

Influence of Environmental Indicators on the Development of Broncho-pulmonary Pathology in Children

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Abstract: This research paper provides a summary of the information available in the literature on environmental indicators, the influence of environmental factors, the clinical picture of bronchopulmonary disease, and is also devoted to the problems of the impact of environmental problems on the development of broncho-pulmonary pathology among the child population. The analysis of the information received will help general practitioners and pediatricians in making the correct diagnosis and timely detection of the disease, taking into account the risk group, as well as prevention, clinical examination and rehabilitation of sick children, and prevention of disability among the child population.

Keywords: Children, Ecology, Retrospective Analysis, Broncho-pulmonary Pathology, Prevention.

1. INTRODUCTION

The organization of medical care for children with acute and chronic broncho-pulmonary pathology is one of the priority health problems at present, since in the structure of morbidity and mortality, especially children of the first year of life, among the so-called controlled respiratory diseases occupy a dominant place. The prevalence of infectious and inflammatory respiratory diseases is also high among older children, with statistical reports showing an upward trend in morbidity. In the structure of causes of mortality of children of the first year of life, respiratory diseases occupy a stable third place (first place - diseases of the perinatal period, second - congenital abnormalities) [1,4,8].

The health of children is the subject of numerous studies by public health professionals. The relevance of these studies increases when organizing medical care for children with acute and chronic broncho-pulmonary pathology. This situation is primarily due to the fact that in the structure of morbidity and mortality, especially children of the first year of life, childhood broncho-pulmonary pathology occupies a dominant position. The deterioration of health is

based on a range of socio-economic causes, among which the imperfection of the existing system of medical examination of children and the decrease in the volume of preventive programs play a role. This pattern of disease prevalence is observed in adolescents 15-17 years old. So, bronchial asthma takes not the second, but the fifth place, and in this regard acute pneumonia, chronic pharyngitis and allergic rhinitis move to previous rank places. Data from epidemiological studies conducted according to a uniform methodology using quantitative diagnostic criteria show that the true prevalence of chronic respiratory diseases often exceeds official data several times [7,8, 9, 10].

The incidence of chronic pneumonia in children is 0.6-1.8 per 1000 cases. It is most often based on congenital lung abnormalities, "hidden malformations" of development, insufficiency of local bronchial immunity and ciliary dyskinesia. In general, in the structure of chronic lung diseases, hereditary and congenital pathology accounts for 4.6 to 20% of all cases [9,11]. In recent decades, the attention of researchers has been drawn to the increasing prevalence in children of chronic broncho-pulmonary pathology, among which bronchial asthma occupies the leading place. Epidemiological studies suggest that between 4% and 8% of the population suffer from bronchial asthma. The annual rate of increase in the prevalence of bronchial asthma in children reaches 20%. It is important to note that in recent years bronchial asthma is also found in children of the first years and even the first months of life. The incidence of chronic bronchitis occupies a small share in the structure of respiratory pathology, however, in terms of the severity of the course and the risk of developing disabled children and adverse outcomes, it is very significant [3,4,5]. Currently, mortality from respiratory diseases, including acute respiratory viral infections, influenza and pneumonia, in the Russian Federation, both in children as a whole and in the age group up to 1 year, is more than 10 times higher than the corresponding levels in economically developed countries, although it tends to decrease. Currently, the problem of studying the true prevalence of broncho-pulmonary diseases in children by the method of scientifically based epidemiological studies is becoming more and more urgent, since medical reporting data usually do not reflect an objective picture. In this regard, it is necessary to study the actual prevalence of broncho-pulmonary diseases in children in real comparable conditions of environmental, socio-hygienic and biological factors. Broncho-pulmonary pathology in children is due to a complex set of risk factors. [1, 2, 3, 4]. The problem of the relationship between the state of the environment and human health in the Republic of Uzbekistan is becoming more and more urgent every year in the pediatric system. An important role in the formation of immunodeficiency states belongs to disorders of adaptation of the human body to environmental changes. The child's body, physical and mental development are greatly influenced by multiple environmental factors. These factors, directly affecting many physiological functions, affect the state of respiration, metabolism, circulation, digestive process, urination and many others. Human health reflects the state of the ecosystem as a whole, is a generalized indicator of the quality of the habitat and its impact on human life. Harmful environmental factors can lead to the development of chronic pathology of all organs and systems, in particular: the immune system, respiratory organs, the gastrointestinal tract, bile tract and liver, endocrine and a number of other systems. [7, 8, 9]. Adverse environmental factors can act directly as allergens. In the structure of broncho-pulmonary diseases of childhood, pneumonia occupies a significant place. The prevalence of pneumonia and the number of hospitalizations associated with it in children worldwide are increasing. Existing qualitative and quantitative changes in metabolism, provoked by changes in ecology, can also cause disorders in the growth and structure of the human body [10, 11, 13]. The scientific studies studied showed an increase in the prevalence of negative factors among children of all ages. Currently, it can be considered proven that environmental factors are risk factors for pneumonia, which can lead to the onset of the disease. An especially important

