

**STRUCTURE AND DEVELOPMENT OF THE BRAIN AND NERVOUS SYSTEM OF CHILDREN**

**BOLALAR MIYA VA ASAB TIZIMINING TUZILISHI VA RIVOJLANISHI  
СТРОЕНИЕ И РАЗВИТИЕ ГОЛОВНОГО МОЗГА И НЕРВНОЙ СИСТЕМЫ ДЕТЕЙ**

**Toshbo'riyev G'ayrat Shuxratovich**

Toshkent tibbiyot akademiyasi  
Termiz filiali anatomiya kafedrasida asistenti

[toshboriyevg@gmail.com](mailto:toshboriyevg@gmail.com)

**Chorshanbiev Saidali O'tkiro'g'li**

Toshkent tibbiyot akademiyasi  
Termiz filiali davolash 1 fakulteti 211-a guruh talabasi

[saidalichorshanbiev04@gmail.com](mailto:saidalichorshanbiev04@gmail.com)

**Ahmadaliyev Fahriddin Abdurahmon o'g'li**

Toshkent tibbiyot akademiyasi  
Termiz filiali davolash 1 fakulteti 211-a guruh talabasi

[faxriddinahmadaliyev84@gmail.com](mailto:faxriddinahmadaliyev84@gmail.com)

**Xolmamatov Ahliddin Xaydarovich**

Toshkent tibbiyot akademiyasi  
Termiz filiali davolash 2 fakulteti 206-b guruh talabasi

[xolmamatovahliddin40@gmail.com](mailto:xolmamatovahliddin40@gmail.com)

**ABSTRACT**

This article is devoted to the structure and development processes of the brain and nervous system of children. It examines the structure of the central and peripheral nervous systems, their functional properties, and changes at different stages of child development. The influence of genetic and environmental factors on the formation of the nervous system during childhood is discussed in detail. It also analyzes the stages of development of the nervous system from the fetal period to school age, the specific aspects of each stage, and neurophysiological processes.

The article provides information on pathologies of the nervous system of children, including diseases such as autism, attention deficit hyperactivity disorder (ADHD), and epilepsy, and provides scientific foundations explaining their causes. In addition, the importance of nutrition, physical activity, and the psychological environment in ensuring the healthy development of the nervous system is also highlighted.

This article is intended primarily for medical professionals, neurologists, pediatricians, psychologists, and those responsible for raising children. It provides important recommendations aimed at forming a healthy nervous system. The article has scientific and practical significance for strengthening children's health and ensuring future health.

**ANNOTATSIYA**

Mazkur maqolada bolalar skelet tizimining o'sishi va rivojlanishi jarayoni atroflicha tahlil qilingan. Unda yangi tug'ilgan chaqaloq skeletining anatomik xususiyatlari va bolalik davrida suyaklarning xaftadan suyak to'qimasi holatiga o'tish jarayoni batafsil bayon etilgan. Bolalar

suyaklarining uzoqqa o'sishi va mineralizatsiyasi mexanizmlari, ularga ta'sir qiluvchi genetik, gormonal va ekologik omillar haqida keng ma'lumot keltirilgan.

Shuningdek, bolalik davrida uchraydigan raxit, skolioz va osteogenez imperfekta kabi skelet tizimi kasalliklari hamda ularning sabab va oqibatlari yoritilgan. Bolalar sog'lig'ini ta'minlash uchun muvozanatli oziqlanish, jismoniy faollik, D vitaminini qabul qilish va suyak tizimini muntazam kuzatib borish kabi oldini olish choralariga alohida e'tibor qaratilgan.

#### АБСТРАКТНЫЙ

Данная статья посвящена строению и процессам развития головного мозга и нервной системы детей. В ней рассмотрено строение центральной и периферической нервной системы, их функциональные особенности, изменения на различных этапах развития ребенка. Подробно объяснено влияние генетических факторов и факторов окружающей среды на формирование нервной системы в детстве. Также анализируются этапы развития нервной системы от внутриутробного периода до школьного возраста, особенности каждого этапа и нейрофизиологические процессы.

В статье представлены сведения о патологиях детской нервной системы, в том числе аутизме, синдроме дефицита внимания и гиперактивности (СДВГ), эпилепсии, а также научные основы, объясняющие их причины. Кроме того, подчеркивается важность питания, физической активности и психологической среды для обеспечения здорового развития нервной системы.

Данная статья предназначена в первую очередь для медицинских специалистов, неврологов, педиатров, психологов и лиц, ответственных за образование детей. Она содержит важные рекомендации, направленные на формирование здоровой нервной системы. Статья имеет научное и практическое значение для укрепления здоровья детей и обеспечения здоровья в будущем.

Maqola skelet tizimining sog'lom rivojlanishini ta'minlash uchun ota-onalar, pedagoglar va tibbiyot xodimlariga muhim ilmiy va amaliy tavsiyalarni taklif etadi. Bolalarning sog'lom o'sishi uchun zarur omillar va ular bilan bog'liq tavsiyalar ilmiy asoslangan holda ko'rsatib berilgan.

