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PERINATAL PATHOLOGY AS A RISK FACTOR FOR THE DEVELOPMENT OF BRONCHIAL ASTHMA IN CHILDREN

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ABSTRACT

The aim of the study: *to study the perinatal history of children with bronchial asthma depending on the concomitant neurological symptoms.*

Material and methods of the study: *A total of 103 children with moderate bronchial asthma in remission were examined, with an average age of 7.2±1.2 years. The children were divided into 2 groups: the main group, which included 72 children with bronchial asthma and late consequences of perinatal CNS damage, and a comparison group consisting of 31 children with bronchial asthma without concomitant neurological disorders.*

Results: *Based on the data obtained, it was found that perinatal lesions of the central nervous system significantly affect the further development and course of bronchial asthma in children. A burdened heredity for allergic diseases in patients with bronchial asthma against the background of late consequences of perinatal lesions of the central nervous system (the main group) was significantly less common (30.6%; n=22) than in the comparison group - in 67.7% (n=21) of cases. In the main group, the mothers' pregnancies proceeded with some complications (100% of cases), while in the comparison group, only a quarter of the observations revealed a pathological course of pregnancy in mothers, which is undoubtedly a predisposing factor in the formation of perinatal damage to the central nervous system in the main group.*

KEY WORDS: *bronchial asthma, consequences, perinatal damage, central nervous system, neurological symptoms, perinatal history, risk factors, Apgar scale*

Bronchial asthma is one of the urgent problems of pediatrics, since in the last decade both in our country and abroad, there has been an increase in the prevalence of this disease in children, a shift in the onset to an earlier age and a worsening of the course. Studies by a number of authors have shown that perinatal hypoxic damage to the central nervous system (CNS) increases the risk of developing bronchial asthma (BA) in preschool children by 3.4 times, while BA is characterized by an early onset, a more severe persistent course, polyvalent sensitization and low efficiency of traditional methods of therapy [4,6].

It has been found that most children with bronchial asthma have a history of perinatal CNS damage [2,4,6]. Perinatal CNS damage increases the risk of developing bronchial asthma in preschool children by 3.4 times. It is the disturbances in the mechanisms of neurovegetative regulation of the cardiorespiratory system that arise as a result of unfavorable nonspecific influences in perinatal ontogenesis, along with hereditary and constitutional predisposition to atopy, that have a significant impact on the development of bronchial asthma in preschool children [5,6,8,11].

In this regard, it is necessary to further develop new diagnostic and prognostic criteria for the implementation and course of bronchial asthma in children with the consequences of perinatal hypoxic damage to the central nervous system, based on a comprehensive study of the pathogenetic features of allergic inflammation in the bronchopulmonary system, as well as the process of cerebral hemodynamics, taking into account a set of neuropsychological, psychosomatic, immunological and functional parameters, which was the basis for this work.

THE AIM OF THE STUDY

To study the perinatal history of children with bronchial asthma depending on the accompanying neurological symptoms.

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MATERIAL AND METHODS OF THE STUDY

A total of 103 children with moderate bronchial asthma in the period of disease remission were examined, the average age of which was 7.2±1.2 years. The children were divided into 2 groups: the main group, which included 72 children with bronchial asthma with the presence of remote consequences of perinatal CNS damage, and a comparison group consisting of 31 children with bronchial asthma without concomitant neurological disorders. The diagnosis of bronchial asthma was verified on the basis of anamnesis data, complaints, clinical symptoms, study of functional respiratory parameters, allergological examination in accordance with the National Program for Bronchial Asthma in Children.

An optimized questionnaire was developed, where the obtained anamnestic data and the results of the conducted studies (28 parameters) were recorded. Particular attention was paid to information from the child's developmental histories (form 112), in particular, the data of the hereditary anamnesis, especially the somatic status of the parents, where the presence of allergic diseases and/or bronchial asthma was indicated . Attention was also paid to the age and place of residence of the child, the age of the mother at the time of the child's birth, the number of pregnancies she had, the characteristics of the course of pregnancy and childbirth; the course of the adaptation period of newborns, the type of feeding, the somatic pathology suffered by children in the first and subsequent years of life.

