

Modified Diagnostic Methods For The Treatment Of Children With Narrowing Of The Upper Jaw And Impaired Nasal Breathing

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Abstract

Not much attention has been paid to the identification of morphological changes in the face-jaw area in children with chronic diseases of the respiratory system. Orthodontic dentist, ENT, pediatric specialists did not work together. In order to eliminate anomalies and deformations of the tooth-jaw system, orthodontic dentists carried out treatment measures without paying attention to their etiology. Today, attention has been paid to the treatment of changes in the face-jaw area in children with chronic diseases of the respiratory system, anomalies and deformations of the tooth-jaw system. Analysis of morphological changes in the upper jaw in mouth-breathing children, clinical examinations, anthropometric analysis of control diagnostic models separately for each patient, as well as analysis of X-ray data (orthopantomography and teleroentgenography). Evaluating the economic and medical effectiveness of our research.

KEYWORDS: Chronic diseases of the respiratory system, face-jaw bone, dental-jaw system anomalies and deformations, such as morphological changes in the upper jaw, clinical trials, control diagnostic models, anthropometric analysis, orthopantomography and teleroentgenography analysis. Economical and medical efficiency.

INTRODUCTION

The morphometric parameters of the craniofacial complex are influenced by external and internal factors, and they also [12] depend on the age of the individual [10]. According to some data [3, 14], the shape of the face is affected by the size of parts of the facial and partially cerebral parts of the head, their location, as well as the size and location of the soft tissues of the craniofacial region.

Teething significantly affects the change in the height of the face, which increases with the eruption of milk teeth by 17%, the first permanent molars and subsequent teeth by another 14%, and the second permanent molars by 24% [2].

According to a number of authors [11], the shape and dimensions of the craniofacial region are directly influenced by environmental factors. The shapes of the head and face are determined using special indices that are of great clinical importance, based on the morphometric parameters of these areas [1].

To determine the size of the craniofacial region, various methods are used, carried out at certain points and lines, which are applied to photographs, teleroentgenograms, tomograms, and panoramic images [17].

We know that anthropologists, studying the laws of proportionality of individual parts of the body, found the so-called "golden section", that is, the division of a quantity into two uneven parts, when the whole is related to the larger part (13:8), as the larger part is related to the smaller (8:5), that is, the larger part is the average proportional between the whole and the smaller part. The "golden section" of the face runs along the bridge of the nose, the gnathic part of the facial skeleton (from the tip of the nose to the chin point with the mouth closed along the line of closing of the lips; with the mouth open, this distance is equal to the distance from the chin point to the upper lip) [3].

When describing the aesthetic features of the face, the following parameters are used:

- full face;
- dimensions of the upper, middle and lower parts of the face and their ratio;
- facies morphological index;
- facial asymmetry;

- the shape of the face in profile, the shape of the nose, lips, chin [4].

Particular attention in practical dentistry is paid to the shape of the dental arches [18].

It has been established that the dimensions of the dental arches correlate with the parameters of the jaws, the facial skeleton, and the whole organism as a whole [15, 18].

Justified by the series and scientists [5] the study of teeth on radiographs such as orthopantomogram, panorama teleroentgenogram, which allows you to determine the size of the crown and root, the formation of the roots, as well as their position.

In Brazil, a study was conducted to assess the bone and tooth age of patients with type 1 diabetes. Thus, panoramic and hand-held radiographs of 82 children aged 5 to 15 years were collected and divided into sick children and controls. The patient group had 41 panoramic and 41 manual radiographs of children with diabetes mellitus, while the control group had 41 panoramic and 41 manual radiographs of healthy children. Bone age was assessed by the method of Greulich and Pyle (1999), while tooth age was assessed by the method of Nolla (1960). Tests did not reveal statistically significant differences between skeletal and dental age between both groups ($p > 0.05$). However, in the group of patients, the bone age of girls was greater than that of boys of the same age ($p = 0.005$). Given that the skeletal and dental growth of both groups were closely related, clinical interventions, including orthodontics and dentofacial orthopedics, should be performed equally for both healthy and for specific groups of patients, such as children with diabetes mellitus.

