough. Conversely, patients who were actively managing their COPD with medication may have been more attuned to the disease's impact on their daily lives and emotional health. The finding that an HCP recommendation is the leading factor influencing patients' decision to try a new maintenance medication—even outweighing the frequency of COPD exacerbations or worsening disease severity—is promising and illustrates the power of HCP influence. Despite the implication that HCP influence is paramount, less than half of patients discussed their symptoms in great detail with the HCP that treated their COPD, and a large proportion of patients admitted to having limited-to-no understanding of their disease. Results from the survey also suggest suboptimal HCP awareness of the level of severity of their patient's COPD. Aside from the communication gaps that exist between HCPs and their patients, it was found that 16% of patients who missed a dose of their COPD medication chose not to take it due to the underlying costs. While only 35% of patients in this study reported that they missed a dose of medication within the past few months, data from retrospective cohort studies indicate low adherence values of 15-30%, depending on the type of medication, indicating possible inconsistencies in the patient perspective of the use of their COPD medication [13,14]. Moreover, although a majority of patients reported using inhalers versus nebulizers for their COPD medication delivery, a large proportion (84%) of patients who used a nebulizer believed the medication reached their lungs. Interestingly, a low proportion of patients (28%) reported that they had difficulty using their inhaler devices, which is contrary to current literature suggesting that most patients do not have proper inhaler techniques [15,16]. This may be attributed to the different perceptions of patients versus HCPs upon discussing inhaler techniques for COPD medication, as data from another real-world study show that physicians reported lower

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confidence in their patients' ability to use their inhaler devices correctly compared to patients' self-reported confidence [17]. Therefore, a limitation of the self-reported inhaler technique is that the patient may not realize that their technique is incorrect. There remains a need for open dialogue between patients with COPD and their HCPs, including disease education and device or technique instruction and observation. Future survey adaptations should therefore include questions about receiving inhaler education and observation of their use.

Currently, there exists an opportunity to improve communication between patients and HCPs and increase patient education. Provider visits may not be as effective due to factors such as limited patient knowledge of their condition, high numbers of comorbidities afflicting patients with COPD, and time constraints that HCPs have for any given patient visit. These potential gaps—both in available appropriate therapies and in the needs/assessment of the patients—for HCPs could hinder comprehensive care. Of note, patients who identify as Black and patients aged 45-64 years were more likely than patients who identify as White and patients aged ≥65 years, respectively, to have limited or no understanding of their condition, highlighting specific demographic groups who could benefit the most from targeted efforts to close the knowledge gap. These types of racial and age disparities have been reflected in clinical outcomes of various diseases across the US, including type 2 diabetes, heart disease, and asthma.[18-23] Potential solutions to reduce disparities in these cases could be applied to COPD as well, including earlier detection and intervention and making healthcare more accessible and affordable to those specific demographic groups who would benefit the most.[24] There is also a need for more nuanced conversations between patients and their HCPs to make the best use of their limited time together. Patients have expressed the desire for more productive HCP visits facilitated by

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detailed discussion guides that can prompt insightful conversations about their COPD.[25,26] In light of this, there is evidence that standardized management of patients with COPD in disease-specific clinics versus in primary care clinics may afford more keen awareness of the care needed and yield more patient engagement in their action plan of care.[27] This highlights a critical need for modifications of healthcare systems to meet the needs of patients with COPD to better manage its impact through comprehensive care and treatment options.

This study has a number of limitations. Only patients checking into scheduled healthcare appointments on the Phreesia platform could participate in this survey after completing their check-in. Patients who did not have or were unable to access healthcare did not have the opportunity to participate; therefore, the survey sample may not be representative of the overall COPD population in the US. Some of the survey questions were asked on a general level, such as the question on how well patients understood their COPD, and therefore may not reflect patient understanding of key issues related to COPD. Additionally, the survey questions did not ask patients which specific type of provider they visited, which would allow for more specific insight into how each type of HCP manages patient care. Patient smoking status was also not queried by the survey. In future surveys, more-specific questions related to these topics will allow for a more nuanced understanding of patient perceptions and HCP practices. Lastly, the patient sample was skewed White and non-Hispanic, though the reasons for these racial and ethnic disparities within the context of this study are not known.

CONCLUSIONS

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The patient burden and impact of COPD are multifaceted, with substantial effects in terms of compromised quality of life, activity impairment, and financial stresses. There is room for improvement in prioritizing patient awareness of COPD so that they can be their own advocates for their care and continually be kept abreast of the most up-to-date treatment and self-management strategies. It is crucial to equip patients with helpful resources to overcome barriers in their treatment journeys. These include providing education about COPD to help facilitate effective HCP discussions and enhance patient understanding of their medication.

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Author contributions:

All authors contributed to the conception of the work; the analysis and interpretation of data; drafting and revising the work critically for important intellectual content; and final approval of the version submitted for publication.

Data sharing statement:

Aggregate data that support the findings of this study are available from ST or JS upon reasonable request.

DISCLOSURES

DM is a consultant to GlaxoSmithKline, AstraZeneca, Regeneron, Genentech, and The COPD Foundation, and receives royalties from Up to Date. **ST** and **JS** are full-time employees of Phreesia, Inc., and own stock and/or stock options as part of that employment. **AD** and **KA** are employees of Verona Pharma, plc, and may hold stock and/or stock options. **BK** is a consultant for Verona, Regeneron, and GlaxoSmithKline and is a speaker for Regeneron.

