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A Brief communication

The Effectiveness of a Multidisciplinary Approach in the Rehabilitation of Children with Autism Spectrum Disorder: Approaches, outcomes, and prospects for application

[Bagdat Imasheva](#)¹, [Zholtay Daribayev](#)², [Marat Imashev](#)³,
[Zulfiya Akhmetzhanova](#)⁴, [Elnara Kapassova](#)⁵

¹ Head of the Organizational and methodological department, Astana Medical University, Astana, Kazakhstan.
E-mail: imasheva.b@amu.kz

² Associate Professor of the Neurology Department, Astana Medical University, Astana, Kazakhstan. E-mail: zholtay@gmail.com

³ Lecturer at the Department of General Surgery, Astana Medical University, Astana, Kazakhstan. E-mail: 7015165173@mail.ru

⁴ Head of the psychoneurological Department 6 "Kamkor", National Center for Children's Rehabilitation, Astana, Kazakhstan.
E-mail: Zhanseitova_z68@mail.ru

⁵ Resident Doctor specializing in Genetics, Medical Center hospital of the President's Affairs administration of the Republic of Kazakhstan, Astana, Kazakhstan. E-mail: megamind2609@gmail.com

Abstract

This article examines current approaches to multidisciplinary rehabilitation for children with autism spectrum disorder, highlighting the potential for these approaches to improve the quality of life for children with autism spectrum disorder and their families.

Objective: The objective of this study is to evaluate the effectiveness of a multidisciplinary approach in the rehabilitation of children with autism spectrum disorder, analyze the obtained results, and determine prospects for further application of this approach in practice. Additionally, it aims to develop recommendations for optimizing rehabilitation programs.

Methods. The multidisciplinary approach included psychological support, speech therapy sessions, social adaptation, and physical rehabilitation. The study was conducted at the National Center for Children's Rehabilitation, with children admitted according to the scheduled intake. Participants were children aged 1 to 18 years diagnosed with autism spectrum disorder (ASD). A total of 481 individuals were studied over 2022 and 2023.

Results. In 2022, 196 children were admitted with a diagnosis of childhood autism, including 151 males and 45 females. Additionally, 49 children were diagnosed with atypical autism, of whom 39 were male and 10 were female. In 2023, 206 children were admitted, including 152 males and 54 females. Of these, 30 children were diagnosed with atypical autism, with 13 males and 17 females. A multidisciplinary, integrative approach to rehabilitation, initiated in well-equipped and staffed centers, helps to improve the accurate diagnosis and treatment of children with autism spectrum disorders and leads to enhanced long-term outcomes.

Conclusions. It is necessary to develop recommendations for specialists in the field of rehabilitation and psychology. It is also necessary to implement a multidisciplinary approach in educational and medical institutions.

Keywords: autism, autism spectrum disorder, rehabilitation, multidisciplinary approach, multidisciplinary team.

Corresponding author: Bagdat Imasheva, Head of the Organizational and methodological department, Astana Medical University, Astana, Kazakhstan.

Postal code: Z10K8Y7

Address: Kazakhstan, Astana, St. Beibitshilik 49a

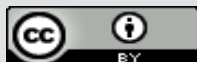
Phone: +7 (7172) 53-94-53

E-mail: imasheva.b@amu.kz

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Introduction

Autism Spectrum Disorders (ASD) represent a significant public health issue, affecting not only children but also their families and society as a whole. These disorders are characterized by a wide range of symptoms, including social and communicative difficulties, restricted interests, and repetitive behaviors. In recent decades, researchers and practitioners have been actively exploring effective rehabilitation methods for children with ASD, and the multidisciplinary approach is receiving increasing attention.

Multidisciplinary teams in the rehabilitation of ASD bring together professionals from various fields, such as psychologists, special educators, kinesiotherapists, play therapists, music therapists, biofeedback specialists, and speech therapists, thereby enhancing the effectiveness of rehabilitation programs. Research indicates that a comprehensive approach, integrating medical, psychological, and educational aspects, leads to significant improvements in the quality of life for children with ASD.

Materials and methods

Study Design: The study was conducted at the National Center for Children's Rehabilitation (NCCR), with children admitted according to the scheduled intake.

Study Participants: Children aged 1 to 18 years diagnosed with ASD.

The multidisciplinary approach included:

- psychological support;
- speech therapy sessions;
- social adaptation;
- physical rehabilitation.

Data Collection: Informed consent is obtained from patients and their parents for subsequent assessment.