Currently, there is an increase in the number of children with respiratory disorders. External factors, in particular climatic conditions, have a serious influence [14, 18]. Moreover, not only the cold climate is important, but also the use of air conditioning in the hot season, and in the southern regions - a dry hot climate [12]. Many orthodontists refuse to treat such children or start treatment at an older age, when there has already been an aggravation of disorders in the maxillofacial area, and, consequently, changes in the respiratory system [19].

A common cause of nasal congestion and the formation of habitual oral breathing (OB) in children is the process of growth of adenoid tissue in the nasopharynx. Adenoiditis takes the 1st place in the structure of ENT pathology of the upper respiratory tract in children. This is a long-term inflammatory process in the nasopharynx, accompanied by hypertrophy of the adenoid tissue of the pharyngeal tonsil, with frequent relapses even after surgical debridement of the nasopharynx. Children suffering from adenoiditis often suffer from colds, which, in turn, lead to an even greater increase in adenoid tissue [3].

In the absence of nasal breathing (NB) in a child, the nasal passages narrow [17]. The width of the pear-shaped foramen affects the location of the crypts of the teeth of the upper jaw and ensuring their correct eruption. In the case of a narrow pear-shaped foramen, there is convergence of the incisor roots and their crowding. Cheeks and lips have a pronounced functional load on the nose area. Occasionally, symmetric and asymmetric abnormal limitations of function may interfere with the normal development of anterior facial structures, as in NB impairment on one or both sides of the nose. The width of the base of the piriform opening is approximately equal to the size of the bony crypts of the central incisors. During the period of growth, the ratio between the width of the base of the pear-shaped opening and the incisal area of the upper incisors depends on the volume of space occupied by the tops of the roots of the upper incisors. Gradual increase in the width of the up/j leads to the expansion of the base of the piriform opening and contributes to the development of soft tissues of the floor of the mouth and nasal passages [13].

Thus, the literature data indicate a reliable direct relationship between difficult nasal breathing and narrowing of the dental arches, crowded position of the Up/J incisors. However, neither orthodontists nor otolaryngologists take into account the relationship between dentoalveolar anomalies and ENT pathology when planning treatment.

Successful orthodontic treatment largely depends on the accuracy of diagnosing disorders [1]. The basic principles of the diagnosis of DAA are reflected in the pages of domestic and foreign literature [6]. Methods for quantitative assessment of disproportions and treatment results include methods based on the relationship between the bone structures of the skull and occlusal relationships: cephalometric analysis of teleroentgenograms (TRG), analysis of control diagnostics model (CDM), as well as methods for assessing the soft tissue profile (soft tissue profile analysis according to TRG, photometric analysis, myography) [18]. The presence of TRG makes it possible to make direct measurements of bones - cephalometry, as well as to monitor the development of an individual over time [14]. Based on cephalometry, it is possible to find out the pathogenesis of dental anomalies and plan treatment of patients with malocclusion [15]. With narrowing of the up/j, a high "Gothic" palate is formed, which affects the volume of the nasal cavity [188]. Orthopantomography (OPTG) plays a certain role in the diagnosis of these disorders. The nasal area is clearly visible in the picture. However, the available literature does not contain data on the effect of narrowing of the up/j on the morphological state of the airways, nasal septum, and nasal passages [7].

Assessment of the soft tissues of the face is also carried out using photographs. Based on the analysis of the angular and linear dimensions of the face in front and profile, normal indicators were established and quantitative methods for assessing the harmony of the structure of the facial profile were proposed [17].

The authors note that there is a direct correlation between the main parameters of the soft and bone tissues of the face and the occlusion of the dentition [18]. The results of orthodontic treatment affect the development of the soft tissues of the face; with the removal of teeth, these changes in the profile occur much earlier and are more pronounced [2]. Since treatment in early mixed dentition provides more opportunities for correction without extraction of teeth, it is advisable to study the parameters of the face in patients whose narrowing of the up/j was performed at different ages.

