

# 1. Introduction

Allergy is considered to be a disease of twentieth-century civilization. Many epidemiological studies show a significant increase in the incidence of allergic rhinitis and asthma in recent decades (1, 2, 3). In highly developed countries, the incidence of allergy is estimated at 20-30%. In recent years, countries of the European Union have been faced with the important task of documenting the incidence and prevalence of allergic rhinitis and asthma (3, 4).

The manifestation of allergic diseases is dependent on the interaction of both genetic and environmental factors. Environmental pollution and the presence of allergens in the environment play an especially important role.

In the past decade, the results of two large worldwide epidemiological studies were published. These studies, ISAAC (5) and ECRHS (6), were designed to evaluate the prevalence of allergic diseases, including allergic rhinitis.

The ISAAC study evaluated the presence of allergic diseases in 768,591 children, ages 13-14, in 56 countries around the world. The data from the study estimated the presence of allergic rhinitis among young adults at 1.4% to 39.7%, with an average prevalence of 7.5%. There were significant variations in the prevalence of allergic rhinitis from country to country. The country with the lowest prevalence of allergic diseases (including allergic rhinitis) was Albania. However, countries such as Portugal and Nigeria had an incidence of rhinitis of more than 35% (5). Five years after the first phase of the ISAAC study was completed, the study was repeated, in 2002-2003, to assess any changes in prevalence of asthma, allergic rhinitis, and eczema. 193,404 children, ages 6-7, in 37 countries and 304,679 children, ages 13-14, in 56 countries were studied (7). An increased prevalence of allergic symptoms was found in many of the research centers, but no increase in the prevalence of asthma was documented in centers which were originally characterized by high levels of asthma among older children (7).

The older ECRHS I study was conducted in 15 countries, mainly European, and surveyed 16,786 adults, ages 20-44 years. In addition to surveys, periodically skin prick, antigen-specific IgE antibody, and bronchial reactivity tests were conducted. Although the study focused on the epidemiology of asthma and allergy, it also estimated the average prevalence of allergic rhinitis. The prevalence of allergic rhinitis was found to be, on average, 20.9%, with a year-round allergic rhinitis prevalence of 4.1%. In 6% of participants, asthma was found only with the co-presentation of seasonal allergic rhinitis. In 9%, asthma was found only with the co-presentation of year-round allergic rhinitis. 18% of participants had asthma with seasonal and year-round allergic rhinitis (6). The ECRHS II study, which was an improved version of the ECRHS I study, was conducted in 38

medical centers in Europe and involved 380,000 participants.

Studies indicate that both allergic and non-allergic rhinitis frequently co-present with asthma. In the French study of patients 15 and over (8), 13.4% of patients with year-round rhinitis had bronchial asthma. However, only 3.5% of patients without rhinitis had bronchial asthma. In the ECRHS study (6) in patients ages 18-44, this same relationship was seen. 22.5% of patients with rhinitis had bronchial asthma, while only 4% of people without rhinitis suffered from this same ailment. Bronchial asthma was observed in 6% of patients with seasonal rhinitis and in 9% of patients with year-round rhinitis. 18% of patients had both seasonal and year-round rhinitis. The prevalence of atopy was not found to be different between the aforementioned groups, but overactive bronchitis in response to histamine or methacholine was observed more frequently in patients with year-round rhinitis than it was in patients with seasonal rhinitis or in healthy individuals. The frequency of NSAID intolerance was found to be over 8 times higher in people with allergic rhinitis (9), and even higher in people with occupational asthma and rhinitis. Based on the analyses, it was concluded that allergic rhinitis, especially when presenting in early life, can be considered a significant risk factor for asthma and future illness.

Epidemiological studies conducted in Poland in the mid 90's under the guidance of the Polish Society of Allergology showed a worrying trend in the prevalence of allergic diseases. The prevalence of allergies in Poland was found to be 12-13% (10). However, it is important to note, the type of survey form used in this study did not match that used in the international surveys.

The multi-center study PMSEAD, which was also carried out under the guidance of the Polish Society of Allergology in 1998-1999 and involved 16,238 participants, showed that the prevalence of asthma in Polish children ages 3 - 16 years was 8.6% and 5.4% in the adult population (11).

Comparative studies on 404 school-aged children living in urban and rural areas in central Poland were also carried out. These studies compared the prevalence of allergic disease between the two groups. It was found that children living in large urban areas had a significantly higher prevalence of allergic diseases than children living in rural area (asthma 16.42% vs 1.97%, allergic rhinitis 38.81% vs 10.84%). In addition to a 4-fold higher prevalence of allergies, children living in the city showed a significantly higher percentage of sensitization to five or more allergens, while a large proportion of children from rural areas had monovalent sensitization or sensitization to no more than 2-4 allergens (12).

Studies were also conducted in accordance with the ISSAC protocol in school children 6-7 and 13-14 years of age in Poznan and Krakow in 1994/95 and 2001/02. The results obtained indicated that, over the 7 years separating the first and second phase of the study, the prevalence of both symptomatic and diagnosed allergic rhinitis as well as allergic rhinitis with conjunctivitis increased in both age groups. In the younger children, the frequency of symptoms was 33.6% in Krakow and

31.3% in Poznan. In the older children, the frequency of symptoms was 41.4% in Krakow and 39.6% in Poznan. The frequency of an established diagnosis of allergic rhinitis in the younger children was 21.1% in Krakow and 19.5% in Poznan. In the older children, it was 29.9% in Krakow and 32.6% in Poznan (13).

In 2003, pilot studies were conducted that aimed at validating a new version of the European Community Respiratory Health Survey II (ECRHS II) questionnaire that was modified to suit Polish conditions. The study was conducted on a group of 1,000 urban participants in Swidnica, near Wroclaw. The results showed a two-fold increase in the prevalence of allergic diseases since similar studies were conducted in the mid 90's (10). However, the use of different survey methods do not allow direct comparisons of these studies to be made.

Hence, the following nation-wide follow-up study to the European Community Respiratory Health Survey II (ECRHS II) and the International Study of Asthma and Allergies in Childhood (ISAAC) was designed to not only update the epidemiological data from Poland, but also make it methodologically consistent with the pan-European studies. Value-added projects were incorporated into the study to identify risk factors, including environmental factors, for the development of allergic diseases.

The results of this study, coined the Epidemiology of Allergic Disease in Poland (ECAP), will enable us to develop standards for the early detection of allergic diseases and their prevention. Prophylaxis will be based on the development of recommendations for shaping the domestic environment for families who are at risk for allergic diseases. Practical application of the results will also contribute to rational medical treatment and reduce the cost of medical treatment for patients with allergic diseases. The ECAP study is the first study on the epidemiology of allergic diseases in Poland to be conducted on such a large scale.

Epidemiological studies, on diseases such as allergies, allow for the evaluation of the differences in prevalence and incidence among different age groups, locations, races, and genders. They also allow for the assessment of the influence of living conditions as well as genetic and family factors, such as month of birth etc. (14). Repeated epidemiological studies allow for the tracking of the natural history of allergy and its change in the population. Furthermore, these studies help identify trends and make it possible to predict developments important for the creation of prevention programs and organization of care for patients suffering from allergic disease.

## **Aims**

To determine the prevalence of allergic disorders and hypersensitivity to the most common

allergens. Since the study methods are similar to those employed worldwide, comparisons with findings of other international studies are possible.

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