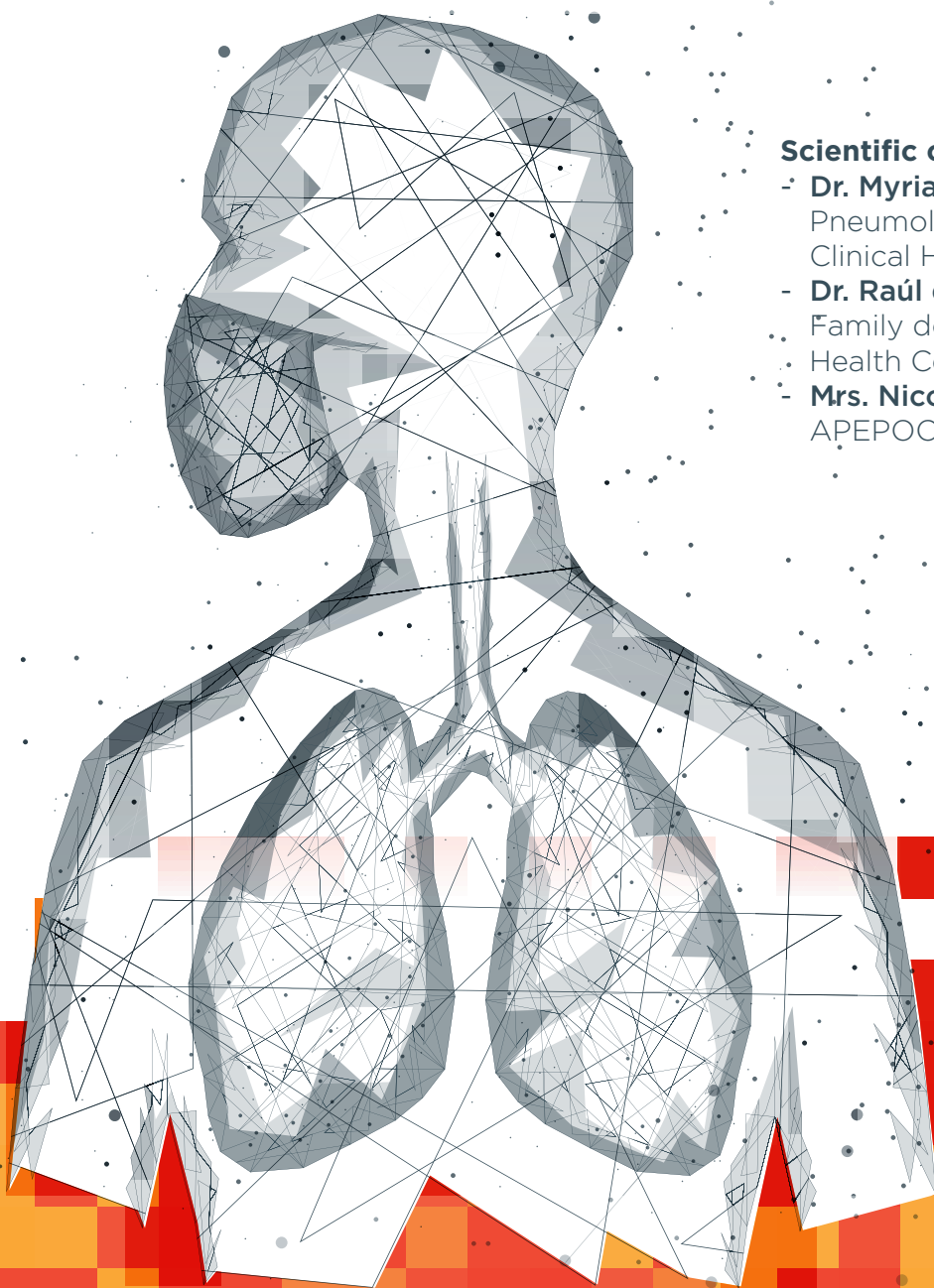


IMPACT OF THE COVID-19 PANDEMIC ON COPD PATIENTS AND HEALTHCARE

Report of results and recommendations
to resume normality

Promoters:



Scientific coordinators:

- **Dr. Myriam Calle Rubio.**
Pneumologist. San Carlos
Clinical Hospital. Madrid
- **Dr. Raúl de Simón Gutiérrez.**
Family doctor. Luis Vives
Health Center. Madrid
- **Mrs. Nicole Hass.**
APEPOC



1. INTRODUCTION	3
2. OBJECTIVES	4
3. METHODOLOGY	5
4. RESULTS	5
5. CONCLUSION	16
6. PROPOSALS FOR CLINICIANS FACING A HEALTHCARE RECOVERY IN COPD	17
7. RECOMMENDATIONS FOR PATIENTS	19
8. REFERENCES	20
APPENDIX I: PATIENT SURVEY	21
APPENDIX II: HEALTHCARE PROFESSIONALS SURVEY	23
ADDITIONAL BIBLIOGRAPHY	26

1. INTRODUCTION

The impact of the COVID-19 pandemic to date has been very relevant to health, the economy and society. As with many other diseases, COVID-19 has had a more serious impact on vulnerable groups, including older people, people with disabilities, ethnic minorities, and people living in disadvantaged areas.¹

The COVID-19 pandemic has motivated a change in the health organization. While it is true that acute patient care has focused a large part of the available resources, people not infected by coronavirus continue to have chronic diseases that require proper healthcare. The imposition of the state of alarm by the Spanish Government as the main measure to avoid contagion represented a new healthcare scenario that made it necessary to redefine the care of chronic patients, giving rise to a short and long-term change in the clinical approach to patients with respiratory diseases, such as COPD.²


A study on the impact of COVID-19 on people with chronic disease in Spain, based on an online survey of 529 volunteers who participated anonymously, showed that almost 80% of the participants had more than one chronic disease and had presented various problems and situations during the state of alarm related to their pathology: delay in their consultations, tests or scheduled interventions; difficulties getting their medication; symptoms caused by their illness; forgetting to take medication; perception of worsening of their health; and lack of specific information about the prevention measures they should take specifically for their disease or chronic symptom.³

Specifically at the primary care, the data for 2020 on total activity, attendance and popula-

tion served have been exceeded compared to the previous year, with the predominant type of assistance being telephone consultation versus face-to-face consultation, inverting the care model.⁴

The current health system and its organizational models were designed for the sociodemographic reality of Spain in the 1980s. However, the current reality is very different, characterized by one of the highest aging rates and a high prevalence of chronicity and long-term disabling diseases, which adds to a public health crisis situation due to the COVID-19 pandemic. All of this poses the challenge of undertaking a change in the current healthcare model.⁵

Fortunately, new communication technologies offer multiple ways of establishing direct contact with patients without having physical contact with them, and also offer an opportunity for more efficient management in the face of a progressive demand for care in chronic respiratory diseases related with the aging of the population in Spain. One of these options is telemedicine, which allows the physician to have a more objective perspective of the patient's condition, generating a perception of more personalized care. Although it is true that during the confinement period the use of telemedicine platforms increased considerably, the majority of Spanish public health centres are currently not in a position to standardize it for healthcare practice with sufficient technical and safety guarantees. Another useful tool is the electronic prescription, which allows physicians to initiate treatments or make modifications without the need for a face-to-face visit to collect the pharmaceutical prescription, which has already been established in most of the autonomous communities.²



However, in the COPD patient, telephone assistance involves certain nuances. Do not forget that COPD is an age-related disease. In 2000, 20% of Spaniards were over 65 years of age, but it is estimated that by 2050 this age group will represent around 35% of the total Spanish population. Frequently, people of this age do not have knowledge of most of the current communication technologies, so, in the management of COPD, this healthcare is usually reduced to telephone contact.² This is why this new healthcare model should not be considered as a substitute for the face-to-face visit, and it should always be based on clinical criteria to establish in which patients and situations it is appropriate to propose this modality of intervention, taking into account that the personal relationship is a key element in medical care.

The available evidence in the approach to the chronic patient supports a change in the model of care for these patients. This change will mean assuming new competencies, redesigning services and providing tools that facilitate their implementation,⁶ accompanied by digital health education for patients, allowing them access to health services in a safe environment.

The health crisis caused by the pandemic poses the challenge of undertaking a change in the current healthcare model, and for this it will be important to assess what its impact has been on the health status of chronic respiratory patients and the changes that have occurred in their healthcare.

2. OBJECTIVES

2.1 Primary objective

To analyse how the pandemic has impacted on patients with chronic respiratory diseases and on the healthcare that is carried out in the monitoring of respiratory diseases, specifically in chronic obstructive pulmonary disease (COPD), in order to specify proposals for improving the public healthcare.

2.2 Secondary objectives

- › To know the patient's perception of the change in their health status and the management of their illness during confinement.
- › To deepen on the emotional impact that the confinement has caused in this population.
- › To know the impact of confinement on health habits in our population.
- › To capture difficulties in obtaining treatment and patient adherence to it.
- › To know changes that have occurred in accessibility and the model of care offered and the use of health resources during confinement from the perspective of the professional and the patient.
- › To know the professionals' perception of the remote telematic consultation model.