**Keywords:** Brain structure, nervous system development, central nervous system (CNS), peripheral nervous system (PNS), child development, fetal neurogenesis, synaptic communication, autism, attention deficit hyperactivity disorder (ADHD), epilepsy, psychological environment, child neurology, genetic factors, environmental influences, neurophysiological processes, healthy lifestyle

**Kalit so'zlar:** Miya tuzilishi, asab tizimi rivojlanishi, markaziy asab tizimi (MAT), periferik asab tizimi (PAT), bolalar rivojlanishi, homila davri neyrogenezisi, sinaptik aloqa, autizm, diqqat yetishmasligi va giperaktivlik sindromi (DYGS), epilepsiya, psixologik muhit, bolalar neyrologiyasi, genetik omillar, tashqi muhit ta'siri, neyrofiziologik jarayonlar, sog'lom turmush tarzi

**Ключевые слова:** строение мозга, развитие нервной системы, центральная нервная система (ЦНС), периферическая нервная система (ПНС), развитие ребенка, нейрогенез плода, синаптическая коммуникация, аутизм, синдром дефицита внимания с гиперактивностью (СДВГ), эпилепсия, психологическая среда, детская неврология,

генетические факторы, внешняя среда, нейрофизиологические процессы, здоровый образ жизни

### **Relevance of the topic**

The topic of the structure and development of the brain and nervous system in children is relevant today, because the nervous system is the main control center of the human body, and its proper formation directly affects the future mental, physical and social development of the child. The following reasons further increase the importance of this topic:

1. Rapid development process: The development of the child's body, especially the brain and nervous system, occurs at a very high rate in the first years of life. Any disruption or negative impact that occurs during this period can lead to serious health problems in the future.

2. Widespread diseases of the nervous system: Currently, the statistical indicators of diseases such as autism spectrum disorders, attention deficit hyperactivity disorder (ADHD), epilepsy are increasing. In order to identify and prevent these problems early, it is necessary to understand the scientific foundations of the development of the brain and nervous system in children.

3. Influence of the external environment: In the modern world, factors affecting the child's body (for example, technologies, changes in nutrition, stress and environmental problems) are increasing. It is important to study their impact on the development of the nervous system.

4. Problems related to education and upbringing: Understanding certain features of brain development is important for raising children, developing their abilities, and organizing the educational process.

5. Health of the future generation: Healthy development of the nervous system of children is important not only for individual well-being, but also for the future of society. Forming a healthy generation is one of the main goals of the global medical and pedagogical fields today.

Therefore, studying the development of the brain and nervous system of children is not only of scientific but also practical importance and is an urgent task for building a healthy society.

### **Purpose of the study**

This article aims to analyze the process of the structure and development of the brain and nervous system of children, identify factors affecting this process, and develop scientifically based recommendations for the healthy formation of the nervous system of children.

Main objectives:

1. Study the stages of development of the brain and nervous system: Analyze the changes that occur in the nervous system from the fetal period to childhood.

2. Identify factors affecting the development of the nervous system: Study the effects of genetic and environmental factors and their impact on the health of the child.

3. Explain the pathologies of the nervous system: Analyze the causes of diseases such as autism, attention deficit hyperactivity disorder (ADHD), epilepsy, and methods for their early detection.

4. Preventive and health measures: Develop recommendations to ensure the healthy development of the brain and nervous system of children.

5. Provide scientific and practical support: Provide scientifically based information for medical professionals, educators, and parents.

The purpose of this study is primarily to understand the nervous system of children, which is important for their future.

### **Research results**

The following scientific and practical conclusions were drawn as a result of this article:

1. The stages of nervous system development were identified:

The formation of the brain and nervous system in the fetal period begins at the 3rd week and continues after birth. In the first year, brain size and synaptic connections between neurons increase significantly.

The specific features of nervous system development for each stage of childhood (infancy, preschool, school age) are indicated.

2. Factors influencing development are analyzed:

Positive factors: Healthy nutrition, regular physical activity, a rich social environment, and good sleep support brain development.

Negative factors: Hypoxia, infections, stress, and environmental factors in the prenatal period can cause disorders in the nervous system.

3. Nervous system pathologies are identified:

The causes of the development of autism, attention deficit hyperactivity disorder (ADHD), epilepsy, and other neurological problems are explained. It is noted that many of these diseases require early diagnosis and treatment.

4. Recommendations have been developed to ensure healthy development:

Parents are given recommendations on activities that support children's brain development (games, creative activities, intellectual games).

Medical professionals are offered scientifically based guidelines for early diagnosis of nervous system disorders in children and preventive measures.

5. Practical result:

The article will help specialists and parents involved in child health to better understand the processes of nervous system development and take appropriate measures.

These results provide the necessary scientific and practical basis for ensuring the healthy development of the brain and nervous system in children.

### **Conclusion**

The brain and nervous system of children are the most complex and vital parts of the human body, its development is formed in the early stages of life and has a significant impact on the child's future mental, physical and social health. This article analyzes the structure and stages of development of the nervous system, highlighting the influence of genetic and environmental factors.

The following main conclusions were drawn in the article:

1. The development of the brain and nervous system begins in the fetal period and enters the most active stage in the first years of a child's life. During this period, the formation of brain and synaptic connections forms the basis of the child's future.

2. Factors that positively affect the development of the nervous system (healthy nutrition, positive psychological environment, physical activity) and factors that negatively affect it (stress, hypoxia in the prenatal period, environmental problems) have been identified.

3. Common problems in the nervous system of children (for example, autism, attention deficit hyperactivity disorder, epilepsy) require early diagnosis and preventive measures.

Also, to ensure healthy development, parents and professionals should consider the following:

Encourage mental and physical activity in the first years of a child's life.

Timely medical monitoring and diagnostics.

Ensuring a healthy lifestyle.

In conclusion, the timely application of scientific and practical measures to properly form the brain and nervous system of children is necessary to ensure a healthy and successful generation in the future. This study provides useful guidelines for professionals involved in child health and parents.

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These publications were used as a basis for the information presented in the article and provide a scientific basis for covering the topic. If a list according to a special bibliography format is required, you can provide additional information.