



## ALLERGY AND ALLERGY-RELATED DISEASES: GLOBAL STATISTICS AND ANALYSIS OF SOURCES

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### ABSTRACT

*This article provides a comprehensive analysis of the global prevalence of allergy and allergy-related diseases, their significance as one of the most pressing challenges facing modern healthcare systems, and key epidemiological statistical indicators. The study is based on official data published by the World Health Organization (WHO), the World Allergy Organization (WAO), and other leading international epidemiological and research institutions. The article examines the main clinical forms of allergy—including allergic rhinitis, bronchial asthma, atopic dermatitis, food allergy, and drug-induced allergic reactions—with particular emphasis on their pathophysiological mechanisms, prevalence rates, and age-specific distribution patterns. In addition, the increasing trend of allergic diseases among both children and adults in recent years is evaluated, with a scientific assessment of the role of environmental factors, urbanization, lifestyle changes, and environmental pollution in this process. Furthermore, the negative impact of allergic diseases on human health, quality of life, work productivity, and educational performance, as well as their socio-economic burden on healthcare systems and national economies, is analyzed in detail. The article emphasizes allergy as a global public health problem and substantiates the need for early diagnosis, strengthening preventive measures, reducing exposure to allergens, and developing effective treatment strategies.*

**Introduction.** Allergy is an exaggerated immune response to external or internal allergens and is currently considered one of the most pressing challenges facing global

healthcare systems. According to data from the World Health Organization (WHO), allergic diseases are widely prevalent worldwide, and their incidence continues to increase annually. Allergy is significant not only as an independent pathological condition but also as a contributing factor to the development and progression of many chronic diseases.

**Materials and methods.** The study analyzed official statistical and scientific data published by the World Health Organization (WHO), the World Allergy Organization (WAO), as well as other international epidemiological and research institutions. The research methodology included the analysis of global and regional epidemiological data, comparison of the prevalence of allergic diseases across different age groups, and evaluation of the underlying mechanisms of allergic diseases based on a comprehensive review of the scientific literature. The collected data were systematized and assessed using descriptive and comparative analytical methods.

**Results.** The results of the analysis demonstrate that allergy and allergy-related diseases are widely prevalent on a global scale.

Allergic rhinitis affects more than 400 million people worldwide and accounts for approximately 10–20% of the global population. In certain developed regions, prevalence rates may reach 25–30%. The condition is particularly common among children and adolescents, while its incidence among adults has also been increasing. More than 300 million individuals worldwide live with bronchial asthma. In 60–80% of cases, the disease is associated with allergic mechanisms. Approximately 250,000 deaths are recorded annually due to asthma-related causes. Atopic dermatitis affects 15–20% of children and 2–10% of adults in developed countries. In many cases, atopic dermatitis coexists with allergic rhinitis and bronchial asthma. Food allergy affects an estimated 200–250 million people worldwide, with a prevalence of 5–8% among children and 3–5% among adults. Drug allergy is observed in approximately 10% of the general population, with the most frequent allergic reactions associated with antibiotics and anti-inflammatory drugs.

Table 1.

**Global epidemiological indicators of major allergy-related diseases**

No.	Type of allergic disease	Global prevalence	Age group distribution	Main clinical manifestations	Key risk factors
1	Allergic rhinitis	400 million+ (10–20%)	Children, adolescents, adults	Sneezing, nasal congestion, watery nasal discharge, ocular itching	Pollen, house dust mites, animal dander, environmental pollution
2	Bronchial asthma	300 million+	Children: 5–15%	Shortness of breath, wheezing, cough, chest tightness	Allergic rhinitis, air pollution, allergens
3	Atopic dermatitis	Children: 15–20% Adults: 2–10%	Predominantly childhood onset	Pruritus, erythema, skin dryness, fissures	Genetic predisposition, household allergens, improper skin care

No.	Type of allergic disease	Global prevalence	Age group distribution	Main clinical manifestations	Key risk factors
4	Food allergy	200–250 million	Children: 5–8% Adults: 3–5%	Skin rashes, abdominal pain, vomiting, dyspnea	Milk, eggs, nuts, fish, shellfish
5	Drug allergy	~10% of the population	All age groups	Skin rash, edema, cough, anaphylactic shock	Antibiotics, NSAIDs, biological agents