3. METHODOLOGY

3.1 Study design

A population-based, descriptive, cross-sectional, non-interventional study was carried out, after collecting data through an electronic form hosted on the patient association website (APEPOC) and on the Neumomadrid website (Society of Pneumology and Thoracic Surgery).



3.2 Population

COPD patients and healthcare professionals.



3.3 Recruitment period

Two months, between February 15, 2021 (survey start date) and April 15, 2021 (survey end date).



3.4 Information source

- › Data collected by electronic form. Participation has been voluntary and anonymous through the online questionnaire creation platform Survey Monkey, complying with the privacy policy and current regulations on data protection and guarantee of digital rights.
- › Consent was requested at the beginning of the form.



3.5 Ethical aspects

This study was carried out in accordance with the ethical principles that come from the latest version of the Declaration of Helsinki accepted by local authorities and that are in line with the Good Clinical Practices (GCP) and the requirements of current Spanish regulations. It has been evaluated by the Clinical Research Ethics Committee of the San Carlos Clinical Hospital, obtaining a favourable opinion (C.P. - C.I. 21/089-E_COVID).

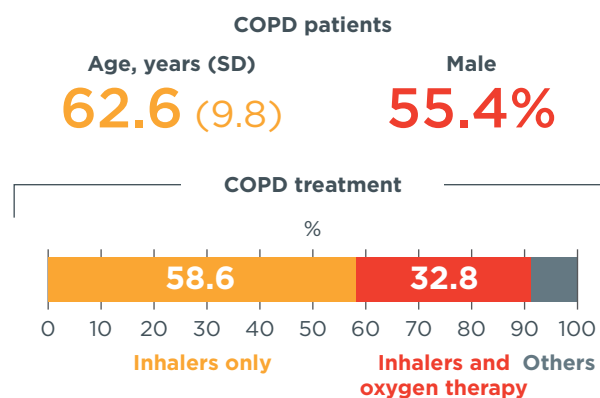
4. RESULTS

4.1 Survey of COPD patients

4.1.1 Functional and emotional characteristics. Total population

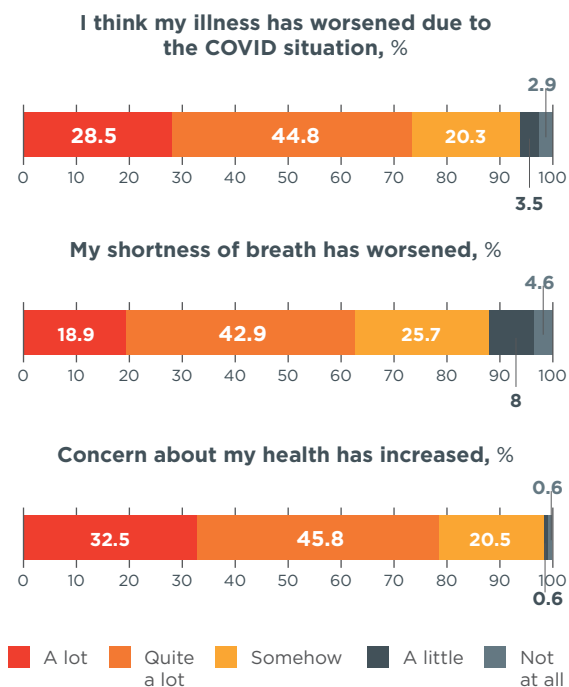
4.1.1.1 Patient characteristics

Answers of 186 patients who met the inclusion criteria were obtained from a total of 230 answers, with 55.4% male and a mean age of 62.6 (9.8) years. COPD was considered serious, with a median of 8 (7-9) on a scale of 0 to 10. 32.8% of the patients used oxygen therapy.



4.1.1.2 Patient's perception of the change in their health status

73.3% of patients surveyed indicated that their COPD had worsened during the pandemic, and 62% reported a worsening in shortness of breath. In 82% of the patients the concern for their respiratory health had increased.



4.1.1.3 Patient's perception of the emotional impact

79.2% of patients surveyed indicated that the pandemic has greatly worsened their sleep quality and 83% feel depressed and unwilling to do anything (Figure).

4.1.1.4 Patient's perception of the impact on health habits

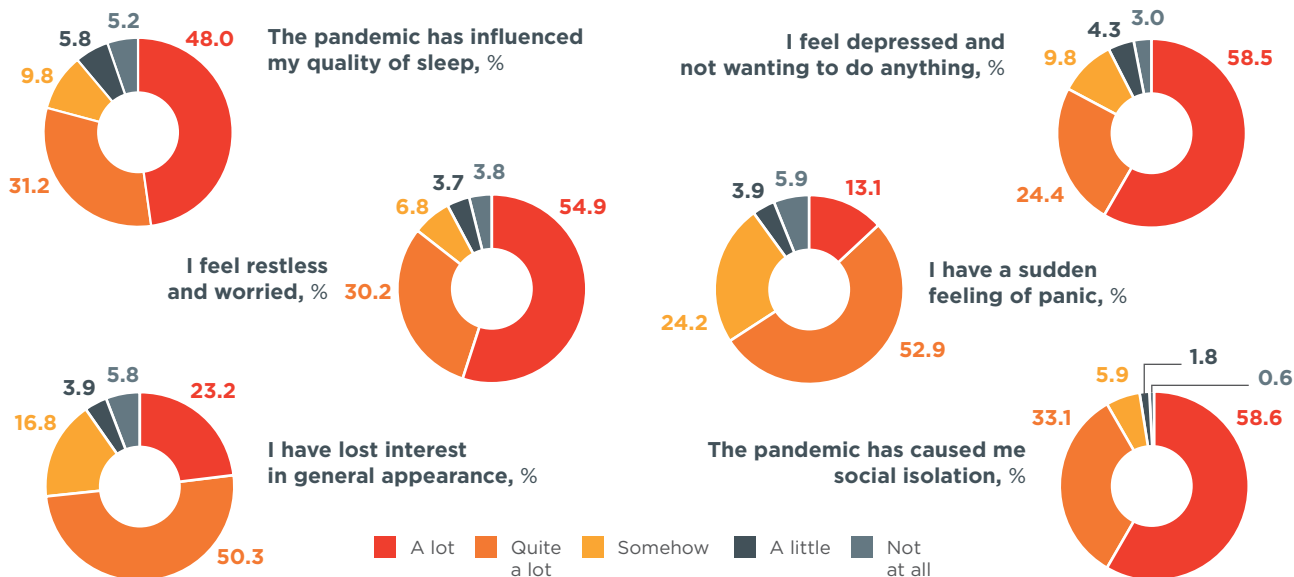
Almost half of the patients reported not doing regular physical activity.



4.1.1.5 Patient's perception of the impact on treatment and adherence

72% of the patients reported good compliance with the inhaled treatment, although the difficulty in it was quantified with a median of 7 (5-9) on a scale of 0 (not difficult) to 10 (very difficult) (Figure).

Figure 4.1.1.3





Difficulty performing inhaled treatment, median (P25-P75)

Figure 4.1.1.5

7



4.1.1.6 Patient perception of the impact on their illness health management during confinement

80.9% of the patients indicate that access to health centres has worsened, 84% report having made non-face-to-face consultations, although only 30% indicate they prefer this consultation model and only 20% wish to maintain this type of consultation after the pandemic. 22.6% report difficulty in accessing their inhaled treatment and 73% consider the pharmacy a supportive figure (Figure).

