

Reinventing Pediatric Pulmonology as a Subspecialty in India

Pudupakkam K. Vedanthan, K. R. Bharath Kumar Reddy¹

University of Colorado at Anschutz Campus, Aurora, Colorado, USA, ¹Shishuka Children's Specialty Hospital, Bengaluru, Karnataka, India.
E-mail: pkv1947@gmail.com

The subspecialty of pediatric pulmonology deserves to get a firm establishment in the Indian medical academic scenario. To achieve this objective, it is prudent and crucial to have a common platform for the specialists and generalists to express and share their academic activities. We are very pleased to note this bold initiative of establishing such a platform with the introduction of the “*Journal of Pediatric Pulmonology*.” Pediatric pulmonology has been one of the first pediatric subspecialties worldwide to branch out, reinvent itself, and progress in scientific expertise, technology, and skills.^[1] Since its initial conception as a subspecialty in India, there has been significant focus and training of pediatricians in managing children with asthma and tuberculosis. The Respiratory Chapter of the Indian Academy of Pediatrics (IAP) has developed peer-reviewed and regularly updated training programs for pediatricians such as the Asthma Training Module,^[2] Respiratory Tract Infections Group Education Model, and National Tuberculosis Training Program^[3] which continue to improve the management of asthma, respiratory tract infections, and tuberculosis. However, in a densely populated country like India, with a high burden of respiratory diseases among children, the challenge has now shifted toward the diagnosis and management of emerging and chronic conditions such as allergy, cystic fibrosis (CF), bronchopulmonary dysplasia, primary ciliary dyskinesia (PCD), interstitial lung diseases, pediatric sleep disorders, and congenital pulmonary conditions. There is a need to improve the skill set and training of specialists in performing bronchoscopy, allergy testing, pulmonary function tests, and sleep studies in children. At the same time, research and publications in Pediatric Pulmonology need to be supported to ensure better patient data and technological innovation in India.

In the domain of allergy, we have progressed with strides by developing multiple training programs across India in collaboration with International Asthma Services, Colorado, USA, and endorsement/sponsorship by the Centre for Global Health, University of Colorado, USA, and the American Academy of Allergy, Asthma, and Immunology. The Diploma in Asthma and Allergy course was started at the Christian Medical College (CMC) Hospital, Vellore, in 2006 as a year long-distance education program with quarterly contact sessions and exit examinations. The syllabus covered the pathophysiology, diagnosis, and management of different allergic conditions with practical training in skin prick testing and spirometry as well as allergen immunotherapy. Following the positive response and increasing demand from clinicians across India,

similar courses in other centers such as the Diploma in Pediatric Allergy and Asthma at Sir Ganga Ram Hospital, New Delhi; Diploma in Asthma, Allergy, and Immunology in Kolkata; and the Allergy and Asthma Specialist Course, an online course in Bengaluru have been initiated in the recent years. The most recent program will be the Global Allergy Program to be offered at the Postgraduate Institute Medical Education and Research, Chandigarh, India. As the number of trained allergy specialists in the country increases with these programs, the burden of pediatric allergy in different cities across India can be managed appropriately. There would still remain a need for training of allergy assistants, asthma nurses, and respiratory technicians who form a primary requirement for such specialized allergy clinics, as well as the formal 2-year postgraduate fellowship for qualified physicians similar to fellowship programs in the west.

The specific diagnosis of the different etiologies of bronchiectasis in children had always been a challenge in India due to limited resources and facilities.^[4] In the past decade, however, there have been significant advances made in the diagnosis and management of CF in centers such as the All India Institute of Medical Sciences, New Delhi, and CMC, Vellore.^[5] Diagnostic modalities such as sweat chloride testing and genetic testing for CF were established at these centers along with training of the needed workforce and clinicians. The CF India project was created by the CF Foundation USA through Nationwide Children's Hospital Columbus, Ohio, in collaboration with CMC, Vellore works toward developing educational activities for medical professionals and CF families. Nonprofit organizations like organization for rare diseases in India are assisting underprivileged CF patients with funding for medication and treatment. Along similar lines, in 2017, a center for the diagnosis and management of children with PCD was established in G. Kuppuswamy Naidu Memorial Hospital, Coimbatore after the training of doctors and technicians by the Southampton University Hospital, UK. It remains one of the first centers in India to start high-speed video microscopy analysis and measurement of nasal nitric oxide for the diagnosis of PCD. The success of these international collaborations is sufficient proof of the need of creating more such centers across India through capacity building, training, and stakeholder engagement.