To diagnose disorders of the dentoalveolar system (DAS), CDM of the dentoalveolar arches is used; in the works, attention is focused on characteristic anomalies: narrowing of the apical base and upper dentition [13]. Anthropometric diagnostic methods allow to determine the size of teeth, dentition [5]. Ms Namara J.A. recommends studying the distance between the nearest points of the first molars of the up/j (transpalatal width) to assess the transversal size of the up/j [15]. According to the author, the normal distance between the molars is 36-39 mm. When the width between the molars is less than 31 mm, anomalies of occlusion and crowded position of the teeth are observed. The technique is relevant for the diagnosis of up/j narrowing in a removable bite, but in practice it is almost not used, and therefore the presence of up/j deformation is established quite late. There is no data in the literature on comparing the parameters of the up/j width in children with impaired nasal breathing and in children with normal nasal breathing. It is also relevant to study changes in the DAS, face and nasopharynx after correction of narrowing of the dentition in patients aged 7-11 years, as well as comparing the state of the width of the upper dental alveolar arch after treatment of children with narrowing of the up/j at different ages.

Thus, there is not enough data in the literature on changes in the DAS, face and nasopharynx after correction of narrowing of the dentition in children, the degree of nasal breathing disorders with narrowing in up/j has not been established, the possibilities of radiography methods used in dentistry to assess the state of the respiratory tract have not been studied. In the literature, there is a direct connection between the violation of nasal breathing (NB) and the narrowing of the dental arches, the crowded position of the incisors in up/j. Experts associate the slowing down of the development of the nasal pyramid with the crowding of incisors, which is associated with a decrease in the volume of the upper jaw bone in the area of the bottom of the nasal cavity. However, neither orthodontists nor otolaryngologists take into account the relationship of DAA with ENT pathology when planning treatment. Narrowing in up/j already at the early stages of bite formation is accompanied by significant morphological, functional and aesthetic disorders. At the same time, the issues of the relationship of the narrowing of the upper jaw with respiratory problems are insufficiently covered in the literature.

Currently, the appearance of a person plays an important role in the formation of personality. The desire to have a beautiful smile, correct bite is an incentive to visit an orthodontist in order to correct various types of dentoalveolar anomalies.

In the absence of nasal breathing (NB) in a child, a narrowing of the nasal passages occurs. The width of the pear-shaped foramen affects the location of the crypts of the teeth of the upper jaw and ensuring their correct eruption. In the case of a narrow pear-shaped foramen, there is convergence of the incisor roots and their crowding. Cheeks and lips have a pronounced functional load on the nose area. Occasionally, symmetric and asymmetric abnormal limitations of function may interfere with the normal development of anterior facial structures, as in NB impairment on one or both sides of the nose. The width of the base of the piriform opening is approximately equal to the size of the bony crypts of the central incisors. During the growth period, the ratio between the width of the base of the pear-shaped hole and the incisor area in up/j depends on the volume of space occupied by the tops of the roots of the upper incisors.

A gradual increase in the width of the up/j leads to the expansion of the base of the pear-shaped opening and promotes the development of soft tissues of the bottom of the oral cavity and nasal passages. Currently, the appearance of a person plays an important role in the formation of personality. The desire to have a beautiful smile, correct bite is an incentive to visit an orthodontist in order to correct various types of dentoalveolar anomalies.

According to E.Yu. Nikolaeva, the occurrence of a large number of facial asymmetries depends on a wide variety of types of facial asymmetries: skeletal, functional, muscular, articular, as a result of neoplasms or inflammatory processes, as well as post-traumatic asymmetries resulting from improper fusion of the jaws after fractures.

Thus, the literature data indicate a direct relationship between obstructed nasal breathing and narrowing of the dental arches, crowded position of the upper jaw (up/j) incisors. However, neither orthodontists nor

otolaryngologists take into account the relationship of dentoalveolar anomaly with ENT pathology when planning treatment.

The purpose of this stage of research was modified diagnostic methods for the correct treatment of children with narrowing of the upper jaw and impaired nasal breathing.

