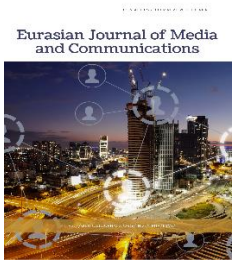

Clinical and functional biochemical characteristics of the oral cavity organs with dentoalveolar anomalies in children and adolescents with bronchial asthma

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ABSTRACT

The dental condition of the oral cavity of children and adolescents with dentoalveolar anomalies against the background of bronchial asthma was studied in 225 patients. Of these, 180 with dentoalveolar anomalies and deformity, suffering from bronchial asthma, and 45 patients without somatic pathology in the age categories 6-9 years old, 10-13 years old and 14-18 years old. In the course of clinical research, the state of hard tissues of the tooth, periodontal tissues and oral mucosa, biochemical composition of the oral fluid, morphological parameters of the maxillofacial region, as well as the frequency of dentoalveolar anomalies and deformities were studied. The clinical, functional and biochemical state of the oral cavity in children and adolescents with dentoalveolar anomalies against the background of bronchial asthma was assessed. Also, for further continuation of the research stages to determine the morphological and functional effectiveness of removable and non-removable orthodontic appliances, a study of the hygienic state and biochemical composition of the oral fluid of children and adolescents was carried out.

Keywords: Children And Adolescents, Oral Cavity, Bronchial Asthma, Dentoalveolar Anomalies and Deformities, Clinical and Functional State, Biochemical Characteristics.

The relevance of the work.

The epidemiology of the main dental diseases in children and adolescents with bronchial asthma indicates a high prevalence of caries and non-carious lesions of the hard tissues of the tooth, pathology of the periodontal tissues and the oral mucosa [2, 6, 17, 34, 35, 36]; frequent detection of violations of immunological, protein and mineral homeostasis at the cellular, organ and organism levels in patients with bronchial asthma [10, 16, 23].

According to literary sources over the past ten years, dentoalveolar anomalies and deformities are often observed among children and adolescents [1, 5, 14, 18, 24]. Also, many researchers note that a significant frequency of morphological and functional disorders in the dentition in the child population are general somatic diseases [3, 4, 27].

The priority in the prevention of dental diseases at the stages of orthodontic treatment is to ensure a high level of oral hygiene. Numerous works have determined the importance and importance of professional hygiene, motivating a child to meticulously follow the doctor's recommendations during the active stage of treatment [8, 29, 30, 32].

Currently, manufacturers are improving hygiene products: modifications are being developed to toothbrushes, irrigators, formulations of therapeutic and prophylactic pastes, rinses, adapted for use by patients undergoing orthodontic treatment [12, 21, 25]. A positive effect was obtained (in 92%), with the combined use of antihistamines in the first weeks after the start of orthodontic treatment with the local use of immunomodulatory, antibacterial drugs (A-bacterin solution and Bischofite) for the prevention of contact stomatitis in children.

For the prevention of complications in the process of orthodontic treatment, it is recommended to use physiotherapeutic methods [13], and there is also evidence of the importance of the final technical stages of processing removable appliances [28]. To eliminate the toxic, toxic-allergic effect of acrylates on the periodontal tissue of the oral mucosa, materials are being developed for basic apparatus that are biocompatible with the surrounding tissues [33]. In other studies, it was found that the ionic composition of the oral fluid changes least of all in patients using devices made by pressing under pressure from Biocryl C plastic and by Orthocryl cold polymerization [11, 19]. On the basis of a comprehensive assessment of the biophysical and biochemical parameters of the oral fluid, it was determined that the adaptation of patients during orthodontic treatment using basic materials of the light type, curing occurs in a shorter time compared to instrumental treatment with basic materials of cold and hot polymerization. Analysis of literature sources showed that the dental status in children with dentoalveolar anomalies and concomitant bronchial asthma, as well as the state of nonspecific resistance and the level of functional reactions that provide oral cavity homeostasis and adaptive capabilities in this contingent, have not been sufficiently studied. Also, an effective scheme of therapeutic and prophylactic measures that improve adaptation to removable and non-removable devices and reduce the risk of developing contact stomatitis in children with bronchial asthma undergoing orthodontic treatment has not been developed.

Purpose of the study.

The aim of the study is to assess the clinical, functional and biochemical state of the oral cavity in children and adolescents with dentoalveolar anomalies against the background of bronchial asthma.

Materials and research methods.

