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**EPIDEMIOLOGICAL CHARACTERISTICS OF ALLERGIC DISEASES IN
CHILDREN OF ANDIJAN**

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Annotation: *The article studied the features of the prevalence of allergic diseases (AD) in children, taking into account the geo-ecological state of the natural environment of the regions of Andijan region. The ranking of the territories of the region according to the incidence of AD was carried out. High morbidity within the region at the same time as BA, AR and AtD is noted in the Asaka district.*

Key words: *allergic diseases, environmental factors, children.*

**ЭПИДЕМИОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА АЛЛЕРГИЧЕСКИХ
ЗАБОЛЕВАНИЙ У ДЕТЕЙ ГОРОДА АНДИЖАНА**

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Аннотация: *В статье изучены особенности распространенности аллергических заболеваний (АЗ) у детей с учетом геоэкологического состояния природной среды регионов Андижанской области. Проведено ранжирование территорий региона по заболеваемости АЗ. Высокая заболеваемость внутри региона одновременно с БА, АР и АтД отмечается в Асакинском районе.*

Ключевые слова: *аллергические заболевания, факторы внешней среды, дети.*

**ANDIJON SHAXRIDA BOLALARDA KECHUVCHI ALLERGIK KASALLIKLARNING
EPIDEMIOLOGIK XUSUSIYATLARI**

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Izoh: *Maqolada Andijon viloyati hududlari tabiiy muhitining geoekologik holatini hisobga olgan holda bolalarda allergik kasalliklar (AK) tarqalishining xususiyatlari o'rganiladi. Mintaqaning hududlari AZ bilan kasallanish darajasi bo'yicha tartibga solingan. Mintaqada astma, AR va AD bilan bir vaqtda, nisbatan yuqori kasallanish Asaka tumanida kuzatilgan.*

Kalit so'zlar: *allergik kasalliklar, atrof-muhit omillari, bolalar.*

In recent decades, the problem of allergic diseases has been one of the most pressing in modern clinical medicine.

The prevalence of allergic diseases, according to statistical reports from many countries around the world, ranges from 10 to 30% (4.6). Numerous epidemiological studies conducted in different countries indicate a high prevalence of allergopathology. Thus, in Turkey the prevalence of allergosis was 13.5%, in Norway - 25.2%, in the USA - 30%, in Germany - 15-20% (7.9).

Many authors note that in every decade there is an almost 2-fold increase in allergic diseases. For example, in Sweden, between 1979 and 1991, there was an increase in the prevalence of asthma among 7-year-old schoolchildren from 23.8% to 29.9% and of allergic rhinitis from 32.5% to 44.8% (7,5). The prevalence of asthma and allergic rhinitis among conscripts in Italy in 2022 was 2.89% and 1.54%, respectively, and in a similar study 12 years later it was 4.39% and 2.2% (1,3,8). In Finland, when studying the prevalence of asthma, hay fever and chronic bronchitis among twins aged 7-18 years for 10 years, it was revealed that the number of patients with hay fever during this period increased by 1.5 times, both among men and among women (6.8% among men and 9.8% among women in 2018 and 11.8 and 15.3%, respectively, in 2021). The prevalence of asthma increased to a lesser extent and was 2.0% among men and 2.2% among women in 2021 and 2.9 and 3.1% in 2022, respectively (1.5).

Numerous data indicate a high prevalence of allergic diseases in childhood (1,2,5,7,8,9,10). Epidemiological studies examining the prevalence of allergic respiratory diseases using the ISAAC questionnaire, conducted among children in the Andijan region (1,2), showed that the prevalence of bronchial asthma was 8.1% (in urban areas - 9.1, in rural areas - 6, 4). High prevalence rates of year-round allergic rhinitis (14.5%) and seasonal allergic rhinitis (6.2%) were also revealed.

Andijan region is one of the regions of the Republic of Uzbekistan. with developed industry and agriculture. The occupied area is 4,240 km² (13th place among the regions of Uzbekistan), 3,127,683 thousand people live, the population density is 240.2 people. per 1 km² (9 times higher than the republican one). In the structure of the republic, it is the smallest in terms of area and population, but one of the most densely populated regions. Urban (73.6%) population prevails in the structure of the population. The climate is continental, the climatic conditions are generally

comfortable in the region [1] and not very comfortable with a reduced climatic potential for self-purification of the atmosphere in Andijan [1].

The chemical industry is dominant, among other significant industries - food, engineering, metalworking, production of building materials. The main production facilities are located in Andijan and Asaka.

The degree of anthropogenic load (AN), which characterizes the impact of human economic activity on the ecosystem, in Andijan region is 4.22 points and is characterized as high. In accordance with the scale for assessing the geoecological state of the natural environment [1], 5.6% of the total area of the region has a favorable state of the natural environment, 50.2% - relatively favorable, 27.1% - relatively unfavorable, 17.1% - unfavorable. AZ in relation to the state of the environment are among the indicators of public health recommended by the WHO Regional Office for Europe as part of the Health for All strategy. In the period 2017-2021 in the Andijan region, there is a steady upward trend in the overall incidence of BA, AR and AD. An analysis of the relationship between the prevalence of AD among the child population and environmental factors in the Andijan region was not carried out, which determined the relevance of this study.