Allergic rhinitis is a chronic or seasonal inflammatory disease of the nasal mucosa induced by exposure to allergens and represents one of the most common allergy-related conditions. This disorder develops as a result of an exaggerated immune response to otherwise harmless environmental substances (allergens). Allergic rhinitis is most frequently associated with sensitivity to plant pollen, house dust mites, mold fungi, and animal dander and epithelial particles. According to epidemiological data published by the World Health Organization (WHO) and the World Allergy Organization (WAO), more than 400 million people worldwide are affected by allergic rhinitis, accounting for approximately 10–20% of the global population. In certain regions, particularly in highly industrialized and urbanized areas, prevalence rates may be even higher, reaching up to 25–30%. Statistical observations indicate that allergic rhinitis is highly prevalent among children and adolescents, while its incidence among adults has also been increasing in recent years. Clinically, allergic rhinitis is characterized by watery nasal discharge, frequent sneezing, nasal congestion, itching, and a reduced sense of smell. These symptoms are often accompanied by ocular manifestations such as lacrimation, itching, and redness of the eyes. The disease may present in a seasonal form, most commonly associated with pollen exposure during spring and summer, or as a perennial condition persisting throughout the year. The significance of allergic rhinitis extends beyond its clinical manifestations. Numerous studies have demonstrated that the condition substantially impairs quality of life, leading to sleep disturbances, reduced concentration, and decreased work productivity. In children, allergic rhinitis negatively affects academic performance and learning outcomes. Moreover, allergic rhinitis is considered a major risk factor for the development of bronchial asthma, as a significant proportion of patients with allergic rhinitis subsequently develop asthmatic conditions. Therefore, experts from the WHO emphasize early diagnosis of allergic rhinitis, implementation of effective allergen avoidance measures, and the use of appropriate treatment strategies as key components in the prevention and management of allergic diseases.

Bronchial asthma is a chronic inflammatory disease of the airways characterized by airway hyperresponsiveness and reversible bronchial obstruction. The disease often develops as a result of a pathological immune response to allergens and is therefore classified as an allergic disorder. The development of bronchial asthma is strongly influenced by exposure to plant pollen, house dust mites, mold fungi, animal dander, as well as air pollution and various chemical agents. According to epidemiological data published by the World Health Organization (WHO), more than 300 million people worldwide are living with bronchial

asthma, and its prevalence continues to increase annually. Statistical analyses indicate that in 60–80% of asthma cases, the disease develops through allergic mechanisms. In particular, the majority of asthma cases with onset in childhood are triggered by exposure to allergens. Bronchial asthma is among the most common chronic diseases in children, with prevalence rates ranging from 5–15% in certain countries, according to WHO data. Clinically, bronchial asthma is manifested by episodes of shortness of breath, wheezing, cough, and a sensation of chest tightness, with symptoms often worsening at night or in the early morning. Asthma exacerbations may be precipitated by physical exertion, cold air, respiratory infections, or allergen exposure. The clinical significance of bronchial asthma is closely related to its potential complications. Poorly controlled asthma can lead to severe exacerbations, increased need for emergency medical care, and even mortality. WHO reports estimate that more than 250,000 deaths worldwide occur annually due to asthma-related causes. In addition, asthma imposes substantial limitations on patients' daily activities, reduces quality of life and work productivity, and places a considerable economic burden on healthcare systems. Consequently, the WHO and international experts emphasize early diagnosis of bronchial asthma, strengthening measures to reduce allergen exposure, appropriate use of inhaled therapies, and continuous disease monitoring as key priorities in global health policy.

Atopic dermatitis is a chronic allergic inflammatory disease of the skin that develops as a result of an exaggerated immune response to external or internal allergens. The condition most commonly begins in early childhood and, in many cases, follows a chronic course throughout life. Atopic dermatitis is frequently associated with genetic predisposition, impairment of the skin barrier function, and the influence of environmental factors. International epidemiological studies indicate that atopic dermatitis affects approximately 15–20% of children in developed countries, reflecting its high prevalence in these regions. Among adults, the prevalence is estimated to range from 2–10%, with an increasing incidence of adult-onset atopic dermatitis observed in certain areas. Clinically, the disease is characterized by intense pruritus, erythema, inflammation, and the development of skin dryness, fissures, and vesicular lesions. Due to its chronic nature, atopic dermatitis substantially reduces patients' quality of life and is often associated with sleep disturbances and psychological distress. In children, atopic dermatitis frequently coexists with allergic rhinitis or bronchial asthma, a progression commonly referred to as the "atopic march." Epidemiological analyses suggest that the development of atopic dermatitis is influenced by several factors, including genetic predisposition—particularly when parents have a history of allergic diseases—environmental pollution, household allergens such as dust and animal dander, inappropriate dietary habits, and inadequate skin care. The World Health Organization (WHO) and international experts recommend early diagnosis of atopic dermatitis, strengthening measures to reduce allergen exposure, and implementing effective treatment strategies aimed at alleviating symptoms as key priorities in global healthcare practice.