To determine the dental status in children and adolescents with bronchial asthma, a comprehensive clinical examination was carried out in 180 patients aged 6 to 18 years (main group - MG); of them - in accordance with the case histories, 88 children were diagnosed with an intermittent form of bronchial asthma and 92 - mild and moderate persistent forms of the disease. During the study, the state of hard tissues of teeth, periodontal tissues and the mucous membrane of the oral cavity, the frequency of dentoalveolar anomalies and deformities, the level of hygienic and biochemical state of the oral cavity were studied. The examination was carried out on the basis of the Department of Dentistry, Pediatric Dentistry and Orthodontics of the TashIID. The control group (CG) consisted of 45 children and adolescents with dentoalveolar anomalies and deformities without somatic pathology. All subjects were divided by age - 6-9 years; 10-13 years old; 14-18 years old. Also, for further continuation of the research stages to determine the morphofunctional effectiveness of orthodontic removable (MG-1; CG-1) and non-removable (MG-2; CG-2) devices (25 patients from MG-1 and MG-2; 10 patients CG-1; CG-2), a study of the hygienic state and biochemical composition of the oral fluid of children and adolescents was carried out, divided into two groups, regardless of gender and age (Table 1).

Table 1.
Distribution of the examined children and adolescents by type of orthodontic apparatus, age and sex (M + m)

Number of children and adolescents in groups												
Age	**Main group**				**Total**		**Control group**				**Total**	
	boys		**girls**				**boys**		**girls**			
	abs.	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**
Removable orthodontic appliances												
6-9	22	24,4	6	6,7	**28**	**31,1**	3	15,8	2	10,5	**5**	**26,3**
10-13	27	30,3	16	17,7	**43**	**47,8**	3	15,8	3	15,8	**6**	**31,6**
14-18	11	12,2	8	8,9	**19**	**21,1**	4	21,0	4	21,0	**8**	**42,1**
Total	60	66,7	30	33,3	**90**	**100**	10	52,6	9	47,4	**19**	**100**
Fixed orthodontic appliances												
6-9	10	11,1	9	10,0	**19**	**21,1**	4	15,4	2	7,7	**6**	**23,1**
10-13	18	20,0	12	13,3	**30**	**33,3**	4	15,4	2	7,7	**6**	**23,1**
14-18	24	26,7	17	18,9	**41**	**45,5**	7	26,7	7	26,7	**14**	**53,4**
Total	52	57,8	38	42,2	**90**	**100**	15	57,7	11	42,3	**26**	**100**
Total abs. 225/ 100%	112	62,2	68	37,8	**180**	**100**	25	56,2	20	44,6	**45**	**100**

The algorithm of the clinical examination corresponded to the classical scheme and included the collection of subjective and objective data, medical history from the local therapist and pediatrician, including the assessment of the level of control of bronchial asthma using Asthma Control Test (ACT) for children and adolescents [31]. During intraoral examination, the nature of attachment of the frenulum of the lips and tongue, the depth of the vestibule of the mouth, the state of the hard tissues of the tooth, periodontal tissues, the state of the oral mucosa were assessed using indices for assessing the state of the hard tissues of the teeth; SFt, SFc, SFEt, SFEc, periodontal tissue condition indices - PMA%, bleeding, Schiller-Pisarev test (Sch-P), CPITN and the level of oral hygiene - Silness-Loe, Stallard [22]. Anomalies of the position of individual teeth, anomalies of dental arches, anomalies of bite in the sagittal, vertical and transversal directions were diagnosed. Clinical functional tests were carried out by Eshler-Bitner, Ilyina-Markosyan. The diagnosis was made in accordance with Engle's classification, as well as with the classification of anomalies in the occlusion of the dentition and jaws [22], and the function of respiration, swallowing, speech and temporomandibular joint was also assessed. In the process of work in the oral fluid of the examined, the following were assessed: the content of malondialdehyde (MDA) [20], the activity of catalase [9], elastase [37], urease [7], lysozyme [15] (using a set of the company "HUMAN"); and also assessed the level of functional reactions in the oral cavity by fluctuations in the pH value of the oral fluid and the assessment of the charge state of the buccal epithelium cells [26].

The results obtained and their discussion.

According to the results obtained during an epidemiological survey of 225 children and adolescents, including 180 with bronchial asthma, it was revealed that the frequency of dentoalveolar anomalies in the early period of mixed dentition (6-9 years) was on average 26.1%, in the late changeable bite (10-13 years old) - 40.5%, in the final stage of bone tissue formation (14-18) - 33.3%; in the Control group 24.4%; 26.7%; 48.9% respectively. At the same time, the obtained data of children and adolescents aged 14-18 years of age of the

control group, demonstrated the unreliability of statistical data (table 2).

