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A modified Delphi consensus study to identify improvement proposals for COPD management amongst clinicians and administrators in Spain

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Abstract

Aims: To identify the obstacles hindering the appropriate management of chronic obstructive pulmonary disease (COPD) in Spain based on consensus amongst clinicians and administrators.

Methods: A two-round modified Delphi questionnaire was sent to clinicians (pulmonologists and GPs) and administrators, all experts in COPD. The scientific committee developed the statements and selected the participating experts. Four areas were explored: diagnosis, training, treatment, and clinical management. Panellists' agreement was assessed using a 9-point Likert scale, with scores of 1 to 3 indicating disagreement and 7 to 9, agreement. Consensus was considered to exist when 70% of the participants agreed or disagreed with the statement.

Results: Respective response rates for the first and second round were 68% and 91% for clinicians, and 60% and 100% for administrators. The statements attracting the highest degree of consensus were: "Not enough nursing resources (time, staff, duties) are allocated for performing spirometry" (85.3% clinicians; 75% administrators); "Nurses need specific training in COPD" (84.8% clinicians; 100% administrators); "Rehabilitation programs are necessary for treating patients with COPD" (94.1% clinicians; 91.7% administrators); and "Integrated care processes facilitate the deployment of educational programs on COPD" (79.4% clinicians; 83.3% administrators).

Conclusions: This document can inform the development and implementation of specific initiatives addressing the existing obstacles in COPD management.

What's known

- COPD is a prevalent and underdiagnosed disease that causes substantial morbidity and mortality.
- The National COPD Strategy established objectives and work programmes to apply in Spain.
- There are barriers impeding the application of interventions contemplated in the COPD strategy.

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What's new

- Different agents involved in COPD management agree that the main challenges to improve COPD management are resource shortages in primary care nursing and lack of training in the use of COPD clinical guidelines.
- Clinicians and administrators involved in COPD management support the implementation of urgent measures to tackle the underdiagnosis of COPD, especially in primary care, along with the routine inclusion of respiratory rehabilitation programmes for COPD.

1 | INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a prevalent, underdiagnosed disease that causes substantial morbidity and mortality.[1] While it used to be regarded as irreversible and unavoidably progressive, today it is considered a disease causing some changes that are not completely reversible, with some patients achieving stabilisation or even improvement in their loss of function.[2] COPD is usually the result of inhaling tobacco smoke, but globally other causes have been described, such as the inhalation of smoke from burning biomass and problems related to lung development.[3] In some studies,[4-6] as many as 25% to 40% of patients with COPD had never smoked.

Following the expansion of the Spanish guide to COPD management[1] and the GOLD strategy,[3] the classification of patients has undergone marked changes. Nowadays, general practitioners (GPs), pulmonologists, nurses, administrators and managers, and patients are all involved in managing the disease.

The National COPD Strategy, based on data from a Spanish study (EPISCAN I)[7] and approved by the Interregional Council in June 2009, established common objectives and work programmes to apply in the different Spanish regions.[8] The analysis performed within the framework of this strategy in 2013 revealed some challenges related to assessing implementation, and in 2014 an updated report was released.[9] Then in 2017, a survey in different Spanish regions highlighted persisting barriers impeding the application of interventions contemplated in the COPD strategy, with a possible relation to insufficient resources needed for their execution. Moreover, recent data from the EPISCAN II study[10,11] suggest a modest increase in both the prevalence of the disease and its underdiagnosis. At the same time, tobacco use increased in Spain in 2018, standing at 34% of the population aged 15 to 64 years.[12]

Delphi studies[13,14] are considered an important technique in the context of health services research. Since their inception more than 50 years ago, they have become widely popular across all scientific disciplines. This method aims to achieve expert consensus through discussion, without the need for physical meetings. Instead, the process is remote, with different rounds of consultation to prioritise the items being assessed. In the field of COPD, Delphi processes have enabled the achievement of multidisciplinary consensus around different facets of care, including the initial management of the disease[15] as well as recommendations on inhaled treatments,[16] inhaler devices,[17] and flare-ups,[18] amongst others. These consensus studies can contribute to overcoming the obstacles identified in different phases of a study and lead to proposals on how different strategies could be carried out. The present study uses the Delphi method to identify obstacles related to COPD diagnosis, training, treatment, and clinical management, based on consensus amongst the different agents participating in patient care, including both administrators and medical professionals (pulmonologists and GPs).

2 | METHODS

2.1 | Design

This Delphi study was conducted according to the Guidance on Conducting and REporting DElphi Studies (CREDES).[19] This observational study used a two-round modified Delphi method to obtain consensus for different statements. The questionnaire was sent to panellists in two rounds; the circuit used is shown in Figure 1. This study is described as a modified Delphi because no open-ended questions were included in round one and specialists proposed different statements after a literature review.

