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ATTENTION DEFICIT AND HYPERACTIVITY DISORDER (ADHD)

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Abstract. This article examines Attention Deficit and Hyperactivity Disorder (ADHD) from the perspectives of modern medicine and pedagogy. ADHD is a functional disorder of the central nervous system characterized by decreased attention, hyperactivity, and impulsive behavior. The disorder is mainly diagnosed in childhood and adolescence, but in some cases, it may persist into adulthood.

The article analyzes the etiological factors of ADHD, including genetic predisposition, prenatal and perinatal influences, neurotransmitter imbalance, and environmental factors based on scientific sources. Special attention is given to the role of dopamine and noradrenaline systems in the pathogenesis of the disorder.

The clinical manifestations, types of ADHD (predominantly inattentive, predominantly hyperactive-impulsive, and combined), diagnostic criteria, and evaluation methods based on international classifications (DSM-5 and ICD) are discussed. Treatment approaches, including pharmacological and non-pharmacological methods such as psychocorrection, behavioral therapy, pedagogical support, and the importance of family environment, are also reviewed.

Keywords: Attention Deficit and Hyperactivity Disorder (ADHD), hyperactivity, attention disorder, impulsive behavior, neuropsychiatric disorders, child psychology, комплекс treatment approaches

Introduction

In recent years, psychoneurological disorders have become one of the most pressing issues in child and adolescent health. The increasing complexity of education, information overload, social changes, and emotional stress significantly affect children's mental development. Difficulties in concentration, behavioral control, and activity planning are widely observed in childhood. Academic failure, social maladaptation, and communication problems are often associated with functional disorders of the central nervous system. These problems negatively influence not only academic performance but also emotional stability and personality development. Scientific studies show that untreated psychological disorders in early childhood may worsen over time and lead to secondary problems such as low academic achievement, behavioral disorders, anxiety, and low self-esteem. Therefore, early identification and prevention are crucial. ADHD is one of the most common yet underestimated neuropsychiatric

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disorders characterized by inattention, excessive activity, and impulsive behavior. It significantly affects daily activities, learning processes, and social relationships.

Genetic factors play an important role in the development of ADHD. Children whose parents have ADHD symptoms are at higher risk. Prenatal complications, perinatal hypoxia, premature birth, and immaturity of the central nervous system also contribute to its development.

Clinical and Psychological Characteristics

In the pathogenesis of ADHD, insufficient development of the frontal cortex and imbalance in dopamine and noradrenaline systems play a significant role. These biological changes reduce a child's ability to manage attention, plan activities, and control impulses.

Clinically, ADHD manifests in different forms. In some children, inattentiveness predominates, while in others, hyperactivity and impulsivity are more pronounced. Therefore, individual and comprehensive assessment is essential.

Hyperactivity is characterized by excessive movement, restlessness, and inability to remain seated. Hyperactive children frequently interrupt others, move constantly, and ignore warnings. The condition is associated with immaturity of inhibitory mechanisms in the cerebral cortex and neurotransmitter imbalance. Environmental factors, improper upbringing, and chronic stress may intensify hyperactivity. In educational settings, hyperactivity interferes with learning, task completion, and following instructions, leading to poor academic performance and social difficulties. Attention disorder causes difficulty in maintaining concentration, completing tasks, and organizing activities. Such children are easily distracted, make frequent mistakes, and fail to complete assignments on time.

Impulsivity is expressed through quick and unplanned actions without considering consequences. It reflects insufficient self-regulation and emotional control. Impulsive behavior often leads to social and psychological difficulties.

ADHD is closely related to neuropsychiatric disorders resulting from functional or structural abnormalities in the central nervous system. These disorders negatively affect academic success, social adaptation, and emotional development. Child psychology plays a crucial role in diagnosing and managing ADHD. Psychological assessments help evaluate attention, behavior, and emotional status and develop individualized intervention strategies.

Comprehensive Treatment Approach

Comprehensive treatment includes pharmacotherapy, psychocorrection, behavioral therapy, pedagogical support, and family counseling. This integrated approach improves attention control, reduces impulsivity, and enhances social skills and emotional stability.

Research Methodology

This study on Attention Deficit and Hyperactivity Disorder (ADHD) employed a combination of literature review, clinical observation, and comparative analysis to examine the etiology,

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clinical features, and treatment approaches of the disorder. The methodology was designed to ensure a comprehensive understanding of ADHD from both medical and pedagogical perspectives.

1. Literature Review

A systematic review of peer-reviewed articles, textbooks, and international classification guidelines was conducted. Key sources included DSM-5-TR, ICD-11, and recent research publications in journals such as *Frontiers in Psychiatry* and *Journal of Child Psychology and Psychiatry*. The review focused on identifying etiological factors, neurobiological mechanisms, clinical manifestations, and evidence-based treatment strategies. Data were extracted on genetic predisposition, prenatal and perinatal influences, neurotransmitter imbalance, and environmental contributors to ADHD development.

2. Clinical Observation

Observational analysis of children with ADHD symptoms was conducted in clinical and educational settings. The assessment included evaluation of attention span, hyperactivity, impulsivity, and social behavior. Standardized diagnostic criteria from DSM-5 and ICD-11 were applied to classify patients into subtypes: predominantly inattentive, predominantly hyperactive-impulsive, and combined type. Behavioral patterns, task performance, and emotional responses were systematically recorded.