4.1.2 Differences according to the age of the COPD patient

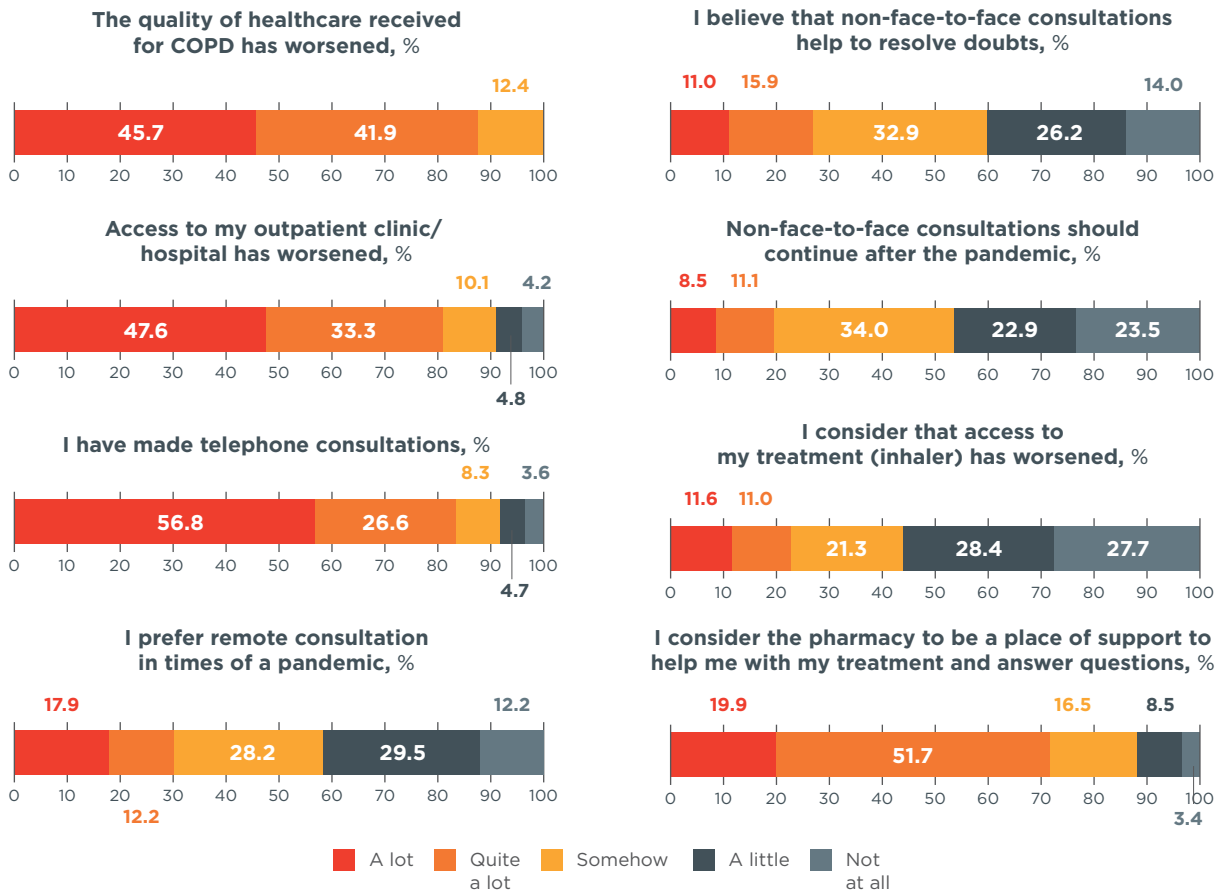
4.1.2.1 Perception of severity of COPD

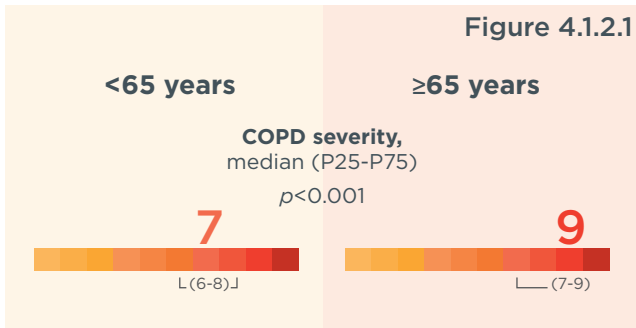
57.9% of the patients surveyed were <65 years. COPD was considered more severe in patients ≥65 years. COPD was considered severe, with a median of 7 (6-8) in <65 years and 9 (7-9) in ≥65 years (Figure).

4.1.2.2 Perception of the patient about the change in their health status

41% of the patients ≥65 years considered that their COPD had worsened greatly, compared to 16.9% of patients <65 years. 76.6% and 90.5% of patients <65 years and ≥65 years, respectively, reported a worsening in their shortness of breath (Figure).

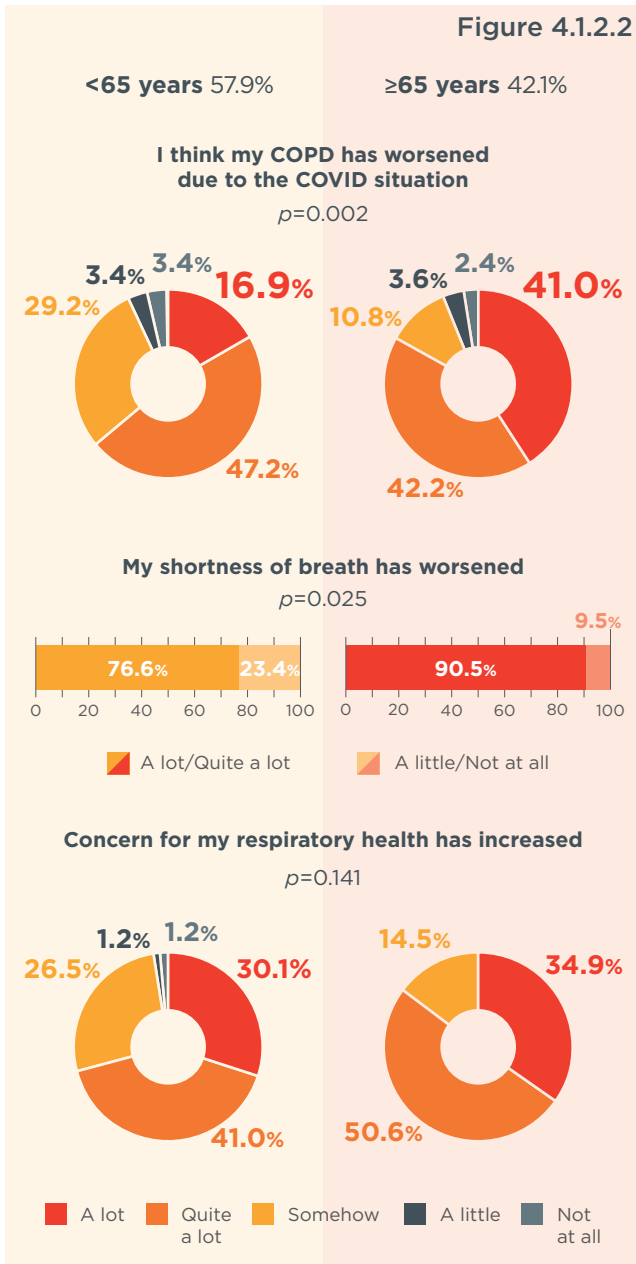
Figure 4.1.1.6





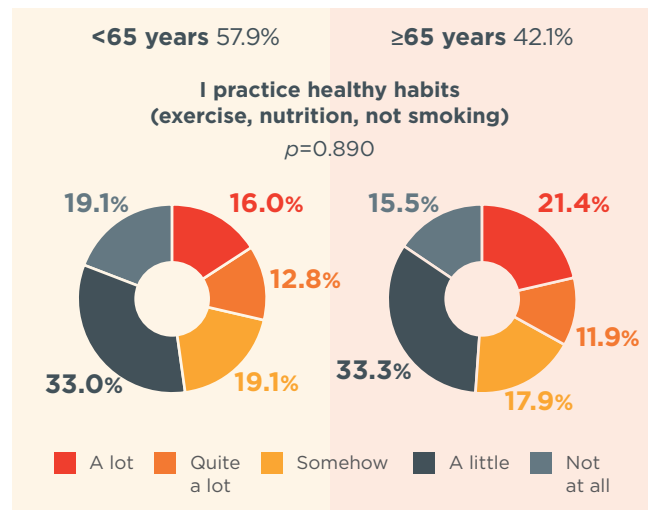
4.1.2.3 Patient's perception of emotional impact

64.7% of the patients ≥65 years reported that their sleep quality had worsened greatly during the pandemic, compared to 31.8% of those <65 years. 97.6% of the patients ≥65 years and 88% of those <65 years indicated that they felt very/quite depressed and did not want to do anything (Figure).



4.1.2.4 Patient perception of the impact on health habits

21.4% of the patients ≥65 years indicated that they continued practicing healthy lifestyle habits, compared with 16% of those <65 years.



4.1.2.5 Patient perception of the impact on treatment and adherence

Difficulty in performing inhaled treatment was quantified with a median of 7 (5-8) in patients <65 years and 8 (5-9) in those ≥65 years.