2.2 | Participants

The scientific committee consisted of five members of the research team (two pulmonologists, two GPs and one nurse) and they had no conflict of interest. They defined the content of the questionnaire after a brain storming session and proposed members for the panel of experts invited to respond to it electronically. Selected panellists included multidisciplinary specialist clinicians (GPs and pulmonologists) from diverse geographical regions of Spain, with proven expertise in managing COPD, as documented by their professional experience, publications, research projects, and participation in COPD forums. The second group of panellists was made up of health service administrators and managers with more than five years of experience in healthcare administration and whose areas of expertise included programmes or management initiatives in the field of COPD (protocols, care pathways, integrated care programmes). The scientific committee was unsure about the current involvement of primary care nursing in COPD management; thus, they decided not to include them as panel experts. In total, we invited 50 clinicians (25 pulmonologists and 25 GPs), and 20 administrators who met our inclusion criteria. There is debate around the ideal number of

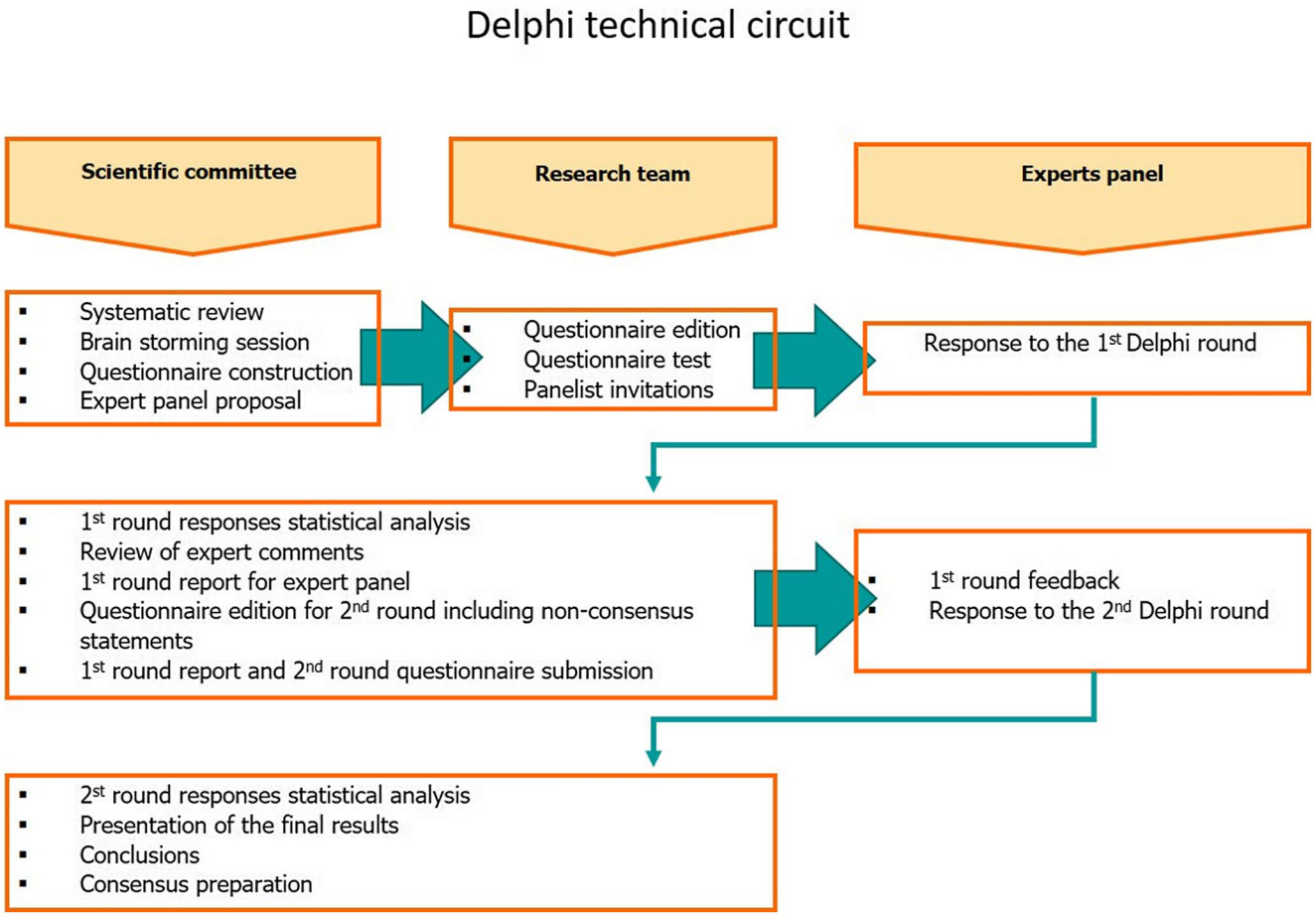

FIGURE 1 Delphi technique circuit

experts necessary to perform a Delphi study but it is recommended to include a minimum of 10 participants in each group.[20]

3 | ETHICAL

Ethics Committee (CEI in its Spanish abbreviation) of the San Juan de Alicante Hospital approved the study protocol (Reference number: 20/037) as a negligible study, and all participants provided written informed consent.

