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КЛИНИЧЕСКАЯ МЕДИЦИНА

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MORPHOMETRY OF THE DENTAL-JAW SYSTEM IN SCHOOL CHILDREN 8-16 YEARS OLD WITH THYROID DISEASES

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Abstarct: *The article provides information on age-related changes in the morphometric indicators of the dentition system of school-aged children with hypothyroidism. Changes in children between the ages of 8 and 16 have been studied. Morphometric changes were mainly carried out using the Bunak method. We used only parameter 5a from the Bunak method. That is, the physiognomic height of the face, the total morphological height of the face, the morphological width of the face, the upper depth of the face, the height of the mandibular body. The specificity of these indicators in each age group was studied.*

Key words: *Bunak methods, morphometric indicators, jaws, anthropometric measurements.*

QALQONSIMON BEZ KASALLIKLARI BO‘LGAN 8-16 YOSHDAGI BOLALARDA TISH-JAG‘ TIZIMINING MORFOMETRIYASI

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Annotatsiya: *Maqolada gipotireoz bilan og‘rigan maktab yoshidagi bolalarda dentoalveolyar tizimning morfometrik ko‘rsatkichlaridagi yoshga bog‘liq o‘zgarishlar haqida ma’lumotlar berilgan. 8 yoshdan 16 yoshgacha bo‘lgan bolalardagi o‘zgarishlar o‘rganildi. Morfometrik o‘zgarishlar asosan Bunak metodi yordamida amalga oshirildi. Biz Bunak metodidan faqat 5 ta parametridan foydalandik. Ya’ni, yuzning fiziognomik balandligi, yuzning umumiy morfologik balandligi, yuzning morfologik kengligi, yuzning yuqori qismining chuqurligi, pastki jag‘ tanasining balandligi. Har bir yosh guruhida ushbu ko‘rsatkichlarning o‘ziga xos xususiyatlari o‘rganildi.*

Kalit so‘zlar*: Bunak medoti, morfometrik ko‘rsatkichlar, jag‘lar, antropometrik o‘lchovlar.*

МОРФОМЕТРИЯ ЗУБОЧЕЛЮСТНОЙ СИСТЕМЫ У ШКОЛЬНИКОВ 8-16 ЛЕТ С ЗАБОЛЕВАНИЯМИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ

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Резюме: *В статье представлена информация о возрастных изменениях морфометрических показателей зубочелюстной системы у детей школьного возраста с гипотиреозом. Были изучены изменения у детей в возрасте от 8 до 16 лет. Морфометрические изменения в основном проводились с использованием метода Бунака. Мы использовали только параметр 5а из метода Бунака. То есть физиогномическую высоту лица, общую морфологическую высоту лица, морфологическую ширину лица, глубину верхней части лица, высоту тела нижней челюсти. Была изучена специфика этих показателей в каждой возрастной группе.*

Ключевые слова: *Методы Бунака, морфометрические показатели, челюсти, антропометрические измерения.*

Introduction. Thyroid hormone deficiency is accompanied by metabolic changes that cause dental caries [11,12,13,14,15]. The analysis of the literature showed that there are scientific data on the changes in the teeth and jaw bones caused by the lack of thyroid hormones [6,7,8,9]. However, these data are incomplete and the changes observed in the teeth are not sufficiently explained. In this regard, it is necessary to constantly give iodine preparations to children not only in the mother's womb, but also at school age and during adolescence [1,2,3,4]. This helps children grow and develop normally and improves mental activity of children [5,10,16,17].

The purpose of the study. Study of morphometry of the dental-jaw system in school children 8-16 years old with thyroid diseases.

Research materials and methods. As an object of research, it was conducted in the clinical bases of the district of the city of Tashkent and the 1st polyclinic of the Yangiyol district of the Tashkent region, following all the necessary ethical and deontological norms. We selected 820 school-age children living in Tashkent city and Yangiyol district of Tashkent region. Bunak's method was used to measure the anthropometric parameters of the teeth-jaw system in all the selected children. The youngest of the children is 8 years old, and the oldest is 16 years old. Therefore, we divided the children from 8 to 16 years into 3 groups. In this, age periodization based on widespread social principles in our country was used (Table 1).