The data presented in the tables demonstrate that in the structure of dentoalveolar anomalies in children and adolescents of the main group, in the age group 6-9 years, anomalies of the position of the teeth (17.1%), edentulous (17.1%), mesial occlusion (12.8 %); in the age group 10-13 years old - adentia (12.3%), three (12.3%), diastema (12.3%), crowding of teeth (17.8), narrowing of the jaws (13.7), distal occlusion (12.3%); in the age group 14-18 years old - abnormal position of the teeth (16.7%), crowding of teeth (25,%), narrowing of the jaws (21.7%), distal occlusion (20%), deep rectal discclusion (9.6%). The Control group at the age of 10-13 and 14-18 years old had an abnormal position of the teeth (13.6), adentia (16.7; 9.1), terms (16.7; 12.3), diastema of the teeth (18, 2; 16.7); crowding of teeth (13.6%), which did not have somatic diseases, and the most frequently revealed anomalies in the position of individual teeth (48.9%).

In the period of late changeable bite in the examined main group, there was an increase in the revealed dentoalveolar anomalies, namely, anomalies in the position of the teeth (vestibular, palatal position, tortoanomaly). This tendency can be explained with an increase in the number of permanent teeth during the formation of a permanent bite against the background of a pronounced tendency towards narrowing of the dental alveolar arches. Also, in children and adolescents of the main group, there was a delay in the eruption of permanent teeth in the main cases.

Table 2
Orthodontic condition in the examined children and adolescents.

Children and adolescents surveyed by age	**Children and adolescents with BA n=180**						**Control group n= 45**					
	6-9 years old n=47		**10-13 years old n=73**		**14-18 years old n=60**		**6-9 years old n=11**		**10-13 years old n=12**		**14-18 years old n=22**	
DAA and DAD	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**
Abnormalities of positive teeth	8	17,1	8	10,9	10	16,7	2	18,2	1	8,3	3	13,6
Adentia	8	17,1	9	12,3	4	6,7	3	27,3	2	16,7	2	9,1
Tremes, diastemas	4	8,5	9	12,3	4	6,7	2	18,2	2	16,7	3	13,6
Crowding teeth	5	10,6	13	17,8	15	25,0	1	9,1	1	8,3	3	13,6
Narrowing of the jaws	5	10,6	10	13,7	13	21,7	-	-	1	8,3	2	9,1
Distal occlusion	5	10,6	9	12,3	12	20,0	1	9,1	2	16,7	2	9,1
Mesial occlusion	6	12,8	3	4,1	-	-	-	-	1	8,3	1	4,5
Deep reticular discclusion	3	6,4	7	9,6	2	3,3	1	9,1	1	8,3	2	9,1
Vertical retinal discclusion	2	4,2	3	4,1	-	-	1	9,1	1	8,3	2	9,1

Transverse anomalies of occlusion	1	2,1	2	2,7	-	-	-	-	1	8,3	1	4,5
The number of DAA; average	**47**	**26,1**	**73**	**40,5**	**60**	**33,3**	**11**	**24,4**	**12**	**26,7**	**22**	**48,9**
Total: 225 of them	**47**	**20,9**	**73**	**32,4**	**60**	**26,7**	**11**	**4,9**	**12**	**5,3**	**22**	**9,8**

When evaluating the data of clinical functional tests performed in the course of clinical examination of children and adolescents with bronchial asthma, orofacial dysfunctions were revealed: dysfunctions of breathing, speech, swallowing (Table 3, Diagrams 3.1 and 3.2).

Diagram №3.1.
Functional disorders in the examined children and adolescents with bronchial asthma of the main group