3.1 | Instrument

During several meetings, the scientific committee formulated items for the questionnaire as affirmative or negative statements. The content was based on a previous literature review and the previous experience of the members. To facilitate the interpretation and clinical applicability of the results obtained, the items were categorised into four areas: (a) COPD diagnosis; (b) COPD training; (c) COPD treatment; and (d) clinical management of COPD. The items were adapted to the profile of each group of panellists (clinicians and administrators), so not all of the statements were presented to all of the groups. Those statements that we considered one group of panellists could not give their view were removed from their questionnaire in order to avoid bias. A structured questionnaire with 55 statements was sent to clinicians, while administrators received a questionnaire with 44 items. Their support for the statements was assessed via a 9-point Likert scale, where 1 represented complete disagreement and 9, complete agreement. Responses were classified into three categories: 1-3, disagree; 4-6, neutral; and 7-9, agree. A free-text option was included after each statement in the first round questionnaire in case panellists wanted to add comments on any item. The questionnaires were piloted on four healthcare professionals to assess the clarity of items and duplicities. Appendix S1 shows the final questionnaires sent to each group of panellists in the first round.

3.2 | Process and analysis

The study took place between June and December 2018. The wording of the questionnaire was finalised in June 2018, and the two consultation rounds occurred from then until October 2018. The panellists received an invitation to participate in an email, which described the study and its objectives and contained a link to an ad hoc website where they could respond to the questionnaire over a period of four weeks.

A collaborator who was not involved in the study extracted panellists' responses, anonymised the data, and provided them to the research team. Results of the first round were analysed, and a 70% consensus threshold was established for agreement/disagreement. The items that did not attract sufficient consensus were rewritten without changing their meaning and taking into account the explanatory comments included in panellists' questionnaires, and then, they were sent to the panellists for the second round of consultation. In turn, these responses were analysed again using the same 70% cut-off. We considered that consensus existed if 70% of the panellists agreed or disagreed with the statement in either the first or second round. Currently, there is no universally accepted consensus threshold for Delphi studies[19]; however, 70% is commonly reported in the literature.[21]

4 | RESULTS

Of the 50 clinicians (25 pulmonologists and 25 GPs) selected to participate on the panel, 34 (68%) responded in the first round. The response rate amongst administrators was 60% (n = 12). In the second round, the response rate was 91% (n = 31) for clinicians and 100% (n = 12) for administrators. Appendix 2 shows the results after rounds 1 and 2 for both expert panels. Tables 1-4 show the percentage of agreement or disagreement (the highest value) for each item by the panellist group and by round. Appendix 3 shows those statements which were amended for the second round according to panellist' comments.

4.1 | COPD diagnosis

The item attracting the highest degree of consensus amongst clinicians (85.3% agreement) was, "Not enough nursing resources (time, staff, duties) are allocated for performing spirometry." Administrators unanimously agreed that "all patients coded as having COPD should undergo a confirmatory spirometry within 12 months" (Table 1). The statement, "Patients do not ask to undergo a spirometry" reached consensus amongst both panel groups, albeit with different proportions (all above 70%) expressing agreement.

4.2 | COPD training

The item achieving the highest degree of consensus amongst clinicians (84.8%) and administrators (100%) was, "Nurses need specific training in COPD" (Table 2) Panellists also agreed that training is needed in clinical practice guidelines for COPD, in differentiating asthma, COPD, and asthma-COPD-overlap, inhaler techniques, and therapeutic education for COPD.

TABLE 1 Maximum percentage of agreement (or disagreement) in those statements related to the diagnosis of chronic obstructive pulmonary disease (COPD) by the panellist group and by round. [Correction added on 20 March 2021, after first online publication: The sentence 'Bolding indicates those items that fulfilled consensus criteria (≥70%) in any group' has been removed from the caption in this version.]

	Round 1		Round 2	
Item	Clinicians	Administrators	Clinicians	Administrators
To define obstruction it is better to use the lower limit of normality than the absolute value of FEV1 / FVC < 70%	**55.9%**[a]	NI	51.6%[a]	NI
Underdiagnosis of COPD is a very prevalent problem in clinical practice	82.4%[a]	NI	—	NI
The routine practice of spirometry in smokers is recommended	67.6%[a]	NI	67.7%[a]	NI
COPD can be confused with other diseases such as asthma or bronchiectasis	76.5%[a]	NI	—	NI
Spirometry is performed in most primary care centres.	36.4%[a]	41.7%[a]	51.6%[a]	45.5%[a]
The COPD diagnosis is performed in the area of primary care without doing spirometry.	44.1%[a]	58.3%[b]	41.9%[a]	54.5%[b]
Not enough nursing resources (time, staff, duties) are allocated for performing spirometry	85.3%[a]	58.3%[a]	—	72.7%[a]
Primary care physicians do not ask spirometry test	55.9%[a]	45.5%[a]	54.8%[a]	54.5%[a]
Patients do not ask to undergo a spirometry	64.7%[a]	91.7%[a]	71.0%[a]	—
Smokers do not recognise the symptoms of COPD (cough, phlegm, breathlessness)	61.8%[a]	75.0%[a]	77.4%[a]	—
All patients coded as having COPD should undergo a confirmatory spirometry within 12 months	75.8%[a]	100%[a]	—	—

Abbreviations: COPD, chronic obstructive pulmonary disease; NI, item not included in this group.

[a]Agreement.

[b]Disagreement.