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TABLES

Table 1. Survey sample demographics

Characteristic	**N=1,615**
Sex, n (%)	
Female	953 (59)
Male	662 (41)
Age, years, mean (SD)	65 (13)
Age group, years, n (%)	
18-24	0
25-34	3 (<1)
35-44	31 (2)
45-54	132 (8)
55-64	430 (27)
≥65	1,109 (63)
Race, n (%)	
White	1,324 (82)
Black	113 (7)
Asian	6 (<1)
Other/Unknown	178 (11)
Ethnicity, n (%)	
Hispanic	32 (2)
Not Hispanic	1,486 (92)
Other/Unknown	97 (6)
Residence, n (%)	
Urban	1,324 (82)
Suburban	173 (11)
Rural	94 (6)

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Table 2. COPD symptoms

Length of time symptoms experienced, n (%)	**n=1,981**
Less than 6 months	61 (3)
Between 6-12 months	87 (4)
1-2 years	281 (14)
3-5 years	523 (26)
6-7 years	254 (13)
More than 7 years	775 (39)
Days in a typical month impacted by COPD, n (%)	**n=1,702**
0	113 (7)
1-7	422 (25)
8-15	297 (17)
16-23	143 (8)
24-30	727 (43)
Most impactful symptoms, n (%)	**n=1,773**
Dyspnea (shortness of breath)	584 (33)
Fatigue	344 (19)
Cough	284 (16)
Phlegm (excess mucous production)	225 (13)
Wheezing	165 (9)
Chest tightness	58 (3)
Other	113 (6)

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FIGURE TITLES AND LEGENDS

Figure 1. COPD impact on quality of life: (A) impact on everyday life; (B) impact on emotional health; and (C) impact on ability to work.

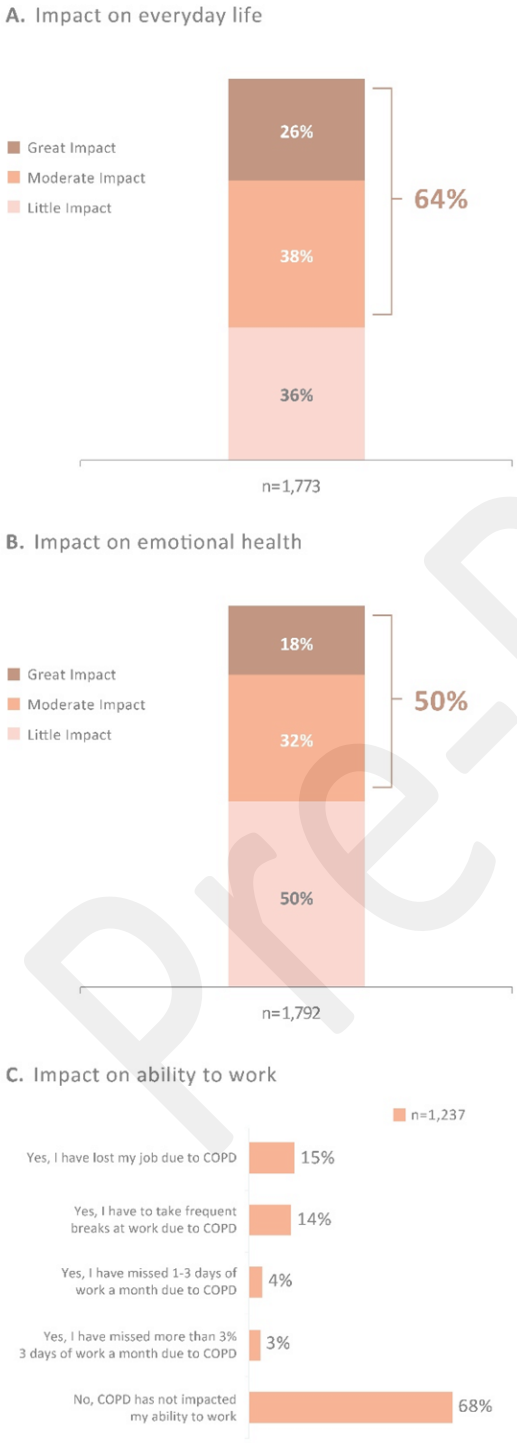

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Figure 2. HCP interactions: (A) level of detail of patients' descriptions of COPD symptoms; and (B) level of patients' understandings of COPD.

