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## **PREVALENCE AND CHARACTERISTICS OF THE INCIDENCE OF POLLINOSIS AMONG THE BUKHARA POPULATION OF THE REPUBLIC OF UZBEKISTAN**

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**Abstract:** The article presents the structure of pollinosis incidence, peculiarities of its course in the adult population of Bukhara region. The influence of genetic factor and disease duration on the development and course of this disease has been evaluated. On the basis of anamnestic and laboratory data the frequency and spectrum of concomitant allergy have been revealed. The causatively significant allergens in the sensitization of patients with pollinosis have also been determined.

**Keywords:** pollinosis, seasonal allergic rhinitis, allergic conjunctivitis, causative allergens, sensitization.

According to the conclusion of the World Health Organization (WHO), allergic rhinitis is a global health problem due to its widespread prevalence and a significant decrease in the patient's quality of life [Allergic Rhinitis and its Impact on Asthma Initiative - ARIA, WHO, 2001]. Seasonal pollen allergic rhinitis is more common than perennial (persistent) rhinitis in people of all ages and genders. According to WHO experts, the prevalence of this disease in different countries of the world ranges from 1 to 20% [1], but it is difficult to establish the exact frequency. Difficulties in determining the exact number are caused by geographical differences in the composition of pollen, misinterpretation of symptoms by patients, or physician error in making a diagnosis [2]. In the Republic of Belarus, according to official statistics, from 10 to 15% of the population suffer from allergic diseases [<http://www.minzdrav.by>]. An increase in the incidence of allergic rhinitis is recorded annually: in 2019 - 102.3 cases per 100,000 populations; in 2020 - 112.1 [3]. The prevalence of hay fever, the most common clinical form of which is seasonal allergic rhinoconjunctivitis, has not yet been studied in the Bukhara region. According to the data of appeals to allergological offices in Bukhara, in 2018, 72.6 cases of the disease were registered per 100,114 thousand of the population, in 2019. -

84.8 cases, in 2020 - 90.1 cases, which indicate a steady increase in this pathology. However, the data of medical statistics based on the appeal to medical institutions do not correspond to the true values of the incidence and prevalence of hay fever among the population. Epidemiological studies conducted in some regions of Russia have shown that the prevalence of hay fever is several times higher than the registered figures [4]. Most often; early symptoms of the disease remain unidentified, as patients turn to medical institutions after a long-term course of an already formed disease. In some patients with a mild course of the disease, hay fever is diagnosed late or not diagnosed at all. This leads to the absence or late onset of therapeutic and preventive measures. There is also an insufficient "atopic alertness" of doctors of various profiles, an inadequate attitude of the patient himself to the seasonal, "passing" problem. As a result, etiological diagnosis and adequate treatment are not carried out in full, and the scale of the problem is underestimated [5].

The complexity of the treatment and diagnostic search for hay fever is determined by its multifactorial nature. The development of the disease is significantly influenced by genetic and biological factors. Under the influence of adverse environmental factors, there is an early manifestation of the allergic process, the formation of polyvalent sensitization, severe and polysyndromic hay fever [4].

Clinical manifestations of hay fever are caused by inflammatory changes in the mucous membrane, primarily of the eyes and respiratory tract. The most common are allergic conjunctivitis