TABLE 2 Maximum percentage of agreement (or disagreement) in those statements related to training for chronic obstructive pulmonary disease (COPD) by the panellist group and by round. [Correction added on 20 March 2021, after first online publication: The sentence 'Bolding indicates those items that fulfilled consensus criteria (≥70%) in any group' has been removed from the caption in this version.]

	Round 1		Round 2	
Item	Clinicians	Administrators	Clinicians	Administrators
Spirometry is not performed correctly in the area of primary care	48.5%[a]	NI	38.7%[a]	NI
Patients with COPD know their disease	57.6%[b]	50.0%[b]	51.6%[b]	63.6%[b]
There is little training in primary care setting (physicians and nurses) on the diagnostic process of COPD	36.4%[b]	33.3%[a]	32.3%[a,b]	45.5%[a,b]
COPD guidelines does not fit the individual well	38.2%[b]	33.3%[a]	51.6%[b]	63.6%[b]
GesEPOC is useful in clinical practice	82.4%[a]	NI	—	NI
GOLD is useful for clinical practice	61.8%[a]	NI	48.4%[a]	NI
In primary care setting there are too many guidelines and it is difficult to remember them	58.8%[a]	NI	51.6%[a]	NI
Patients do not participate in the development of clinical practice guidelines	58.8%[a]	83.3%[a]	67.7%[a]	—
GOLD guideline is easier to use than GesEPOC guideline	32.4%[b]	NI	54.8%[b]	NI
GesEPOC guideline is easier to use tan GOLD guideline	52.9%[a]	NI	54.8%[a]	NI
The definition of ACO (asthma -COPD overlap) is difficult to apply in clinical practice	38.2%[a,b]	NI	45.2%[b]	NI
Subjective judgement by the physician is sufficient to define asthma-COPD-overlap	73.5%[b]	NI	—	NI
It is necessary to simplify COPD management in clinical practice guidelines	66.7%[a]	72.7%[a]	67.7%[a]	—
Training is needed in clinical practice guidelines for COPD	72.7%[a]	100%[a]	—	—
Patients should participate in the development of clinical practice guidelines	63.6%[a]	83.3%[a]	67.7%[a]	—
Clinical practice guidelines should incorporate cost-effectiveness considerations	75.8%[a]	91.7%[a]	—	—
The difficulty of distinguishing between asthma and COPD in primary care setting prevents adequate treatment of COPD	35.3%[a,b]	NI	40.0%[a]	NI
Training workshops in inhaler techniques are necessary for health professionals	78.8%[a]	91.7%[a]	—	—
More training is needed in differentiating asthma, COPD, and asthma-COPD-overlap	79.4%[a]	58.3%[a]	—	63.6%[a]
Training on specific therapeutic education for COPD is scarce amongst primary care nursing	65.6%[a]	45.5%[a]	73.3%[a]	72.7%[a]
Healthcare managers (administrators, primary care coordinators, service chiefs, nurses) do not promote educational programmes on COPD	58.8%[a]	33.3%[b]	60.0%[a]	45.5%[a]
There are no specific documents or adequate materials to facilitate patient education on COPD	38.2%[b]	50.0%[b]	46.7%[b]	63.6%[b]
Nurses need specific training in COPD	84.8%[a]	100%[a]	—	—

Abbreviations: COPD, chronic obstructive pulmonary disease; NI, item not included in this group.

[a]Agreement.

[b]Disagreement.

4.3 | COPD treatment

Clinicians and administrators reached the greatest consensus around the two statements affirming the need to use rehabilitation programmes in COPD treatment (94.1% and 91.7%, respectively, for the first statement, and 88.2% and 91.7% for the second) (Table 3). Both groups also agreed that inhaled corticosteroids are used excessively in COPD patients (84.8% clinicians, 81.8% administrators) and

TABLE 3 Maximum percentage of agreement (or disagreement) in those statements related to treatment for chronic obstructive pulmonary disease (COPD) by the panellist group and by round. [Correction added on 20 March 2021, after first online publication: The sentence 'Bolding indicates those items that fulfilled consensus criteria (≥70%) in any group' has been removed from the caption in this version.]

	Round 1		Round 2	
Item	Clinicians	Administrators	Clinicians	Administrators
Some patients with COPD needlessly receive dual bronchodilation.	50.0%[a]	75.0%[a]	51.6%[a]	—
Inhaled corticosteroids are overused in COPD.	84.8%[a]	81.8%[a]	—	—
Inhaled corticosteroids are rarely removed in the area of primary care.	73.5%[a]	NI	—	NI
High doses of inhaled corticosteroids are used in primary care.	55.9%[a]	NI	74.2%[a]	NI
There is an excess of treatments with mucolytics in COPD	47.1%[a]	NI	41.9%[a]	NI
Patients are unfamiliar with inhaling techniques for different devices.	70.6%[a]	91.7%[a]	—	—
Triple therapy is quickly reached.	50.0%[a]	45.5%[a]	51.6%[a]	45.5%[a]
Rehabilitation programmes are necessary for treating patients with COPD.	94.1%[a]	91.7%[a]	—	—
Adherence to inhaled medication in patients with COPD is very low.	47.1%[a]	41.7%[a]	64.5%[a]	45.5%[a]
Physicians do not have time to explain the technique of inhalers to their patients with COPD.	52.9%[a]	50.0%[a]	64.5%[a]	63.6%[a]
It is necessary to include rehabilitation programmes in COPD treatment.	88.2%[a]	91.7%[a]	—	—
There are specific resources planned to cope with excessive care pressure because of the exacerbations of COPD (influenza epidemics or other respiratory infections)	NI	50.0%[a]	NI	36.4%[b]
The home hospitalisation unit treats many patients with severe COPD	NI	41.7%[a]	NI	54.5%[a]

Abbreviations: COPD, chronic obstructive pulmonary disease; NI, item not included in this group.

