



**НАЦИОНАЛЬНЫЙ  
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НАУЧНО-ПРАКТИЧЕСКИЙ, ИНФОРМАЦИОННО-АНАЛИТИЧЕСКИЙ ЖУРНАЛ ФАРМАЦИИ И ЗДРАВООХРАНЕНИЯ



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ZH.U. YERKIBAYEVA<sup>1,2</sup>, G.T. YERMUKHANOVA<sup>1,2</sup>, YU.A. MENCHISHEVA<sup>1</sup>, D.B. ABDUKALIKOVA<sup>1,3</sup>, M.ZH. MALIM<sup>1</sup>

<sup>1</sup> Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan.

<sup>2</sup> Al-Farabi Kazakh National University, Almaty, Kazakhstan.

<sup>3</sup> Kazakhstan Medical University «KSPH»

## DENTISTRY AND AUTISM: KEY PROBLEMS AND WAYS TO SOLVE THEM (LITERATURE REVIEW)

### Resume

The article presents data from the analysis of the literature on the dental morbidity of children with autism spectrum disorders, describes in detail the problems that children and their parents face when searching for and visiting a dental clinic. The features of the preparation and conduct of dental reception in children with ASD are described in detail, and practical recommendations are given for dentists.

**Purpose:** to study the sources of literature on the analysis of dental problems in children with autism spectrum disorders and find ways to solve them. Search strategy: scientific publications were searched and analyzed in the databases of web resources like: Web of Science, MEDLINE, PubMed, Google Scholar and e-library, by using the keywords (children, autism spectrum disorders, autism, dental caries, gingivitis, dental help). The search depth was 10 years (from 2011 to 2021). Of all the selected articles for further analysis, 33 sources were included that corresponded to the objectives of our study. Results and conclusions: the review analyzes the results of key clinical studies on the implementation of dental care for children with ASD in the CIS countries and far abroad.

**Results and conclusions:** The increase in the number of children with autism spectrum disorders, the high prevalence of pathology of the dental system with a tendency to increase, indicate the relevance of the problem and dictate the need for further study of the features of the manifestation of dental pathology and carrying out therapeutic and preventive measures in this contingent of children.

Insufficiency of methodological and practical development of a system for providing special care to children with ASD, and the lack of generally accepted approaches to teaching and educating about the dental health of children with autism with taking into account their psychological characteristics led to the conduct of this study.

Unlike healthy children, when working with children with ASD, it is necessary to repeatedly prepare them for the upcoming examination, as well as interdisciplinary approach in the provision of dental care.

**Key words:** children, autism spectrum disorders, autism, dental caries, gingivitis, hygiene index, dental care, ABA-therapy

Ж.У. Еркибаева<sup>1,2</sup>, Г.Т. Ермуханова<sup>1,2</sup>, Ю.А. Менчишева<sup>1</sup>,  
Д.Б. Абдукаликова<sup>1,3</sup>, М.Ж. Мәлім<sup>1</sup>

<sup>1</sup> С.Ж. Асфендияров атындағы Қазақ ұлттық медицина университеті, Алматы, Қазақстан

<sup>2</sup> Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан Республикасы.

<sup>3</sup> «ҚДСЖМ» Қазақстандық медицина университеті

Ж.У. Еркибаева<sup>1,2</sup>, Г.Т. Ермуханова<sup>1,2</sup>, Ю.А. Менчишева<sup>1</sup>,  
Д.Б. Абдукаликова<sup>1,3</sup>, М.Ж. Мәлім<sup>1</sup>

<sup>1</sup> Казахский Национальный медицинский университет имени С.Д. Асфендиярова, Алматы, Республика Казахстан

<sup>2</sup> Казахский Национальный университет имени Аль-Фараби, Алматы, Республика Казахстан

<sup>3</sup> Казахстанский медицинский университет «ВШОЗ»

СТОМАТОЛОГИЯ ЖӘНЕ АУТИЗМ: ӨЗЕКТІ МӘСЕЛЕЛЕР ЖӘНЕ  
ОЛАРДЫҢ ШЕШУ ЖОЛДАРЫ (ӘДЕБИЕТТІК ШОЛУ)

### Түйін

Мақалада аутизм спектрі бұзылулары бар балалардың стоматологиялық ауруы туралы әдебиеттерді талдау туралы мәлімет-

СТОМАТОЛОГИЯ И АУТИЗМ: КЛЮЧЕВЫЕ ПРОБЛЕМЫ  
И ПУТИ ИХ РЕШЕНИЯ (ЛИТЕРАТУРНЫЙ ОБЗОР)

### Резюме

В статье приведены данные анализа литературы по стоматологической заболеваемости детей с расстройствами аутистическо-

тер келтірілген, балалар мен олардың ата-аналары стоматологиялық клиниканы іздеу және бару кезінде кездесетін мәселелер жан-жақты көрсетілген. Аутизм спектрі бұзылулары (АСБ) бар балаларда стоматологиялық қабылдаудағы дайындық және жүргізу ерекшеліктері толық сипатталған, сондай-ақ тіс дәрігерлерге арналған практикалық ұсынымдар берілген.