Table 1.

Please age periodization
According to the status of school-aged children:

Social age	Number		
	Age	Girls	Boys
Junior school age 7-10 years old	7 years old	n=39	n=35
	8 years old	n=42	n=41
	9 years old	n=49	n=39
	10 years old	n=32	n=39
Middle school age 11-14 years old	11 years old	n=44	n=36
	12 years old	n=41	n=40
	13 years old	n=39	n=35
	14 years old	n=31	n=32
Senior school age 15-16 years old	15 years old	n=54	n=51
	16 years old	n=52	n=49
n=423		n=397	

Based on age periodization, the first group 1 is school children aged 7-8-9-10, Group 2 is school children aged 11-12-13-14, and Group 3 is school children aged 15-16. Then each group was further grouped into 2 groups, Boys (n=397) and girls (n=423). Of the children selected, 385 were healthy and had a control group and 435 were a group of children in hypothyroidism. In addition to this, we also used the data of the school nurse (№287), approved by the Order of the Minister of health of the Republic of Uzbekistan № 16 of January 17, 2022, in the form of a digital medical document, and the Polyclinic nurse (№025), approved by the Order of the Minister of health of the Republic of Uzbekistan №363 of De-

cember 31, 2020. Then we measured anthropometric indicators in children using the Bunak method. Of the total number of practically healthy children (n = 820), 397 (48.4%) are boys and 423 (51.6%) are girls. 100 of the selected children are the control group, and 80 are the group of children with hypothyroidism (subclinical). We studied children with hypothyroidism (subclinical) based on the information received by the school nurse and the polyclinic nurse. Then we measured the anthropometric indicators of children using the Bunak method.

An important parameter for evaluating a child's physical development is the upbringing of the child in organized groups. In this regard, we decided to divide the children involved in the study according to the place of education and upbringing.

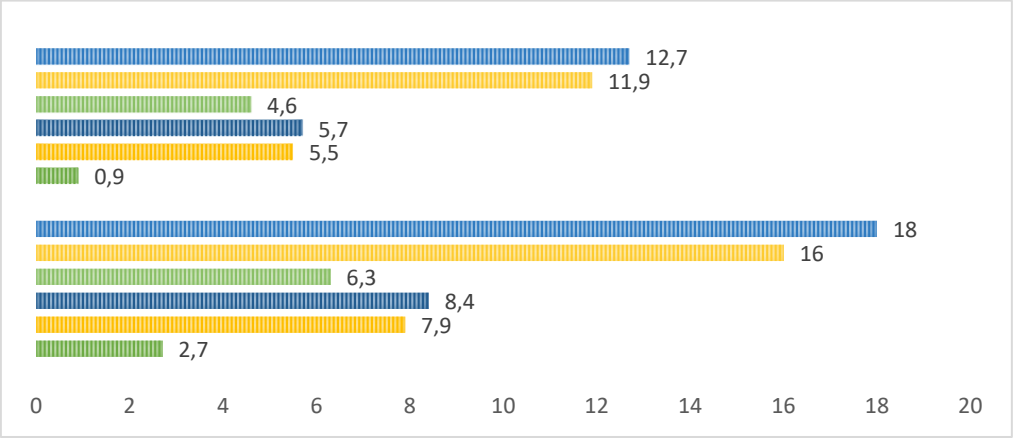
Results of the study: In the implementation of the cynical method, we have used extensive statistical testing steps. First, we conducted a survey of selected school-aged children with their passports and outpatient information. We collected our data using the ambulatory cards kept by the school nurse (№287) and the polyclinic nurse (№025) of children in the healthy (control) group. We also studied children with hypothyroidism (subclinical) based on the information we received from the school nurse and the polyclinic nurse. Then we divided all collected data into 3 age groups (see Table 1). We divided these groups again by gender: boys and girls. First, we studied the musculoskeletal system of children in the control group. In addition, we took into account the mental and physical development of each child, whether or not they have genetic diseases. In the second group, we monitored hypothyroidism (subclinical) level, observed certain consequences, as well as the role of these consequences in the child's life, their impact on mental and physical development. Most importantly, we took into account whether the offspring has a severe form of hypothyroidism or not.