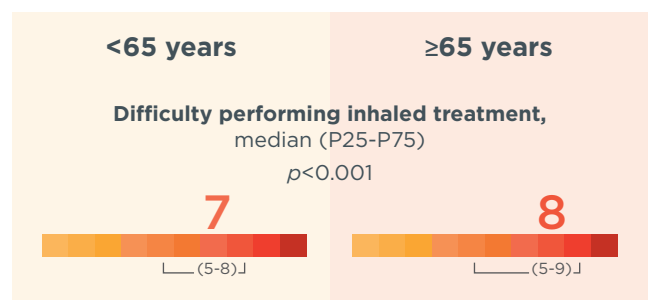
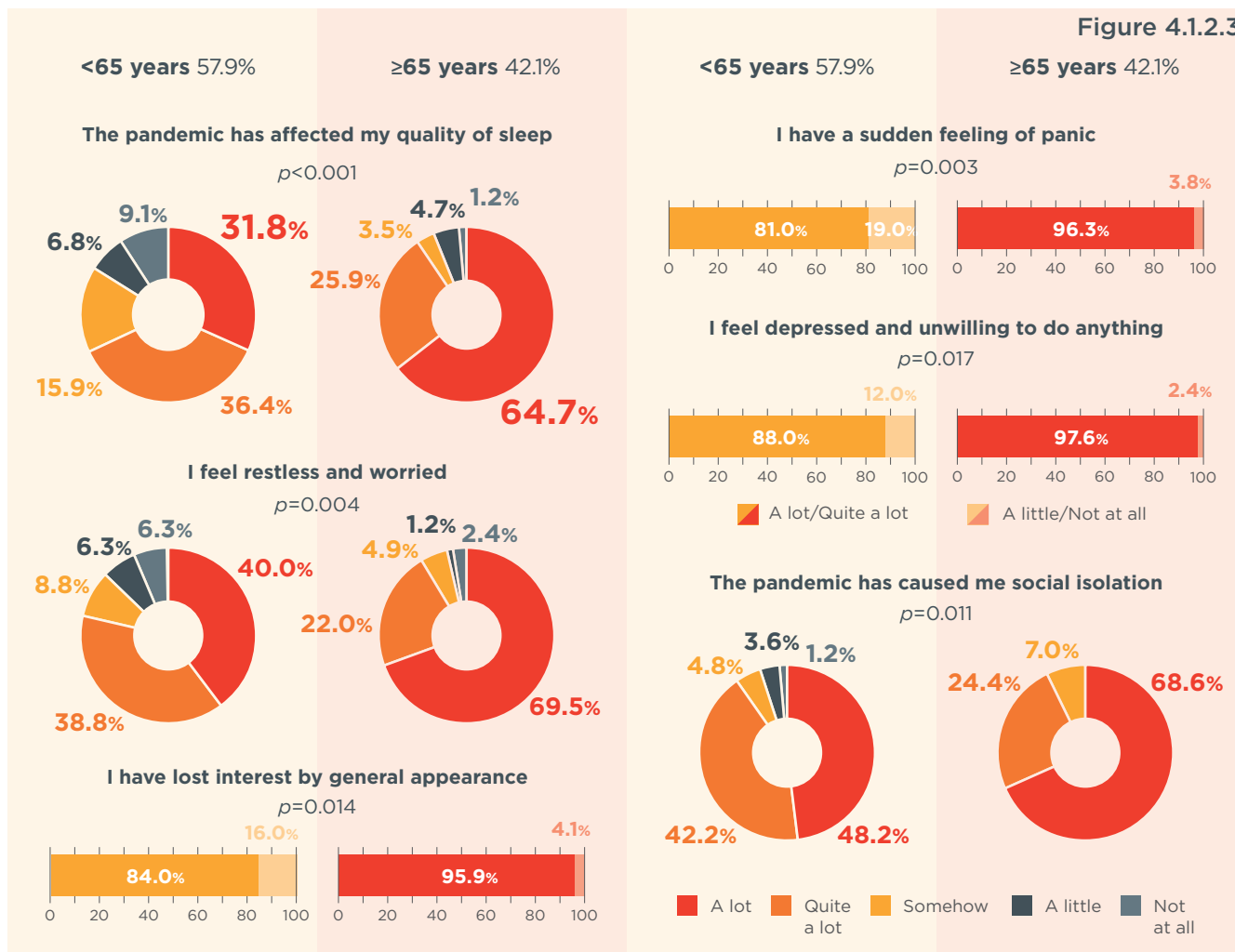


Figure 4.1.2.3



4.1.2.6 Perception of the patient on the impact on health management of his illness during confinement

87.4% of the patients <65 years and 96.3% of those ≥65 years indicated that they had made frequent telephone consultations. The preference for non-face-to-face consultations during the pandemic is 65.1% in patients <65 years and 50.6% in patients ≥65 years (Figure).

4.1.3 Differences according to the sex of the COPD patient

4.1.3.1 Perception of the patient about the change in their health status

No significant differences were found in the per-

ception of worsening of COPD during the pandemic between men and women, but there were differences in the worsening of their shortness of breath (78.5% men vs. 91.5% women).

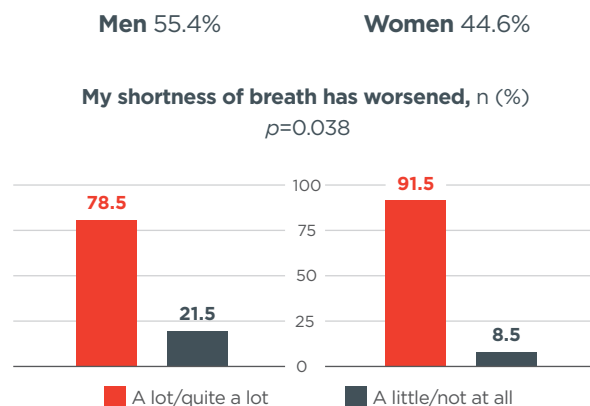
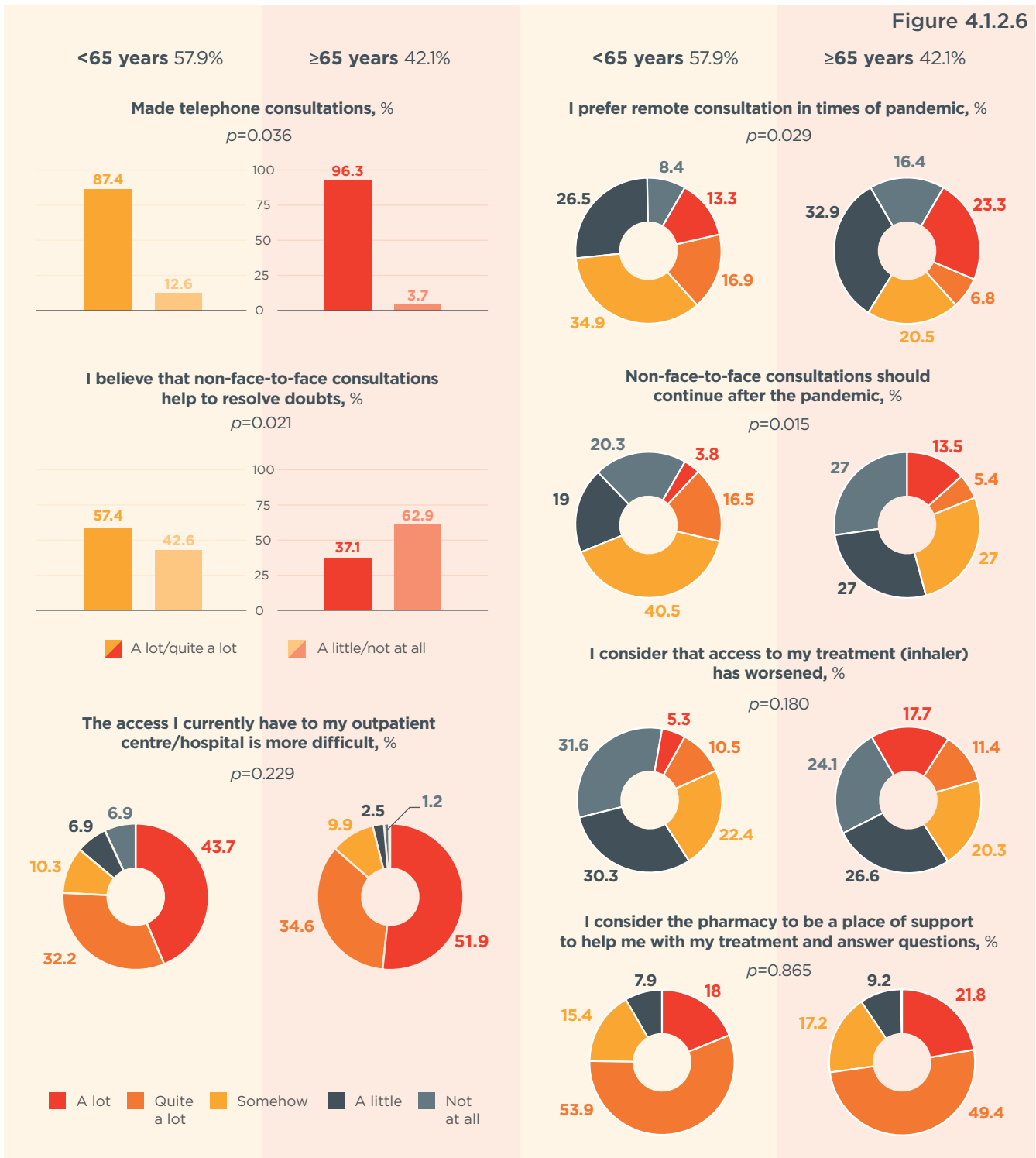