MATERIALS AND METHODS

150 children were selected to study the chronic pathology of the respiratory system. 118 children and 32 children (over 10 years old) practically healthy from the generally examined groups were selected with narrowing of the up/j and habitual oral breathing (OB). To compare the condition of a number of organs of the oral cavity (dental condition, occlusion, occlusion, alveolar ridge, etc.), clinical and functional, morphometric, immunological and sociological studies were conducted, observed in 2015-2019 at the dental center on the basis of the Bukhara State Medical Institute and the regional pediatric Dental clinic. We have conducted both clinical research methods and special ones. With the help of an otorhinolaryngologist, anterior active rhinomanometry was performed. The examined patients were divided into groups according to the type of occlusion in accordance with the classification of Persin L.S. and ICD-10: with distal occlusion (DO), mesial occlusion (MO), cross occlusion and physiological occlusion (PhO), as well as depending on the presence or absence of chronic pathology of the respiratory system. And subgroups without ENT history and children with a history of chronic pathology of the respiratory system.

Using the photometric method, the state of the soft tissues of the face profile was assessed, with the help of anthropometry, measurements were made of the size of the teeth, the transversal and sagittal dimensions of the dentition and apical bases, and the dimensions of the palate. In addition, the dimensions of the palatine arch were determined on plaster models of the upper jaw (up/j): length, width, depth, angle "alpha".

Orthopantomography was used to assess the condition of the periapical tissues of the teeth, the presence of the rudiments of the eighth teeth, and with a telereöntgenographic (TRG) study, the size of the pharynx in the lateral projection of the head was studied.

RESULTS AND DISCUSSION

The results of the study showed that out of 150 examined with chronic pathology of the respiratory system (CPRS), there are DO to 55 children, MO – 30 children, CrO – 33 children and 32 children without CPRS with physiological occlusion (PhO). The difference in the frequency of positive ENT history in groups with physiological occlusion and dentoalveolar anomalies was significant. Among all patients with CPRS, physiological occlusion was not detected, and 100% had various types of occlusion anomalies: DO - 47%, MO - 25%, and CrO - 28%.

Morphometric features of DAS according to facial photometry in patients with various types of occlusion revealed highly significant differences between DO and MO in all parameters, between MO and CrO in most DO and CrO parameters, in some parameters. CPRS was reflected in a significant decrease in the nasolabial angle in patients with DO - 4.2%, and in an increase in this angle in MO - 5.2%. A decrease in the angles of the suprumental fold was noted - by 11.8% with MO and by 7.7% with CrO. Convexity of the face - by 4.1% with MO and 7.8% with CrO. The middle part of the face - by 5.1% with MO and by 6.2% with CrO in groups with MO and CrO in the presence of CPRS - anamnesis. Differences in angular parameters between patients with nasal breathing disorders (NBD) and healthy ones were most pronounced in the group with CrO. In general, the photometric study indicated an aggravation of the disproportionality of facial characteristics in CPRS.

When studying diagnostic models of the jaws, the length and width of the dentition and apical bases were determined in groups with different types of occlusion. With CPRS, there was a significant decrease in comparison with the norm of the distance between the first premolars up/j and l/j, as well as between the first molars in / h (by 6.4%). In groups with various types of anomalies of occlusion, there was a tendency to narrow the dentition in CPRS compared with the norm. Between teeth 1.4-2.4 - by 5.9% with DO and 10.2% with CrO, between teeth 3.4-4.4 - by 6.5% with DO, 7.5% with MO and 8.9% with CrO, between teeth 1.6-2.6 - by 7.2% with DO and by 8.5% with CrO.

With CPRS, the length of the anterior segment of the upper dentition was significantly greater. On a plaster model, calculations showed that the greatest length of the palate is typical for patients with MO (34.0 ± 0.5 mm). With CrO, the values of the palate length are intermediate (32 ± 0.4 mm), and with DO they are the smallest (30.8 ± 0.6 mm). The width of the palate in patients with PhO was maximal (36.9 ± 0.4 mm) with MO and CrO, this indicator was the smallest (33.5 ± 0.4 mm and 34.1 ± 0.9 mm, respectively). The sky width at DO occupied an intermediate value. The sky depth practically did not differ in the four studied subgroups, and the alpha angle was minimal at MO (24.5 ± 1.9) and maximum at DO (33.7 ± 1.2). In PhO, a statistically significant difference in the depth of the palate was revealed: 16.9 ± 0.2 mm in patients with CPRS.