role among the latter is played by inhalation of allergens of the pet mite, house dust, passive smoking. Risk factors also include the effects of car emissions and occupational sensitizers, as well as agricultural and economic factors. Developing inflammation leads to development of bronchial hyperreactivity, their hypersecretion, swelling and respiratory insufficiency [11,12, 13, 14]. According to statistics, the incidence rate increases in early childhood. This trend is evident in the dynamics of prevalence, the structure of early childhood incidence is generally consistent with reporting rates. The prevalence of community-acquired pneumonia is more evident in early childhood by comparison of older children. Thus, it is relevant to conduct a comprehensive retrospective analysis, epidemiological, clinical and anamnestic monitoring to early detect the effects of adverse environmental factors on children, since it is this method that can detect the real impact on the children's population.

2. MATERIALS AND METHODS OF RESEARCH

The aim of the study is to study the negative impact of environmental distress in broncho-pulmonary diseases in children.

1. Carry out retrospective analysis and study the prevalence of respiratory diseases in the districts of Surkhandarya region with different environmental conditions.
2. Identify the main etiological risk factors for bronchopulmonary diseases in children.
3. Make recommendations to GPs for early detection of broncho-pulmonary system pathology in children.

In the period from January 2019y to February 2020y, the method of retrospective analysis studied broncho-pulmonary pathology among the children (according to the form 112/y), to identify the prevalence of broncho-pulmonary pathology among children from 1 year to 16 years old living in the Surkhandarya region. In total, 500 outpatient cards of sick children, an advisory polyclinic of the regional children's multidisciplinary center were checked.

Statistical processing of the results of the study was carried out using the standard statistical computer system "Microsoft Excel" using the Student test (t) to evaluate the reliability of the difference in absolute values of the average values. The difference was considered valid at $p < 0.05$.

3. RESULTS OF THE STUDY AND THEIR DISCUSSION

The results of the retrospective analysis study showed that, to identify the prevalence of bronchopulmonary pathology among children. The first group studied the data of the Termez region and the city of Termez, conditionally called the ecological dysfunctional region, the connection with the negative influence of environmental indicators, such as insulations, wind, air dust, and the composition of drinking water. In total, 150 outpatient cards were studied. The second group included the Baisun district, the most favorable in terms of environmental situation is located in the mountainous region of the region. In total, -100 outpatient cards were studied. The third group is the rural, environmentally disadvantaged zone, Sariasiya and Uzun districts there are industrial enterprises of the Republic of Tadjikistan, namely the negative impact of the aluminum plant. In total, 150 outpatient cards were studied.

The control group was composed of the Dzarkurgan, Muzrabad districts.

In total, -100 outpatient cards were studied.

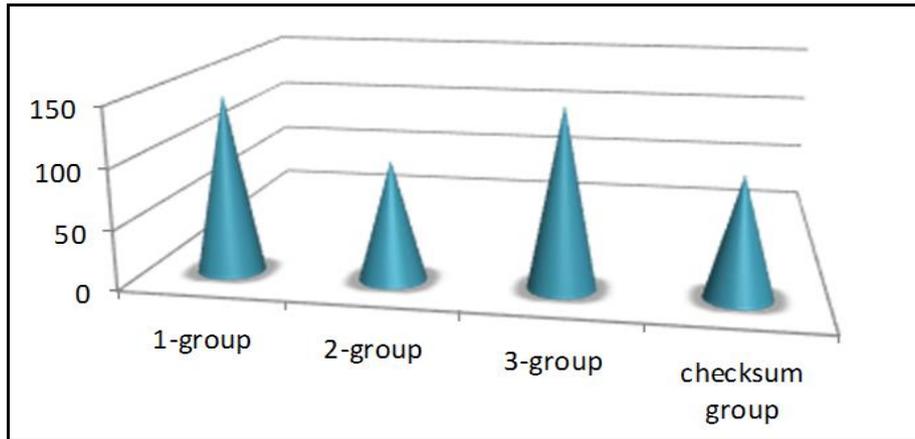


Fig. 1 Amount examination stationary hand

According to the advisory polyclinic of the regional multidisciplinary children's center, the following results were obtained:

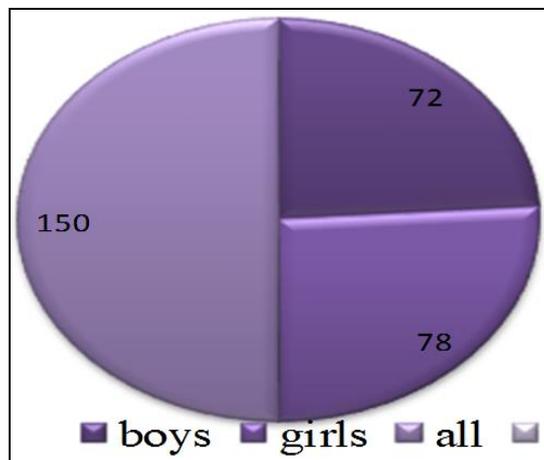


Fig. 2 1- group-distribution patient children by gender

In the first group of 150 children, boys made up 65, girls - 75, of which 47 (31%) children suffered from pneumonia, 23 (15%) children suffered recurrent bronchitis, 32 (21%) children suffered pneumonia due to intrauterine infection, 26 (17%) children suffered acute respiratory infection, 4 (3%) children found bronchial asthma, 6 (4%) allergic rinitis, 12(8%) bronchiolitis.

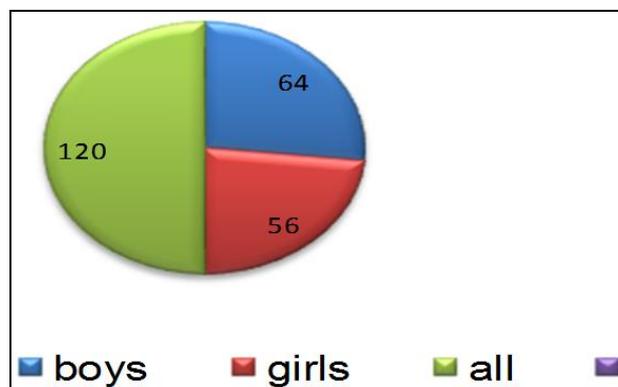


Fig. 3 2-group-distribution patient children by gender

In the second group of 120 children, boys made up 64, girls - 56, of which 32 (27%) children suffered from pneumonia, 13 (11%) children suffered recurrent bronchitis, 38 (31%) children suffered acute respiratory infection, 2 (5%) children found bronchial asthma, 3 (2.5%) revealed allergic rhinitis, 8 (21%) suffered bronchiolitis, obstructiv bronxitis 20(17%), acute respiratory infection with timomegalis 4(3%).

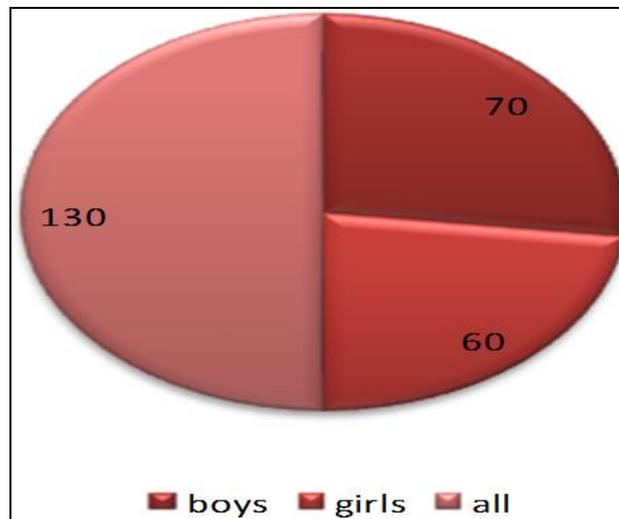


Fig. 4 3-group-distribution patient children by gender

In the third group of 130 children, boys made up - 70, girls - 60, of which 22 (17%) children suffered pneumonia, 24 (18%) children suffered obstructive bronchitis, 33 (25%) children suffered acute respiratory infection, 12 (9%) children found bronchial asthma, 8 (6%) revealed allergic rhinitis, 6 (4.6%) suffered bronchiolitis, 15 (12%) acute respiratory infection allergic, limfatic-gipoplastik diathesis.