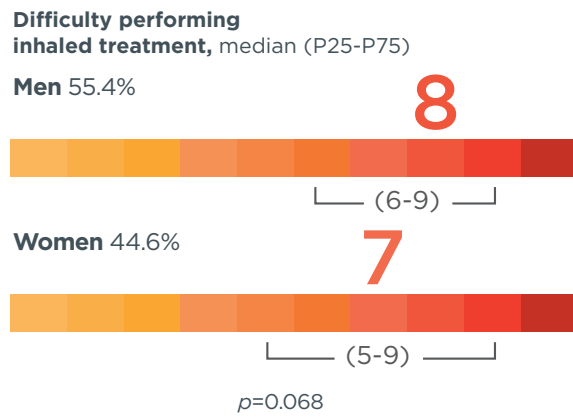
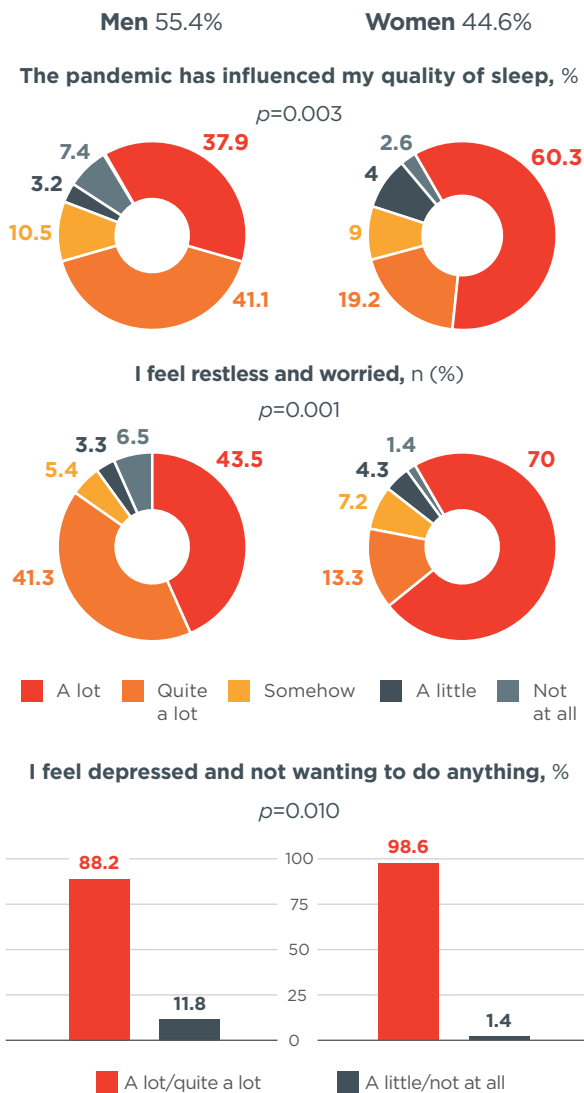
Figure 4.1.2.6



4.1.3.2 Patient's perception of the emotional impact

37.9% of the male patients reported that their sleep quality had worsened greatly during the

pandemic, compared to 60.3% of the women. 88.2% of the men and 98.6% of the women indicated that they felt very/quite depressed and did not want to do anything.



4.1.3.5 Patient perception of the impact on health management of their illness during confinement

No significant differences were found in the perception of difficulty of access to health centres during the pandemic, conducting face-to-face consultations, the preference for non-face-to-face consultations during the pandemic, the usefulness in solving doubts during non-face-to-face consultations, the need to maintain non-face-to-face consultations once the pandemic has ended and the difficulty in accessing inhaled treatment. 91.3% of the men and 66.3% of the women considered the pharmacy as a place of support to help with treatment and to resolve any doubt.

4.1.3.3 Patient perception of the impact on health habits and treatment

No significant differences between men and women were observed in terms of practicing healthy habits during the pandemic.

4.1.3.4 Patient perception of the impact on treatment and adherence

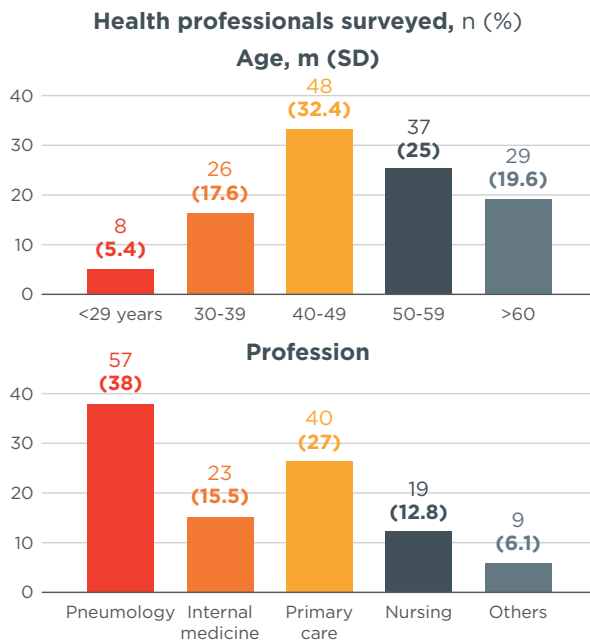
Difficulty in performing inhaled treatment was quantified with a median of 8 (6-9) in men and 7 (5-9) in women.



4.2 Survey of health professionals

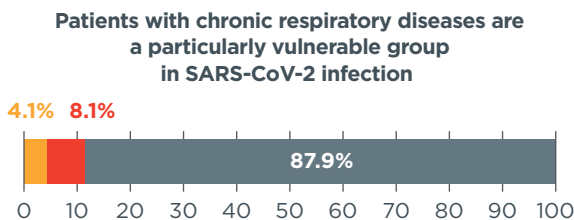
4.2.1 Characteristics: age and scope of work

Answers were obtained from a total of 148 health professionals (73% specialized care, and 27% primary care), with an average age of less than 50 years in 56% of the surveyed patients.

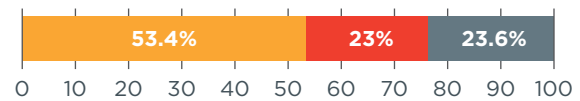


4.2.2 Perception of vulnerability

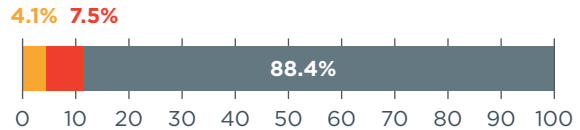
83% of the healthcare professionals reported that COPD patients are an especially vulnerable group in SARS-CoV-2 coronavirus infection. 64.2% indicated that COPD patients had worsened their dyspnoea. A worse quality of life and mood were also referred by 79%.



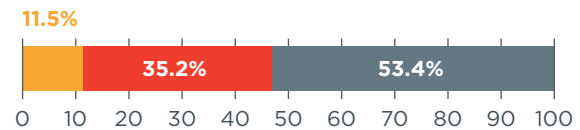
During the pandemic, patients with chronic respiratory diseases follow the same healthy lifestyle habits



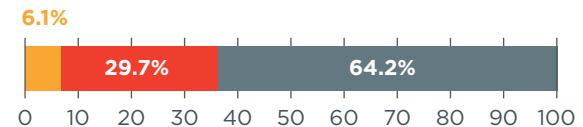
During the pandemic, patients with chronic respiratory diseases have a greater concern for their respiratory health



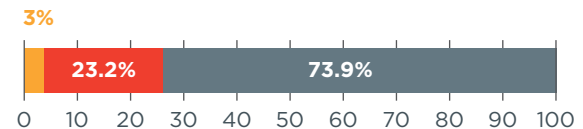
During the pandemic, the clinical situation in chronic respiratory patients has worsened



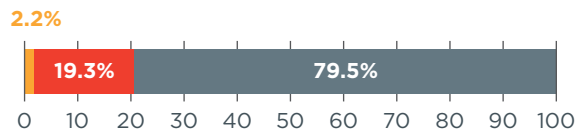
During the pandemic in patients with chronic respiratory diseases, dyspnoea and its limitations in usual activities has worsened



During the pandemic, the health-related quality of life of patients with chronic respiratory diseases has worsened



During the pandemic, patients with chronic respiratory diseases feel more depressed and unwilling to do anything



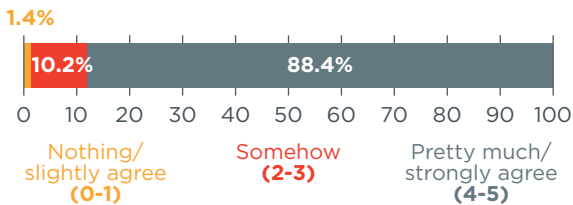
■ Nothing/slightly agree (0-1)
■ Somehow (2-3)
■ Pretty much/strongly agree (4-5)



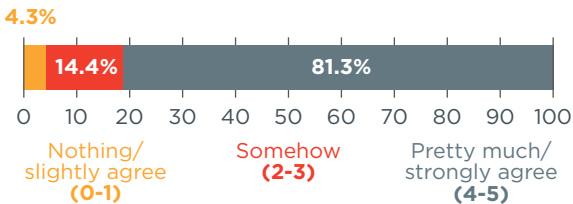
4.2.3 Referred changes that have occurred in patient care

81.3% of patients surveyed stated that the quality of healthcare has worsened during the pandemic. Only 30.6% reported having carried out scheduled check-ups in COPD patients during the months of September to December 2020 and 42.8% stated that spirometry is not performed in the COPD check-up. 44% stated that the telematic attention modality is the one they currently use most frequently. 76% of those surveyed affirmed that remote consultation should be a complementary model. 65.7% considered that patients continue to comply with the prescribed treatment, although only 12.7% confirmed it. 69.4% considered that the pharmacy is a place of support for healthcare.