[a]Agreement.

[b]Disagreement.

clinicians agreed that high doses of inhaled corticosteroids are used in primary care (74.2%), and that inhaled corticosteroids are rarely discontinued in the area of primary care (73.5%). Clinicians and administrators think that patients are unfamiliar with how to use different inhalation devices (70.6% and 91.7%, respectively).

4.4 | Clinical management of COPD

The two groups of panellists agreed on the need to implement expert patient programmes in the area of COPD, ie, programmes to train and motivate COPD patients through the promotion of expert patients (Table 4). For clinicians and administrators, integrated care programmes would also facilitate the launch of educational programmes on COPD. Both groups believe management agreements should be explicitly linked to adherence to clinical guidelines (78.8% clinicians, 72.7% administrators). These panellists also agreed that primary care nursing does not usually include COPD patients in its therapeutic education programmes.

5 | DISCUSSION

This study analysed the perspectives of different agents involved in COPD management in order to identify obstacles and propose recommendations for improving the diagnosis, training, treatment, and clinical management of the disease. The main challenges were resource shortages in primary care nursing and lack of training in the use of COPD clinical guidelines. Moreover, panellists supported the implementation of urgent measures to tackle the underdiagnosis of COPD, especially in primary care, along with the routine inclusion of respiratory rehabilitation programmes for COPD, the application of integrated care programmes, the identification of expert patients for improving clinical management in COPD, and the increased availability of information and training on COPD and its treatment for patients.

5.1 | COPD diagnosis

Clinicians and administrators widely agreed that insufficient nursing resources (time, staff, duties) were allocated for performing spirometry, a fundamental test for diagnosing and following patients with COPD. Likewise, there was a high degree of agreement amongst clinicians that underdiagnosis of COPD is a very prevalent problem in clinical practice. This statement is consistent with findings from the EPISCAN I study, which estimated the rate of COPD underdiagnosis at over 70% in Spain,[7] and with the review of Diab et al,[22] which found several previous studies that suggested that approximately 70% of COPD worldwide may be underdiagnosed.

TABLE 4 Maximum percentage of agreement (or disagreement) in those statements related to the clinical management of chronic obstructive pulmonary disease (COPD) by the panellist group and by round. [Correction added on 20 March 2021, after first online publication: The sentence 'Bolding indicates those items that fulfilled consensus criteria (≥70%) in any group' has been removed from the caption in this version.]

	Round 1		Round 2	
Item	Clinicians	Administrators	Clinicians	Administrators
There is easy access to the pulmonologist from primary care to consult COPD problems	51.5%[a]	NI	60.0%[a]	NI
There is easy access to the primary care physician to comment on the follow-up of patients with COPD	42.4%[a]	NI	56.7%[a]	NI
The use of mini spirometers for screening (COPD-6, Piko-6) should be generalised in primary care setting	45.5%[a]	NI	53.3%[a]	NI
Management agreements should be explicitly linked to adherence to clinical guidelines	78.8%[a]	58.3%[a]	—	72.7%[a]
Automated integrated care pathways increase adherence to clinical practice guidelines	78.8%[a]	100%[a]	—	—
In primary care setting there is no human resources to apply COPD educational programmes	46.9%[a]	50.0%[a]	55.2%[a]	54.5%[a]
Primary care nurses do not usually include COPD patients in their therapeutic education programmes	76.5%[a]	41.7%[a]	—	72.7%[a]
Integrated care processes facilitate the deployment of educational programmes on COPD	79.4%[a]	83.3%[a]	—	—
It is necessary to develop therapeutic educational programmes for patients with COPD at a national level	76.5%[a]	50.0%[a]	—	63.6%[a]
Expert patient programmes should be applied for COPD management	73.5%[a]	83.3%[a]	—	—
Spirometry should be linked to management agreements.	NI	91.7%[a]	NI	—
COPD is a serious health problem.	NI	100%[a]	NI	—
Hospital admissions because of COPD have increased in recent years.	NI	75.5%[a]	NI	—
Consensus-based criteria for COPD management exist between primary and secondary care levels.	NI	66.7%[a]	NI	72.7%[a]
Care for patients with COPD is a priority within the current healthcare system context.	NI	75.0%[a]	NI	—
The rate of influenza vaccination in patients with COPD is low	NI	41.7%[a]	NI	36.4%[a,b]

Abbreviations: COPD, chronic obstructive pulmonary disease; NI, item not included in this group.

[a]Agreement.

[b]Disagreement.