Food allergy is an acute or chronic allergic reaction that occurs as a result of a pathological immune response to specific food products, such as milk, eggs, nuts, fish, shellfish, and certain plant-derived foods. In this condition, the immune system misidentifies otherwise harmless substances as dangerous, leading to the production of immunoglobulin E (IgE) antibodies and the subsequent development of allergic symptoms of varying severity. According to statistical estimates, approximately 200–250 million people worldwide are affected by food allergy,

representing a substantial proportion of the global population. The prevalence of food allergy is estimated to be 5–8% among children and 3–5% among adults. Epidemiological studies indicate that the prevalence of food allergy among children is even higher in developed countries, with rates reaching up to 10% in certain regions. Clinically, food allergy manifests with a wide range of symptoms, including cutaneous reactions such as erythema, pruritus, rashes, and angioedema, gastrointestinal disturbances (abdominal pain, diarrhea, vomiting), and respiratory symptoms such as dyspnea. In severe cases, allergic reactions may progress to anaphylactic shock, a life-threatening condition that requires immediate medical intervention. The cornerstone of food allergy management and prevention involves accurate identification of the offending allergens and their strict elimination from the diet, as well as the use of epinephrine auto-injectors in emergency situations when indicated. The World Health Organization (WHO) and international experts recommend strengthening strategies for the early identification of food allergy, providing preventive counseling for both children and adults, and enhancing monitoring within global healthcare systems.

Drug allergy is a pathological immune reaction to medications, most commonly mediated by immunoglobulin E (IgE). Such allergic reactions may occur even at recommended therapeutic doses and can result in a wide spectrum of clinical manifestations with varying severity. According to medical literature and epidemiological studies, drug-related allergic reactions are observed in up to approximately 10% of the general population. Allergic reactions most frequently occur with certain classes of medications, particularly anti-inflammatory drugs such as non-steroidal anti-inflammatory drugs (NSAIDs). In addition, some chemical and biological agents, including vaccines and certain medicinal vitamins, may also trigger allergic responses in susceptible individuals. Clinically, drug allergy may present with cutaneous manifestations such as skin rashes, pruritus, erythema, and edema, as well as respiratory symptoms including cough and dyspnea; in severe cases, it may progress to anaphylactic shock. Allergic reactions associated with antibiotics, in particular, often require prompt medical intervention due to their potential life-threatening nature. The primary strategies for the diagnosis and management of drug allergy include accurate identification of the offending drug, selection of alternative medications, and, in emergency situations, treatment with epinephrine or antihistamines. Furthermore, encouraging patients to share their history of drug allergy with healthcare providers is essential for reducing the risk of recurrent allergic reactions. The World Health Organization (WHO) and international experts emphasize the importance of monitoring drug allergies and strengthening preventive measures in patients, as this represents a significant issue for global healthcare systems.

**Discussion.** The obtained results confirm the increasing global prevalence of allergic diseases. This trend can be attributed to factors such as urbanization, environmental pollution, genetic predisposition, and changes in lifestyle. The close association between allergic rhinitis and bronchial asthma highlights the need for a comprehensive approach to the management of allergic diseases. The high prevalence of atopic dermatitis and food allergies among children underscores the importance of early diagnosis and preventive strategies. Overall, the analyses demonstrate that allergic diseases represent not only a medical concern but also a significant socio-economic problem, as they adversely affect quality of life, work productivity, and educational performance.

**Conclusion.** Allergy and allergy-related diseases currently represent a serious challenge for global healthcare systems. Epidemiological data indicate that allergic conditions affect more than one billion people worldwide. Allergic rhinitis, bronchial asthma, atopic dermatitis, food allergy, and drug allergy are highly prevalent, and their incidence continues to increase annually. These findings highlight the urgent need for early diagnosis, strengthened preventive measures, and the development of effective treatment strategies for allergic diseases. Enhanced monitoring and control of allergic conditions within global healthcare systems are essential for reducing their long-term adverse outcomes.

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