Comparison of the size and position of the jaws in patients with MO (81.4 ± 1.8 mm), with DO and CrO, the elongation was approximately the same and amounted to 75.5 ± 0.9 mm and 75.8 ± 0.8 mm, respectively, this is due to an increase in the length of the chin. A, the length of the base of the up/j (A'-SnP) was significantly increased relative to the norm only in DO (48.3 ± 0.5 mm and 44.5 ± 0.8 mm, respectively); l/j angle (Ar Go Me) was significantly increased relative to the norm during MO. The SNB angle was also significantly increased in MO and significantly decreased in DO, and was approximately normal in CrO. CPRS in DO was accompanied by an increase in the length of the base of the up/j and by 3.9% and the length of the branch of the l/j - by 4.7%, a decrease in the angle of the l/j - by 2.0%, a decrease in the angle of position of the up/j - by 5.1%, as well as the angle of inclination of the plane of the base of the up/j relative to the anterior part of the base of the skull (by 15.9%). In addition, a decrease of 6% and an increase of 4.8% in the posterior superior dentoalveolar height were found. During MO in patients with CPRS, there was an increase in the angle of the l/j by 3.8%, the angle of the position of the anterior part of the apical basis of the l/j by 7.4%, as well as a decrease in the angle of inclination of the incisors up/j (by 12%) and a decrease in dentoalveolar heights l/j (by 10%).

A comparative analysis of the pharyngeal characteristic spaces showed that in MO there was a significant increase in all parameters of the pharyngeal width, as well as the angle of inclination of the soft palate relative to patients with PhO. Patients with CrO significantly differed from the group with PhO by a decrease in the lower width and length of the longitudinal axis of the pharynx, as well as an increase in the angle of inclination of the soft palate. Comparison of pharyngeal sizes in patients with CPRS, there was a significant decrease in the upper width (by 11.5%) and lower (by 14.5%) width. The upper (by 18.2%) and lower (by 24.9%) minimum width. At DO, the upper (by 8.8%) and lower (by 7.5%) width and angle of inclination of the soft palate were increased (by 4.1%) in patients with the comparison group with PhO. With MO, a sharp change in parameters was determined in patients with CPRS compared with patients of the norm. Upper (by 8.1%) and lower (by 9.3%) width, upper (by 54.7%) and lower (by 23.0%) minimum width, middle width (by 32.1%). Longitudinal axis (by 7.1%), length (by 10.3%) and angle (by 13.4%) of the soft palate. CrO revealed changes in the upper width (by 9.0%), the longitudinal axis (by 4.0%), and the angle of inclination of the soft palate (by 3.8%): The maximum area was observed in persons with PhO (20.0 ± 0.5 cm²), the minimum - with CrO (12.0 ± 0.6 cm²). The decrease in the area of the pharynx with all types of anomalies of occlusion relative to the norm was statistically significant by 26%, 30% and 37% for MO, DO and CrO, respectively.

To study a specific functional and morphological disorder in CPRS, 60 children with varying degrees of narrowing of the up/j at the age of 10-14 years were selected. They were divided into 2 groups. Group 1, 30 children with habitual oral breathing (OB) and a pronounced narrowing of the up/j, in which the distance between the palatal surfaces of the first molars of the up/j was less than 36 mm. 2nd group, 30 children with OB, with a sufficient width up/j.

From the case histories, the anamnesis, analysis of CDM, TRG and OPTG were analyzed. The analysis of the questionnaires did not reveal any significant difference in the state of health in patients of the 1st and 2nd comparison groups. Special attention was paid to the presence of diseases of ENT organs, their severity and duration.