The purpose of the study was to study the prevalence of AD in children, taking into account the geoecological state of the natural environment in the regions of Andijan region.

Materials and methods. Data sources on the use of natural resources in Andijan region: "Statistical Yearbook of Andijan Region 2017", "Statistical Yearbook of Andijan Region 2020", "Statistical Yearbook of Andijan Region 2021", Official website of the Andijan Regional Department of Statistics, "Environmental Bulletin for 2017", "Environmental Bulletin for 2021".

Checking the normality of the distribution of quantitative indicators was carried out using the Kolmogorov-Smirnov criterion.

Statistical processing of the obtained data was performed using the Statistica for Windows v. 6.0, StatSoft Inc. (USA).

Results and discussion. The component analysis, carried out to identify the main factors influencing the natural resources of the region's environment, made it possible to identify 2 components that explain 81.45% of the accumulated variance. The first principal component explains 65.07% of the accumulated variance. Closely related to it (the correlation coefficient is more than 0.8) is the volume of water used for household and drinking needs (+0.97), water intake from natural sources (+0.82), water intake from underground sources (+0.99), the total volume of water used (+0.95), the discharge of wastewater into surface water bodies (+0.79), the discharge of standard treated water (+0.95), the total volume of wastewater discharged (+0.93). The second main component explains 17.83% of the accumulated dispersion, it is closely related to the use of water for production needs (+0.87), the use of standard purified water (+0.91).

Component analysis, carried out to identify the main factors that determine the emissions of pollutants into the atmospheric air, made it possible to identify 3 components that explain 90.74% of the accumulated dispersion. The first principal component explains 63.08% of the accumulated dispersion, is closely related to emissions of gaseous and liquid pollutants (+0.97), carbon monoxide (-0.82), carbon monoxide (+0.85), nitrogen dioxide (+0.92), non-methane volatile compounds (+0.93), emissions from mobile (-0.93) and stationary sources (+0.97) pollution. The second main component explains 17.09% of the accumulated dispersion, pollutants (+0.88) and emissions of solid pollutants (-0.89) are closely related to it, captured and neutralized. The third principal component accounts for 11.44% of the accumulated variance and is closely related to sulfur dioxide emissions (-0.94).

An analysis of the regional characteristics of AZ in children in the analyzed period showed that the first ranking places (high incidence) in general for AZ (BA, AR, AtD) are occupied by Asaka, Pakhtabad and Izbasken districts. A high incidence of BA, AR and AtD at the same time in the region is noted in Asaka district, AtD - in Pakhtabad district, AR - in Andijan (+ Andijan city), BA - in Izbasken district. Territories of Asaka, Andijan (+ Mt.Andijan), Pakhtabad districts are the most urbanized, the main industrial enterprises of the region are located here, there is a very high AN on the ground. The last ranking places (low incidence) are occupied by Kurgantyupinsky, Zhalakudusky and Bulakbashi districts, their territories are characterized by a relatively favorable geocological state of the natural environment, low AN.

In order to clarify the role of unfavorable environmental factors present in the region in the development of AD, we conducted a comparative analysis of the average long-term incidence rate of BA, AR, and AD in the period 2017-2021. in 4 territories, differing in the geo-ecological state of the natural environment. As can be seen from the presented table, there were no differences in the incidence rate of BA in the analyzed territories. The incidence rate of AR and AD increased as the degree of ecological trouble increased and was the highest in areas with an unfavorable geo-ecological state of the natural environment. In the structure of the AZ in areas with a favorable geo-ecological state of the natural environment, the first ranking place is occupied by BA, the second - by AtD. In the structure of the AZ in areas with an unfavorable geo-ecological state of the natural environment, the first ranking place is occupied by AtD, the second - by BA, which is consistent with the literature data [8].

Based on the results of the study, it can be concluded that the spatial variation in the incidence rate of BA, AR and AtD in the child population aged 0-14 years is interconnected with the ecological and hygienic state of the environment in the Andijan region. According to the results of the component analysis, the leading factors affecting the risk of their development are pollution of water resources and air by liquid and gaseous pollutants. In accordance with the latest results of a study by scientists, a change in the structure of AZ towards the predominance of the frequency of skin allergies, an increase in the prevalence of chronic AZ of the respiratory tract is

the result of a violation of the barrier properties of these systems due to the pathogenetic impact of adverse environmental factors [7].

The results of studies on the prevalence of AD in areas with different geoeological conditions of the natural environment can be useful in developing action plans for the prevention, treatment and rehabilitation of the child population with this pathology. Therapeutic and preventive measures should be carried out taking into account the regional features of the geo-ecological state of the natural environment.

The implementation of such measures should be carried out in several directions: long-term monitoring of the health status of the child population, correction of identified violations, environmental protection measures, informing medical workers about the degree of environmental pollution, the consequences of technogenic impacts and possible preventive measures to prevent them.

Conclusion. The territories of the region were ranked according to the level of morbidity with AD. High morbidity within the region at the same time as BA, AR and AtD is noted in the Asaka district,

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