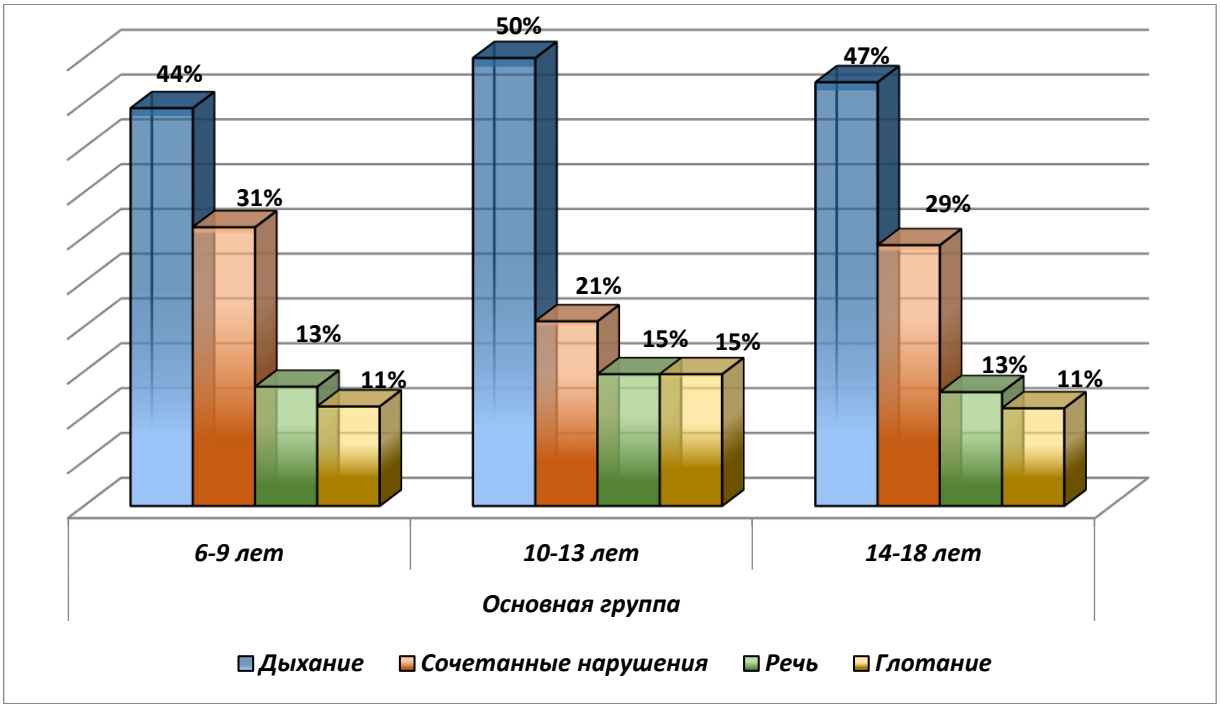
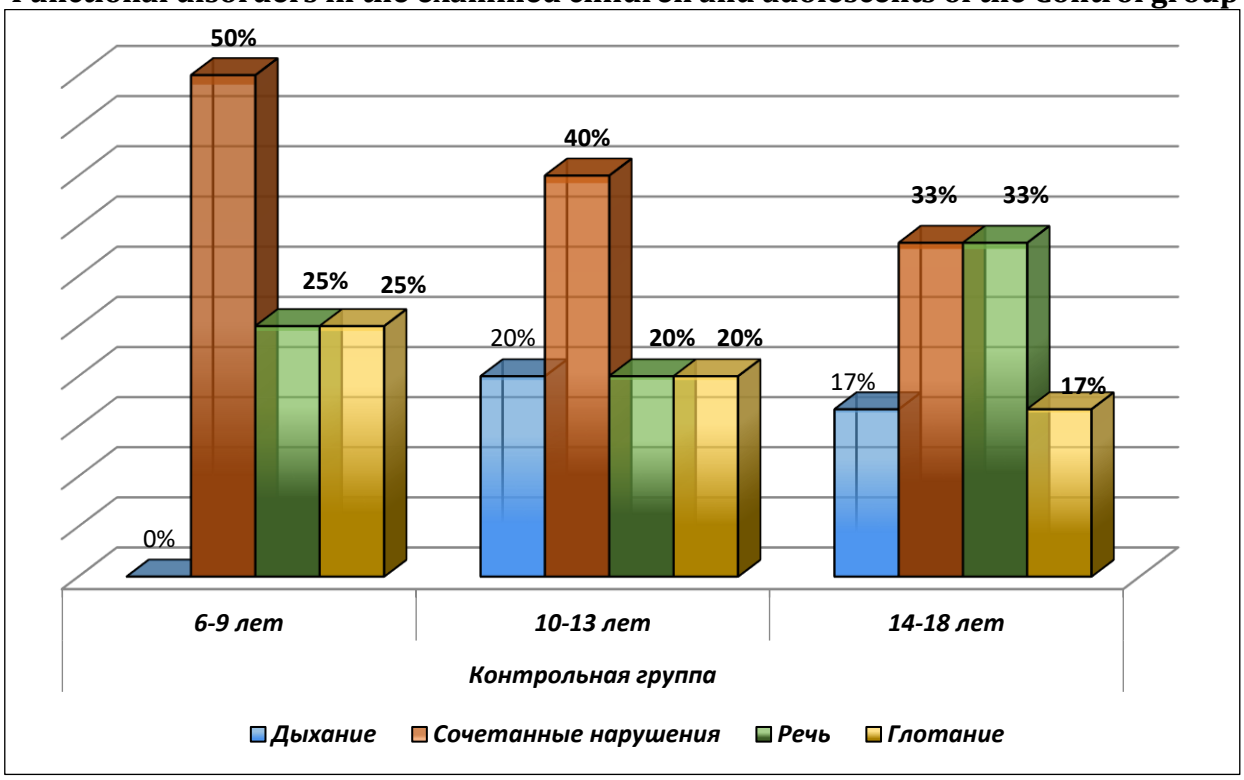


Diagram № 3.2.
Functional disorders in the examined children and adolescents of the Control group



As can be seen from these tables, in children and adolescents with bronchial asthma, orofacial dysfunctions were diagnosed with a higher frequency than in children without somatic diseases. The most common clinical signs of oral respiration were revealed: a symptom of "glossoptosis", dryness of the red border of the lips, a violation of lip closure. Infantile type of swallowing was detected in children with bronchial asthma almost 2 times more often than in practically healthy children. It is noteworthy that in children with bronchial asthma in the period of early mixed bite, combined myofunctional problems were recorded 2.5 times more often than in healthy children, and in the period of late mixed bite - 4 times.