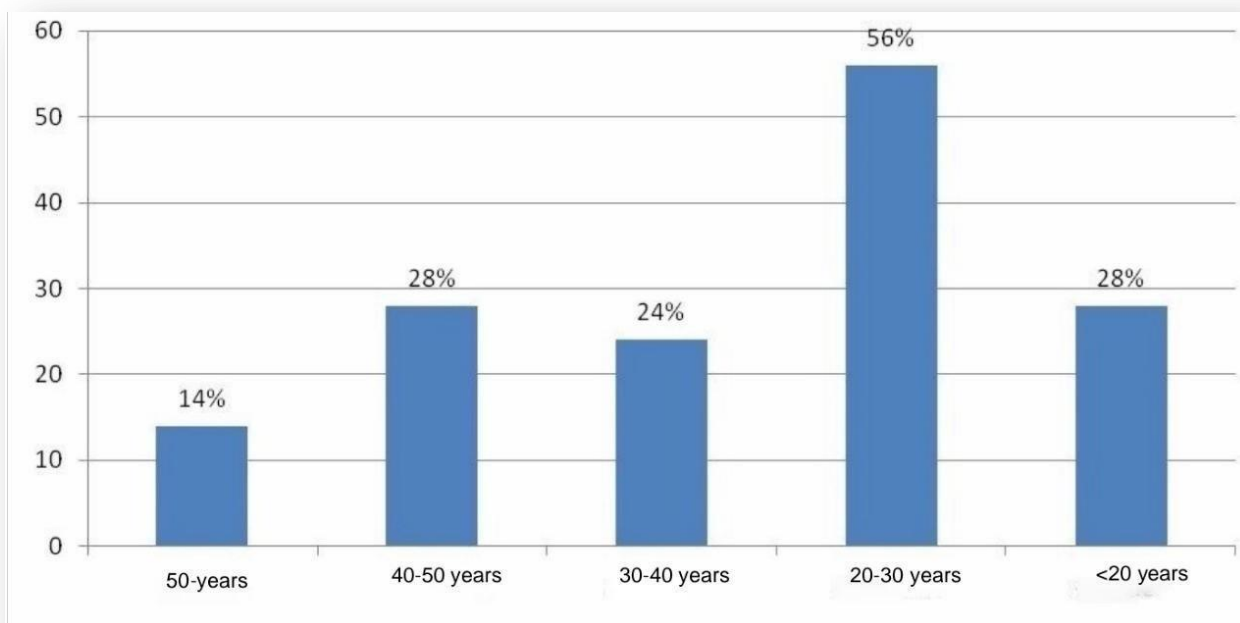
(91-95%), rhinitis (95-98%) and bronchial asthma (30-40%), which, as a rule, are combined with each other [6]. Pollen sensitization, being causally significant in the development of allergic rhinitis, allergic conjunctivitis, bronchial asthma, additionally causes allergic processes of other localization in a number of patients, for example, atopic dermatitis, urticaria, contact dermatitis, less often damage to the nervous system, gastrointestinal tract, which significantly aggravates the course of the disease [1]. The complexity of detailing the nature of clinical manifestations and the severity of their course, the underestimation of the role of studying the pathogenesis and therapeutic aspects of diseases caused by pollen sensitization, the lack of differentiated diagnostic and treatment algorithms create difficulties for practitioners in determining the tactics of managing patients suffering from hay fever. Self-healing of hay fever, as a rule, does not occur. There are numerous treatments for this disease, which are used by general practitioners, homeopaths, traditional healers and psychics. However, incorrect treatment worsens the prognosis of the course of the disease and leads to the development of complications. Surgical, physiotherapeutic, psychotherapeutic and other methods are ineffective and almost do not differ from placebo [4]. Modern approaches to the treatment of hay fever are based on pharmacotherapy and allergen-specific immunotherapy. Evidence has been obtained of the effectiveness of preventive pharmacotherapy, and especially allergen-specific immunotherapy, for hay fever in children and adults [7]

Methods of allergen-specific immunotherapy are constantly being improved in order to improve safety, effectiveness and simplify the scheme of their use. At present, it remains unclear to what extent age, social status, and other biomedical aspects affect the structure of causative factors, clinical manifestations, and the course of pollinosis in the adult population. In this regard, it is of great relevance to study the structure of morbidity and determine the features of the formation of hay fever as a manifestation of atopy against the background of individual, genetic and environmental factors [8].

**The purpose of this study** was to study the incidence and regional features of the course of pollinosis associated with the taxonomic diversity of pollen in the atmospheric air of the Bukhara region.

**Methods:** The work is based on the results of a survey of 1142 patients in the allergy rooms of the Bukhara Regional Multidisciplinary Medical Center. 150 patients (13.1%) aged 18 to 55 years old, living in the city of Kazan, were selected using the continuous sampling method. Bukhara and Bukhara region and suffering from hay fever. All patients underwent a complete allergological examination, which included the collection of an allergic anamnesis, clinical and laboratory examination, and skin prick tests. Skin tests were performed using standard sets of pollen allergens (16 types in total) manufactured by FSUE NPO Microgen, Ukraine. 2,700 skin scarification tests were performed. We used a standard adapted extended questionnaire developed by RQLQ (rhinoconjunctivitis quality of life questionnaire) [9]. Statistical data processing was carried out using the application software package "Statistica 6.0" (StatSoft, Ink. 1994-2001), adapted for biomedical research. Results and discussion

Distribution of patients by sex, age, duration of the disease. Of the 150 examined patients,



50% were men (75 people), 50% were women (75 people). The mean age of the patients was 31.3 years. The most common pollinosis occurred in the age group from 20 to 30 years (56%) (Fig. 1), which confirms the data that this disease affects in most cases the young, able-bodied segment of society. According to the obtained anamnestic data, hay fever developed in 20.67±3.32% of the examined children in childhood and was later characterized by a long, relapsing course (Table 1).