RESULTS AND DISCUSSION

The conducted analysis of the anamnesis to identify the factors influencing the development and course of bronchial asthma in children, in most cases showed a hereditary burden of atopic /allergic diseases - 69.9% (n=72) of observations, which was detected in 100% of cases (31 patients) in the comparison group. Whereas 30.1% (n=31) of children did not have an burdened heredity and these were children with bronchial asthma against the background of remote consequences of perinatal CNS damage. Allergic diseases were present in both parents of the examined children (34.0%; n=35) and other close relatives (grandmothers, grandfathers, aunts, uncles) (14.6%; n=15). In 21.4% (n=22) of children, a hereditary burden of the group of diseases was noted on both lines at once (Table 1). Moreover, hereditary burden in children with bronchial asthma on the mother's side (22.3%) was found almost 2 times more often than on the father's side (11.7%).

Table 1
Hereditary burden of allergic diseases in children in observation groups

Hereditary burden	Main group (n=72)			Comparison group (n=31)			r
	n	% of all children (103)	% in group (72)	n	% of all children (103)	% in group (31)	
Hereditary burden of allergy pathology	41	39.8	56.9	31	30.1	100,0	0.753
Including on the father's side	6	5.8	8.3	6	5.8	19.4	0.832
Including on the mother's side	13	12.6	18.1*	10	9.7	32.3*	0.552
On both lines	14	13.6	19.4	8	7.8	25.8	0.909
Other immediate relatives	8	7.8	11.1	7	6.8	22.6	

Note: * - p ≤0.005 between paternal and maternal lines (Chi-square test)

When assessing the health status of the patients' parents, it was found that both fathers and mothers of the children had various allergopathologies (Table 2), more often found on the maternal side. Thus, mothers suffered from hay fever and drug allergies (4.8% and 5.8%, respectively) significantly more often than the fathers of the examined children, in whom this pathology was not found in any case (p≤0.05). Allergic dermatitis/urticaria was found in the anamnesis among mothers of patients with bronchial asthma almost 7.7 times more often - 14.6%, against 1.9% on the paternal side.

Table 2
Allergic diseases of parents of examined children

Allergic diseases	Fathers		Mothers		Both parents	
	n	%	n	%	n	%
Hay fever	0	0*	5	4.8	0	0
Bronchial asthma	5	4.8	6	5.8	0	0
Quincke's edema	0	0	2	1.9	0	0
Allergic rhinitis	5	4.8	8	7.7	0	0
Drug allergy	0	0*	6	5.8	0	0
Cold allergy	4	3.9	2	1.9	2	1.9
Allergic dermatitis/urticaria	2	1.9*	15	14.6	0	0

Note: * - p ≤0.005 between paternal and maternal lines (Chi-square test)

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When analyzing the incidence of allergic diseases in children in the observation groups, a burdened heredity for allergic diseases in patients with bronchial asthma against the background of remote consequences of perinatal CNS damage (main group) was significantly less common (30.6%; n=22) than in the comparison group – in 67.7% (n=21) of cases.

The study of the perinatal history showed that the majority of the examined children in the study group were born from the first birth (68.9%); 26.2% - from the second; 2.9% - from the third and 1.9% - from the fourth. The analysis of somatic pathology in mothers revealed that the most common pathology in them was chronic pyelonephritis and tonsillitis, noted in 21.3% (n=22) and 15.5% (n=16) of mothers. At the same time, 8.3% were diagnosed with an exacerbation of pyelonephritis during this pregnancy. Somatic pathology among mothers of children with bronchial asthma was found in the main group 2.8 times more often than in patients of the comparison group ($p \leq 0.05$) (Table 3).

Table 3
Analysis of somatic pathology of mothers of examined children

Nosological Form	Main Group		Comparison Group		Total	
	n=72	%	n=31	%	n=103	%
Chronic pyelonephritis	19	26.4*	3	9.7	22	21.3
Chronic gastritis	3	4.2	1	3.2	4	3.9
Nodular goiter/hypothyroidism	5	6.9	1	3.2	6	5.8
Chronic tonsillitis	15	20.8*	1	3.2	16	15.5
Chronic bronchitis	4	5.6	1	3.2	5	4.8

Note: * - $p \leq 0.05$ – reliability of data between the main and comparison groups
Other somatic diseases (chronic gastritis, chronic bronchitis, thyroid disease) were quite rare, and their frequency did not differ significantly between the groups of children examined.