The prevalence of sleep disorders in children in India is estimated to range from 3% to 40%.^[6] Despite the increasing need to address pediatric sleep issues such

as obstructive sleep apnea, parasomnias, initiation of noninvasive ventilation, infant sleep disorders, and circadian rhythm disorders, there existed no formal training program or specialized sleep clinics for children in India. We hence started India's first training program in pediatric sleep, the Diploma in Pediatric Sleep Medicine as a hybrid course in 2022. This certified program was designed by Shishuka Children's Specialty Hospital, Bengaluru, in association with the University of Colorado and Global Chest Initiatives, Colorado, USA. The course syllabus covers the diagnosis and management of all pediatric sleep disorders, interpretation of polysomnography (sleep study) in children, and the practical aspects of setting up a sleep center. The future steps needed in this domain of pulmonology would include the training of support staff and sleep technicians and sensitization of parents and general pediatricians toward sleep problems in children.

Flexible bronchoscopy is commonly indicated in children for the diagnosis of various airway abnormalities, obtaining microbiological samples, and the therapeutic clearing of airway secretions.^[7] Following the advent of bronchoscopy training courses in India, this procedure is now available in many centers in the major cities of India. There is no doubt that there is a need to increase the training of pulmonologists in pediatric bronchoscopy in more cities and towns across India so that patients need not travel in need of the procedure.

As clinical services develop in pediatric pulmonology, so must the engagement of doctors in this field with authorities and organizations working toward social issues such as air pollution. Air pollution remains one of the leading causes of respiratory morbidity worldwide with decreasing air quality in many cities in India.^[8] Data collection and recommendations for action against air pollution must increase in the country to ensure action. In this regard, we published a report^[9] in joint collaboration with the International Pediatric Association, Health and Environment Alliance, and Shishuka Children's Specialty Hospital on the levels of PM_{2.5} and air quality index over 1 year around schools in Bengaluru. This report was shared with local authorities, government officials, non-governmental organizations, and other stakeholders working in this field to encourage their action. Further, a consensus statement on the impact of air pollution on allergic rhinitis and asthma was published by the IAP to increase awareness among pediatricians on this pertinent global problem and provide guidelines on managing children exposed to poor air quality.^[10]

Health-care research provides important information on disease trends, treatment outcomes, patterns of care, and public health interventions. Increasing publication in pediatric respiratory medicine would add immense value to the academic and clinical growth of the branch in India. Hence, an exclusive journal dedicated to Pediatric

Pulmonology will be of no doubt a progressive step toward encouraging more centers and health-care professionals in India to produce high-quality research and publications.

As India is moving forward as one of the world's fastest-growing economies, so must be the field of pediatric pulmonology in the country. Although the past decade has shown immense commitment and progress toward this goal, more work can be achieved by focusing attention on deficient areas in the branch, designing better training programs, creating more international collaborations, and generating more indigenous data and publications.

References

1. Chernick V, Mellins RB. Pediatric pulmonology: A developmental history in North America. *Pediatr Res* 2004;55:514-20.
2. Sukumaran TU. Asthma training module (ATM), asthma by consensus (ABC) and asthma education. *Indian Pediatr* 2011;48:433-5.
3. Singh V, Parakh A. What is new in the management of childhood tuberculosis in 2020? *Indian Pediatr* 2020;57:1172-6.
4. Kumar A, Lodha R, Kumar P, Kabra SK. Non-cystic fibrosis bronchiectasis in children: Clinical profile, etiology and outcome. *Indian Pediatr* 2015;52:35-7.
5. Kabra SK, Kabra M, Lodha R, Shastri S. Cystic fibrosis in India. *Pediatr Pulmonol* 2007;42:1087-94.
6. Gupta R, Goel D, Kandpal SD, Mittal N, Dhyani M, Mittal M. Prevalence of sleep disorders among primary school children. *Indian J Pediatr* 2016;83:1232-6.
7. Soyer T. The role bronchoscopy in the diagnosis of airway disease in children. *J Thorac Dis* 2016;8:3420-6.
8. Samek L. Overall human mortality and morbidity due to exposure to air pollution. *Int J Occup Med Environ Health* 2016;29:417-26.
9. Available from: https://www.env-health.org/wp-content/uploads/2021/04/AQ-Indian-Schools_web.pdf. [Last accessed on 2022 Jun 15].
10. Reddy KR, Gupta N, Bhattacharya BG, Dekka NM, Chandane P, Kapoor R, *et al*. Impact of air pollution on allergic rhinitis and asthma: Consensus statement by Indian Academy of Pediatrics. *Indian Pediatr* 2021;58:765-70.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code: 	Website: https://journals.lww.com/jpp/
	DOI: 10.4103/jopp.jopp_6_22

How to cite this article: Vedanathan PK, Reddy KR. Reinventing pediatric pulmonology as a subspecialty in India. *J Pediatr Pulmonol* 2022;1:5-6.

Submitted: 22-Jun-2022 **Revised:** 23-Jun-2022 **Accepted:** 23-Jun-2022
Published: 24-Aug-2022