Assessment Methods:

- Standardized tests for developmental assessment (e.g., ADOS, CARS).

The ADOS-2 (Autism Diagnostic Observation Schedule) is considered the most reliable and internationally recognized "gold standard" in test-based diagnosis of ASD. The ADOS involves observing the child's behavior during a series of structured activities, tasks, and conversations. It is divided into five modules, each corresponding to a specific age group. The modules vary in complexity, the simplicity of the tasks, the presence or absence of verbal (speech) tasks, and the play situations created by the clinician using a special set of toys. In these play situations, the child is expected to engage in various social interactions. The child's social behaviors (such as facial expressions, vocalizations, words, requests, etc.) are carefully recorded, and their characteristics are quantitatively assessed. The ADOS-2 is a practical, mathematically precise, and internationally accepted diagnostic tool. However, the test results alone cannot be the sole basis for diagnosing ASD. The most reliable diagnostic outcomes are achieved when

Results

A total of 481 individuals were studied in 2022 and 2023.

In 2022, 196 children with a diagnosis of childhood autism were admitted to the NCCR, including 151 males and 45 females. 49 children were diagnosed with atypical autism, including 39 males and 10 females.

In 2023, 206 individuals were admitted to the NCCR,

including 152 males and 54 females. 30 individuals were diagnosed with atypical autism, including 13 males and 17 females.

Interest in multidisciplinary rehabilitation methods for ASD continues to grow. Data from various studies highlight the importance of these approaches and their potential for developing individualized rehabilitation programs that consider the unique characteristics of each child.

The phenomenon of autism has provided an opportunity to shift perspectives on the issue and challenge the notions of what constitutes pathology and what is considered normal, depending on who addresses the problem. Furthermore, the understanding of the issue itself is influenced by the classification of mental and behavioral disorders adopted in each individual country [1].

Objective of the study: To evaluate the effectiveness of the multidisciplinary approach in the rehabilitation of children with ASD, analyze the obtained results, and determine the prospects for further application of this approach in practical activities, as well as develop recommendations for optimizing rehabilitation programs.

the ADOS test is conducted by an experienced pediatric clinician, who evaluates both the test results and the clinical picture as a whole.

The child is in a relaxed atmosphere of play and free interaction, with no specific tasks to "complete" - they simply behave as they naturally would. However, despite the freedom given to the child, all possible behavior patterns are accounted for in the test and assigned corresponding evaluation scores. The specialist adheres strictly to the prescribed guidelines, where not a single word or gesture is considered random.

- Parent questionnaires (e.g., SRS, ABC).

- Qualitative interviews with parents and specialists.

The diversity of clinical forms and manifestations of ASD necessitates a multidisciplinary approach to patients at all stages of rehabilitation. In the rehabilitation process for ASD, various specialists are involved: neurologists, physicians in physical medicine and rehabilitation (PM&R), kinesiotherapists, occupational therapists, speech therapists, psychologists, special education teachers, play therapists, music therapists, dietitians, nurses, social workers, family members, and the patient themselves. For effective interaction among specialists from different fields and related specialties, a common "language" of communication is essential, as well as a unified system for coding impaired functions and life activity limitations. In this regard, the International Classification of Functioning, Disability and Health (ICF) serves as the tool that helps specialists describe all of the patient's needs within the categories of the ICF.

The distribution by age is presented in Table 1. The increase in the number of children with ASD is attributed to improvements in diagnostic tools and increased awareness among parents and healthcare professionals.

Table 1 – Distribution of Children by Age

Year	Diagnosis	Age							Total number
		1-3 y.o.	3-5 y.o.	5-7 y.o.	7-9 y.o.	9-12 y.o.	12-15 y.o.	15-18 y.o.	
2022	Childhood Autism	5	51	75	26	23	11	5	196
	Atypical Autism	-	3	17	17	8	3	1	49
2023	Childhood Autism	3	44	77	38	30	10	4	206
	Atypical Autism	-	1	8	12	7	2	0	30

Childhood autism is characterized by a lack of emotional contact with others, stereotypical behavior, speech impairments, limited repetitive actions, fears, sleep and eating disturbances, outbursts of anger, aggression, and self-harm.