When analyzing the unfavorable factors of the perinatal history of mothers of children in the examined groups, it was found that the most common causes were medical abortions preceding the given pregnancy, which were noted in 33.3% (n=24) of mothers of children in the main group and in 19.4% (n=6) in the comparison group (Table 4). In 31.9% and 16.1% of mothers of children in the main and comparison groups, respectively, there were complaints of cervical erosion in the anamnesis. Chronic adnexitis in mothers of children in the main group was noted 1.7 times more often than in the comparison group (22.2% and 12.9%, respectively), but the differences were not statistically significant.

Table 4
Adverse factors in the gynecological anamnesis of mothers of the examined children

Factors and nosological forms	Main group (n=72)		Comparison group (n=31)		r
	n	%	n	%	
History of miscarriages, frozen pregnancy	8	11.1	2	6.5	0.464
History of medical abortions	24	33.3*	6	19.4	0.915
Long-term history of infertility	1	1.4	1	3.2	0.535
Chronic adnexitis	16	22.2	4	12.9	0.273
Cervical erosion	23	31.9*	5	16.1	0.533
Bicornuate uterus	3	4.2	-	-	0.249
History of ectopic pregnancy	1	1.4	-	-	0.51
History of termination of pregnancy for medical reasons	2	2.8	-	-	0.349
Total number of pathologies	64	88.8*	13	41.9	

Note: * - $p \leq 0.05$ – reliability of data between the main and comparison groups
Other unfavorable factors of gynecological history, such as miscarriages, history of frozen pregnancy, termination of pregnancy for medical reasons, long-term infertility, bicornuate uterus, history of ectopic pregnancy, were observed in isolated cases with the same frequency in both groups. At the same time, in mothers of children of the main group, an aggravated gynecological history was observed in 88.8% of cases, which is 2.1 times more often than in the comparison group. Since the course of pregnancy largely determines the health of future children, special attention is paid to its characteristics. The conducted studies allowed us to establish that in mothers of children of the main group, the threat of termination of pregnancy at different stages was noted significantly more often than in mothers of patients of the comparison group (52.8% and 22.6%, respectively; p=0.05), which, most likely, was the main etiologic factor of intrauterine hypoxia of the fetus. The next most significant factors leading to the development of perinatal CNS damage were maternal anemia (54.2%), colpitis (40.3%), gestosis in the second half of pregnancy (30.6%) and umbilical cord entanglement around the fetus's neck (22.2%). Gestational diabetes mellitus occurred with the same frequency in both groups (4.2% and 3.2%, respectively). An important perinatal risk factor was intrauterine infections, observed 4.1 times more often in the main

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observation group. In general, in all observations in the main group, the pregnancy of mothers proceeded with some complications (100% of cases), and in the comparison group, only a quarter of observations revealed pathological pregnancy in mothers (Table 5).

Table 5
Peculiarities of the course of pregnancy in mothers of the examined children

Factors and nosological forms	Main group (n=72)		Comparison group (n=31)		r
	n	%	n	%	
Threat of termination of pregnancy	38	52.8*	7	22.6	0.05
Cord entanglement	16	22.2	3	9.7	0.489
Gestational diabetes mellitus	3	4.2	1	3.2	0.535
Gestosis of the first half	11	15.3	6	19.4	0.829
Gestosis 2nd half	22	30.6	3	9.7	0.05
Colpitis	29	40.3	3	9.7	0.446
Anemia	39	54.2	2	6.5	0.745
Intrauterine infection	19	26.4	2	6.5	0.927

Note: * - p ≤0.05 – reliability of data between the main and comparison groups

When analyzing the condition of newborn children after birth, it was found that the majority of children in the comparison group (93.5%) received a score of 8-10 points in the first minute after birth, while in the main group all children were born in a state of asphyxia (Fig. 1).