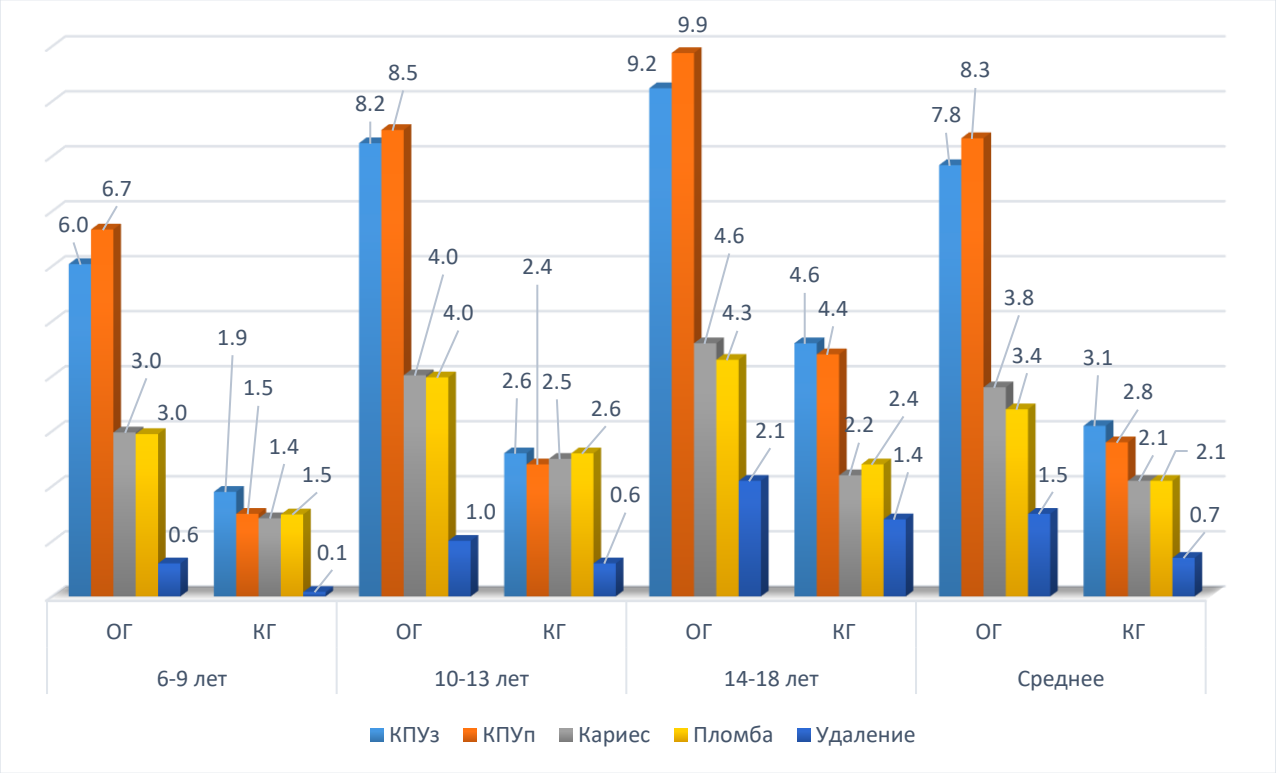
Based on the results obtained, a comparison was made in terms of the relative frequencies of dentoalveolar anomalies in the Control and Main groups. The Student's t-test was used to assess the difference in the arithmetic mean of the two samples, and we concluded that there was no statistically significant difference between the arithmetic mean of the relative frequencies of dentoalveolar anomalies in the Control and Main groups. Also, using the methods of nonparametric statistics in order to compare the medians and distributions of the two samples, the level of significance of the median test for independent samples was determined $p = 0.815$, which means that there is no statistically significant difference in the relative frequencies of dentoalveolar anomalies in the Control group with the Main group.

According to the results of the research, it was determined that the prevalence of caries in the main group in the period of mixed bite was 90.4% on average. In children and adolescents aged 6-9 years, the intensity of caries according to the SFt index was 6.04 ± 0.42, SFc - 6.67 ± 0.4, SFEt - 2.98 ± 0.2, SFEc - 2.95 ± 0.3. It is characteristic that in 15.8% of these children, chalk-like spots were diagnosed in the cervical region of the teeth, with the intensity of the lesion being 4.2 ± 0.68. In the CG index SFt = 1.94 ± 0.22, SFc = 1.54 ± 0.12, SFEt = 1.42 ± 0.55, SFEc = 1.49 ± 0.5. In the period of late changeable bite (10-13 years old) and (14-18 years old), the final stage of

the formation of inert tissue, the indicators of caries intensity even more exceeded those in the Control group of children and adolescents. Acute initial caries was determined in 20.8% of cases with a lesion intensity equal to 4.02 ± 0.8; 4.6 ± 0.24. When comparing the intensity of caries in children and adolescents 6-9 years old; 10-13; 14-18 years old from the Main group who do not have somatic diseases using Student's t-test, in order to assess the differences between the arithmetic mean values of the SFt in the Main group and the Control group, reliable data were obtained corresponding to statistical data, which means that caries of hard dental tissues is directly affected. depends on age, severity of DAA and somatic pathologies.