Atypical autism is characterized by qualitative

Discussion

ASD is a heterogeneous, behaviorally defined neurodevelopmental disorder. Over the past two decades, the prevalence of autism spectrum disorders has gradually increased. However, there are no clear diagnostic markers or targeted medications for autism. As a result, neurobehavioral anomalies, neurobiological changes in ASD, and the development of new pharmacological therapies for ASD require interdisciplinary collaboration [2]. In the Republic of Kazakhstan, since 2014, new standards for providing medical rehabilitation services to the population have been implemented. The developed standard establishes requirements for the provision of medical rehabilitation to patients in healthcare organizations, specifically in neurology. This standard enables an objective assessment of patients' health status, the prognosis of impaired functions, and the evaluation of the effectiveness of rehabilitation activities based on international criteria. The ICF provides a framework for describing health indicators and health-related measures in any health condition and is a useful tool for implementing internationally accepted human rights documents [3].

Teamwork is considered a crucial element in patient care within rehabilitation centers. At the NCDR, for over 10 years, rehabilitation activities have been carried out by a multidisciplinary team, starting with the family. The multidisciplinary team (MDT), using the ICF, formulates a rehabilitation diagnosis to describe all components of health and health-related indicators that limit the patient's ability to function. The rehabilitation diagnosis allows for the formulation of goals, tasks, and an individual medical rehabilitation program, as well as pedagogical correction and social adaptation for children with ASD. It also helps assess the program's effectiveness and the contribution of each MDT specialist in addressing the set objectives. The rehabilitation diagnosis is a description of the functional impairments caused by the disease/injury that have led to disturbances in daily activities (basic daily activities, instrumental daily activities, extended daily activities, interaction in the current natural and social environment for performing daily functions, communication, and fulfilling domestic, professional, and social roles) and environmental factors that may facilitate or hinder the execution of these functions by the patient, as assessed using the ICF. The rehabilitation diagnosis formulates only the current problems of the patient that determine their functioning at the time of evaluation.

In the individual medical rehabilitation program, a responsible specialist from the MDT is assigned to each patient and each ICF domain (identified patient problem). The rehabilitation technology and/or interventions aimed

at resolving the identified problem are specified. The ICF is a descriptive tool and is not a scale. International scales and tests are used for assessment according to the ICF. It is unacceptable to use the ICF assessment as a substitute for scales. All MDT members must be proficient in the proper application of the ICF [5].

The rehabilitation diagnosis is formulated during the initial examination by the MDT at any stage of rehabilitation, upon admission of the patient for inpatient medical rehabilitation, during its course, at least once a week, and upon completion of the rehabilitation program at each stage. The rehabilitation diagnosis is made by the MDT specialists and described in ICF categories using codes.

It should be noted that several components of this multi-parameter structure are interrelated, illustrating that these concepts are directly connected to each other. In this regard, the ICF can be seen as a "dynamic system," meaning that interventions or changes in one element of the system are likely to affect other aspects of the lives of children with ASD. It is also important to emphasize that the language of the ICF is neutral, not negative ("body structure and function" rather than "disorder"; "activity" rather than "disability"; "participation" rather than "barrier, obstacle").

It is known that a variety of questionnaires, scales, and observation methods are used for early diagnosis of autism in scientific research. Characteristics of autism, such as underdevelopment of speech and social interaction skills, motor impairments, lack of balance in sensory integration, preference for routine behaviors, and limited interests, pose significant barriers to the inclusion of a child with autism, regardless of intellectual development or academic abilities. In order for children with ASD to overcome these difficulties and be educated in a regular classroom, the use of specific methods and strategies, proven effective in research literature, is necessary. According to a study [4], approximately 2.3% of 8-year-old children and around 2.2% of adults in the United States are affected by ASD. First-line therapy consists of behavioral interventions, while comorbid psychiatric conditions such as anxiety or aggression can be addressed through specific behavioral therapy or medication.

The prevalence of ASD is not influenced by racial, ethnic, or socio-economic differences. The condition is five times more common in boys (1 in 54) than in girls (1 in 252). The average prevalence of ASD in Asia, Europe, and North America is around 1%. In South Korea, where schoolchildren were studied, this figure reached 2.6% (3.7% in boys and 1.5% in girls) [6].

Detailed clinical and functional characteristics of patients with ASD show how analyzing the situation can help individuals, including parents and specialists, identify areas that can and should be addressed in each specific case. This approach allows for the creation of a profile of the patient's strengths, identifying which abilities can be restored (rehabilitation) and/or newly acquired (habilitation), alongside the issues in body structure and functions that are most concerning to the patients. In this way, family members and caregivers of children with ASD begin to appreciate their children's abilities and encourage growing independence, despite the significant psychological and social limitations and barriers. These challenges require families and specialists to explore alternative methods to stimulate their development and improve the quality of life for children with ASD.