The main complaint made by patients (parents) in both groups is aesthetic disorders (100%) associated with the position of the incisors. Parents note that children of the 1st group (46%) get tired quickly during physical exertion and after lessons. There is a violation of lip closure (35% and 10% in the 1st and 2nd groups, respectively), a violation of the purity of pronunciation of speech sounds (28% and 14%). In 20% of group 1 children, parents noted a nasal tinge of speech, despite the adenotomy performed at preschool age. In 20% of group 1 children, parents noted a nasal tinge of speech, despite an adenotomy performed at preschool age. From the anamnesis, it was found that in children of the 1st group, CPRS was established in the anamnesis in 68% of cases, in the 2nd group this parameter was 20% of cases. Violation of NB, due to chronic pathologies of the nasopharynx, persisted for a long period of time in the 1st group in 52% of patients, in the 2nd group - in 8%.

On clinical examination, the majority of children with narrowing of the up/j are characterized by a face with an elongation of the gnathic part. Narrow, convex, with tight closing of the lips. There is lethargy of facial expressions, smoothing of the nasolabial folds, flattening of the upper lip, weakness of the circular muscle of the mouth, retraction of the wings of the nose, "adenoid" facial expression. In profile photographs, tension of the muscles of the chin is noted when the lips are closed. To diagnose facial parameters and to determine the morphological facial index Izard G. in 60 children aged 10-14 years, an analysis of facial photographs was carried out. 1st group, 30 photographs of children with narrowing of the up/j., 2nd group, 30 photographs with a normal width up/j. The results of the IFM index according to Izard G. - in 20 children for the 1st group from 104 and more (narrow face). In 9 children 97-103 (middle face). 96 or less in 1 child (wide face). For the 2nd group in 7, 17 and 6 children, respectively. The result

shows that for children with a narrowing of the up/j (group 1), a “narrow face” is more characteristic and there was only one case with such a face shape as a “wide face”. In children of the 2nd group with a sufficient width of the up/j, an “average face” is characteristic. Undoubtedly, the shape of the face is mainly influenced by genetic factors, but the noted parameters show a tendency to increase the height of the face with prolonged OB in children, which is also demonstrated by the clinical examples presented above. For patients with impaired nasal breathing (INB), narrowing of the dentition is characteristic, often the upper dentition is V-shaped, the lower one is evenly narrowed.

The deep palate in the form and in the form of the letter “V” indicates skeletal insufficiency of the up/j and these data are statistically confirmed by the data on the anthropometric parameters of these children. When measuring models in 68% of cases in the 1st group, a sharp narrowing of the up/j, transpalatal width was established. Bilateral exocclusion testified to skeletal insufficiency of the width of the up/j in the 1st group.

In 38 (63%) cases, unilateral exocclusion with a displacement of l/j was observed in 10 (16%) children. A characteristic violation of occlusion with narrowing of the up/j in group 1 was DO with dysocclusion of the anterior teeth (68%), which in half of the cases was combined with exocclusion.

In children of the 2nd group, the narrowing of the upper dentition was not sharp, the dome of the palate was shallow, the lateral teeth were inclined to the palatine side, which is characteristic of the narrowing of the upper dentition of dental alveolar origin. In 10 (33%) cases, unilateral exocclusion with a shift of l/j was observed. Cases of pronounced exocclusion, including bilateral, were not observed in this group. DO to 11 (34%) children were diagnosed with dysocclusion of the anterior teeth in group 2.

The upper incisors in children with narrowing up/j were located crowded, were in the position of protrusion, which are associated with insufficient lip pressure in OB. In turn, the protrusion of the incisors prevented the closure of the lips at rest (36% and 14%, respectively, groups).

Thus, endoscopic methods of diagnostics of the nasal cavity and nasopharynx in children with narrowing up/j of varying degrees revealed that obstructed NB is associated with hypertrophy of adenoid vegetations. In accordance with the severity of the NB violation, the ineffectiveness of conservative treatment, there were indications for surgical treatment of hypertrophy of the nasopharyngeal tonsil.

The above-mentioned features of the clinical data allow us to say that the disproportion of teeth and dentition is due to a violation of "function - form". The development of the lower dentition is due to the influence of the size of the upper dental arch.

Social significance of the work: The results obtained made it possible to analyze the state of the oral cavity in children with chronic pathologies of the respiratory system. The above has determined the need for diagnostic methods for the correct choice of treatment for children with narrowing of the upper jaw and impaired nasal breathing.