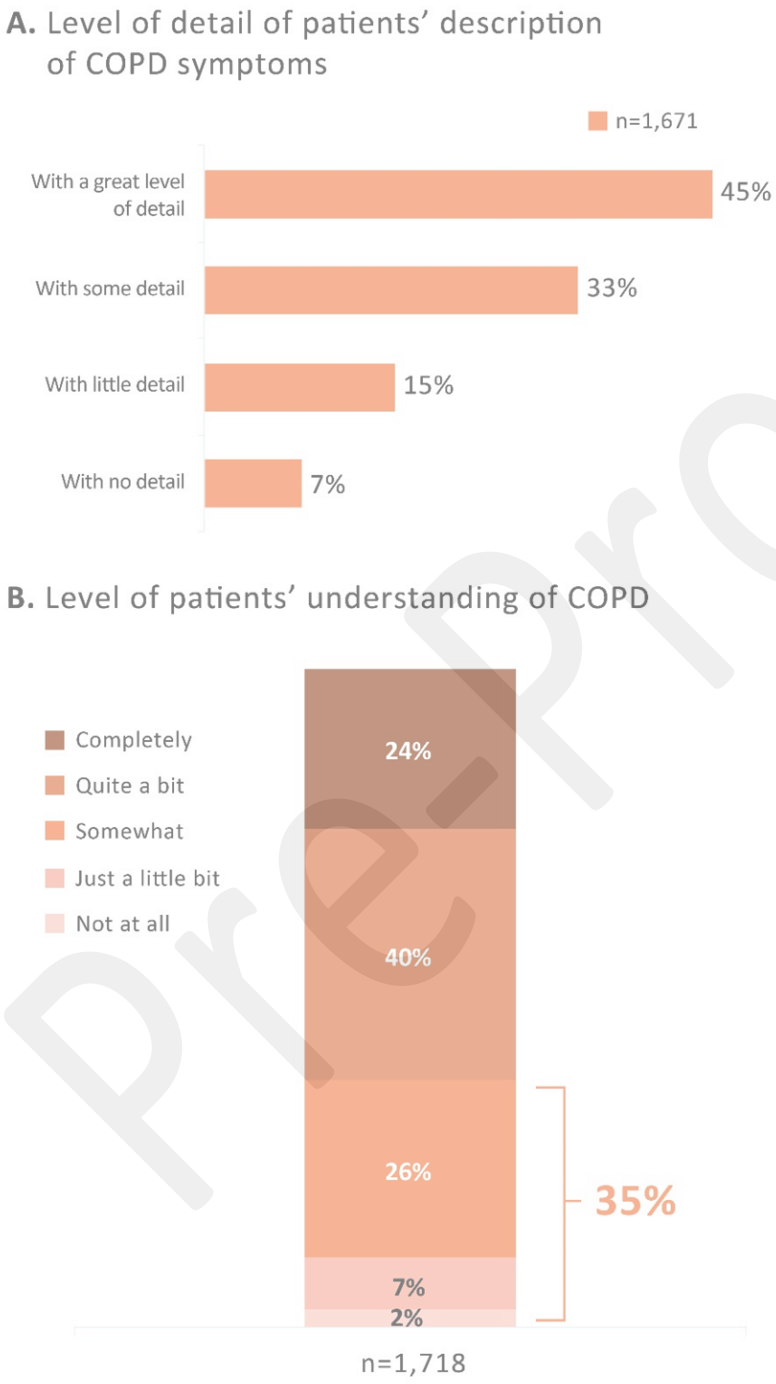

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Figure 3. Treatment journey: (A) reasons patients are not on medication for COPD; (B) likelihood of trying new maintenance medication; (C) drivers in trying new maintenance medication; (D) missed COPD medication dose in the past few months; and (E) reasons for missed medications.