Previous studies reported that the underuse of spirometry, particularly in the primary care setting, contributes to COPD underdiagnosis.[23,24] The high rate of underdiagnosis can be also partly explained by the fact that smokers do not recognise the symptoms of COPD (cough, phlegm, breathlessness), a statement that attracted significant support from clinicians. This difficulty may reside in the gradual onset of symptoms, as people may become used to these effects and fail to recognise when they become severe. Smokers' struggle to quit smoking may also contribute to their progressive adaptation, a hypothesis that is also supported by the agreement amongst clinicians and administrators that patients do not tend to ask for spirometry. Furthermore, the agreement amongst clinicians on the potential confusion between COPD and other obstructive diseases such as asthma or bronchiectasis could also explain some of the underdiagnosis of COPD.

The clinical records of some patients show that they have been diagnosed with COPD without having received a spirometry.[25] In light of this phenomenon, it is worth highlighting the consensus around the need to perform confirmatory spirometry amongst all patients coded as having COPD within 12 months of their initial diagnosis.[26]

5.2 | COPD training

The panellists identified multiple shortcomings in different facets of training. Clinicians and administrators widely agreed on the need to improve nurse training, both generally in COPD and specifically in therapeutic education and in clinical practice guidelines for COPD. Although clinicians generally agreed on the usefulness of the national

clinical guidelines for COPD, GesCOPD,[1] they perceived a need for increased training to identify the asthma-COPD-overlap phenotype[27] and to gain practical experience in inhaler techniques. Indeed, there was broad disagreement with the statement, "Subjective judgment by the physician is sufficient to define asthma-COPD-overlap," revealing the need for objective criteria.[28]

Clinicians and administrators also agreed on the need to incorporate economic considerations on the efficiency of different interventions in clinical practice guidelines. A recent study[29] compared the cost-effectiveness of conventional vs home-based COPD management. Although the costs of both treatment modalities were similar in both Spain and France, the clinical parameters during follow-up were better in patients receiving home care. These results suggest that home-based care is preferable for patients with COPD, and the study is a clear example of how economic analyses can inform clinical practice guidelines.

Administrators call for greater patient participation in the development of clinical practice guidelines. Baker and Fatoye[30] concluded in their review that some programmes that promote self-care for patients under supervision from nurses have shown benefits in terms of reducing planned medical consultations, decreasing anxiety amongst patients, and increasing feelings of self-efficacy in the management of the disease. Although the economic meta-analysis of this study[30] did not produce definitive results, inclusion of the patient perspective in some care programmes, such as self-management, home care, and certain forms of treatment, is essential for establishing criteria in clinical guidelines.

Administrators considered that clinical practice guidelines are too complex, but clinicians' responses did not reflect consensus on this point. The art of writing guidelines is to synthesis evidence and enable non-specialists to understand complex situations. However, the complexity and heterogeneity of COPD are also such that simplifying the guidelines is not only difficult—it could undermine their usefulness.

Finally, clinicians called for more therapeutic education programmes for patients with COPD, ie, programmes to train the patient to acquire the necessary resources to optimally manage their life with COPD with or without the assistance of expert patients, along with adequate information materials and flexible times that adapt to their needs. Currently, in our setting, there are no health education programmes directed specifically to patients with COPD; if and when these are established, planners should keep in mind the need to adapt the programme timetables to patient needs rather than only to health professional schedules.

Although items about COPD training reached consensus, they were not specific for primary care physicians. Thus, the need for specific training amongst primary care physicians should be considered in future studies.

5.3 | COPD treatment

Administrators and clinicians overwhelmingly agreed on the need to address the absence of rehabilitation programmes for COPD patients in clinical practice. Given the high certainty of evidence supporting the effectiveness of these programmes[1,2] and the wide agreement amongst professionals working in the healthcare system on their necessity, initiatives to apply these services within health centres should be a priority. In practice, and despite the widespread consensus amongst clinicians and administrators, the real-world implementation of structured rehabilitation programmes in Spain is suboptimal, especially in some regions.

In general, administrators and professionals agree that inhaled corticosteroids are used too frequently for treating COPD and additionally that high doses are prescribed in primary care. Even the group of administrators agreed with the statement that there are COPD patients that needlessly receive dual bronchodilation. Recent studies have already called out the excessive use of inhaled steroids for COPD and proposed recommendations for their withdrawal.[31,32]

5.4 | Clinical management of COPD

Both clinicians and administrators show a high degree of consensus regarding the implementation of integrated care pathways. Moreover, these groups agree on the need to link adherence to clinical practice guidelines on COPD with management agreements. Another area of agreement is that primary care nursing does not generally include patients with COPD in therapeutic education programmes as it should. In fact, clinicians concurred on the need to design therapeutic education programmes for COPD at a national level. Likewise, there was broad consensus amongst clinicians and administrators on the need to develop expert patient programmes in the area of COPD, suggesting that this intervention should be prioritised for implementation.

Given its focus, the area of clinical management had a higher number of items specifically directed to administrators. These panellists coincided in their belief that COPD is a severe health problem and that hospital admissions for this cause have increased in recent years. Although this affirmation may be true in some health departments,[31] national data indicate the opposite, with a trend towards decreasing the number of COPD-related admissions.[33,34] This perception may instead be rooted in clinicians' and patients' heightened demand for resources and care, along with a greater number of consultations for patients with COPD and the increasing complexity and comorbidities present in this group. Participating administrators also affirm that consensus-based criteria for COPD management exist between primary and secondary care levels, but this perception is probably subject to some selection bias, as our inclusion criteria required the existence of specific COPD programmes in the administrators' health departments. This panellist group expressed their opinion that care for patients with COPD is a priority within the current healthcare system context.