When analyzing the data of the clinical examination of the Main group and the Control group, a comparison was made of the intensity of caries according to the indices of the SFEt index, SFEc in those examined at the age of 6-9 years, 10-13 years, and 14-18 years (diagram № 2).

Diagram № 2
The intensity of dental caries in children and adolescents with bronchial asthma and in the Control group at the age of 6-9, 10-13 and 14-18 years



These tables demonstrate that the intensity of dental caries lesions in the Main group was significantly higher than in the Control group, both in terms of the indices of SFEt and in terms of SFEc. It is noteworthy that in the SFEc index for MG, the component S (68.8%) was 1.8 times higher than F (36.5%). Extracted teeth accounted for 7.7%. In the Control group, the number of filled cavities (F = 52.1%) was 30% higher than the number of carious cavities (S = 62.1%). The component E in the SFEc index in this group was 5.7%. Thus, in the main group in all periods - early, late and final stages of occlusion, a high prevalence and intensity of dental caries was observed, significantly exceeding those of practically healthy children.

In the course of work, the dominant clinical form was revealed - chronically generalized catarrhal gingivitis (72.24% of cases) and chronically generalized hypertrophic gingivitis (28.3% of cases).

According to the results, mainly in children and adolescents in the period of the early and late stage of mixed bite, generalized catarrhal gingivitis of mild severity was observed (42.55%; 32.87%, respectively), while the severe degree was noted in the subjects (17.02%, 23 , 28%). With age, there was a tendency for the aggravation of inflammatory changes in the periodontal tissues, the incidence of severe generalized catarrhal gingivitis increased to 50% (14-18 years). The most common clinical symptoms of gingivitis in the main group were determined with crowded teeth, the average value of the PMA index in children and adolescents 6-9 years old was 19.4%, in children and adolescents 10-12 years old - 35.8%, in children and adolescents 14- 18 years old - 86.8%; in the middle, in the Main group - 47.4%, in the Control group - 6.6%.

The numerical values of the tables show that children and adolescents with bronchial asthma in the period of early, late changeovers and the stage of dentition formation in accordance with the Silness-Loe and Stallard indices, a satisfactory state of oral hygiene was determined. In children and adolescents aged 6-9 years and 10-13 years, an unsatisfactory level of hygiene was recorded more often than in the Control group. Analysis of the results obtained for the PMA index in the Control group indicates that in the “healthy children” group, PMA index values of more than 10 are rare; also, the severity of inflammation in the gum tissues according to the Schiller Pisarev test was higher in children and adolescents with bronchial asthma.

Table 3
Results of an index assessment of the state of periodontal tissues and oral hygiene in children and adolescents with bronchial asthma

Age group	Examined	Silness-Loe	Stallard	Schiller Pisar's test	Bloody	Dental calculus	IDOST	CPITN	PMA
6-9 years old	MG	31,9±1,8 p<0,05	1,62±0,08 p<0,05	1,68±0,04 p<0,05	0,22±0,04 p<0,05	0,04±0,06 p<0,05	-	0,24±0,06 p<0,05	19,4±1,2 p<0,05
	CG	27,3±1,1	0,62±0,12	0,68±0,12	0,07±0,01	0,02±0,01	-	0,12±0,02	4,86±1,4
10-13 years old	MG	50,7±1,4 p<0,05	1,98±0,76 p<0,05	1,72±0,08 p<0,05	0,98±0,1 p<0,05	0,56±0,08 p<0,05	0,08±0,02 p<0,05	0,98±0,03 p<0,05	35,8±1,76 p<0,05
	CG	33,3±1,1	0,86±0,9	0,78±0,18	0,62±0,08	0,22±0,08	-	0,35±0,08	6,84±1,8
14-18 years old	MG	61,7±1,1 p<0,05	2,1±0,9 p<0,05	1,98±0,02 p<0,05	1,42±0,1 p<0,05	0,92±0,01 p<0,05	0,86±0,12	1,2±0,06 p<0,05	86,8±0,09 p<0,05
	CG	31,8±0,9	0,88±0,14	0,98±0,12	0,94±0,09	0,34±0,06	0,06±0,08	0,67±0,08	8,22±2,8
Средний.	MG	48,1±1,1 p<0,05	1,98±0,4 p<0,05	1,80±0,02 p<0,05	0,88±0,04 p<0,05	0,50±0,02 p<0,05	0,47±0,02 p<0,05	0,8±0,02 p<0,05	47,4±1,2 p<0,05
	CG	30,8±0,9	0,78±0,8	0,82±0,18	0,54±0,09	0,19±0,04	0,06±0,09	0,4±0,08	6,6±2,1

Note. p - significance of differences between groups.