We used the Bunak method, not its 21 parameters, but 5 of them related to the jaw system. That is, the physiognomic height of the face, the total morphological height of the face, the morphological width of the face, the upper depth of the face, the height of the body of the lower jaw.

In all of our observations, the average physiognomic height of the face of healthy school-aged boys of the 2nd grade (7-8-9-10 years old) was 18.7±0.33 cm. The average morphological height of the face of boys of the same age was 12±0.31 cm, the morphological width of the face was 22±0.68 cm, the upper depth of the face was 13±0.82 cm, and the height of the lower jaw was 3.5±0.50 cm. In girls of this age, these parameters were equal to the following parameters on average: the physiognomic height of the face was on average 17±0.97 cm, the morphological height of the face was on average 10.7±1.03 cm, the morphological width of the face was 20.2±0.84 cm, the depth of the upper jaw was 11.1±0.78 cm, and the height of the lower jaw was 3.4±0.48 cm (Diagram 1).

Diagram 1.

The dynamics of changes in the anthropometric parameters of the teeth and jaw system of 7-year-old boys

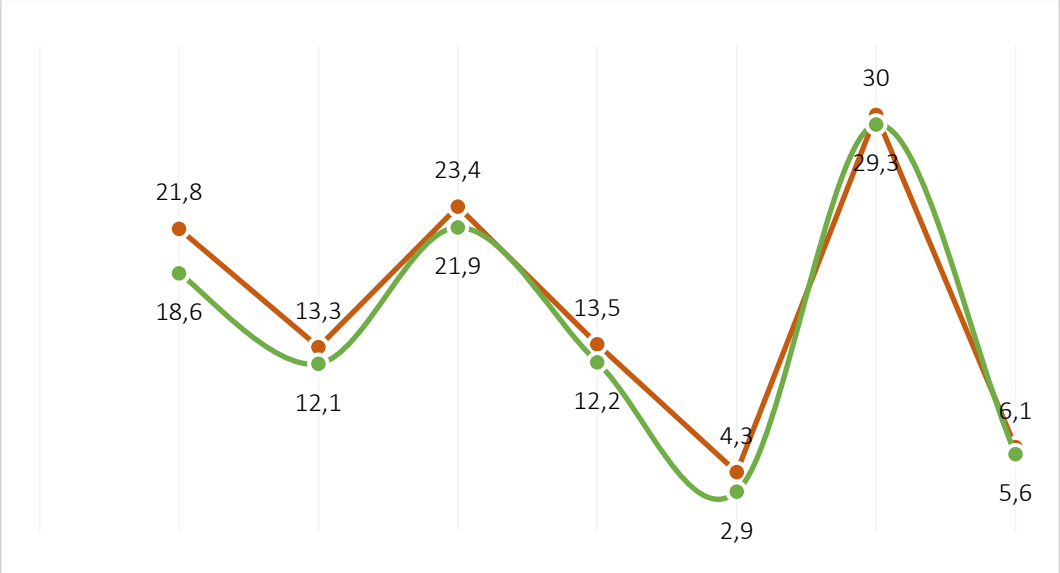


Explanation: *First group hypothyroidism-control group*
Second group Healthy-watch group

We also studied the anthropometric indicators of the teeth and jaw system of children in the healthy (control) group of 11-12-13-14 years old. In this case, the physiognomic height of the face in the group of boys was 21.5±0.97 cm on average, and in the group of girls it was 21.8±0.85 cm. During this period, the total morphological height of the face was found to be 14.3±0.94 cm in the boys' group, and 13.3±0.91 cm in the girls' group. The average morphological width of the face is 24.1±0.89 cm in the group of boys and 23.4±0.70 cm in the group of girls. In the same period, the depth of the upper part of the face was 14.6±0.76 cm in the group of boys, and 13.5±0.83 cm in the group of girls. The average height of the lower jaw was 4.0±0.52 cm in the group of boys, and 4.3±0.42 cm in the group of girls (Diagram 2).