6 | LIMITATIONS

The limitations of this study are similar to those of other research projects with a similar design. The type of participant that was included

TABLE 5 Problems or obstacles in the COPD management with the highest level of consensus amongst primary care physicians, pulmonologists, and administrators

Resources are needed in primary care nursing: time for and training in spirometry, COPD consults for verifying inhaler techniques, and programmes for therapeutic education in COPD
Urgent measures are needed to reverse the increasing rates of underdiagnosis in COPD, especially in primary care, where early diagnosis is easier to achieve
More training is still necessary for the use of clinical guidelines for COPD, which are useful but could be more so if they included considerations on cost-effectiveness and the patient perspective
Respiratory rehabilitation programmes in COPD are necessary and should be routinely included in the treatment for this disease
All of the sectors involved in managing COPD believe that applying for integrated care programmes and identifying expert patients would improve the clinical management of COPD
Adherence to clinical guidelines should improve by linking compliance to annual targets in management agreements, keeping in mind the current excessive use of some drugs such as inhaled steroids
Patients with COPD would benefit from the dissemination of informational materials on COPD and the performance of workshops on disease management, follow-up, and the use of inhaler devices
Healthcare administrators recognise that COPD is a serious problem whose clinical management is a current priority and that additional nursing resources are needed to address it

limit the participation rate of the study because of the clinicians' lack of time to participate in research studies or the competency of other duties of the panellists who are experts who tend to have busy schedules. To ensure the correct and consistent interpretation of the statements, we took care to adjust the wording and structure of the items. Anonymity and confidentiality were guaranteed for all participants in order to avoid the influence that known opinion leaders might exercise on other participants' responses. Opinions based on the collective experiences of a group of specialists or subject-area experts will always be of a higher quality than those from a single specialist because of the greater amount of information that a group can access. Another possible limitation was the use of a structured questionnaire. However, to reduce this limitation, we allowed space for free-text comments on the first round questionnaire, and they were taken into account to clarify some statements in the second-round questionnaire.

Miravitlles et al[35] suggested that, in areas in which a validated method of evaluation and grading of evidence may not be applied, consensus or opinion-based recommendations should be incorporated in COPD guidelines. This study identified obstacles to COPD diagnosis and management, as agreed by primary care physicians, pulmonologists, and administrators (Table 5). The highest degree of consensus exists around the participation of nursing professionals. Addressing these problems could help to improve COPD management. As Miravitlles et al[35] suggested, all stakeholders should participate in guidelines development, and, thus, in future studies of this type, it would be desirable to include nurses, patients or other stakeholders as panellists, as this could increase their engagement and implication in COPD-related health services.

DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

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REFERENCES

1. GesEPOC Research Team. Guía de práctica clínica para el diagnóstico y tratamiento de pacientes con enfermedad pulmonar obstructiva crónica (EPOC)-Guía española de la EPOC. Versión 2017. *Arch Bronconeumol*. 2017;53(Supl 1):2-64.
2. De Torres JP, Celli BR. ¿Es realmente la enfermedad pulmonar obstructiva crónica una enfermedad progresiva? *Arch Bronconeumol*. 2017;53:362-363.
3. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease. Global Initiative for Chronic Obstructive Lung Disease (GOLD). 2019. Available from: www.goldcopd.org. Accessed July 26, 2019
4. Lamprecht B, McBurnie MA, Vollmer WM, et al. COPD in never smokers. Results from the population-based burden of obstructive lung disease study. *Chest*. 2011;139:752-763.
5. Behrendt CE. Mild and moderate-to-severe COPD in non-smokers: distinct demographic profiles. *Chest*. 2005;128:1239-1244.
6. Zhou Y, Wang C, Yao W, et al. COPD in Chinese nonsmokers. *Eur Respir J*. 2009;33:509-518.
7. Miravitlles M, Soriano JB, GarcíaRío F, et al. Prevalence of COPD in Spain: impact of undiagnosed COPD on quality of life and daily life activities. *Thorax*. 2009;64:863-868.
8. Estrategia en EPOC del Sistema Nacional de Salud. Aprobada por el Consejo Interterritorial del Sistema Nacional de Salud el 3 de junio del 2009. Sanidad 2009. Ministerio de Sanidad y Política Social.
9. Actualización de la Estrategia en EPOC del Sistema Nacional de Salud. Informe enero de 2014. Sanidad 2014. Ministerio de Sanidad, Servicios Sociales e Igualdad.
10. Alfageme I, de Lucas P, Ancochea J, et al. 10 years after EPISCAN: A new study on the prevalence of COPD in Spain-A summary of the EPISCAN II protocol. *Arch Bronconeumol*. 2019;55:38-47.
11. Soriano JB, Ponencias Área de EPOC. Nuevos datos epidemiológicos de la EPOC en España: Situación epidemiológica de la EPOC en España. 25ª Reunión de invierno conjunta Áreas. Salamanca, Noviembre de 2018.
12. Informe EDADES 2017-2018: Encuesta sobre alcohol y otras drogas en España (EDADES), 1995-2017. Delegación del Gobierno para el Plan Nacional sobre Drogas. Observatorio Español de las Drogas y las Adicciones. Secretaría de Estado de Servicios Sociales. Ministerio de Sanidad, Consumo y Bienestar Social. Madrid, Diciembre de 2018.
13. Mays N. Qualitative research in health care: Assessing quality in qualitative research. *BMJ*. 2000;320(7226):50-52.
14. Pope C, Ziebland S, Mays N. Qualitative research in health care: Analysing qualitative data. *BMJ*. 2000;320:114-116.
15. Di Marco F, Balbo P, de Blasio F, et al. Early management of COPD: Where are we now and where do we go from here? A Delphi consensus project. *Int J COPD*. 2019;14:353-360.
16. Ninane V, Corhay JL, Germonpré P, et al. Inhaled treatment of COPD: a Delphi consensus statement. *Int J COPD*. 2017;12:793-801.

