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Preschool wheezing diagnosis and management–Survey of physicians' and caregivers' perspective

To the Editor,

Preschool children with wheezing disorders represent a diagnostic and therapeutic challenge, and consume disproportionately large amounts of healthcare resources.[1-3] Most wheezing episodes are triggered by viral respiratory tract infections, occurring in 30%-50% of all preschool children.[4,5] In the majority of cases, episodes of wheezing are mild and transient and are managed in non-hospital settings; however, some infants develop recurrent episodes severe enough to require medical review, hospital admission and further referral to specialist paediatricians for diagnosis and management.[6,7]

Although there is an abundance of guidelines on asthma,[8] there is no consensus on diagnostic workup in preschool children with wheezing'.[9] Therefore, the Task Force on Preschool Wheeze, established by the European Academy of Allergy and Clinical Immunology (EAACI), initiated a survey to identify the most common problems physicians face around the diagnosis and management of preschool wheeze, in order to inform future recommendations.

We carried out two consecutive surveys among physicians: an open survey (A), to study physicians' perception of the problem, and subsequently specifying all problems in the second survey (B) and a patients' opinion survey (C).

The preliminary international Survey A consisted of 5 open-ended questions (Appendix S1) and was conducted in winter 2017/2018 upon invitation to EAACI's Paediatric Section members. The answers were analysed and divided into appropriate categories by two independent researchers.

The full Survey B was addressed to physicians, based on the results of the Survey A, and involved a demographic survey with 5 closed-ended clinical questions, identical to those from the pilot survey (created using Google Forms). The estimated time of completing the survey was 5 minutes. The form circulated from May through September 2018 among EAACI Paediatric Section and Asthma Section members. The survey was also translated and distributed via a Polish, physician-exclusive, medical social network—www.konsylium24.pl, accessible from the website in August 2018.

Survey C was addressed to preschool wheezers' caregivers. The respondents were recruited by patient associations or in hospital wards. The questions were discussed with parents, as many questions from the survey were written in professional language. Their responses were compared to those received from physicians to investigate agreements. All surveys were entirely anonymous and voluntary.

The results of the surveys were analysed using descriptive statistics. Chi-square test with the Bonferroni correction was used for categorical analyses.

A total of 2132 members of the EAACI Paediatric Section and Asthma Section were mailed, out of whom 55 (2.6%) completed Survey A and later 226 (10.6%) completed Survey B (Table S1). The National Survey B in Poland was viewed by 1324 unique users of the www.konsylium24.pl portal, 504 (38.1%) of whom completed the survey (Table S2). The detailed characterization of the participants of both surveys is available in Appendix S1.

Nearly uniform responses were observed across the different specialties and practice setting. Some significant differences were noted, however, and are described below.

1 | QUESTION 1: TROUBLES IN THE DIAGNOSIS OF 'PRESCHOOL WHEEZE' OR ASTHMA IN PRE-SCHOOLERS

The most pressing problem with the diagnosis of wheezing in preschoolers is lack of diagnostic tools, pointed out by the largest group of responders (36.4%, Figure 1), followed by fluctuation of symptoms (26.6%), doubts about the diagnosis significance (25.5%) and clear definition problems (21.9%).

2 | QUESTION 2: DIAGNOSTIC OPTIONS IN PRESCHOOL WHEEZERS

The most frequent response (50.7%) points out response to treatment, while allergy tests were also very popular, having been chosen by 34.1%. (Figure 2). Other relevant answers include number

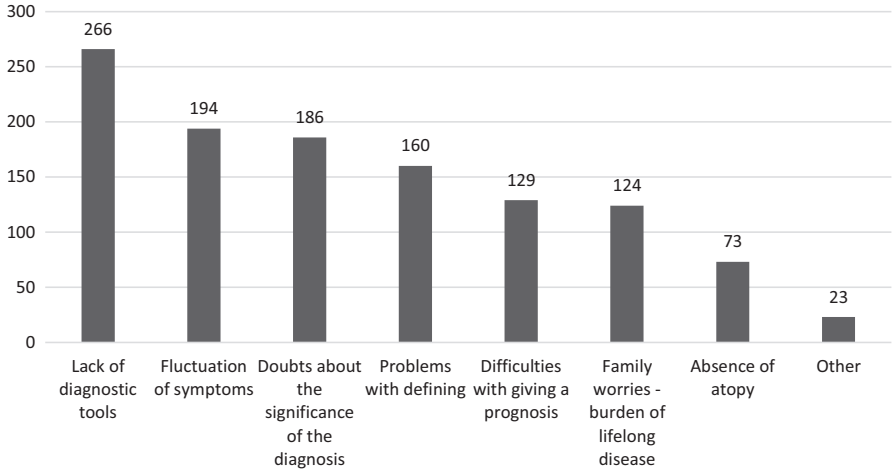

FIGURE 1 Question 1: What troubles you with the diagnosis of 'preschool wheeze' or asthma in pre-schoolers?