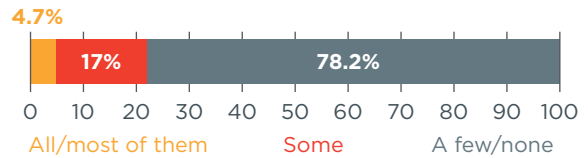
The pandemic has influenced the care of patients with chronic respiratory diseases



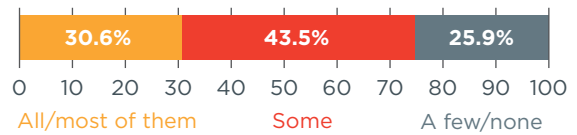
During the pandemic, the quality of healthcare received by patients with chronic respiratory diseases has worsened



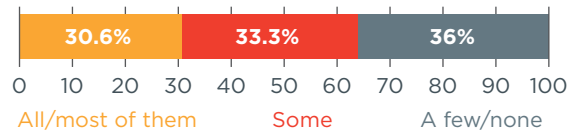
How many scheduled check-ups have been conducted on COPD patients during the COVID-19 pandemic during the months of March to May 2020?



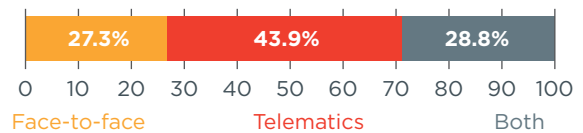
How many scheduled check-ups have been conducted on COPD patients during the COVID-19 pandemic during the months of June to August 2020?



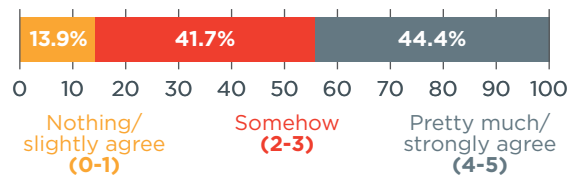
How many scheduled check-ups have been conducted on COPD patients during the COVID-19 pandemic during the months of September to December 2020?



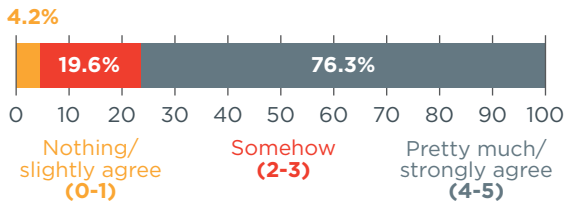
What modality of care do you currently use most frequently for the check-ups of your COPD patients?



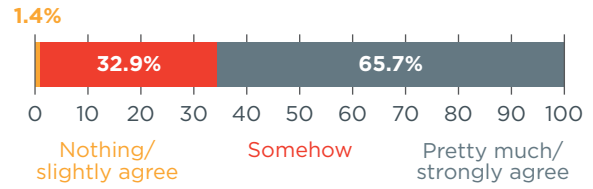
Looking ahead, I believe that the non-face-to-face modality should be generalized in the follow-up of a patient with stable COPD



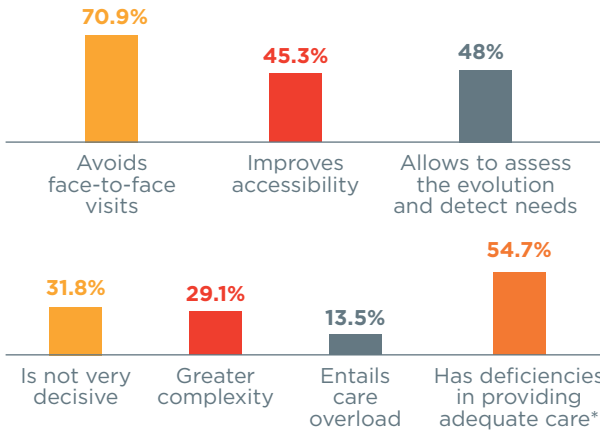
The non-face-to-face consultation for the scheduled check-up of a patient with COPD should be a complementary model to face-to-face assistance



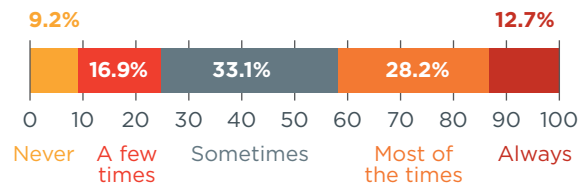
Regarding adherence to inhaled medications during the pandemic, I believe that despite the pandemic, my patients continue to comply with the prescribed treatment



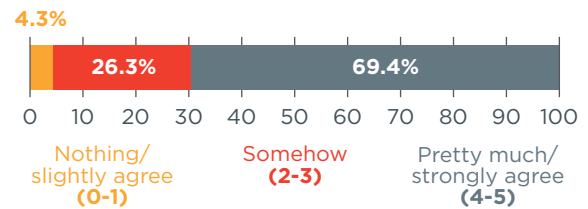
I consider that the non-face-to-face consultation



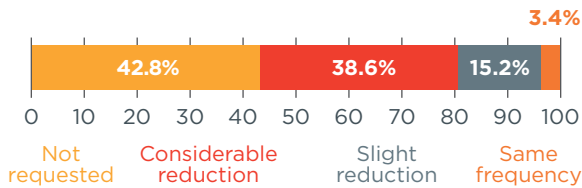
Do you check through the electronic prescription modules if your patient acquire their medications at the pharmacy?



I consider that the pharmacy is currently a place of support to help me with the treatment and to answer questions



Regarding the request for spirometry in the COPD review, point out the statement that you consider most true taking into account the current moment



(*personal specific training, telematic tools and protocols)

4.2.4 Differences according to the age of the healthcare professional

No significant differences were found regarding the age of the health professionals surveyed in relation to the aspects of COPD and the care offered, except in those who did not request spirometry in the COPD review (<50 years: 28.8% vs. ≥50 years: 60%, p=0.001) and those who do not consider that face-to-face consultation allows assessing the evolution of the disease and detecting needs (<50 years: 59.8% vs. ≥50 years: 42.4%, p=0.036).

Health professionals surveyed N=148	<50 years (n=82)	≥50 years (n=66)	p
Regarding the request for spirometry in the COPD review, indicate the statement that you consider most true taking into account the current moment			0.001
Not requested	28.8%	60%	
Considerable reduction	45%	30.8%	
Slight reduction	21.3%	7.7%	
Same frequency	5%	1.5%	
I consider that the non-face-to-face consultation allows us to assess evolution and detect needs			0.036
Yes	40.2%	57.6%	
No	59.8%	42.4%	

4.2.5 Differences according to the scope of work

Significant differences were found in the following aspects:

	Primary care (n=40)	Specialized care (n=108)	p
Medical examinations, %	35.7%	61.4%	0.021
Use of telephone consultation, %	63.2%	36.2%	0.006
Not performing spirometry, %	92.5%	23%	0.001
Verification of treatment compliance, %	57.5%	34.3%	0.012
Pharmacy as a point of support, %	86.8%	63%	0.024
Remote consultation is more complex, %	50%	21%	0.001
The non-face-to-face consultation allows assessing the evolution and detecting needs, %	65%	41.7%	0.012



5. CONCLUSION

The results of the surveys reveal that the impact of the pandemic on COPD in Spain has been very important. Regarding the patients, they show a worsening in the lack of air and the quality of life and sleep, and an affectation of their mood, with more than 80% of the patients reporting feeling depressed and unwilling to do anything. It also highlights the difficulty of access to health services during the pandemic. Regarding healthcare, this impact is evidenced mainly in terms of the loss of check-ups and lung function tests.

The pharmacy is considered a point of support, and the remote consultation is proposed as a complementary model (without forgetting that face-to-face care will always be more personalized than telemedicine). However, deficiencies are reported in telemedicine protocols and person-specific training.

6. PROPOSALS FOR CLINICIANS FACING A HEALTHCARE RECOVERY IN COPD

The crisis originated as a consequence of the pandemic has highlighted the need to adapt multidisciplinary services to the needs of the patient, attending beyond the medical context.

This is why we propose a series of recommendations that guarantee the continuity of care for our patients, taking into account a holistic approach that includes the patient and its environment in the process of change towards a new form of communication and exchange of training.