Rice. 1. Age groups of patients with hay fever

The duration of the disease with pollinosis	Number of patients	
	Abs	%±
Since childhood	31	20,67±3,3
1 to 5 years	24	16,0±3,0
6 to 10 years	42	28,0±3,68
11 to 15 years	28	18,67±3,19
16 to 20 years	14	9,33±2,38
Over 20 years	11	7,33±2,14

In 42 patients (28.0±3.68%) the disease duration was from 6 to 10 years, in 11 patients (7.33±2.14%) - more than 20 years. The analysis of medical documentation and anamnesis data revealed a late verification of the diagnosis. Thus, the time from the onset of the disease to diagnosis in most cases (28.0%) was 6±3.2 years. The data obtained indicate a rather late appeal of patients for specialized medical care, since most of them have been treating —colds— for years, not suspecting the possible presence of pollen sensitization. The presence of a hereditary predisposition, concomitant allergic pathology.

When detailing the anamnesis data of patients under our supervision, the influence of the hereditary factor on the development of the disease was established. According to the anamnesis, hereditary burden for allergic diseases was detected in 64 patients (42.7%). Among patients suffering from pollinosis, the high prevalence of polyvalent sensitization attracts attention. So, in 119 examined patients (79.3%), concomitant allergic pathology was diagnosed, among which the

most common was year-round (persistent) allergic rhinitis (Table 2). Its presence was detected in 87 patients (58.0±4.04%). One third of the surveyed (50 people (33.3±3.86%)) had a combination of hay fever, atopic bronchial asthma caused by household and epidermal allergens, and year-round allergic rhinitis. Quite often, the examined patients had drug allergy (25 patients (16.67±3.05%)), idiopathic urticaria (15 people (10±2.46%)). Among the relatively rare pathologies, one can distinguish cold urticaria (11 examined (7.33±2.14%)) and insect allergy (2 people (1.33±0.94%)).

Concomitant allergic pathology	Number of patients	
	Abs	%±
Hay fever and perennial allergic rhinitis	87	58,0±4,04
Pollinosis, perennial allergic rhinitis and atopic bronchial asthma caused by household and epidermal allergens	50	33,3±3,86
Pollinosis and drug allergy	25	16,67±3,05
Hay fever and idiopathic urticaria	15	10±2,46
Pollinosis and cold urticaria	11	7,33±2,14
Pollinosis and insect allergy	2	1,33±0,94

Thus, out of 150 examined, 119 people (79.3%) had sensitization to other allergens, and only 31 people (20.7%) suffered from hay fever only. Some patients noted simultaneous sensitization to several allergens, which indicates the need for a more thorough collection of allergic anamnesis and, if necessary, additional allergy testing when patients seek specialized help. The simultaneous combination of several types of allergies complicated the differential diagnosis and etiologic therapy.

