Validation of the Algorithm for the Monitoring and Control of Asthma Through Telemedicine: The COMETA Project

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Asthma is a common chronic respiratory disease [1]. Appropriate control of its symptoms, one of the main objectives of treatment, is usually compromised [2]. The COVID-19 pandemic could have further jeopardized this lack of control [3,4]. Telemedicine has improved control of symptoms, quality of life, and patient-reported outcomes in patients with asthma [5-7]. In addition, eHealth interventions seem to have a positive impact on adherence, satisfaction with inhalers, and the use of rescue medication [7-9].

The COMETA project (Spanish acronym for *Control as Goal in the Era of Telemedicine in Asthma*) aimed to promote the use of telemedicine for the control of asthma and train health professionals to adapt to telemedicine [10]. In a first step, a dedicated multidisciplinary scientific committee addressed patients' characteristics for teleconsultation (including individual patient willingness), identified problems hampering control of asthma, proposed several initiatives for mitigating them, and agreed on telemedicine-based strategies for the care of patients with asthma (Supplementary Figure and supplementary material) [11]. In a second step, the algorithm was validated by a larger group of specialists.

The COMETA algorithm for teleconsultation was validated using the Delphi method (supplementary material). A total of 75 experts in pulmonology, allergology, family medicine, nursing, and community pharmacy participated. The inclusion criteria were as follows: (*a*) having more than 5 years of experience with asthma patients; (*b*) having used telemedicine within the previous 6 months; and (*c*) belonging to a respiratory disease task force (family medicine physicians and nurses) or an asthma task force (community pharmacists).

The experts expressed their agreement on a 9-point Likert scale, with 1 indicating the lowest agreement and 9 being the highest. Consensus was considered to have been reached when 70% of participants or more expressed the same answer. The consultation was performed in 2 consecutive phases, and all the invited experts participated in both.

The mean (SD) age of participants was 50.3 (9.1) years, and women accounted for 56%. The mean number of patients visited per month was 58 (57.1). The distribution by specialty and by type of sites, as well as the use of different telemedicine tools, is specified in the Table.

All the statements related to the general perception of the COMETA algorithm were agreed on by more than 70% of the participants, except the inclusion of all the possible options for the correct action during teleconsultation, on which 28% of the panelists differ (Supplementary table). This might be one of the limitations of the consensus, since other e-tools, such as telestethoscopes, home spirometers, and FeNO, were not considered.

The need for a management system for the preparation of the teleconsultation was agreed upon by 97% of the participants. The notification of the teleconsultation and the inclusion of the Asthma Control Test and the 10-item Test of

Table. Distribution of Participants.

Characteristics	Participants, % (n=75)
Specialists	
Allergologists	24.0%
Pulmonologists	24.0%
Family medicine specialists	24.0%
Community pharmacists	13.3%
Nurses specialized in family medicine	6.7%
Nurses specialized in allergology	4.0%
Nurses specialized in pulmonology	4.0%
Funding of working center	
Public	97.3%
Mixed	2.7%
Private	0.0%
Type of working center	
Primary care	44.0%
Tertiary hospital	45.0%
Secondary hospital	8.0%
Primary hospital	3.0%
Frequent use of telemedicine tools (daily or weekly basis)	
Telephone calls	91.0%
Messaging tools	32.0%
Social networks	30.0%
E-mail	48.0%
Videoconference platforms	11.0%

Adherence to Inhalers (TAI-10) with the notification were agreed on by consensus. More than 85% of the participants agreed that patients should have their action plan, inhalers, and peak flow meter on hand for the visit. The review of medical records before a teleconsultation was agreed by consensus for physicians and nurses, but not for pharmacists. In contrast, a review of medication collection was agreed as relevant for all specialties.

The evaluation of adherence, comorbidities, and inhalation technique during teleconsultation were considered necessary by 99% of participants, while trigger and aggravating factors and control of symptoms were considered necessary, respectively, by 89% and 80%. The agreement with the assessment of adherence by reviewing electronic pharmacy refill records and TAI-10 results was 97% and 93%, respectively. All the items in the questionnaire referring to evaluation of inhalation technique were validated by consensus, except referral to the pharmacist for face-to-face assessment. All the key points related to the assessment of trigger and aggravating factors were agreed on by 99% of participants. All the items in the questionnaire referring to reporting of asthma control were validated by 85% of participants or more.

All the participants agreed that the treatment strategy and the action plan should be reviewed and adjusted at the end of the teleconsultation. All the items related to scheduling new visits were agreed on by 80% of participants or more.

The COMETA algorithm for teleconsultation of patients with asthma was widely validated by a large and multidisciplinary group of experts. Out of 55 items, no agreement was reached in only 3, of which 2 referred to the role of pharmacists in the review of medical records and inhalation technique. Some gaps between how specialists would like to run teleconsultations and currently available tools were detected. For instance, assessment of the inhalation technique requires videoconference support, although only 11% of the participants reported regular use of video platforms.

Participants also commented on the lack of appropriate resources, such as peak flow meters and spirometers, for successful teleconsultation. Additionally, some experts highlighted the need to ask patients about self-medication practices, the collection of medication with a private prescription, and the actual use of the prescribed treatment to correctly assess adherence. The role of the professionals who are to intervene at each step of the algorithm, as previously detailed in the consensus document [11], was also evaluated by the participants.

The increasing ability and willingness of patients to access the internet and use technological tools to control and monitor their chronic diseases may favor the use of telemedicine. Moreover, telemonitoring has been reported to increase patient empowerment and involvement in disease management [12,13] and is cost-effective [14]. Equally, teleconsultation is an important support tool for health care providers who monitor and manage chronic diseases without the possibility of face-to-face visits [14]. Considering this landscape, the COMETA algorithm for teleconsultation is currently proving to be a useful tool at a time when specific legislation regarding telemedicine is being developed in Europe [15].

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Conflicts of Interest

In the last 3 years, CAS has received fees for lectures, scientific advice, participation in clinical studies, or writing publications for ALK, AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Novartis, and Pfizer. CAS declares that he has never received, directly or indirectly, funding from the tobacco industry or its affiliates. JDO reports personal fees from AstraZeneca, personal fees from GSK, personal fees from Sanofi, personal fees from Novartis, personal fees from Teva Pharmaceuticals, personal fees from BIAL, and personal fees from Chiesi, outside the submitted work. VP reports grants and personal fees from AstraZeneca, personal fees from Boehringer-Ingelheim, personal fees from Merck, grants and personal fees from Chiesi, personal fees from Novartis, grants from Menarini, and personal fees from Sanofi, outside the submitted work. The remaining authors declare that they have no conflicts of interest.

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