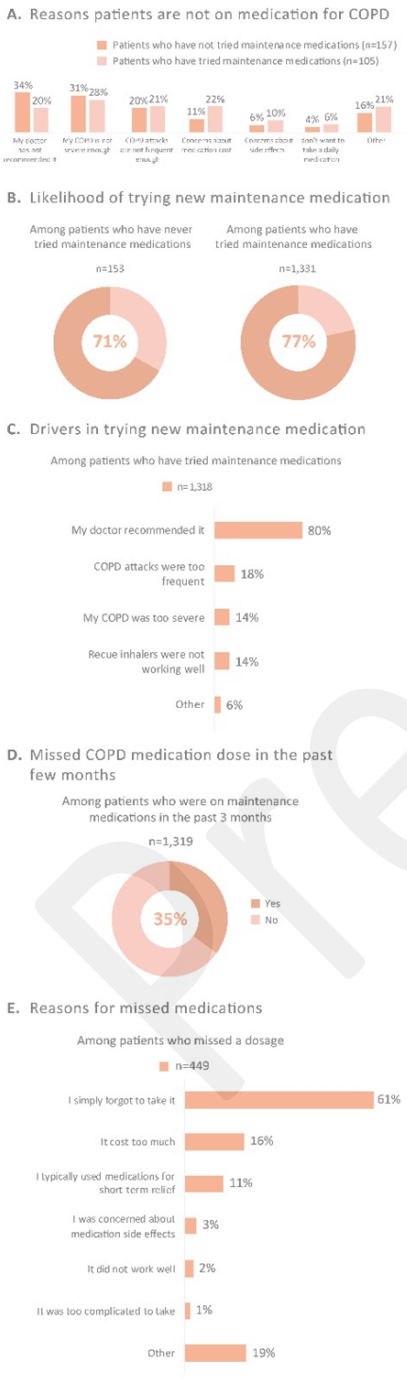

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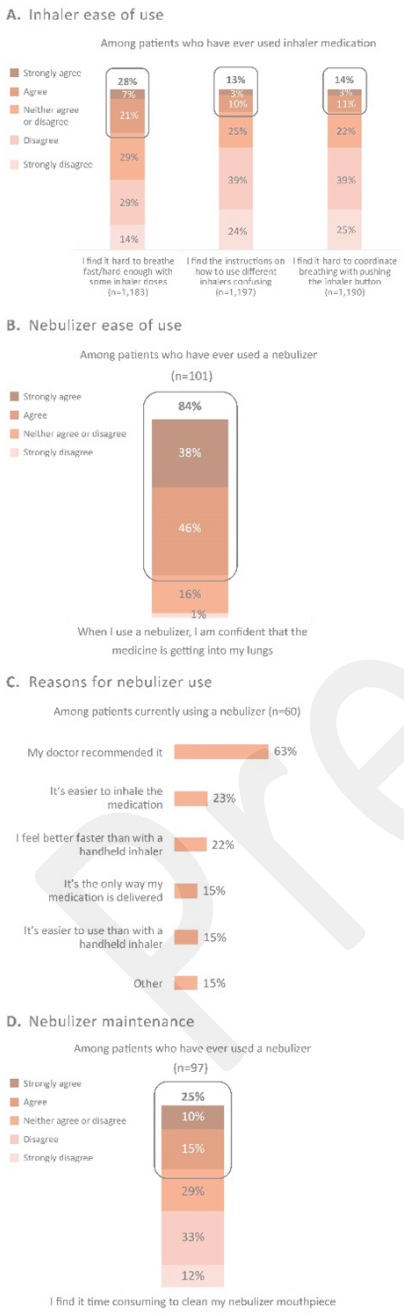
Figure 4. Treatment device use: (A) inhaler[a] ease of use; (B) nebulizer ease of use; (C) reasons for nebulizer use; and (D) nebulizer maintenance.

[a]Includes maintenance inhaler of any type for COPD.



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Online Supplement

Phreesia PatientInsights COPD survey

Consent

Page exit logic: Skip / Disqualify Logic**IF:** #1 Question "The following questions are being asked to better understand peoples' experiences with chronic obstructive pulmonary disease (COPD). These questions are not being asked by your doctor's office and your responses are anonymous and will not be shared with your doctor. It will take 2-3 minutes to complete. Your feedback is very valuable and you may stop at any time. Do you wish to continue?" is one of the following answers ("No") **THEN:** Jump to page 24 - Disqualify Flag response as complete

The following questions are being asked to better understand patient experiences and decision-making around chronic obstructive pulmonary disease (COPD). This survey is optional.

Your answers will **not** be shared with your health care provider.

Phreesia will not store your name with your survey responses. Phreesia may use other information you have provided to Phreesia (such as demographic information) to better understand how different people answer the survey questions. Phreesia may publish insights gained from survey responses, but Phreesia will not publish or share your identity or your individual survey responses with third-parties.

This consent is only for this survey. If you'd like to withdraw your consent after completing the survey, please write to privacy@phreesia.com.

These questions will take about 5-7 minutes to complete. Your feedback is very valuable. **Do you wish to continue?**

( ) Yes

( ) No

Diagnosis

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Page exit logic: Skip / Disqualify Logic**IF:** #2 Question "Which of the following conditions have you been diagnosed with? Please check all that apply." is not one of the following answers ("COPD") **THEN:** Jump to page 24 - Disqualify

1. **Which of the following conditions have you been diagnosed with? Please check all that apply.***

a. COPD
b. Asthma
c. Chronic sinusitis
d. Seasonal allergies
e. Other
f. Decline to answer

Symptoms

2. **How long have you experienced COPD symptoms?***

a. Less than 6 months
b. Between 6-12 months
c. 1-2 years
d. 3-5 years
e. 6-7 years
f. More than 7 years
g. Decline to answer

Slider

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Validation: Min = 0 Max = 30

3. **When experiencing these symptoms, how many days in a typical month do the symptoms impact your daily life?***

0 _____[__]_____ 30

[ ] Decline to answer

4. Which symptom impacts your daily life the **most**? Please select one.

a. Dyspnea (shortness of breath)
b. Fatigue
c. Cough
d. Phlegm (excessive mucous production)
e. Wheezing
f. Chest tightness

g. Other (e.g. respiratory or chest infections, swollen ankles etc.)

h. Decline to answer

Impact on QoL

5. **How much does COPD impact your** everyday life**?***

a. Great impact

b. Moderate impact

c. Little impact

d. Decline to answer

Emotional Impact

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6. **How much has COPD impacted your** emotional and mental health**?***

a. Great impact

b. Moderate impact

c. Little impact

d. Decline to answer

Impact Work

7. **Has COPD impacted your ability to work? Please select all that apply. ***

a. Yes, I have lost my job due to COPD

b. Yes, I have missed 1-3 days of work a month due to COPD

c. Yes, I have missed more than 3 days of work a month due to COPD

d. Yes, I have to take frequent breaks at work due to COPD

e. No, COPD has not impacted my ability to work

f. Decline to answer

Slider Discuss

Validation: Min = 0 Max = 100

8. **How often do you discuss your COPD with the other doctors who are not the main ones to treat your COPD? Please answer in the percentage of your appointments with other doctors. Your best guess is fine.***

0 _____[__]_____ 100

[ ] Decline to answer

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Detail Discuss

9. With how much detail do you describe your COPD symptoms to your main doctors who treat your COPD?*

a. With a great level of detail
b. With some detail
c. With little detail
d. With no detail
e. Decline to answer

Understand COPD

10. How well do you feel you understand COPD?*

a. Completely
b. Quite a bit
c. Somewhat
d. Just a little bit
e. Not at all
f. Decline to answer

Treatments Discussed

11. What type of COPD treatments have you discussed with your doctor? Please check all that apply.*

a. Rescue inhalers
b. Maintenance medications
c. Pulmonary rehabilitation

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d. Other
e. I have not yet discussed treatments with my doctor
f. Decline to answer

Treatments Tried

Logic: Show/hide trigger exists.