During the clinical examination, in children and adolescents of the Main group, lesions of the oral mucosa and the red border of the lips were diagnosed in 58.9% of cases, in children and adolescents of the Control group - in 8.2% of cases. Also, in the examined patients of the Main group, chronic catarrhal stomatitis was detected in 54.62% of cases, while often (76.4%) single petechial rashes were detected. Examination of the tongue in 42.27% of cases revealed desquamative glossitis, in 6.4% of cases - atrophy of filiform and mushroom papillae, also the tongue was edematous - 25.1%, dry red border of the lips - 51.8%, and angular cheilitis was observed in 11.9% of cases, and the corners of the mouth were hyperemic with painful cracks.

In order to study the effectiveness of planning a treatment-and-prophylactic complex, an analysis of the biochemical parameters of the oral fluid of the children and adolescents under study was carried out in advance. The results of studying the activity of catalase, the content of MDA, elastase, urease and lysozyme are shown in Table 4.

Table 4.
Results of studying the activity of catalase, the content of MDA, elastase, urease and lysozyme in a group of children and adolescents

Survey group	Study term	Catalase, m / cat.	MDA	Elastases mk-cat / l	Ureases, mk-cat / l	Lysozyme unit / mmol
MG-1	**The initial state**	0,119±0,01 1 p<0,001 p1>0,8	0,288±0,022 p<0,01 p1>0,5	2,48±0,13 p>0,5 p1>0,3	0,527±0,024 p<0,001 p1>0,2	0,042±0,008 p<0,001 p1>0,4
	Before commit	0,214±0,043 p>0,1 p1<0,2	0,183±0,021 p>0,2 p1<0,05	1,48±0,14 p>0,5 p1<0,002	0,212±0,026 p>0,2 p1<0,002	0,068±0,008 p<0,2 p1<0,01
CG-1	**The initial state**	0,248±0,021	0,173±0,082	2,45±0,11	0,264±0,02	0,088±0,011
	Before commit	0,364±0,011	0,114±0,02	1,68±0,24	0,108±0,022	0,098±0,007
MG-2	**The initial state**	0,176±0,04 1 p<0,001 p1>0,8	0,318±0,042 p<0,01 p1>0,5	2,78±0,18 p>0,5 p1>0,3	0,452±0,032 p<0,001 p1>0,2	0,054±0,008 p<0,001 p1>0,4
	Before commit	0,211±0,29 p>0,1 p1<0,2	0,330±0,061 p>0,2 p1<0,05	1,28±0,12 p>0,5 p1<0,002	0,266±0,036 p>0,2 p1<0,002	0,078±0,007 p>0,001 p1<0,02
CG-2	**The initial state**	0,288±0,044	0,198±0,042	2,95±0,14	0,221±0,019	0,076±0,009
	Before commit	0,298±0,021	0,154±0,08	1,76±0,34	0,128±0,032	0,086±0,008

Note. p – p_1 – reliability of differences between indicators in children and adolescents of the main group of the subgroup and the control group; p_2 – reliability of differences from the baseline.

The results of the table demonstrate that the catalase activity in MG-1 and MG-2 during the primary clinical and laboratory study was 1.5-2 times lower than in children and adolescents CG-1 and CG-2. It is possible to indicate the depletion of the reserve capacity of the antioxidant system in children and adolescents with bronchial asthma.