Diagram 2.

The dynamics of changes in the anthropometric parameters of the teeth and jaw system of 12-year-old boys



Explanation: *First group hypothyroidism-control group*
Second group Healthy-watch group

We measured the anthropometric parameters of the teeth and jaw system of 15-16-year-old healthy (control) children. The following indicators were observed, the physiognomic height of the face in the boys' group was on average 29.5±0.73 cm, and in the girls' group it was 23.7±0.94 cm. In the same period, the total morphological height of the face was 18.0±0.82 cm in the group of boys, and 14.9±0.84 cm in the group of girls. The average morphological width of the face is 29.4±0.79 cm in the group of boys and 25.9±0.80 cm in the group of girls. During this period, the depth of the upper part of the face is 17.2±0.83 cm in the group of boys, and 15.1±0.74 cm in the group of girls. The height of the lower jaw was found to be 5.7±0.62 cm in the boys' group, and 5.2±0.39 cm in the girls' group.

We measured anthropometric indicators in the dental-jaw system of children in the 11-12-13-14year-old hypothyroidism group. In relation to the control group, the following were found. In the boys ' group, it was noted that the physiognomic height of the face ranges from 16.0cm to 20.1 cm, and the average height is 18.4±0.86 cm significantly smaller. During this period, it was found that the total morphological height of the face decreased from 10.4 cm to 14.4 cm, and the average height decreased from 12.2±0.74 cm. It was revealed that the morphological width of the face decreased from 18.3 cm to 22.5 cm, and the average width decreased by 20.8±1.00 cm. During the same period, it was demonstrated that

the upper depth of the face ranged from 11.7 cm to 15.6 cm, while the average depth was significantly reduced by 13.0±0.83 cm. It was observed that the height of the lower jaw varies significantly from 2.1 cm to 4.2 cm, and the average height is 3.0±0.33 cm. The circumference of the cerebrum of the head averaged 28.9±0.48 cm, with a minimum figure of 26.8 cm, and a maximum figure of 31.1 cm recorded a decrease. It was found that the upper height of the face decreased from 5.0 cm to 5.9 cm, and the average upper height decreased from 5.4±0.09 cm. The average height of the face ranged from 2.1 cm to 2.8 cm, while the average height indicator was calculated to be significantly smaller at 2.3±0.07 cm. The lower height of the face was shown to vary from 6.5 cm to 7.4 cm, while the average lower height was 7.0±0.10 cm. It was noted that the upper morphological height of the face decreased from 6.3 cm to 7.3 cm, while the average higher morphological height decreased from 6.9±0.11 cm. The lower morphological height of the face averaged 5.4±0.12 cm, with a minimum figure of 4.8 cm and a maximum figure of 6.1 cm found to be significantly smaller. The average depth of the face was calculated to be 12.9 cm to 15.9 cm, while the average depth indicator was 14.6±0.29 cm. The lower surface depth was known to vary from 14.4 cm to 17.1 cm, while the average lower depth was 15.7±0.27 cm. The height of the lower jaw branch was observed to be 4.5 cm to 5.5 cm, while the height of the average branch was significantly reduced by 5.0±0.10 cm. It was noted that the projection length of the lower jaw body was reduced from 10.0 cm to 12.3 cm, while the average projection length was 11.3±0.24 cm.