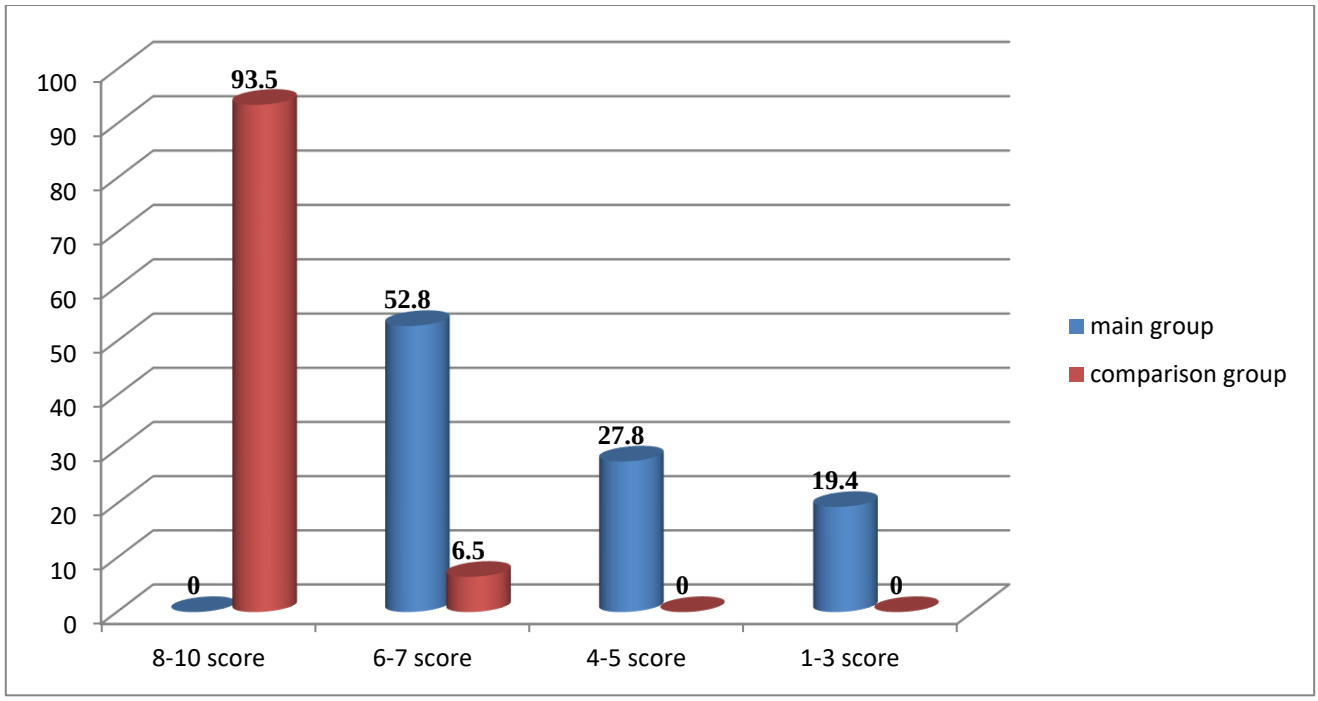


Fig. 1. Apgar score at 1 minute after birth of the examined children

Apgar score of 6-7 points, corresponding to mild asphyxia, was given to 52.8% (n=38) of the children in the main group and 6.5% (n=2) of the children in the comparison group. Also, 27.8% (n=20) of the children in the main group were born in a state of moderate asphyxia (an Apgar score of 4-5 points) and 19.4% (n=14) of the children in a state of severe asphyxia.

When assessing the condition of newborns in the main group according to the Apgar scale at the 5th minute after birth, it was found that the number of children who received 8-10 points increased to 6.9% (n=5), mild asphyxia was detected in 55.6% (n=40), while moderate and severe asphyxia was diagnosed in more than a third of newborns, accounting for 23.6% (n=17) and 13.9% (n=10) of cases, respectively (Fig. 2).