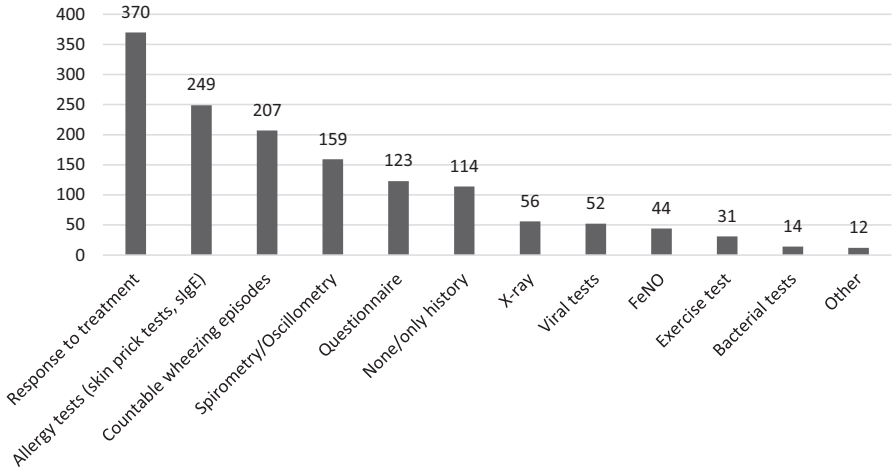

FIGURE 2 Question 2: Which diagnostic option in preschool wheezers might be the most relevant?

of wheezing episodes (28.4%) and lung function tests (spirometry/oscillometry, 21.8%).

3 | QUESTIONS 3 & 4: DIFFERENT APPROACH IN DIAGNOSIS AND MANAGEMENT IN RECURRENT- AND SINGLE-EPISODE WHEEZERS

A vast majority 76.3% of the responders agreed that recurrent wheezers required a different approach in comparison with patients with a single episode of wheezing (Figure 3).

Allergy tests were indicated as most appropriate approach in recurrent wheezers by 46.7% responders, followed by lung function tests, with 40.7% of responders (Figure 3). The third most chosen option was tobacco smoke exposure assessment with 37.1% of responders. Other significant answers indicated careful follow-up (35.2%), intensify inhaled corticosteroids treatment (24.8%) and prophylactic therapy (22.5%)

Interestingly, allergy specialists were more likely (P = .004) to suggest prophylactic therapy than the other specialties and less keen on using lung function tests and X-rays.

The academic hospital practice setting was associated with higher expectations of defining wheezing phenotypes (P = .001), but lower likelihood of recommending lung function tests.

4 | QUESTION 5: PROBLEMS OR DOUBTS IN THE MANAGEMENT OF PRESCHOOL WHEEZERS

The responders predominantly indicated poor compliance and lack of clear indications to withdraw pharmacotherapy (36.7% and 32.3% of responders, respectively). Other options indicated were as follows: lack of diagnostic guidelines (26.6%); problems with ICS dose adjustment (25.5%) and preventive therapy (23.0%), followed by inefficacy of current therapies. Allergists were less likely (P = .046) to choose poor compliance as their main concern. Strikingly, 29.5% of the responders did not indicate any problems with the management of preschool wheezers.

5 | QUESTION 6: NEED FOR GUIDELINES IN PRESCHOOL WHEEZERS

Most of responders (69%) indicate an unmet need for current clinical practice guidelines for wheezy pre-schoolers (answers: important or very important).

In Survey C, there were altogether 31 opinions from caregivers of patients gathered from nine countries (Finland, Germany, the Netherlands, Norway, Poland, Sweden, Switzerland, Turkey and UK).

