

Asthma in Portuguese Pediatric Practice

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Asthma is one of the most common chronic disorders in children and imposes a great burden on global health. It is the major cause of frequent admissions to hospitals and visits to emergency rooms in the pediatric population, leading to significant morbidity and mortality among children worldwide.¹ The international study of asthma and allergies in childhood (ISAAC) uses two approaches to determine asthma prevalence²:

1. A doctor diagnosis of lifetime asthma (ever had asthma);
2. Ever had asthma plus current wheeze.

The first one has gained the highest rate of incidence. In Portugal, the prevalence of ever had asthma has been estimated at 9.8% in the 6-7-year-old group and 13.2% in the 13-14-year-old group.² Many other studies have been conducted in Portugal leading to different prevalence estimates.³⁻⁶ The Portuguese study of allergic diseases in childhood showed a prevalence of around 10% in children between 6 and 10 years old in Madeira. In two Portuguese studies, physician diagnosis of asthma among preschoolers was reported to be 4.6%. In a more recent Portuguese study, it has been reported that asthma affects 8.4% of Portuguese children.⁷ Although asthma is a prevalent disease, there is still insufficient Portuguese data on its burden, especially on the use of healthcare services, level of asthma control, and associated costs.

According to the global initiative for asthma,⁸ asthma is a heterogeneous disease, characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms (*eg*, wheeze, shortness of breath, chest tightness, and cough) that vary over time and in intensity, together with a variable expiratory airflow limitation. This airflow limitation may later become persistent. It is a heterogeneous disease, with different underlying pathological processes.⁹ Environmental triggers are also major players in asthma pathophysiology. Accordingly, viruses, exercise, cold, irritant or allergen exposure, and other well-known factors contribute to disease development, maintenance, and exacerbation.

Asthma diagnosis and management are mainly based on symptoms; however, diagnostic tests are also

important for the diagnosis and assessment of the disease. Pulmonary function tests, especially spirometry with bronchodilation tests, are recommended for every suspicious child of asthma above 5 years of age. Allergy tests, namely skin prick tests or serum-specific immunoglobulin E (IgE) to aeroallergens, are important for the assessment of atopic status and optimization of asthma management.¹⁰ The presence of atopy increases the probability that a patient with respiratory symptoms might have asthma. However, the presence of a positive skin test or positive specific IgE does not necessarily mean that an allergen is the cause of that patient symptoms. Sensitization to at least one inhaled allergen in atopic children is a prognostic and predictive indicator for developing asthma and for the persistence of asthma in late childhood and adulthood.^{11,12} The identification of sensitization to inhaled allergens in children with asthma can assist in planning an environmental control strategy, titration of therapy (*ie*, seasonal exacerbations), or referring patients for immunotherapy.^{13,14} Thus, it is highly important to identify the allergen sensitization pattern among Portuguese children. In this issue of the Portuguese Journal of Pediatrics, you can find an article¹⁵ where the authors goal is to define the aeroallergens sensitization profile in asthmatic children followed in a general pediatric clinic and assess the relationship of inhalant Phadiatop® (Thermo Fisher Scientific Inc.) and a personal / family history of atopy with total seric IgE. In addition to allergens that trigger asthma attacks in 60%-90% of atopic children and 50% of atopic adults,^{16,17} viral infections and meteorological conditions are important triggers for asthma exacerbations. Weather changes may affect the airways^{18,19} directly by cooling and irritation or indirectly by airborne allergens and pollutants. Exacerbations of asthma and rhinitis have been demonstrated to be precipitated by low temperature and humidity or a sudden fall in temperature. Asthma admissions increase following low or high barometric pressure and rainfall. Cold temperature has also often been followed by an increase in bacterial and viral infections of the airways, infiltration of inflammatory factors, and mucus secretion. Reduced

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temperatures often precede the onset of infections; a finding that may explain, at least in part, the effects of the mean temperature on asthma.²⁰ The World Health Organization estimates that by 2050, half of the world population will be affected by asthma and allergy. Human-caused climatic changes strongly contribute to this rising frequency through direct and indirect effects. One of the articles in this issue of the Portuguese Journal of Pediatrics,²¹ which is the first study to determine the impact of meteorological variables on pediatric asthma exacerbations and respiratory infections, conducted in Lisbon, will guide you through these issues.

Childhood asthma in Portugal costs 161 410 007 euros annually, corresponding to 929.35 euros per child with current asthma. The most important factor for higher costs has been related to asthma attacks in the previous

12 months.²² Thus, identifying the Portuguese pediatric asthmatic patients and preventing exacerbations will lead to better asthma control. Health services should be prepared to avoid respiratory illness overloads. In this regard, more Portuguese investigations are needed!

Keywords: Adolescent; Allergens; Child; Asthma/epidemiology; Asthma/diagnosis; Climate; Humidity; Portugal; Temperature; Weather

Conflicts of Interest

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