**Clinical forms of hay fever.** The occurrence of clinical manifestations of pollen allergy occurred simultaneously or developed sequentially during the flowering season of causally significant plants. The structure of clinical manifestations of hay fever is presented in the table 3. The data obtained demonstrate that in all patients with pollinosis living in the Bukhara region, the disease manifests itself in the form of rhinoconjunctival syndrome. The most severe manifestation of hay fever was pollen atopic bronchial asthma, which was manifested by attacks of suffocation or their equivalents (episodes of paroxysmal cough, shortness of breath and wheezing). Its presence was diagnosed in 47 patients (31.3±3.8%). The data obtained show a high frequency of systemic damage to the respiratory tract in pollen allergy, which aggravates the course and prognosis of the disease. In our opinion, in addition to systemic damage to the respiratory tract, the severity of seasonal exacerbation of the disease is affected by the concentration of pollen in the air, the duration of the pollen season, and the degree of individual sensitivity. Probably, individual hyper reactivity occurred in 17 patients (11.3%), who noted manifestations of pollinosis after a decrease in the concentration of pollen in the air. At the same time, it is impossible to exclude the fact of a non-specific response of the upper respiratory tract to various irritating factors (strong odor, air pollution, changes in temperature, etc.). A high percentage of hay fever patients with cross food allergy to plant products was revealed - 46 people (30.67±3.78%). Patients noted the appearance of pollinosis symptoms when eating plant products such as honey, nuts, seeds, apples. In 2 examined (4.3%) clinical manifestations of hay fever were accompanied by gastrointestinal syndrome (nausea, vomiting, abdominal pain, diarrhea). This symptom complex was diagnosed both during and outside the period of pollination of plants. Skin syndrome in patients with hay fever was observed more often in the form of urticaria (11 patients (7.33±2.14%)), Quincke's edema (4 people (2.67±1.32%)), and atopic dermatitis on open parts of the body (4 patients (2.67±1.32%)). A variety of possible manifestations of hay fever, a combination of various clinical variants of the course

of seasonal allergic rhinitis indicate the need for a more thorough collection of allergic anamnesis when visiting patients and timely allergic diagnosis. Analysis of Causally Significant Allergens According to skin testing data, sensitization to tree pollen allergens was detected in 111 patients (74.0±3.59%), meadow - in 132 (88.0±2.66%), cereal grasses – 139 (92.67±2.14%), Compositae and haze - in 111 patients (74.0±3.59%).

Table 3

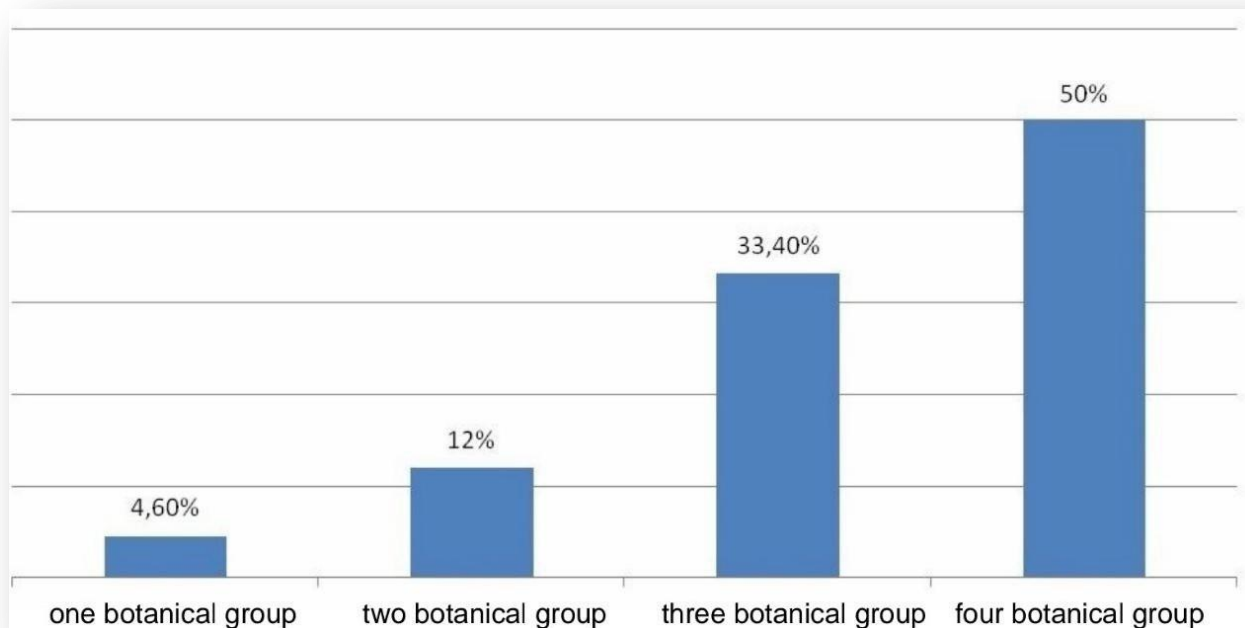
Clinical variants of the course of hay fever	Number of patients	
	Abs	%±
Allergic rhinitis, conjunctivitis	150	100
Allergic rhinitis, conjunctivitis pollen bronchial asthma	47	31,3±3,8
Allergic rhinitis, conjunctivitis cross food allergy to vegetable products	46	30,67±3,78
Allergic rhinitis, conjunctivitis hives	11	7,33±2,14
Allergic rhinitis, conjunctivitis angioedema	4	2,67±1,32
is, conjunctivitis, atopic dermatitis	4	2,67±1,32

