

Psychomotor Development of Preschool Children by Assessing Thyroid Function

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Abstract: The article is devoted to the development of a scheme for predicting the psychomotor development of preschool children, which is of great importance for health authorities when organizing specialized pediatric and medical-pedagogical, preventive services. The proposed method allows early diagnosis and prevention of disorders of psychomotor development in preschool children, which is of important medical and social importance.

Key words: Children, psychomotor development, thyroid gland, preschool age, anthropometry.

Introduction. Maturation and complication of motor and mental functions, the formation of a child's personality occurs under the influence of hereditary factors and in the process of mastering social experience. Delayed psychomotor development can be the first sign of trouble, or it can be the leading syndrome in various etiology and pathogenesis of somatic diseases and pathology of the nervous system. That is why a large percentage of children with various developmental problems at an early age have a common diagnosis – a delay (or lag) in psychomotor development. For this reason, during the entire period of early childhood, the district pediatrician, together with the child's parents, must monitor the main parameters of development [2,4].

It is important to note that in the practical activities of a district pediatrician, a pediatrician of preschool and school institutions, the use of "screening techniques" is the most optimal for a quick assessment of a child's psychomotor development [5].

The advantage of these methods is the possibility of examining a large number of children at once in order to determine the degree of compliance with the norm of the child's health and identify health problems: congenital, perinatal and other pathologies. The results of such an examination are the basis for subsequent diagnosis, treatment of a problem child, as well as possible referral to appropriate services for early psychological and pedagogical assistance [7].

There are many scales by which the child's development is assessed. They are based on the mandatory allocation of various lines of development, i.e. the versatility of the assessment, which allows us to timely determine the cause of the backlog and direct efforts specifically to correct the identified problems [1,3].

At the same time, as a screening, it is proposed to use one of the proposed methods constantly, in a timely manner, methodically correctly. Only with the same type is it possible to obtain objective dynamics data

with an assessment of the child's level of development at each age stage. With unsystematic control or the use of different scales, dynamic monitoring of the child is disrupted, cases of delay and/or mosaic variants of developmental disorders are missed [6].

The aim of the study was to develop a method for predicting the psychomotor development of preschool children.

Materials and methods of research:

A survey of 1,390 organized preschool children living in the Bukhara region was conducted. Of these, 721 are girls, 669 are boys aged 3-7 years. The analysis, depending on the place of residence, showed that there are only 667 children living in rural conditions, 313 of them boys (46.9%), 354 girls (53.1%). There are 723 children living in the city, including 356 boys (49.3%), 367 girls (50.7%). The ratio of urban and rural children was 1:1.

Results and discussion.

The results of the distribution of children by age and place of residence showed the predominance of organized children in preschool institutions at the age of 4-6 years, regardless of the place of residence (fig.1).

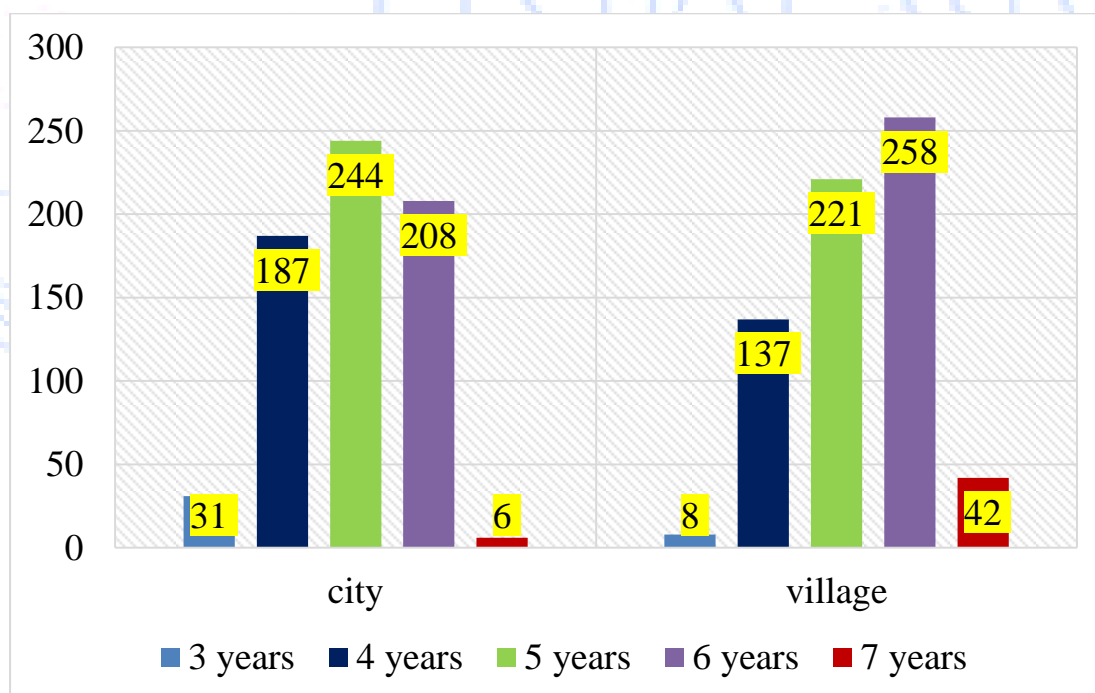


Figure 1. Distribution of children by age and place of residence

The analysis of the children's health status allowed us to establish the frequency and structure of their morbidity. The structure of morbidity of children living in the city is dominated by infectious diseases, diseases of ENT organs, endocrine, neurological and allergic diseases.