17. Ninane V, Brusselle GG, Louis R, et al. Usage of inhalation devices in asthma and chronic obstructive pulmonary disease: a Delphi consensus statement. *Exp Opin Drug Delivery*. 2014;11:313-323.
18. Alcázar Navarrete B, Ancochea Bermúdez J, García-Río F, et al. Paciente exacerbador con enfermedad pulmonar obstructiva crónica: recomendaciones en procesos diagnósticos, terapéuticos y asistenciales. *Arch Bronconeumol*. 2019;55:478-487.
19. Jünger S, Payne SA, Brine J, et al. Guidance on Conducting and REporting DElphi Studies (CREDES) in palliative care: recommendations based on a methodological systematic review. *Palliat Med*. 2017;31(8):684-706.
20. Trevelyan EG, Robinson N. Delphi methodology in health research: how to do it? *Eur J Integ Med*. 2015;7:423-428.
21. Stewart D, Gibson-Smith K, MacLure K, et al. A modified Delphi study to determine the level of consensus across the European Union on the structures, processes and desired outcomes of the management of polypharmacy in older people. *PLoS One*. 2017;12(11):e0188348.
22. Diab N, Gershon AS, Sin DD, et al. Underdiagnosis and overdiagnosis of chronic obstructive pulmonary disease. *Am J Respir Crit Care Med*. 2018;198(9):1130-1139.
23. Hangaard S, Helle T, Nielsen C, et al. Causes of misdiagnosis of chronic obstructive pulmonary disease: a systematic scoping review. *Respir Med*. 2017;129:63-84.
24. Lamprecht B, Soriano JB, Studnicka M, et al. Determinants of underdiagnosis of COPD in national and international surveys. *Chest*. 2015;148:971-985.
25. Gershon AS,Hwee J, Chapman KR, et al. Factors associated with undiagnosed and overdiagnosed COPD. *Eur Respir J*. 2016;48:561-564.
26. Press VG, Cifu AS, White SR. Screening for chronic obstructive pulmonary disease. *JAMA*. 2017;318(17):1702-1703.
27. Cosio BJ, Soriano JB, López-Campos JL, et al. Defining the asthma-COPD overlap syndrome in a COPD cohort. *Chest*. 2016;149:45-52.
28. Miravitlles M. Diagnosis of asthma-COPD overlap: the five commandments. *Eur Respir J*. 2017;49:1700506.
29. Bourbeau J, Granados D, Roze S, et al. Cost-effectiveness of the COPD patient management European trial home-based disease management program. *Int J COPD*. 2019;14:645-657.
30. Baker E, Fatoye F. Clinical and cost effectiveness of nurse-led self-management interventions for patients with COPD in primary care: A systematic review. *Int J Nurs Stud*. 2017;71:125-128.
31. Alcázar Navarrete B, Casanova C, Miravitlles M, et al. Correct use of inhaled corticosteroids in chronic obstructive pulmonary disease: a consensus document. *Arch Bronconeumol*. 2015;51:193-198.
32. Miravitlles M, Cosío BG, Arnedillo A, et al. A proposal for the withdrawal of inhaled corticosteroids in the clinical practice of chronic obstructive pulmonary disease. *Respir Res*. 2017;18:198.
33. Librero J, Ibañez-Beroiz B, Peiró S, et al. Trends and area variations in potentially preventable admissions for COPD in Spain (2002–2013): a significant decline and convergence between áreas. *BMC Health Serv Res*. 2016;16:367-376.
34. de Miguel-Díez J, Jiménez-García R, Hernández-Barrera V, et al. Trends in hospital admissions for acute exacerbation of COPD in Spain from 2006 to 2010. *Respir Med*. 2013;107:717-723.
35. Miravitlles M, Roche N, Cardoso J, et al. Chronic obstructive pulmonary disease guidelines in Europe: a look into the future. *Respir Res*. 2018;19:11.

SUPPORTING INFORMATION

Additional Supporting Information may be found online in the Supporting Information section.

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APPENDIX 1

Expert panel members

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