12. What type of COPD treatments have you ever tried**? Please check all that apply.***

a. Rescue inhalers
b. Maintenance medications
c. Pulmonary rehabilitation
d. Other
e. I have not yet tried any treatments
f. Decline to answer

Awareness

13. Which of the following maintenance brands come to mind for COPD? Please check all that apply.*

a. Incruse® Ellipta®
b. Spiriva® Respimat®
c. Seebri™ Neohaler®
d. Tudorza® Pressair®
e. Brovana®
f. Anoro® Ellipta®
g. Bevespi Aerosphere®
h. Utibron® Neohaler®
i. Stiolto® Respimat®

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j. Trelegy®
k. Breztri Aerosphere®
l. Symbicort Turbuhaler
m. Breo®
n. Yupelri®
o. DuoNeb®
p. Pulmicort Respules™
q. Other
r. I cannot recall any maintenance COPD brands
s. Decline to answer

Ever Used

Logic: Show/hide trigger exists.

14. What medications have you ever used **to treat your COPD? Please check all that apply.***

a. Incruse® Ellipta®
b. Spiriva® Respimat®
c. Seebri™ Neohaler®
d. Tudorza® Pressair®
e. Brovana®
f. Anoro® Ellipta®
g. Bevespi Aerosphere®
h. Utibron® Neohaler®
i. Stiolto® Respimat®
j. Trelegy®
k. Breztri Aerosphere®
l. Symbicort Turbuhaler

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m. Breo®
n. Yupelri®
o. DuoNeb®
p. Pulmicort Respules™
q. Other
r. I have not used any maintenance medications
s. Decline to answer

15. Please rate your agreement on the statements below.

IF EVER USED INHALER MEDICATION [Incruse, Spiriva, Seebri, Tudorza, Anoro, Bevespi, Utibron, Stiolto, Trelegy, Breztri , Symbicort or Breo] I find it hard to coordinate breathing with pushing inhaler button

IF EVER USED INHALER MEDICATION [Incruse, Spiriva, Seebri, Tudorza, Anoro, Bevespi, Utibron, Stiolto, Trelegy, Breztri , Symbicort or Breo] I find it hard to breathe fast/hard enough with some inhaler doses

IF EVER USED INHALER MEDICATION [Incruse, Spiriva, Seebri, Tudorza, Anoro, Bevespi, Utibron, Stiolto, Trelegy, Breztri , Symbicort or Breo] I find the instructions on how to use different inhalers confusing

IF EVER USED NEBULIZER MEDICATION [Brovana, Yupelri, DuoNeb, Pulmicort] I find it time consuming to clean my nebulizer mouthpiece

IF EVER USED NEBULIZER MEDICATION [Brovana, Yupelri, DuoNeb, Pulmicort] When I use a nebulizer, I am confident that the medicine is getting into my lungs

a. Strongly agree
b. Agree
c. Neither agree or disagree
d. Disagree
e. Strongly disagree
f. Decline to answer

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Current Treatment

Logic: Hidden unless: #14 Question "What medications have you ever used to treat your COPD? Please check all that apply." is not one of the following answers ("I have not used any maintenance medications")

Piping: Piped Values From Question 14. (What medications have you **ever used** to treat your COPD? Please check all that apply.)

16. **What medications are you currently using to treat your COPD? Please check all that apply.***

a. I am not currently on any maintenance medications
b. Decline to answer

17. IF CURRENTLY ON BID MEDICATIONS (Seebri, Tudorza, Brovana, Bevespi, Utibron, Breztri, Symbicort, Pulmicort) Please rate your agreement on the following statement:

The second dose of my medication helps control symptoms during the night until my morning dose.

a. Strongly agree
b. Agree
c. Neither agree or disagree
d. Disagree
e. Strongly disagree
f. Decline to answer

18. IF CURRENTLY ON BROVANA, YUPELRI, DUONEB, PULMICORT (NEBULIZER) Why are you using a nebulizer? Please select all that apply.

a. My doctor recommended it
b. It's the only way my medication is delivered
c. It's easier to inhale the medication
d. It's easier to use than a hand held inhaler
e. I feel better faster than a hand held inhaler
f. Other
g. Decline to answer

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19. IF CURRENTLY ON BROVANA, YUPELRI, DUONEB, PULMICORT (NEBULIZER) How often do you use a nebulizer? Please select one.

a. Twice a day

b. Once a day

c. Only during my COPD flare ups

d. Other

e. Decline to answer

Satisfaction

Piping: Piped From Question 14. (What medications have you **ever used** to treat your COPD? Please check all that apply.)