As a result of this multidisciplinary approach to the rehabilitation of children with ASD using various methods, the members of the interdisciplinary team achieve positive outcomes:

- children become less sensitive to certain stimuli and respond more confidently to new situations;

- the level of social adaptation increases (children more easily interact with others, participate in play and social activities, better regulate their behavior and emotions, and adapt to new situations, which is essential for developing communication skills, including listening, expressing their thoughts, and understanding others);

- learning improves (children become more attentive, focused, and are better able to assimilate new information).

- children experience lower levels of stress (this approach helps children with ASD regulate their emotional state and reduce anxiety levels).

- children are taught to perceive sounds and rhythm in speech and music, which aids in the development of articulatory hearing (the ability to recognize and

distinguish speech sounds, correct pronunciation, and comprehension).

- the articulatory apparatus develops (speech and articulation motor skills improve; children learn to control the muscles of the face, tongue, and lips, which helps them pronounce sounds and words correctly, and purposeful use of these movements contributes to fluency and clarity in speech).

- visual perception improves, which is essential for developing reading and writing skills.

- tactile and proprioceptive sensitivity is developed, which contributes to the development of communication skills and interaction with the surrounding world, enabling children to better perceive and interpret tactile and kinesthetic signals.

The study of this issue indicates that autism is not curable, and it is necessary to create conditions for children with special needs and their socialization.

Outcomes are assessed using accepted standards and scales (such as the ICF, Disability, and Health, the Functional Independence Measure, the Manual Ability Classification System, the Barthel Index of Activities of Daily Living, and others). An improvement is observed from physical, psychological, and social perspectives in most children. Follow-up is crucial, and children's conditions are monitored through regular telephone conversations between their parents and doctors. Physicians in the children's home regions, as well as during follow-up visits at the rehabilitation center, also provide support to the families.

We believe that a multidisciplinary, integrative approach to rehabilitation, initiated in well-equipped and adequately staffed centers, can improve the diagnosis and treatment of children with autism spectrum disorders, leading to better long-term outcomes.

Conclusions

It is necessary to develop recommendations for specialists in the field of rehabilitation and psychology. It is also necessary to implement a multidisciplinary approach in educational and medical institutions.

Conflict of interest. We declare no conflict of interest.

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Аутизм спектрі бұзылған балаларды оңалтудағы көпсалалы тәсілдің тиімділігі: Тәсілдер, нәтижелер және қолдану перспективалары

Имашева Б.С.¹, Дарибаев Ж.Р.², Имашев М.С.³, Ахметжанова З.Ж.⁴, Капасова Э.Р.⁵

¹ Ұйымдастыру-әдістемелік бөлімінің меңгерушісі, Астана медицина университеті, Астана, Қазақстан.
E-mail: imasheva.b@amu.kz

² Неврология кафедрасының доценті, Астана медицина университеті, Астана, Қазақстан.
E-mail: zholtay@gmail.com

³ Жалпы хирургия кафедрасының оқытушысы, Астана медицина университеті, Астана, Қазақстан.
E-mail: 7015165173@mail.ru

⁴ "Қамқор" №6 психоневрологиялық бөлімшенің меңгерушісі, Ұлттық балалар оңалту орталығы, Астана, Қазақстан.
E-mail: Zhanseitova_z68@mail.ru

⁵ Генетика мамандығы бойынша резидент-дәрігер, ҚР Президентінің іс басқармасы медициналық орталығының ауруханасы, Астана, Қазақстан. E-mail: megamind2609@gmail.com

Түйіндеме

Бұл мақалада аутизм спектрі бұзылған балаларды көпсалалы оңалтудың заманауи тәсілдері, аутизм спектрі бұзылған балалар мен олардың отбасыларының өмір сүру сапасын жақсарту үшін осындай тәсілдерді қолдану мүмкіндігі қарастырылған.

Зерттеудің мақсаты: аутизм спектрі бұзылған балаларды оңалтудағы көпсалалы тәсілдің тиімділігін бағалау, алынған нәтижелерді талдау және осы тәсілді практикалық қызметте әрі қарай қолдану перспективаларын анықтау және оңалту бағдарламаларын оңтайландыру үшін ұсынымдар әзірлеу.

Әдістері. Көпсалалы тәсіл мыналарды қамтиды: психологиялық қолдау; логопедиялық сабақтар; әлеуметтік бейімделу; физикалық оңалту. Зерттеу Ұлттық балаларды оңалту орталығында жүргізілді, балалар келу кестесіне сәйкес қабылданды. Зерттеуде АСБ диагнозы қойылған 1 жасан 18 жасқа дейінгі балалар туралы деректер қолданылды. 2022 - 2023 жылдары барлығы 481 адам зерттелді.