These rates equated to the following averages in girls of the same age: the physiognomic height of the face was observed to decrease from 16.7 cm to 20.8 cm, and the average height to 18.6±0.98 cm. The total morphological height of the face ranges from 10.0 cm to 14.2 cm, while the average height is 12.1±0.84 cm. The morphological width of the face was known to have decreased from 19.4 cm to 23.5 cm, while the average width was 21.9±0.80 cm. It was noted that the upper surface depth ranged from 10.3 cm to 14.8 cm, while the average depth was reduced to 12.2±0.89 cm. The height of the lower jaw was found to vary from 2.0 cm to 3.1 cm, while the average height was 2.9±0.31 cm. The cerebrum of the head was found to be 27.6 cm to 33.7 cm in circumference, while the median cerebrum was found to be significantly smaller at 30.7±0.70 cm. The High height of the face was on average 5.6±0.11 cm, in which it was calculated that the minimum figure was 5.0 cm, and the maximum figure was 6.1 cm reduced. The average height of the face was shown to vary from 2.2 cm to 2.6 cm, while the average height indicator was 2.4±0.05 cm. It was noted that the lower height of the face is 6.7 cm to 8.5 cm, while the average lower height is 7.6±0.17 cm. The high morphological height of the face was known to have decreased from 6.6 cm to 8.0 cm, while the average high morphological height was 7.3±0.14 cm. The lower morphological height of the face was observed to be 5.4 cm to 6.2 cm, while the average lower morphological height was significantly reduced to 5.8±0.10 cm. The average depth of the face was on average 15.3±0.33 cm, with a minimum figure of 14.0 cm, and a maximum figure of 16.9 cm. The lower depth of the face was calculated to be 15.7 cm to 18.0 cm, while the average lower depth was 17.1±0.30 cm reduced. The height of the lower jaw branch was recorded as 4.7 cm to 5.8 cm, while the height of the average branch was recorded as 5.2±0.13 cm. The projection length of the lower jaw body was found to be 10.6 cm to 12.5 cm, while the average projection length was found to be a significant decrease of 11.4±0.19 cm.

The anthropometric indicators of children in the 15–16-year-old hypothyroidism group in the dental-jaw system were as follows. In this case, the following indicators were calculated in relation to the control group. In the boys ' group, it was noted that the physiognomic height of the face was significantly reduced from 21.2 cm to 25.4 cm, and the average height was 23.0±0.21 cm. During this period, it was observed that the total morphological height of the face decreased from 12.8 cm to 16.4 cm, and the average height de-

creased from 14.2±0.20 cm. The morphological width of the face was found to be 24.2 cm to 28.5 cm, while the average width was found to be significantly smaller at 26.1±0.14 cm. During the same period, it was known that the upper depth of the face varied from 11.3 cm to 15.5 cm, while the average depth varied from 13.0±0.20 cm. It was noted that the height of the lower jaw was significantly reduced from 1.9 cm to 5.4 cm, and the average height was 3.1±0.31 cm. The circumference of the cerebral part of the head was on average 28.3±0.57 cm, which showed that the minimum indicator was 25.7 cm, and the maximum indicator was reduced by 30.4 cm. The height of the face was found to be 8.1 cm to 9.7 cm, while the average high height was found to be 8.8±0.16 cm reduced. The average height of the face was seen to be between 2.3 cm and 2.8 cm, while the average height indicator was seen to be significantly smaller at 2.5±0.05 cm. It was noted that the lower height of the face varied from 6.6 cm to 7.8 cm, while the average lower height varied from 7.2±0.13 cm. The high morphological height of the face was on average 7.8±0.14 cm, with a minimum figure of 7.1 cm, and a maximum figure of 8.5 cm was calculated as a significant decrease. It was observed that the lower morphological height of the face decreased from 5.5 cm to 6.5 cm, while the average lower morphological height decreased from 5.8±0.09 cm. The average depth of the surface was known to vary significantly from 13.1 cm to 15.9 cm, while the average depth indicator was 14.6±0.27 cm. The lower surface depth was found to be between 14.5 cm and 17.4 cm, while the average lower depth was found to be 16.0±0.32 cm reduced. The height of the lower jaw branch was on average 6.8±0.11 cm, with the minimum indicator recorded as 6.2 cm, and the maximum indicator as 7.3 cm. The projection length of the lower jaw body was shown to vary from 10.9 cm to 12.9 cm, while the average projection length was 12.0±0.23 cm.