20. How satisfied are you with these medications for COPD?*

	Completely satisfied	Very satisfied	Somewhat satisfied	Somewhat unsatisfied	Very unsatisfied	Completely unsatisfied	Decline to answer

---

Miss Meds

Logic: Show/hide trigger exists. Hidden unless: #12 Question "What type of COPD treatments have you ever tried? Please check all that apply." is not one of the following answers ("I have not yet tried any treatments")

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21. Have you missed any doses of your COPD medications in the last 3 months?*

a. Yes
b. No
c. I was not on any COPD medications in the past 3 months
d. Decline to answer

Why Miss Meds

Logic: Hidden unless: #16 Question "Have you missed any doses of your COPD medications in the last 3 months?" is one of the following answers ("Yes")

22. Why did you miss taking your COPD medications in the last 3 months?*Select all that apply.

a. It did not work well
b. It costed too much
c. It was too complicated to take
d. I typically used medications for short-term relief
e. I was concerned about medication side effects
f. I simply forgot to take it
g. Other
h. Decline to answer

Intent

Logic: Hidden unless: #14 Question "What medications have you ever used to treat your COPD? Please check all that apply." is not one of the following answers ("I have not used any maintenance medications")

23. How likely are you to try a new maintenance medication for your COPD?*

a. Extremely likely

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b. Very likely

c. Somewhat likely

d. Somewhat unlikely

e. Very unlikely

f. Extremely unlikely

g. Decline to answer

Logic: Hidden unless: #14 Question "What medications have you ever used to treat your COPD? Please check all that apply." is one of the following answers ("I have not used any maintenance medications")

24. How likely are you to try a maintenance medication for your COPD? *

a. Extremely likely

b. Very likely

c. Somewhat likely

d. Somewhat unlikely

e. Very unlikely

f. Extremely unlikely

g. Decline to answer

Why Not Maintenance

Logic: Hidden unless: (#14 Question "What medications have you ever used to treat your COPD? Please check all that apply." is one of the following answers ("I have not used any maintenance medications","Decline to answer") OR #15 Question "What medications are you currently using to treat your COPD? Please check all that apply." is one of the following answers ("I am not currently on any maintenance medications","Decline to answer"))

25. Why aren't you on a maintenance medication now? Please check all that apply.*

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a. My COPD is not severe enough
b. COPD attacks are not frequent enough
c. I don't want to take a daily medication
d. My doctor has not recommended it
e. Concerns about side effects
f. Concerns about medication cost
g. Other
h. Decline to answer

Why Maintenance Meds

Logic: Hidden unless: #14 Question "What medications have you ever used to treat your COPD? Please check all that apply." is not one of the following answers ("I have not used any maintenance medications")

26. Why did you start maintenance medication? Please check all that apply.*

a. My COPD was too severe
b. COPD attacks were too frequent
c. My doctor recommended it
d. Recue inhalers were not working well
e. Other
f. Decline to answer

Increase Med Trust

27. What kind of resources about COPD care would be helpful to you? Please select all that apply. *

a. A nursing line to answer questions about medication use
b. Tips for better handling side effects

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c. Questions to prepare my discussion with my doctor
d. Resources to better understand how my medication works
e. Financial support on medication cost
f. Connecting me to other patients on my medication
g. Phone apps to manage your symptoms
h. Other
i. Decline to answer

Lifestyle Changes

Page exit logic: Skip / Disqualify Logic**IF:** #23 Question "Which of the following lifestyle changes do you plan on making in the next 6-months? Please check all that apply." **THEN:** Jump to page 25 - Complete Flag response as complete

28. Which of the following lifestyle changes do you plan on making in the next 6-months? Please check all that apply.*

a. Quit smoking
b. Exercise regularly
c. Eat a healthy diet
d. Avoid close contact with people who have respiratory infections
e. Avoid excessive heat, cold, and very high altitudes
f. Avoid exposure to environmental irritants
g. Learn breathing techniques
h. Learn relaxation techniques
i. Other
j. I do not plan on making any lifestyle changes
k. Decline to answer

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TABLES

Table S1. Impact of COPD by maintenance medication status

Proportion, %	Currently on maintenance medication	Currently not on any maintenance medication but have tried in the past
How much does COPD impact your everyday life?		
Great/moderate [NET]	68*	53*
Great impact	29	22
Moderate impact	39	31
Little impact	32*	47*
Base, n	**1188**	**118**
How much has COPD impacted your emotional and mental health?		
Great/moderate [NET]	52*	39*
Great impact	19	18
Moderate impact	33*	21*
Little impact	48*	61*
Base, n	**1163**	**119**

*Statistical significance determined at P<0.05 (chi-square test).