The data are presented in Table 4. When analyzing skin tests with pollen allergens, a high frequency of simultaneous sensitization to several botanical groups of pollen allergens was established (Fig. 2). Isolated pollen sensitization within one botanical group of plants, in particular, only to tree pollen, was observed in 7 patients (4.6%), to pollen from two botanical groups was detected in 18 patients (12%), to three - in 50 patients (33.4%), to four - in 75 patients (50%).

Thus, polyvalent sensitization to the pollen of trees, meadow, cereals and weeds was found in half of the examined people - 75 people (50%). The data obtained indicate that for residents of the Bukhara region suffering from hay fever, the most characteristic is polysensitization to all four groups of causally significant allergens (trees, meadows, cereals, weeds) - 75 people (50%). Monosensitization to one group of pollen allergens is only 4.6% of the examined (7 people). Thus, when conducting allergy testing, it is necessary to use the full range of pollen allergens, even in cases where the patient accurately indicates the time of development of clinical manifestations. In the light of the data obtained, it is obvious that hay fever is a chronic, genetically determined disease that mainly affects people of working age, characterized by a long, relapsing course, the clinical manifestations of which are characterized by the presence of rhinoconjunctival syndrome and bronchospastic syndrome in 31.3±3.8%. Seasonal exacerbation of hay fever often occurs under the guise of colds.

**Table 4 the frequency of detection of sensitization to plant pollen in hay fever**

Botanical groups of pollen allergens	Number of patients	
	Abs	%±
Trees	111	74,0±3,59
Meadow grasses	132	88,0±2,66
cereal herbs	139	92,67±2,14
Composite and haze	111	74,0±3,59



**Rice. 2. Distribution of patients with hay fever according to the number of causally significant pollen allergens.**

Which significantly complicates the timely verification of the diagnosis. In the structure of causally significant allergens among residents of the Bukhara

Region, polysensitization to all botanical groups of plants predominates. For patients suffering from pollinosis, the presence of concomitant allergopathology is characteristic.

The multifactorial nature of the etiopathogenetic mechanisms of the development of the disease determines the need for an integrated approach to the diagnosis and treatment of this pathology.

### **Conclusion**

1. The incidence of hay fever in the Bukhara region is equally common in both women and men of working age. The average age of people suffering from hay fever is 31.3 years. This age group is people of young working age who determine the economic and creative potential of society.

2. Pollinosis is characterized by non-specific clinical manifestations with the manifestation of concomitant allergopathology. Most often (58%) seasonal allergic rhinitis was combined with year-round allergic rhinitis, in 33.3% there was a combination of hay fever, atopic bronchial asthma and year-round allergic rhinitis. In all examined patients, pollinosis proceeded with symptoms of rhinoconjunctivitis. The most severe manifestation of hay fever was atopic (pollen) bronchial asthma, which was manifested by attacks of suffocation or episodes of paroxysmal cough, shortness of breath and wheezing. (47 patients (31.3±3.8%)). The time from the onset of the disease to the diagnosis is  $6 \pm 3.2$  years, which indicates insufficient "allergic alertness" of primary care physicians - general practitioners, pediatricians, otorhinolaryngologists, etc. regarding allergies and the absence of screening test systems for its diagnosis. The similarity of the clinical manifestations of hay fever with colds leads to belated treatment of patients for specialized medical care and, as a result, late verification of the diagnosis.

3. For residents of the Bukhara region suffering from hay fever, polysensitization to all



four groups of causally significant allergens (trees, meadows, cereals, weeds) is most characteristic – 75 people (50%). Monosensitization to one group of pollen allergens is only 4.6% of the examined (7 people). Thus, when conducting allergy testing, it is necessary to use the full range of pollen allergens, even in cases where the patient accurately indicates the time of development of clinical manifestations.

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