Economic efficiency: It was calculated based on the practical application of the proposed recommendations. When conducting a cost-effectiveness analysis, the compared options, in contrast to the cost minimization analysis, are characterized by greater or lesser, but not equivalent efficiency. In this regard, it is important to assess the degree of expediency of the analysis, depending on the level of reliability of the data.

As a result of the cost-effectiveness analysis, the ratio "cost / efficiency" was obtained. These ratios were calculated using the following formula [Fillips S., Thompson G., 1999].

$$S / E = (C2 - C1) : (E2 - E1) \times 100, \text{ where}$$

S / E - "cost / efficiency", S1 and S2 are the total cost of the first and second intervention, respectively, E1 and E2 - the effectiveness of the first and second intervention, respectively, expressed in terms of the chances of desirable and undesirable outcomes, 100 is the calculation coefficient.

Cost-effectiveness analysis when using the proposed methodological recommendation in dentistry practice has shown that the cost of use with the desired outcome will be:

$$S/E=(S2-S1) : (E2-E1) \times 100 = (23000-18000) : (85-75) \times 100 = 5000 : 10 \times 100 = 50000 \text{ sum.}$$

The application of our recommendations on the study of the oral cavity in children with chronic pathologies of the respiratory system, diagnostic methods for the proper treatment of children with narrowing of the upper jaw and impaired nasal breathing allows you to save 50,000 soums of the total cost per examined patient.

Medical effectiveness: This is the degree of achievement of a medical result. In relation to one particular patient, it is the recovery or improvement of the state of health, the restoration of the lost functions of individual organs and systems. At the level of healthcare institutions and the industry as a whole, medical efficiency is measured by a variety

of specific indicators: the proportion of cured patients, a decrease in cases of transition of the disease to a chronic form, a decrease in the incidence of the population.

The calculation of the coefficient of medical efficiency (CME) is carried out according to the formula:

CME= FAIR / TNAC * 100%, where

FAIR - Full achievement of the intended result, TNAC - Total number of assessed cases, 100 is the calculation coefficient.

CME=138/150*100%=92%

When applying the recommendations proposed by us to study the condition of the oral cavity in children with chronic pathologies of the respiratory system, diagnostic methods for the proper treatment of children with narrowing of the upper jaw and nasal breathing disorders, 150 cases of medical care were evaluated to calculate the coefficient of medical effectiveness, among which 138 cases of complete achievement of the intended result of treatment were established. In this case, the CME will be 92%.

CONCLUSION

The frequency of nasal breathing disorders among patients with cross occlusion (36%) was significantly higher than in those with physiological occlusion (21%). Impaired nasal breathing is most often combined with distal occlusion (61%) and cross occlusion (22%). In addition, the indicators of the patency of the nasal passages in physiological occlusion and min in mesial occlusion, differing from those in physiological occlusion by 30%, while impaired nasal breathing is accompanied by a decrease in the total volume flow of air and an increase in total resistance in all types of cross occlusion dentition, and the deterioration of rhinomanometry is most pronounced in mesial occlusion with impaired nasal breathing.

Disturbed nasal breathing is accompanied by - with distal occlusion, the width of the sky is reduced (by 4.3%); mesial occlusion, the alpha angle is reduced (by 27.8%), the depth of the sky is increased (by 9.6%); with cross occlusion, the width is reduced (by 13.9%), the alpha angle (by 28.4%) and the length of the sky (by 8.0%); with physiological occlusion in persons with impaired nasal breathing, the depth of the palate is increased (by 12.0%) and also others;

It was revealed that the morphological and physiognomic height of the face in children with chronic pathology of the respiratory system is less than in healthy children. The growth rates of the anthropometric parameters of the face in healthy children are almost the same at regular intervals, and in children with chronic pathology of the respiratory system they change abruptly. Healthy male children have less growth rates than male children with chronic pathology of the respiratory system.

The determination of the state of the respiratory tract in the analysis of orthopantomography and telereöntographic affects the choice of method and the effectiveness of the diagnosis of children with narrowing upper jaw and habitual oral breathing.

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