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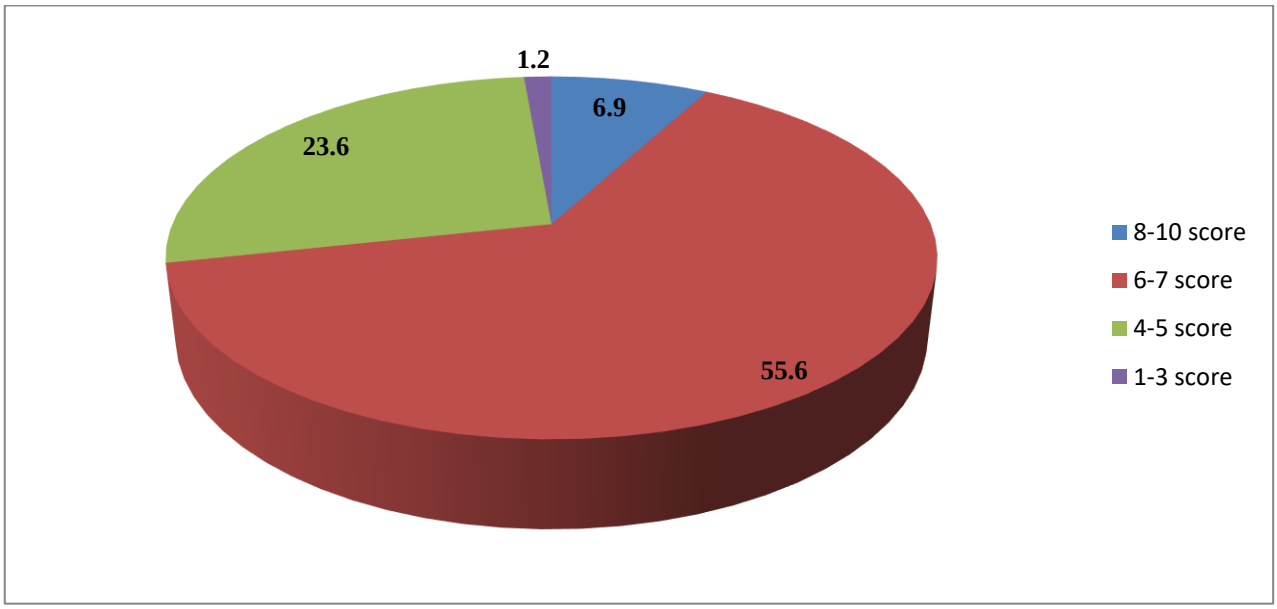


Fig. 2. Apgar score at 5 minutes in the main group

When studying the duration of breastfeeding as a protective factor in the formation of the implementation of atopic predisposition to the disease, it was found that the examined children were breastfed from 0 to 36 months, on average 12.2±0.97 months (Table 6). Children with a duration of breastfeeding less than 1 month, as well as from birth, who were bottle-fed, were encountered with the same frequency of cases in both groups, their share was 19.4%. The duration of breastfeeding from 1 month to 3 was slightly higher in the main group (33.3% versus 25.8%). There were more children who received breast milk from 3 to 6 months in the comparison group than in the main group (14.6% and 11.1%, respectively), but there were no reliable differences. The number of children who were breastfed for more than 6 months was approximately the same in both groups (36 and 32%, respectively).

Table 6

Duration of breastfeeding in the examined children

Duration of breastfeeding	Main group, n=72		Comparison group, n=31		Total, n=103		r
	n	%	n	%	n	%	
Less than 1 month	14	19.4	6	19.4	20	19.4	0.991
From 1 to 3 months	24	33.3	8	25.8	32	31.1	0.449
From 3 to 6 months	8	11.1	7	22.6	15	14.6	0,130
More than 6 months	26	36.1	10	32.3	36	34.9	0.706

CONCLUSIONS

1. For more than a third of children with bronchial asthma due to remote consequences of perinatal CNS damage (30.1%), hereditary burden is not characteristic.
2. In the main group, the mothers' pregnancies proceeded with some complications (100% of cases), while in the comparison group, only a quarter of the mothers' pregnancies showed pathological pregnancy.
3. It can be assumed that the duration of breastfeeding in children with bronchial asthma with the onset of the disease in the first 5-6 years of the child's life was not a protective factor in the development of a predisposition to an allergic disease.

REFERENCES

1. *Abdusalomova M. A., Mavlyanova Z. F., Kim O. A. Ork a miya va umurtka pogonasining byin qismining tugruk zharohatlari bilan bemorlarning diagnosticssid electroneuromyography Journal // journal of biomedicine and practice. – 2022. – T. 7. – No. 2.*
2. *Avdeev S.N., Aisanov Z.R., Arkhipov V.V. et al. Principles of therapy selection for patients with mild bronchial asthma. Agreed recommendations of RAAKI and RRO // Practical pulmonology. - 2017. - No. 1. - P. 44-54*
3. *Avdeev S.N., Aisanov Z.R. et al. Ways to improve the diagnosis and treatment of patients with bronchial asthma by primary care physicians // Pulmonology. - 2019. - No. 29. - P. 457-467*
4. *Baranov A.A. National leadership. Pediatrics / edited by A. A Baranov. - M.: GEOTAR-Media , 2019. - 100 pp.*
5. *Ezhova O.L. Polysystemic functional disorders in children with consequences of perinatal damage to the central nervous system // Russian Family Doctor. - 2012. - No. 1. - P. 40*