At the same time, the frequency of morbidity of children depending on the place of residence shows that, regardless of the place of residence, organized preschool children get sick 2 times a year.

The study of the physical growth of preschool children showed that 4-year-old girls are ahead of boys in height, weight, chest circumference and leg length.

At the same time, boys' average physical development indicators were at the level of weight - 14.9 ± 0.24 kg compared to girls' weight - 15.8 ± 0.24 kg ($p < 0.05$). The height of 4-year-old boys was 95.7 ± 0.70 cm compared to the height of girls - 99.4 ± 1.19 cm ($p < 0.05$). During the analysis, a statistically significant large breast circumference was found in girls - 56.1 ± 0.31 cm against the indicators in boys - 53.1 ± 0.31 cm ($p < 0.05$). And also the length of the legs in girls was 55.3 ± 0.49 cm against the length of the legs in boys - 50.3 ± 0.23 cm, which shows the reliability of the results obtained by comparing the indicators of physical development of children aged 4 years ($p < 0.05$).

The results of the study showed that boys received a higher score on the psychomotor development assessment scale - 83.6 ± 1.91 points, compared to the data for girls of the corresponding age - 81.5 ± 1.52 points. A more detailed study of morphometric parameters and thyroid hormones in 4-year-old children showed that in boys the length of the right and left lobes of the thyroid gland is greater than in girls, 2.7 ± 0.09 cm and 2.4 ± 0.05 cm, respectively, ($p < 0.05$). At the same time, the volume of the left lobe of the thyroid gland in boys is 2.0 times greater than in girls: 1.2 ± 0.13 cm and 0.6 ± 0.04 cm ($p < 0.05$).

Analysis of the state of thyroid hormone synthesis showed higher titers of free T4 - 25.7 ± 0.72 pmol/L and TSH - 2.4 ± 0.21 pmol/L in boys versus data in girls, 19.1 ± 0.91 pmol/L and 1.4 ± 0.09 pmol/L, respectively ($p < 0.05$).

Evaluation of thyroid hormone synthesis allowed to establish an increase in the level of total T3 in girls to 2.7 ± 0.14 mmol/l compared to its synthesis in boys - 2.0 ± 0.15 pmol/l ($p < 0.05$).

Thus, the results of the study made it possible to establish the features of psychomotor and physical development in children aged 4 years, depending on gender. It was found that girls of 4 years of age are ahead of boys in height, weight, chest circumference and leg length. At the same time, the length of the right and left lobes of the thyroid gland is greater in boys than in girls, the volume of the left lobe of the thyroid gland is 2.0 times greater than in girls ($p < 0.05$). And also revealed an increased synthesis of T4 and TSH in boys, and in girls - an increase in the level of total T3.

Consequently, in girls, an increase in the level of total T3 indicates a lack of iodine in the body and a high risk of developing endemic goiter.

Based on the results of a study of children aged 4 years, it was concluded that in children aged 4 years, the functional state of the thyroid gland does not depend on the indicators of physical development. Girls at the age of 4 have a high risk of developing endemic goiter due to iodine deficiencies in the body, which shows the importance of taking into account the diet and ensuring the intake of iodine in the body with food in preschool institutions.

Thus, a comprehensive assessment of the physical and psychomotor development of children with morphometric indicators of thyroid and the state of synthesis of its hormones in children, depending on age, made it possible to determine their age-sexual characteristics and predict the risk of developing thyroid diseases.

Conclusion:

1. The prevalence of organized children in preschool institutions (DDU) at the age of 4-6 years has been established, regardless of the place of residence
2. It was found that girls of 4 years of age are ahead of boys in height, weight, chest circumference and leg length. At the same time, in boys, the length of the right and left lobes of the thyroid gland is

greater than in girls, the volume of the left lobe of the thyroid gland is 2.0 times greater than in girls ($p < 0.05$).

3. Increased synthesis of T4 and TSH was found in boys, and in girls - an increase in the level of total T3 at the age of 4 years. An increase in the level of total T3 in girls indicates a lack of iodine in the body and a high risk of developing endemic goiter.

4. In children aged 4 years, the functional state of the thyroid gland does not depend on the indicators of physical development.

5. There is a high risk of developing iodine deficiency in girls at the age of 5 years, which is clinically manifested by the lag of girls in growth against the background of the tendency to gain weight, lag in the growth of the circumference of the head and chest, the length of the arms and legs compared to the physical growth of boys.

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