These rates were comparable to the following average in girls of this age: the physiognomic height of the face was found to be 15.3 cm to 19.7 cm, and the average height was found to be significantly smaller by 17.2±0.25 cm. It was noted that the total morphological height of the face was reduced from 9.3 cm to 13.5 cm, and the average height was 11.2±0.20 cm. The morphological width of the face was shown to be between 20.2 cm and 24.6 cm, while the average width was significantly smaller at 22.0±0.54 cm. During the same period, it was known that the upper depth of the face decreased from 9.3 cm to 13.5 cm, and the depth decreased by 11.5±0.65 cm. The height of the lower jaw was seen to be between 1.6 cm and 5.2 cm, while the average height was 3.1±0.32 cm. It was noted that the cerebrum of the head varied from 25.5 cm to 30.2 cm, while the circumference of the median cerebrum varied by 27.9±0.53 cm. The High height of the face averaged 8.3±0.19 cm, with a minimum figure of 7.5 cm and a maximum figure of 9.1 cm reduced. The average height of the face was found to be between 2.1 cm and 2.5 cm, while the average height indicator was found to be significantly smaller at 2.3±0.04 cm. The lower height of the face is known to be between 6.3 cm and 7.5 cm, while the average lower height is 6.9±0.14 cm. The high morphological height of the face was shown to vary from 6.9 cm to 8.0 cm, while the average high morphological height was 7.4±0.12 cm. The lower morphological height of the face was calculated to be 5.0 cm to 6.0 cm, while the average lower morphological height was calculated to be 5.5±0.10 cm reduced. The average depth of the face was recorded as ranging from 12.3 cm to 15.4 cm, while the average depth indicator was recorded as significantly smaller at 13.9±0.33 cm. The lower depth of the face averaged 14.9±0.36 cm, with a minimum indicator of 13.1 cm, and a maximum indicator of 16.6 cm. The height of the lower jaw branch was found to vary from 6.0 cm to 6.9 cm, while the height of the average branch varied from 6.4±0.09 cm. The projection length of the lower jaw body was seen to be 10.4 cm to 11.9 cm, while the average projection length was seen to be a significant decrease of 11.2±0.15 cm.

Discussion: We have identified anthropometric indicators in the dental-jaw system of children in the 7-year-old hypothyroidism group. In this case, it was found that the indi-

cators of children in the main group are low compared to children in the observation group. The physiognomic height of the face of children of this group is 6.25%, the total morphological height of the face is 2%, the morphological width of the face is 7.65%, the upper depth of the face is 10.85%, the height of the lower jaw is 5.33%, the circumference of the brain of the head is 3%, the upper height of the face is 15%,%, the height of the lower jaw branch is 11%, and the projection length of the lower jaw body is found to be 9.56% less reliable. We measured anthropometric parameters in the dental system of children in the group of 16-year-old hypothyroidism. In this case, it was found that the indicators of children in the main group are low compared to children in the observation group. Children of this group have 10% of the physiognomic height of the face, 23.2% of the total morphological height of the face, 8% of the morphological width of the face, 5.78% of the depth of the upper part of the face, 10% of the height of the lower jaw, 15.9% of the circumference of the face the brain is 8.74% of the upper height of the face, the lower depth of the face is 13.27%, the height of the lower jaw is 11.59%, it was noticed that the length of the projection of the lower jaw is 11.6% less than that of the ischium. It was found that in girls of this age, the indicators of children in the main group were lower than in children in the observation group. Children of this group have a physiognomic face height of 14%, a total morphological face height of 12.25%, a morphological face width of 11%, an upper face depth of 31%, a lower jaw height of 22.8%, a brain circumference of 18%, an upper face height of 20%, an average face height of 17%, 13.64%, a lower jaw height It was estimated at 11.72%, and the projection length of the mandible at 12.16% was estimated as very poor.

Conclusion: 1. It was noted that the morphological height of the face of boys of the same age increased by 19%, the morphological width of the face decreased by 10%, the upper depth of the face increased by 12%, and the height of the lower jaw increased by 14%.

2. These indicators were equal to the following indicators in girls of the same age: the physiognomic height of the face increased by 28%, the morphological height of the face increased by 24%, the morphological width of the face increased by 16%, the upper depth of the face increased by 22%, and the height of the lower jaw increased by 26%.

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