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6. *Zaitseva S.V., Zaitseva O.V., Lokshina E.E., Zastrozhina A.K., Murtazaeva O.A. Severe bronchial asthma in children. // Allergology and Immunology in pediatrics. - 2019. No. 3. - P. 4-14*
7. *Inoyatova Sh.Sh., Omonova M.Kh., Sarsenova A.Zh. Causal factors of bronchial asthma in children // Scientific community of students of the 21st century. Natural sciences. - 2021. - No. 10. - P. 12-15*
8. *Kobiljonova Sh.R., Mirrakhimova M.Kh., Sadullaeva H.A. Prevalence and risk factors of bronchial asthma in children // Journal of Theoretical and Clinical Medicine. - No. 2, - 2022. - P. 51-55*
9. *Lebedenko A.A. Clinical and pharmacoepidemiological monitoring and prediction of the course of bronchial asthma in children: author's abstract of diss .... doctor of medicine . n auk: 14.01.08 / Lebedenko Alexander Anatolyevich. - Rostov-on-Don, 2014. - 42 p.*
10. *Metelsky S.M., Rudoy A.S., Davidovskaya E.I., Sushinsky V.E. Management of patients with bronchial asthma: GINA 2021 // « Recipe ». – 2021. - Volume 24. - No. 4. – p. 480-497*
11. *Plakhotina O.V., Orazbaeva Zh.A., Koldasbekkyzy M. Age-gender aspect of bronchial asthma incidence in children // Bulletin of KazNMU . - 2018. - No. 3. - P. 498-500*
12. *Ryngachenko E.S., Novak A.A., Sokolova L.V., Mizernitsky Yu.L. // Clinical features of asthma in children with mental disorders. – Russian Bulletin Perinatol. and pediatrics. – 2022. – No. 67. – P. 125-131*
13. *Simbirtsev S.A., Petrash V.V., Nozdrachev A.D. Bronchial asthma as a functional insufficiency of the meta-sympathetic nervous system of the lungs // Bulletin of the St. Petersburg Medical Academy of Postgraduate Education. - 2011. - Vol. 3. - No. 2. - P. 142-148*
14. *Худойкулова Ф. В. и др. the structure, age features, and functions of hormones. pedagog, 1 (5), 681-688. – 2023.*
15. *Shavkatovna I. M. Studying risk factors for the development of infantial cerebral palsy in children and the need for their prevention //Journal of biomedicine and practice. – 2023. – Т. 8. – №. 2.*
16. *Mavlyanova Z. F., Burxanova G. L., Hursandov M. H. General practitioner's tactics for convulsive syndrome in children //editor coordinator. – 2021. – С. 468.*
17. *Lutfilloyevna B. G., Farxadovna M. Z., Zohidjonovna R. M. Convulsive Syndrome In Children: Tactics Of Conduct //Journal of biomedicine and practice. – 2022. – Т. 7. – №. 1.*
18. *Anatolevna K. O. et al. The Influence of Risk Factors on the Development of Cerebral Strokes in Children //Open Access Repository. – 2022. – Т. 8. – №. 04. – С. 179-182.*
19. *Khaidarzhonovna K. S., Farkhadovna M. Z., Khaitovich S. R. Features of physical development in children with bronchial asthma //journal of biomedicine and practice. – 2023. – Т. 8. – №. 2.*
20. *Мавлянова З. Ф., Хайдарова С. Х., Шарипов Р. Х. Соматоморфометрический статус детей с бронхиальной астмой //Science and Education. – 2023. – Т. 4. – №. 4. – С. 345-352.*
21. *Хайдарова С. Х., Мавлянова З. Ф. Влияние патологии центральной нервной системы на физическое развитие детей с бронхиальной астмой //" GERMANY" modern scientific research: achievements, innovations and development prospects. – 2024. – Т. 17. – №. 1.*