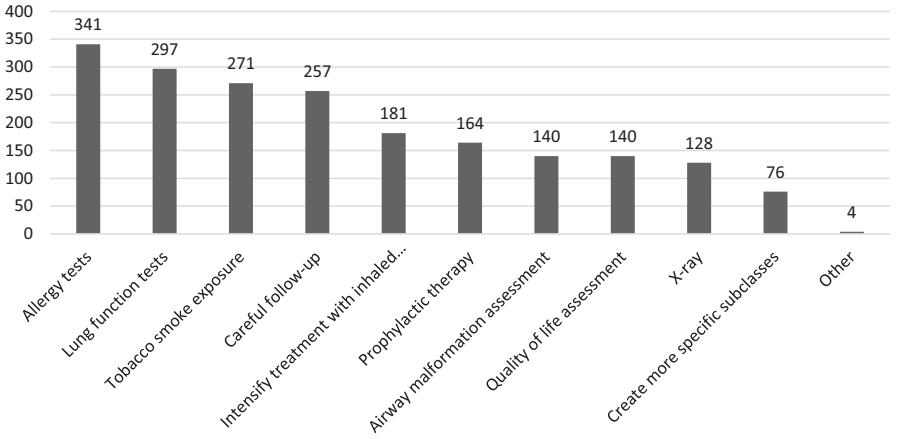

FIGURE 3 Questions 3 & 4: Do pre-schoolers with recurrent wheeze require a different approach in terms of diagnosis and management in comparison to patients with a single episode of wheezing? If yes, what kind?

Their responses mirrored the trends shown in the physician's surveys. The most common answers point out problems with defining (Q1, 54.8%) and the role of Allergy tests (Q2, 58.1%). Most parents (87.1%) agree recurrent wheezers require a different approach than those with a single episode. Interestingly, there was a striking difference between caregivers and doctors views of existing treatment modalities. More than 64% of parents label treatment as inefficacious, while in the physicians' perspective, poor compliance is the main issue.

This is the first survey exploring physicians' views on preschool wheeze, showing that wheezing itself and its association with future asthma remain a substantial challenge for most physicians.

Our surveys revealed existing gaps in diagnosis of wheezy preschoolers. These are as follows: need for clear definitions and lack of reliable diagnostic tools (including allergy and lung function tests).[5,10]

In terms of management, doctors highlighted the importance of developing tools to manage recurrent wheezers and to set clinically useful recommendations for both prevention and treatment, by using various existing drugs (ICS, LTRA, LABA).

Interestingly, 37% of physicians listed poor compliance as their primary problem. This differs significantly ($P = .0004$) from the opinions of patients who put more emphasis on the inefficacy of treatment (64% of all answers). This discrepancy probably reflects overall frustration with existing treatment options and results in an overwhelming call for guidelines (69% of opinions).

This study has several strengths. A key strength is the number of responders (all together 730 participants) who might allow us to define gaps in practice, particularly of GPs and family medicine specialists, as well as existing challenges they face. Secondly, we developed respondent-centred questions by analysing the responses from the pilot Survey A (open-ended questions). Thirdly, the variety in the level of experience, the diversity of specializations and practice setting in the EAACI survey and the Polish survey (Table S1) allowed us to gather opinions of various specialists in the field, as well as to receive responses that mirror daily practice of general practitioners. Finally, we have achieved a substantial national diversity (52 nations) among the responders, which enables us to assume cultural bias reduction.

We are also aware of the limitations of our study that are common to survey studies. While distributing the surveys by email was very quick and allowed us to reach a large number of potential responders from many different countries, there was no way to verify the responder's experience with preschool wheezing. Additionally, the response rate in email-based surveys is often low, despite them producing a large number of responses. Due to effective co-operation with konsylium24.pl while conducting this survey, the number of Polish responders turns out to be disproportionately high, which we anticipated beforehand, but chose to accept, in order to gather more data, as the group of responders was still heterogeneous with regard to specialization, age and practice setting. Furthermore, this study does not include a completely random sample of physicians, due to methodology used (email and social network), so only physicians familiar with the technology were able to participate. Additionally, the survey was entirely opt-in, so there exists a possibility of voluntary bias, which constitutes another obvious limitation of this study.

The degree of similarity between the answers from responders across practice settings and specialties was striking, showing that diagnostic and therapeutic modalities seem insufficient. Considered together with their view on the lack of appropriate recommendations and importance of their development, this study is the fundamental step towards creating up-to-date, comprehensive and useful clinical practice guidelines.

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CONFLICT OF INTEREST

Authors declare no conflict of interests.

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SUPPORTING INFORMATION

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