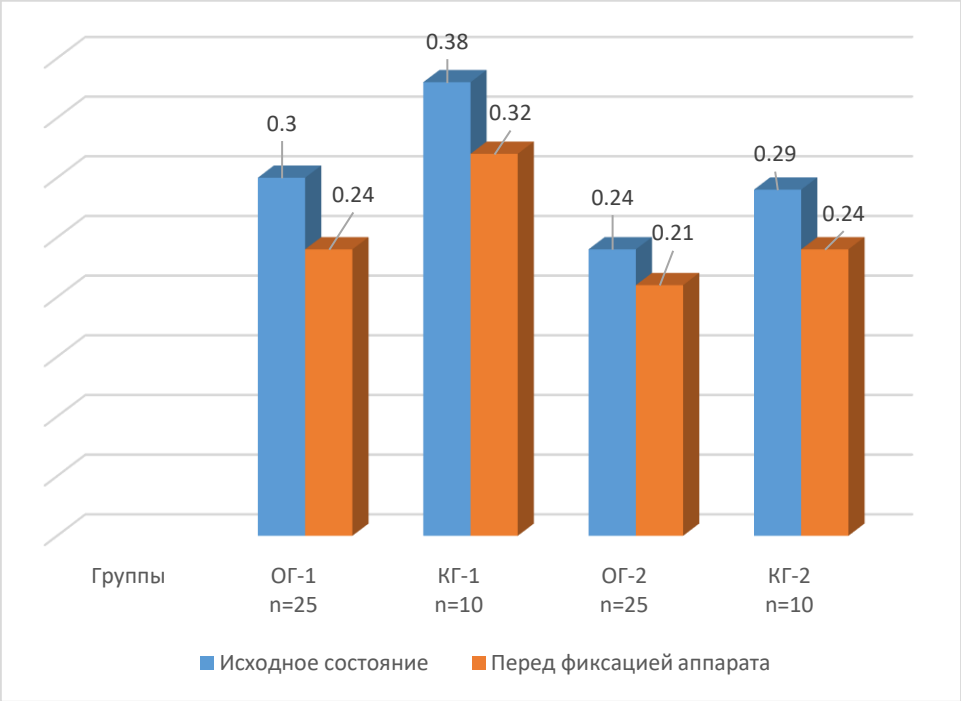
Also, when planning before the start of complex orthodontic treatment, in children and adolescents with bronchial asthma, the MDA content was significantly higher than in CG-1 and CG-2 (P <0.002, P <0.01), which shows the possibility of an assumption about local (in the oral cavity) intensification of lipid peroxidation processes in children and adolescents with bronchial asthma.

The results of the study during the primary biochemical analysis of the oral fluid in children and adolescents who were planned for orthodontic treatment, there were no significant differences between the parameters of the groups. In children and adolescents CG-1 and CG-2, elastase activity was significantly reduced relative to the initial state by 1.5-2.0 times (P2 <0.002), in MG-1 and MG-2; also that in children and adolescents MG-1 and 2 - the activity of lysozyme in the oral fluid was 2.5–3 times less than in CG-1 and 2.

The state of antimicrobial protection in the oral cavity was also assessed by the activity of urease in the oral fluid, which is produced by pathogenic and opportunistic microflora. The results of the study of the activity of urease in the OF during the primary biochemical analysis of MG-1 and 2 established that it was, on average, 1.7-2.3 times higher than in CG-1 and 2 (P<0.001).

As you know, the state of oral fluid homeostasis is an indicator of the level of nonspecific resistance and functional regulatory reactions in the body and in the oral cavity, providing it. According to the results of the study of the stability of the pH-oral fluid in children and adolescents MG-1 and 2, in the initial state, there was a high confidence interval of fluctuations in the value of the pH of the oral fluid (pH = 0.30 ± 0.04; 0.24 ± 0.02) , which indicates a low level of regulatory reactions that maintain homeostasis in the oral cavity, a decrease in caries resistance and the risk of developing inflammatory processes in the periodontal tissues.

Diagram № 3
Indicators of the confidence interval of fluctuations in pH-OF in children and adolescents examined in the preparatory period of orthodontic treatment (M±m)



The charge state of buccal epithelial cells (BEC) corresponds to the level of adaptive-compensatory reactions in the body and, consequently, to the level of nonspecific general and local resistance. This is especially important to take into account when planning therapy for accompanying instrumental treatment of children with somatic pathology. At the initial examination, the average electrophoretic mobility of the nuclei of the buccal epithelium cells in the examined people in the Main group was almost 2 times lower than the average norm and amounted to 28–32%, versus 48% in the examined people in the Control group. In this category of children and adolescents, the ratio of the amplitudes of electrophoretic oscillations of plasmolemmas and nuclei of buccal epithelium cells in an alternating electric field established by the author [33] decreases 1.18–1.22 ± 0.14 ($P<0.001$), which indicates a decrease in cellular metabolism.

Conclusions.

In children and adolescents with bronchial asthma, the frequency of dentoalveolar anomalies in the period of early mixed bite exceeds the value of practically healthy children and adolescents. At the same time, crowding of teeth, narrowing of the jaws, distal occlusion and deep incisal disocclusion prevail in the structure of dentoalveolar anomalies.

In the examined children and adolescents of the main group, there is a decrease in nonspecific resistance and the level of functional reactions responsible for homeoresis, which is manifested by a high confidence interval of fluctuations in the pH of the oral fluid and a 2-fold decrease in the electrophoretic mobility of the nuclei of the buccal epithelium cells, compared with the average norm.

Also, they have an imbalance in the prooxidant-antioxidant system, a decrease in antimicrobial protection and an increase in the degree of contamination by pathogenic and opportunistic microflora.

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