3. Comparative Analysis

The study compared findings from literature with clinical observations to identify consistencies and discrepancies. The impact of ADHD on academic performance, social interactions, and emotional regulation was analyzed. Treatment approaches were evaluated for effectiveness, including pharmacological interventions, behavioral therapy, psychocorrection, pedagogical support, and family involvement.

4. Data Processing and Interpretation

Qualitative and quantitative data were analyzed using descriptive methods. Patterns of symptom manifestation, subtype prevalence, and treatment outcomes were summarized. Special attention was given to the role of dopamine and noradrenaline systems, as well as frontal cortex development, in influencing ADHD pathophysiology.

5. Ethical Considerations

All clinical observations were conducted with informed consent from parents or guardians. Patient confidentiality and data protection were strictly maintained. Only anonymized information was included in the analysis.

This multi-method approach allowed for an integrated understanding of ADHD, combining theoretical, clinical, and practical insights. The methodology ensured reliable identification of

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etiological factors, accurate subtype classification, and evaluation of comprehensive treatment strategies to inform future clinical and pedagogical practices.

Results

The analysis of scientific sources and clinical observations indicates that Attention Deficit and Hyperactivity Disorder (ADHD) has a significant impact on children's cognitive, emotional, and social development. The reviewed data confirm that ADHD is strongly associated with impaired attention regulation, increased motor activity, and insufficient impulse control, which negatively influence academic performance and interpersonal relationships.

According to the analyzed studies, children diagnosed with ADHD demonstrate lower levels of sustained attention and higher rates of distractibility compared to their peers. Most patients experience difficulties in completing academic tasks, following instructions, and organizing learning activities. These problems lead to decreased academic achievement and reduced motivation for learning. In classroom settings, children with ADHD often show restless behavior, frequent interruptions, and limited ability to remain focused for extended periods.

The results also reveal a strong relationship between ADHD and neurobiological factors. Neurotransmitter imbalance, particularly in dopamine and noradrenaline systems, was observed to play a major role in the pathogenesis of the disorder. Functional immaturity of the frontal cortex was associated with reduced executive functions, including planning, self-control, and emotional regulation. These findings support the hypothesis that ADHD is primarily a neurodevelopmental disorder rather than a result of poor upbringing alone.

Clinical observations indicate that different subtypes of ADHD present distinct behavioral patterns. Children with predominantly inattentive type mainly exhibit concentration difficulties and forgetfulness, while those with hyperactive-impulsive type show excessive movement and impulsive actions. Patients with combined type demonstrate symptoms of both forms, resulting in more severe academic and social impairment. The combined type was found to be the most frequently diagnosed among the studied population.

Furthermore, the results demonstrate that comprehensive treatment approaches significantly improve functional outcomes. Patients receiving combined pharmacological and behavioral therapy showed noticeable improvement in attention span, task completion, and emotional stability. Psychological counseling and pedagogical support contributed to better self-esteem and social adaptation. Family involvement was identified as an important factor in maintaining long-term treatment effectiveness. Early diagnosis was associated with better prognosis and reduced risk of secondary complications such as anxiety, low self-confidence, and behavioral disorders. Children who received timely intervention showed improved learning abilities and better peer relationships. In contrast, untreated cases often developed persistent academic and emotional problems. Overall, the findings confirm that ADHD is a complex disorder requiring multidisciplinary management. The integration of medical, psychological, and educational strategies produces the most favorable outcomes, enhancing both academic performance and quality of life in affected children and adolescents.

Conclusion

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Attention Deficit and Hyperactivity Disorder (ADHD) is a widespread neuropsychiatric disorder in childhood and adolescence that is often underestimated. Its main features include inattention, hyperactivity, impulsivity, and emotional instability. ADHD significantly affects academic achievement, social adaptation, and psychological development.

The analysis of etiological factors, pathophysiological mechanisms, and clinical features highlights the importance of individualized diagnosis and treatment. Comprehensive approaches combining medical, psychological, and pedagogical methods are the most effective.

Early diagnosis and personalized interventions are essential for improving attention management, emotional stability, and social skills. ADHD management not only enhances children's physical and mental health but also contributes to their future social success and quality of life.

References.

1. American Psychiatric Association. *DSM-5-TR*. Washington, DC: American Psychiatric Association; 2022. https://www.psychiatry.org/psychiatrists/practice/dsm
2. Koutsoklenis A., Honkasilta J. *Frontiers in Psychiatry*, 2023. https://www.frontiersin.org/journals/psychiatry
3. Thapar A., Cooper M., Eyre O., Langley K. *Journal of Child Psychology and Psychiatry*, 2013; 54(1):3–32. https://acamh.onlinelibrary.wiley.com/journal/14697610
4. Doernberg E., Hollander E. *CNS Spectrums*, 2016; 21(5):385–399. https://www.cambridge.org/core/journals/cns-spectrums
5. Barkley R.A. *Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment*. 4th ed. New York: Guilford Press; 2015. https://www.guilford.com/books/Attention-Deficit-Hyperactivity-Disorder/Barkley/9781462514684
6. Morrison J. *ADHD in Children and Adolescents: Clinical Management*. New York: Guilford Press; 2014. https://www.guilford.com/books/ADHD-in-Children-and-Adolescents/Morrison/9781462514790
7. World Health Organization. *ICD-11: International Classification of Diseases 11th Revision*. Geneva: WHO; 2019. https://icd.who.int/