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Table S2. Associations between demographic variables and key survey responses

Proportion, %	Overall	Gender		Age			Race		Ethnicity		Location Setting		
		Female	Male	18-44	45-64	65+	Black	White	Hispanic	Not Hispanic	Rural	Suburban	Urban
How much does COPD impact your everyday life?													
Great/moderate [NET]	64	63	66	76	72*	59*	64	64	51	64	73*	71*	62*
Great impact	26	24*	29*	24	34*	22*	29	26	32	26	29	29	26
Moderate impact	38	39	37	52	38	38	35	38	19*	38*	45	43	37
Little impact	36	37	34	24	28*	41*	36	36	49	36	27*	29*	38*
Base, n	**1841**	**1089**	**750**	**29**	**653**	**1159**	**152**	**1486**	**37**	**1525**	**112**	**195**	**1508**
How much has COPD impacted your emotional and mental health?													
Great/moderate [NET]	50	52*	47*	50	63*	43*	51	50	52	50	61*	55*	49*
Great impact	18	19	17	29	26*	13*	20	17	30	18	18	22	17
Moderate impact	32	33	31	21	37*	30*	31	32	21	32	43*	33*	31*
Little impact	50	48*	53*	50	37*	57*	49	50	48	50	39*	45*	51*
Base, n	**1792**	**1057**	**733**	**28**	**642**	**1122**	**144**	**1449**	**33**	**1490**	**109**	**189**	**1468**
With how much detail do you describe your COPD symptoms to your main doctors who treat your COPD?													
With a great level of detail	45	42*	48*	65	49*	42*	48	44	47	45	44	39	45
With some detail	33	34	33	12	32	34	28	34	30	33	35	36	33
With little detail	15	16	14	8	12*	17*	14	15	10	15	16	17	14
With no detail	7	8	6	15	7	7	11	7	13	7	5	8	7

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Base, n	**1671**	**990**	**679**	**26**	**579**	**1066**	**130**	**1367**	**30**	**1402**	**96**	**179**	**1370**
How well do you feel you understand COPD?													
Completely	24	27*	20*	38	24	24	33*	23*	29	24	21	27	24
Quite a bit	40	40	40	27	35*	43*	21*	42*	41	40	44	39	40
Somewhat	26	24*	29*	19	28	25	29	26	15	26	27	27	26
Just a little bit	7	7	8	12	10	6	11	7	9	8	8	7	7
Not at all	2	2	2	4	3	2	6	2	6	2	0	0	2
Somewhat/a little bit/not at all [NET]	36	33*	39*	35	41*	33*	46*	35*	29	36	35	34	36
Base, n	**1718**	**1018**	**698**	**26**	**596**	**1096**	**136**	**1397**	**34**	**1438**	**102**	**180**	**1410**
What type of COPD treatments have you discussed with your doctor? Please check all that apply.													
Rescue inhalers	75	78*	71*	78	79*	73*	77	75	69	76	79	76	75
Maintenance medications	67	66	69	48	65	69	55*	69*	63	69	80*	59*	67*
Pulmonary rehabilitation	16	15	17	19	14	17	16	15	16	16	22*	11*	16*
Other	7	8	7	11	9	6	8	7	3	7	8	10	7
I have not discussed any treatments	6	6	6	15	7	6	4	7	9	6	3	7	7
Base, n	**1672**	**985**	**685**	**27**	**587**	**1058**	**130**	**1362**	**32**	**1400**	**101**	**175**	**1373**

* Statistical significance determined at P<0.05 (chi-square test).

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SUPPLEMENTAL FIGURE TITLES AND LEGENDS