Нәтижелері. 2022 жылы балалар аутизмді диагнозы қойылған 196 бала түсті, оның ішінде 151 ұл бала және 45 қыз бала. Атипті аутизм диагнозы қойылғандардың жалпы саны 49 бала, оның 39-ы ұл бала, ал 10-ы қыз бала болды. Жалпы 2023 жылы 206 адам қабылданды, оның ішінде 152 ұл бала, 54 қыз бала. Атипті аутизм диагнозымен - 30 адам, оның ішінде ұл бала -13, қыз бала - 17. Жақсы жабдықталған және қызметкерлермен қамтамасыз етілген орталықтарда басталған көпбейінді, интегративті оңалту тәсілі аутизм спектрі бұзылған балаларға дұрыс диагноз қою мен емдеуді жақсартуға көмектеседі және жақсартылған ұзақ мерзімді нәтижелерді қамтамасыз етеді.

Қорытынды. Оңалту және психология саласындағы мамандарға арнап ұсынымдар әзірлеу, сондай-ақ, білім беру және медициналық мекемелерге мультидисциплинарлық тәсілді енгізу қажет.

Түйін сөздер: аутизм, аутизм спектрінің бұзылуы, оңалту, көпсалалы тәсіл, көпсалалы топ.

Эффективность мультидисциплинарного подхода в реабилитации детей с расстройством аутистического спектра: Подходы, результаты и перспективы применения

Имашева Б.С.¹, Дарибаев Ж.Р.², Имашев М.С.³, Ахметжанова З.Ж.⁴, Капасова Э.Р.⁵

¹ Руководитель организационно-методического отдела, Медицинский университет Астана, Астана, Казахстан.
E-mail: imasheva.b@amu.kz

² Доцент кафедры неврологии, Медицинский университет Астана, Астана, Казахстан. E-mail: zholtay@gmail.com

³ Преподаватель кафедры общей хирургии, Медицинский университет Астана, Астана, Казахстан. E-mail: 7015165173@mail.ru

⁴ Заведующая психоневрологического отделения №6 "Қамқор", Национальный центр детской реабилитации, Астана, Казахстан. E-mail: Zhanseitova_z68@mail.ru

⁵ Врач-резидент по генетике, Больница Медицинского центра Управления делами Президента Республики Казахстан, Астана, Казахстан. E-mail: megamind2609@gmail.com

Резюме

В данной статье рассмотрены современные подходы к мультидисциплинарной реабилитации детей с расстройством аутистического спектра, возможность перспектив применения таких подходов для улучшения качества жизни детей с расстройством аутистического спектра и их семей.

Цель исследования: оценка эффективности мультидисциплинарного подхода в реабилитации детей с расстройством аутистического спектра, анализ полученных результатов и определение перспектив дальнейшего применения данного подхода в практической деятельности и разработке рекомендаций для оптимизации реабилитационных программ.

Методы. Мультидисциплинарный подход включал: психологическую поддержку; логопедические занятия; социальную адаптацию; физическую реабилитацию. Исследование проводилось в Национальном центре детской реабилитации, дети поступали согласно графика заезда. Дети в возрасте от 1 года до 18 лет с расстройством аутистического спектра. Всего за 2022, 2023 годы было исследовано – 481 человек.

Результаты. В 2022 году поступило 196 детей с диагнозом детский аутизм из них 151 детей мужского пола, и 45 детей женского пола. С диагнозом "Атипичный аутизм" - 49 человек, из них 39 - мужского пола, 10 – женского пола. В 2023 году поступило 206 человек, из них 152 - мужского пола, 54 –женского. С диагнозом "Атипичный аутизм" - 30 человек, из них мужского пола 13 человек, женского 17. Многопрофильный, интегративный подход к реабилитации, начатый в хорошо оборудованных и укомплектованных персоналом центрах, помогает улучшить надлежащую диагностику и лечение детей с расстройствами аутистического спектра и обеспечивает улучшенные долгосрочные результаты.

Выводы. Необходимо разработать рекомендаций для специалистов в области реабилитации и психологии. Также необходимо внедрить мультидисциплинарный подход в образовательные и медицинские учреждения.

Ключевые слова: аутизм, расстройство аутистического спектра, реабилитация, мультидисциплинарный подход, мультидисциплинарная группа.