1. To prioritize COPD patients in the consultation, giving special importance to the most vulnerable, always taking into account their risk factors. Patients who require early diagnosis and optimization of treatment must be the focus of our care in order to avoid complications. It is necessary that we be proactive in the care of these patients to know their medical history, the frequency with which they went to the emergency room during the pandemic, the difficulties they had in treatment, etc. These data will be relevant to achieve effective treatment.
2. To respond to the needs of patients with COPD, ensuring continuity of care, strengthening communication between the patient, health personnel and the administration, with the participation of each of those involved, to respond to the needs of the patients with COPD efficiently and ensure continuity of care.
3. To guarantee therapeutic follow-up to avoid problems in adherence to treatments. In delicate situations such as the current pandemic, it is essential to eliminate administrative procedures that interfere with access to treatment. However, although electronic prescribing is useful to physicians, the initiation of any treatment should always take place after a thorough physical examination of the patient and after ensuring that the patient has understood the correct use of the inhaler device. Remember that not all inhalers are the same, and some can be more complicated than others, potentially compromising patient adherence.
4. To promote teleconsultation as a form of permanent attention, as long as it is included as a complementary and support model for face-to-face consultation, to guarantee efficient attention. To do this, trust between the patient and her healthcare professional must be strengthened, and the learning of these new tools should be facilitated. These include:
 - › Check EPOC (available on AppStore and Google Play), to direct and support telephone consultation in a structured way, increasing the probability of success in the effective care of patients with COPD.
 - › Printed test to use as a script and check the control:
 - › CAT (COPD Assessment Test), to measure the impact of COPD on the quality of life of the patient.⁷
 - › mMRC (modified Medical Research Council dyspnoea scale), to assess the degree of dyspnoea when performing daily activities.^{8,9}



- › New criteria for controlling COPD through the use of a designed and validated scale, based on a combination of variables that indicate whether or not there is good control of the disease (recently published by GesEPOC).¹⁰
5. To resume the performance of spirometry in health centres as an essential and key tool in the diagnosis and monitoring of respiratory diseases. For this, it will be necessary to evaluate and adapt the needs in each centre to guarantee the safety and quality of the procedures according to the current recommendations.
 6. To identify comorbidities such as depression and anxiety in COPD patients, which should be treated taking into account age, adverse effects of drugs, and drug interactions. The presence of depression and/or anxiety in COPD has been related to a lower adherence to respiratory treatments, and a greater consumption of health resources, a higher risk of exacerbations and hospitalization, and a worsening of its symptoms and a poorer quality of life.
 7. To promote respiratory rehabilitation at the community level with simple structured programs to promote muscle reconditioning and promote regular physical activity in COPD patients.
 8. To promote structured programs of therapeutic education for patients with COPD, focused on their self-care in a proactive way to favour the development of skills in order to know how to act when symptoms worsen (personalized action plans based on their characteristics), through a biopsychosocial model with a participatory approach.
 9. Strengthen care for the mental health of patients.
 10. Ensure the implementation and compliance with protection measures, both for health workers and patients, so that healthcare can be maintained during the pandemic.

7. RECOMMENDATIONS FOR PATIENTS

The COVID-19 pandemic has constituted an unprecedented challenge for our health system and we understand that multiple doubts arise in patients with chronic diseases, such as COPD, re-

garding the management of their disease. That is why we want to offer a series of basic recommendations that can help these patients to adapt to this new reality that affects us all.



1. **Keep in mind that, as a COPD patient, you are at risk. Therefore, extreme all security measures against COVID-19.**
2. **Strictly follow the instructions given by healthcare personnel for your treatment. Remember that part of the success is in your fulfilment and you are jointly responsible for your own illness. If you have doubts or consider that you cannot comply with the treatment, tell your trusted doctor.**
3. **If you detect any of these symptoms (increased shortness of breath or worse tolerance to habitual efforts, changes in the sputum or fever, a greater need to use the usual inhalers, or swelling of the legs), do not wait for it “to pass”, see your doctor for an evaluation.**
4. **Taking into account that teleconsultations complement face-to-face visits, whenever you have the opportunity and possibility, practice the use of digital platforms with family and friends, and ask for support from patient associations. This will make it easier for your doctor’s visit to be effective.**
5. **If you have questions about how to use your inhalers, let your doctor or pharmacist know so that together they can help you improve your treatment.**
6. **If you have anxiety or symptoms of sadness, be sure to consult your doctor. He will be able to give guidelines for help and/or refer you to a specialized professional. Spend time on your favourite activities. Talk to your family. Remember that sharing your experiences with other people will help improve your general mood. If you have possibilities, use the technological advances and contact family and friends by video call.**
7. **Resting and eating a healthy diet support your general well-being. Remember to ask for help if you think you are not eating properly or have trouble sleeping.**
8. **Avoid contact with people affected by respiratory infections and contaminated environments. Remember that quitting smoking is the most important treatment for COPD.**
9. **Perform regular physical activity and breathing exercises taking into account all the recommendations, including the current safety regulations against COVID-19.**
10. **Look for moments of happiness, pleasant and calm. This will help you improve your quality of life, which is highly dependent on yourself. A positive and communicative attitude will help you cope better with COPD and its symptoms.**

8. REFERENCES

1. Department of Health and Social Care, UK. Analysis of the health, economic and social effects of COVID-19 and the approach to tiering. Available in: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/944823/Analysis_of_the_health_economic_and_social_effects_of_COVID-19_and_the_approach_to_tiering_FINAL_-_accessible_v2.pdf. Last access: August 2021.
2. López-Campos JL, Calle M, Cosío BG, González Villaescusa C, García Rivero JL, Fernández Villar A, et al. Telephone Support for Copd Patients During COVID-19. *Open Respiratory Archives*. 2020 July-September; 2(3):179-185.
3. Plataforma de Organizaciones de Pacientes. Estudio del impacto de COVID-19 en las personas con enfermedad crónica. Informe de resultados. Available in: https://www.plataformadepacientes.org/sites/default/files/informe_covid19_final_web_ok.pdf. Last access: August 2021.
4. Comunidad de Madrid. Informe sobre la situación de la atención primaria durante la pandemia.
5. Consejo de Colegios de Médicos de Cataluña. Covid-19. Lecciones aprendidas. Por una reforma del sistema de salud de Cataluña. Available in: https://www.congreso.es/docu/comisiones/reconstruccion/Sanidad/comp/Sr_Padros_Reflexiones_futuro.pdf. Last access: August 2021.
6. Consejería de Sanidad de la Comunidad de Madrid. Estrategia de Atención a Pacientes con Enfermedades Crónicas en la Comunidad de Madrid. Diciembre de 2013. ISBN: 978-84-695-9045-4.
7. Jones PW, Harding G, Berry P, Wiklund I, Chen WH, Kline Leidy N. Development and first validation of the COPD Assessment Test. *Eur Respir J*. 2009 Sep;34(3):648-54.
8. Mahler DA, Wells CK. Evaluation of clinical methods for rating dyspnea. *Chest* 1988; 93: 580-586.
9. Bestall JC, Paul EA, Garrod R, Garnham R, Jones PW, Wedzicha JA. Usefulness of the Medical Research Council (MRC) dyspnoea scale as a measure of disability in patients with chronic obstructive pulmonary disease. *Thorax*. 1999 Jul;54(7):581-6.
10. Miravittles M, Calle M, Molina J, Almagro P, Gómez JT, Trigueros JA, et al. Spanish COPD Guidelines (GesEPOC) 2021: Updated Pharmacological treatment of stable COPD. *Arch Bronconeumol (Engl Ed)*. 2021 Mar 17:S0300-2896(21)00103-4.

APPENDIX I: PATIENT SURVEY

Dear patient,

We ask for your cooperation to get your opinion on the impact that the COVID-19 pandemic has had on his respiratory disease.

Check if you AGREE to participate in the survey

A. SOCIODEMOGRAPHIC DATA

Could you tell us...

A1.- How old are you? _____

› <40 years → **End interview.**

A2.- Sex (write down without asking based on the name -if possible-):

Man

Woman

A3.- Do you currently suffer from any respiratory disease?

Yes → **Go to A4.**

No → **End interview.**

A4.- What respiratory disease do you suffer from?

If it is COPD, chronic bronchitis or emphysema go to A5.

If you don't remember, ask: do I have COPD or chronic bronchitis or emphysema?

If it is COPD, chronic bronchitis or emphysema go to A5.

If it is NOT any of these options, → **End interview.**

A5.- Could you tell us, on a scale from 0 (absence of severity) to 10 (maximum severity), how severe you consider this disease, COPD?

For this reason, we launched this anonymous and voluntary survey, without any commitment, promoted by the Association of Patients with COPD, APEPOC, in collaboration with the Madrid Society of Pneumology and Thoracic Surgery, NEU-MOMADRID

A6.- Are you receiving treatment for COPD?

No

Yes → Specify treatment (read options):

Inhalers

Oxygen

If it is inhalers (go to A7).

A7.- Please tell us, on a scale from 0 (not difficult) to 10 (very difficult), how you consider the performance of your inhaled treatment

B. FUNCTIONAL ASPECTS

ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statements, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › I am following the treatment my physician has prescribed despite the pandemic.
- › I maintain the same healthy lifestyle habits (exercise, nutrition, not smoking, etc.) despite the pandemic.
- › I think the current COVID-19 situation has worsen my illness.
- › The pandemic has affected my quality of sleep.
- › My shortness of breath (choking) has worsened.
- › I believe that the restrictions due to the pandemic prevent me from having an acceptable quality of life.