Control group - residents of the Dzharkurgan and Muzrabad districts made up almost children's health.

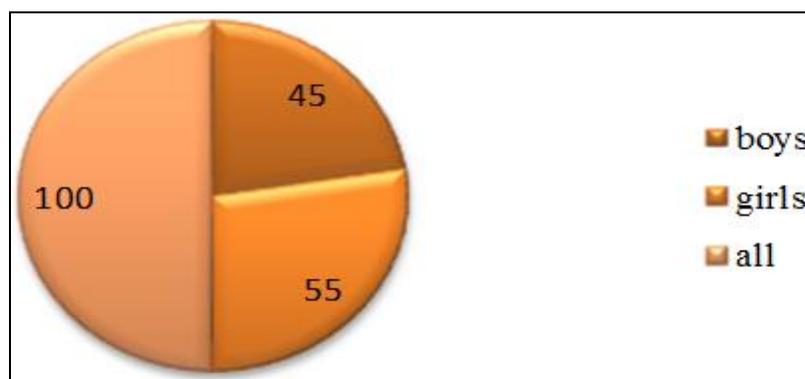


Fig. 5 Checksum group

The results of the study showed that children living with high ecological disadvantage suffered more from broncho-pulmonary pathology. The development of the disease was negatively affected by environmental factors, especially the influence of insolation, dusty, dry weather, soil composition, which led to the development of hypoxia of the child's body.

Table 1: Classification patient to group

№	Name disease	1-group n =150		2- group n =120		3- group n =130	
		<i>abs</i>	%	<i>absc</i>	%	<i>abs</i>	%
1.	Pneumonia:	47	31	32	27	22	17
	Pneumonia with intrauterine infection	32	21	0	0	10	7,6
2.	Bronchial asthma	4	3	2	5	12	9
3.	Obstructive bronchitis	23	15	13	11	24	18
4.	Bronchiolitis	12	8	8	21	6	4,6
5.	Allergic rhinitis	6	4	3	2,5	8	6
6.	Acute respiratory infection	26	17	38	31	33	25
7.	Acute respiratory infection with allergic, limfatic-gipoplastik diatezis.	0	0	0	0	15	12
8.	Acute respiratory infecthion with timomegalis	0	0	4	3	0	0

As seen from table, children with first group and triens group characteristically tallest periodicity respiratory infection airly drip and allergic condition than second group. Received finding indicates at that, engineering plan diagnosis and therapy patient with bronxo-pulmonary patology inclusive of ecological scorecard and particular qualities at specific clinical syndromy diseases.

4. RESULTS

We can say that additional differential - diagnostic criteria for the diagnosis of broncho-pulmonary pathology have been developed for the further observation and implementation of preventive measures, as well as studying the negative impact of environmental factors for general practitioners. The most informative adverse factors were identified: insolation, dust, wind, drinking water quality, the presence of aggravated allergic history, repeated acute respiratory infections, obstructive bronchitis, history of bronchiolitis also negatively affects the development of broncho-pulmonary pathology in children. Specific recommendations have been developed for the family to eliminate adverse risk factors, stages of medical examination and rehabilitation of children with broncho-pulmonary pathology have been proposed.

It should be noted that the results of the retrospective study confirm the influence of environmental factors on the course of pregnancy and the state of health of childhood. All this indicates the need to continue such studies for improvements in order to optimize methods of diagnosis and prevention of broncho-pulmonary pathology.

5. CONCLUSIONS

1. For the first time, a comprehensive study of the prevalence of broncho-pulmonary diseases in children in regions with various environmental conditions was carried out.
2. We studied the prevalence of broncho-pulmonary pathology in children in regions with a dysfunctional environmental situation higher than in environmentally favorable regions of the region.
3. Children living in areas with air pollution are more susceptible to allergic diseases, they suffered more severe broncho-pulmonary diseases.
4. In children living from the first and third groups of regions, bronchial hyperreactivity was more noted, which led to a deterioration in bronchial patency, this reduces the development of obstructive bronchitis.

5. To prevent chronization, complication of disease or aggravation of pathology, an in-depth medical examination from early childhood, taking into account the influence of the environment, is necessary.
 6. Environmental factors: insolation, dust, dry air negatively affects the growth of broncho-pulmonary disease in children.
 7. Often sick children lag behind in physical development by comparing their peers.
- The authors declare that there is no conflict of interest in the preparation of this article.

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