Figure S1. Reasons patients did not try maintenance medications

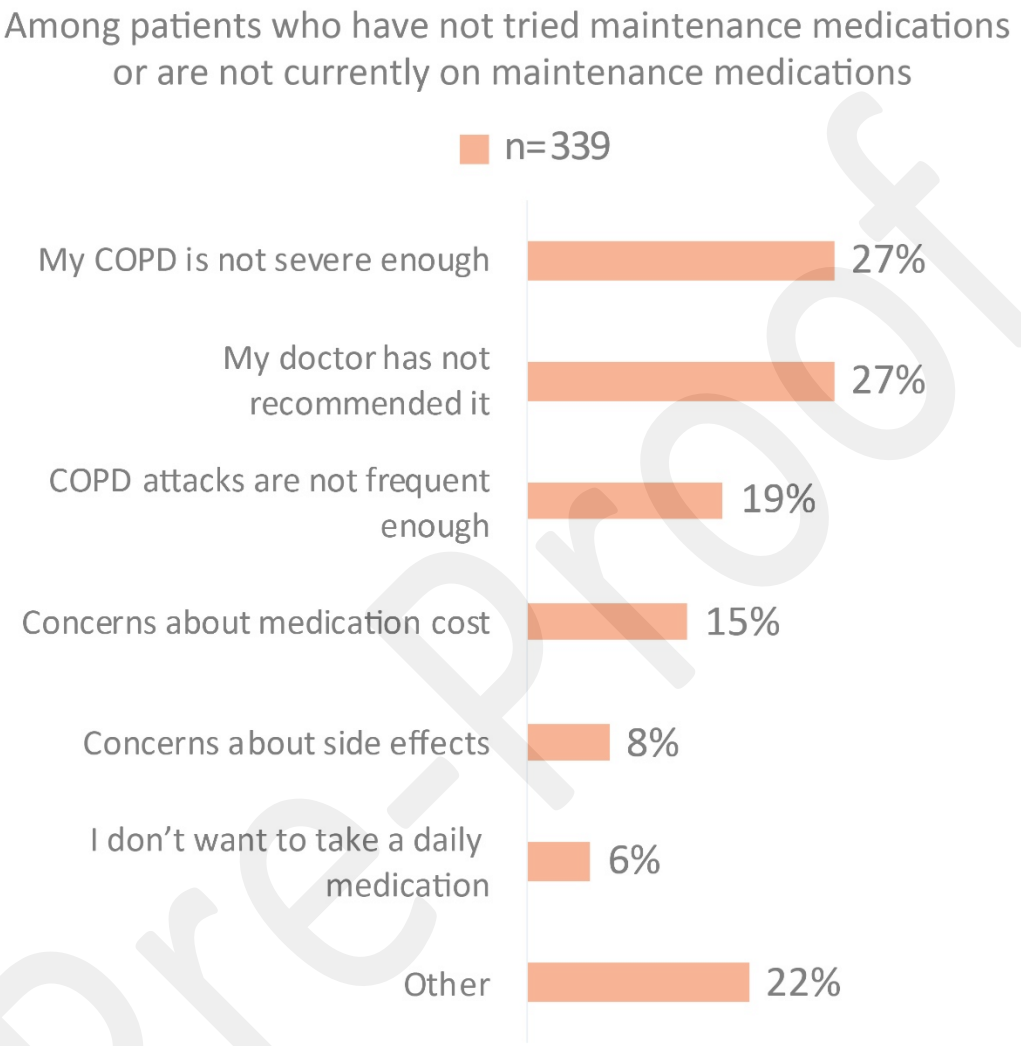

Figure S2. Types of COPD treatments discussed with HCPs or tried

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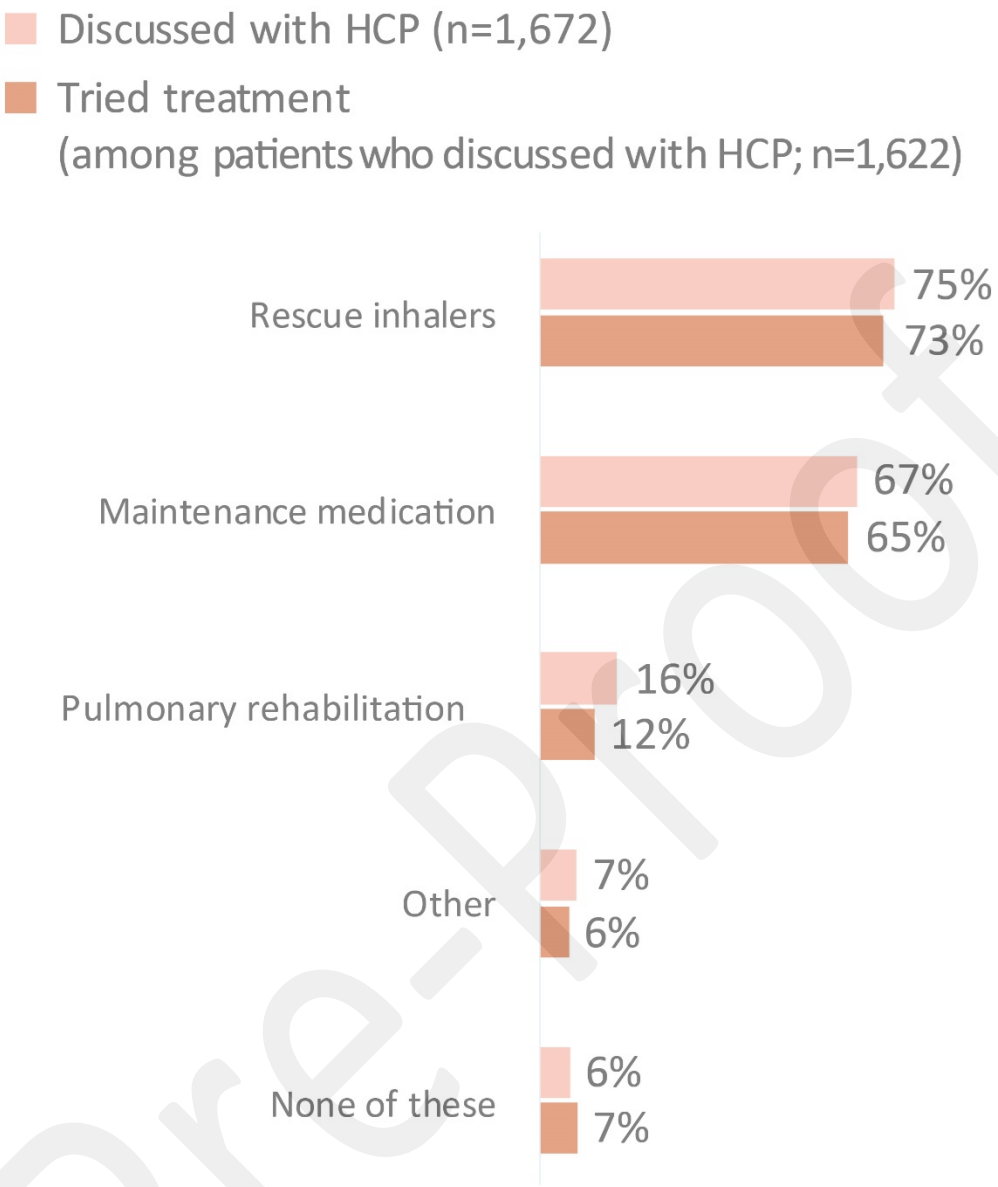

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