C. EMOTIONAL ASPECTS

ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statements, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › My concern about catching a cold or my respiratory health has increased.
- › I feel restless and my mind is full of worries.
- › I have lost interest in my personal appearance.
- › I have a sudden feeling of panic.
- › I feel depressed and unwilling to do anything.
- › I believe that the pandemic causes social isolation.

D. ORGANIZATIONAL ASPECTS OF HEALTHCARE

ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statements, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › The quality of healthcare I receive for my respiratory illness has now worsened.
- › The access I currently have to my outpatient centre/hospital is more difficult.
- › I have made consultations by phone without going to the clinic to see my doctor or nurse.
- › Right now, in times of a pandemic, I prefer the remote consultation instead of going to the centre to see my doctor.
- › I think the non-face-to-face consultations, which are carried out by phone, without going to the outpatient centre, allow us to resolve doubts and avoid face-to-face visits.
- › Non-face-to-face consultations should continue after the pandemic.
- › Regarding access to my treatment (inhalers), I consider that it has worsened compared to before the pandemic.
- › I consider the pharmacy to be a supportive place to help me with my treatment and to answer questions.

APPENDIX II: HEALTHCARE PROFESSIONALS SURVEY

Dear Partner,

We ask for your collaboration to get your opinion about the impact that the COVID-19 pandemic has had on the outpatient care of patients with chronic respiratory diseases.

For this reason, we launched this anonymous and voluntary survey, without any commitment, promoted by the Association of Patients with COPD, APEPOC, in collaboration with the Madrid Society of Pneumology and Thoracic Surgery, NEU-MOMADRID

Check if you AGREE to participate in the survey

How old are you?

- › ≤29 years
- › 30-39 years
- › 40-49 years
- › 50-59 years
- › ≥60 years.

Profession exercised (in case there is more than one, please indicate the main one):

- › Pneumology.
- › Nursing.
- › Physiotherapy.
- › Pediatrics.
- › Thoracic surgery.
- › Primary or general care medicine.
- › Internal Medicine.
- › Other.

1. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statements, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?
 - › I consider that patients with chronic respiratory diseases are a particularly vulnerable group in SARS-CoV-2 infection.
 - › I consider that during the pandemic, patients with chronic respiratory diseases

follow the same healthy lifestyle habits (exercise, nutrition, not smoking).

- › I consider that during the pandemic, patients with chronic respiratory diseases have a greater concern for their respiratory health.
 - › I consider that during the pandemic, the clinical situation in chronic respiratory patients has worsened.
 - › I consider that during the pandemic, in patients with chronic respiratory diseases, dyspnoea and its limitations in usual activities have worsened.
 - › I consider that during the pandemic, the health-related quality of life of patients with chronic respiratory diseases has worsened.
 - › I consider that during the pandemic, patients with chronic respiratory diseases feel more depressed and unwilling to do anything.
2. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statement, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?
 - › The pandemic has influenced the care of patients with chronic respiratory diseases.

3. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statement, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › I consider that during the pandemic the quality of health care received by patients with chronic respiratory diseases has deteriorated.

4. ACCORDING TO YOUR JUDGMENT, what is the truest option?

How many scheduled check-ups have been conducted during the COVID-19 pandemic? Please mark one option

During the months of March to May:

- a. All of them.
- b. Most of them (>60%).
- c. Some of them (33-66%).
- d. A few of them (<33%).
- e. None.

During the months of June to August:

- a. All of them.
- b. Most of them (>60%).
- c. Some of them (33-66%).
- d. A few of them (<33%).
- e. None.

During the months of September to December:

- a. All of them.
- b. Most of them (>60%).
- c. Some of them (33-66%).
- d. A few of them (<33%).
- e. None.

5. ACCORDING TO YOUR JUDGMENT, what is the truest option?

What modality of care do you currently use most frequently for the check-ups of your COPD patients? Please mark one option.

- a. Telematics (telephone and/or video call).
- b. Face-to-face.
- c. Both equally.

6. ACCORDING TO YOUR JUDGMENT, what is the truest option?

Regarding the request for spirometry in patients with COPD, mark the statement that you consider most true considering the current moment.

- a. I do not request it.
- b. I have considerably reduced the request compared to other periods.
- c. I have slightly reduced the request compared to other periods.
- d. I have requested it with the same frequency as in other periods.

7. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statement, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › Regarding adherence to inhaled medications during the pandemic, I consider that despite the pandemic, my patients continue to comply with the prescribed treatment.

8. ACCORDING TO YOUR JUDGMENT, what is the truest option?

Do you check through the electronic prescription modules if your patients acquire their medications at the pharmacy?

- a. Always.
- b. Most of the times (>60% of prescriptions).
- c. Sometimes (33-66%).
- d. A few times (<33% of prescriptions).
- e. Never.

9. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statement, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › I consider that the pharmacy is currently a place of support to help me with the treatment and to answer questions.

10. ACCORDING TO YOUR JUDGMENT, which is the level of agreement or disagreement with the following statements, between 1 and 5: a lot, quite a lot, somehow, a little, not at all?

- › Looking ahead (next years), I consider that the non-face-to-face modality should be generalized in the follow-up of a patient with stable COPD.
- › The non-face-to-face consultation for the scheduled check-up of a patient with COPD should be a complementary model to face-to-face assistance.
- › The remote consultation focuses on patients who are already known by the physician and nurse.
- › The non-face-to-face consultation should be performed by the nursing staff as a previous step to the medical consultation.

Mark the most important disadvantages of the remote visit in the COPD patient that you consider (several options are valid).

- › Care overload.
- › Not very decisive.
- › Greater complexity.
- › Frequent limitations of patients due to physical-social conditions to make a non-face-to-face consultation.
- › Unable to perform physical examination of the patient.
- › Inhalation technique cannot be verified.
- › A legal framework is missing.
- › There are deficiencies in being able to provide adequate non-face care (specific training of personnel, telematic tools and protocols).
- › Others.

Mark the most important advantages of the remote visit in the COPD patient that you consider (several options are valid).

- › It allows to avoid face-to-face visits, with a more efficient management facing a progressive healthcare demand.
- › Improved accessibility.
- › It allows assessing the evolution and detecting new needs.
- › Others.

ADDITIONAL BIBLIOGRAPHY

The authors recommend reading the following bibliography that served as the basis for the preparation of the study.

1. Greenhalgh T, Koh GCH, Car J. Covid-19: a remote assessment in primary care. *BMJ*. 2020;368:m1182.
2. Zhao Q, Meng M, Kumar R, Wu Y, Huang J, Lian N, et al. The impact of COPD and smoking history on the severity of Covid-19: A systemic review and meta-analysis. *J Med Virol*. 2020 Apr 15.
3. Guan WJ, Liang WH, Zhao Y, Liang HR, Chen ZS, Li YM, et al; China Medical Treatment Expert Group for Covid-19. Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis. *Eur Respir J*. 2020 Mar 26. pii: 2000547.
4. de la Fuente Ballesteros SL, García Granja N, Hernández Carrasco M, Hidalgo Benito A, García Álvarez I, García Ramón E. Tele-medicine consultation as a tool to improve the demand for consultation in Primary Care. *Semergen*. 2018;44:458-462.
5. Rodríguez Hermosa JL, Fuster Gomila A, Puente Maestu L, Amado Diago CA, Callejas González FJ, Malo De Molina Ruiz R, et al. Compliance and Utility of a Smartphone App for the Detection of Exacerbations in Patients With Chronic Obstructive Pulmonary Disease: Cohort Study. *JMIR Mhealth Uhealth* 2020;8(3):e15699.
6. Gaveikaite V, Fischer C, Schonenberg H, Pauws S, Kitsiou S, Chouvarda I, et al. Telehealth for patients with chronic obstructive pulmonary disease (COPD): a systematic review and meta-analysis protocol. *BMJ Open*. 2018 Sep 19;8(9):e021865.
7. Documento de Consenso de la Sociedad Española de Anestesiología y Reanimación (SEDAR), Sociedad Española de Cardiología (SEC), Sociedad Española de Dolor (SED), Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica (SEIMC), Sociedad Española de Medicina Preventiva, Salud Pública e Higiene (SEMPSPH), Sociedad Española de Neumología y Cirugía Torácica (SEPAR), Sociedad Española de Patología Digestiva (SEPD). Recomendaciones de seguridad del paciente y profesionales en procedimientos intervencionistas en la fase de transición de la pandemia COVID-19. 26 de junio de 2020. Available in: <https://drive.google.com/file/d/1IWJfXLlqfapyKuvETI741AkZvmeKg38R/view>. Last access: August 2021.
8. Gerencia Asistencial de Atención Primaria. Consejería de Sanidad de la Comunidad de Madrid. Recomendaciones para la realización de espirometrías en atención primaria durante la pandemia de COVID-19.