**Мақсаты:** аутистік спектрі аурулары бар балалардағы стоматологиялық мәселелерді талдау бойынша әдебиет көздерін зерттеу және оларды шешу жолдарын іздеу. Іздеу стратегиясы: Web of Science, MEDLINE, PubMed, Google Scholar және e-library деректер базаларында және веб-ресурстарында ғылыми мақалаларды іздеу және талдау жүргізілді (балалар, аутизм спектрі бұзылулары, аутизм, тіс жегі, гингивит, стоматологиялық көмек). Іздеу тереңдігі 10 жылды құрады (2011 жылдан 2021 жылға дейін). Кейінгі талдау үшін таңдалған барлық мақалалардың ішінен біздің зерттеу мақсаттарымызға сәйкес келетін 33 дереккез құрады. Нәтижелер мен қорытындылар: шолуда ТМД елдерінде және алыс шетелдерде АДБ бар балаларға стоматологиялық көмекті іске асыруға қатысты негізгі клиникалық зерттеулердің нәтижелері талданған.

**Нәтижелер мен қорытындылар:** аутизм спектрінің бұзылулары бар балалар санының көбеюі, оларда тіс-жақ жүйесі патологиясының жоғары таралуы, мәселе өзектілігін көрсетіп, стоматологиялық патологиялардың көрініс ерекшеліктерін әрі қарай зерттеу және осы балаларда емдеу және алдын алу шараларын жүргізу қажеттілігін көрсетеді. АБД бар балаларға арнайы көмек көрсету жүйесінің әдіснамалық және практикалық өзіндік жеткіліксіздігі және аутизмді бар балалардың психологиялық ерекшеліктерін ескере отырып, олардың стоматологиялық денсаулығы туралы оқыту мен тәрбиелеуге жалпы қабылданған тәсілдердің болмауы осы зерттеуді жүргізуге себепші болды. Дені сау балалармен салыстырғанда, АБД бар балалармен жұмыс істеу кезінде оларды алдағы тексеруге алдын ала бірнеше рет дайындау, сондай-ақ стоматологиялық көмек көрсетуде пәнаралық тәсілді қажет етеді.

**Түйінді сөздер:** балалар, аутизм спектрі бұзылулары, аутизм, тіс жегі, гингивит, гигиена индексі, стоматологиялық көмек, АВА-терапиясы.

### Relevance.

Currently, there is a clear trend towards an increase in the number of children with autism spectrum disorders (ASD). According to WHO statistics, more than 10 million people in the world suffer from autism. A few decades ago, there was one person with an autism spectrum disorder per 10,000 inhabitants.

Every year there are 11-17% more of them. Today, every hundredth inhabitant of the planet suffers from autism. In Kazakhstan, the rate of detected cases of autism in children over the past 7 years has increased 5 times. According to the Republican Scientific and Practical Center for Mental Health of the Ministry, 4887 patients with ASD are under dynamic observation as of December 31, 2021 [1]. Autism Spectrum Disorders (ASD) is a heterogeneous group of neurodevelopmental disorders, including various nosolog-

ical definitions (Kanner and Asperger syndromes, high-functioning autism, infantile psychosis, atypical childhood psychosis, childhood disintegrative disorder, as well as many chromosomal and genetic syndromes), characterized by a triad of disorders (qualitative violations of social interaction, communication, stereotyped behavior and non-specific problems (ICD-10) and a dyad of violations of social interaction, limited and repetitive patterns of behavior and / or interests. Autism is a severe disorder of mental and emotional development that causes problems in communication, relationships with others and learning. The disease manifests itself in the first three years of a child's life, it is quite difficult to diagnose and is practically incurable. Classic childhood autism manifests itself in the form of asynchronous disintegrative autistic dysontogenesis with incomplete and uneven maturation of higher mental functions, inability to form com-

mon spectrum, detailed problems, with which children and their parents are faced when searching for and visiting a stomatological clinic. Detailed description of the preparation and conduct of a stomatological reception in children with PAC, as well as practical recommendations for stomatologists. **Цель:** изучение источников литературы по анализу стоматологических проблем у детей с расстройствами аутистического спектра и поиск путей их решения. Стратегия поиска: Проведен поиск и анализ научных публикаций в базах данных и веб-ресурсах Web of Science, MEDLINE, PubMed, Google Scholar и e-library, по ключевым словам, (дети, расстройства аутистического спектра, аутизм, кариес зубов, гингивит, стоматологическая помощь). Глубина поиска составила 10 лет (с 2011 по 2021 годы). Из всех отобранных статей для последующего анализа было включено 33 источника, соответствующих целям нашего исследования. Результаты и выводы: в обзоре проанализированы результаты ключевых клинических исследований относительно реализации стоматологической помощи детям с PAC в странах СНГ и дальнего зарубежья.

**Результаты и выводы:** Увеличение численности детей с расстройствами аутистического спектра, высокая распространенность патологии зубочелюстной системы с тенденцией к росту, свидетельствуют об актуальности проблемы и диктуют необходимость дальнейшего изучения особенностей проявления стоматологической патологии и проведения лечебно-профилактических мероприятий у данного контингента детей. Недостаточность методологической и практической разработки системы оказания специальной помощи детям с PAC, и отсутствие общепринятых подходов к обучению и воспитанию о стоматологическом здоровье детей с аутизмом с учетом их психологических особенностей обусловило проведение данного исследования. В отличие от здоровых детей, при работе с детьми с PAC необходима их предварительная неоднократная подготовка к предстоящему обследованию, а также междисциплинарный подход в оказании стоматологической помощи.

**Ключевые слова:** дети, расстройства аутистического спектра, аутизм, кариес зубов, гингивит, индекс гигиены, стоматологическая помощь, АВА-терапия.

ical definitions (Kanner and Asperger syndromes, high-functioning autism, infantile psychosis, atypical childhood psychosis, childhood disintegrative disorder, as well as many chromosomal and genetic syndromes), characterized by a triad of disorders (qualitative violations of social interaction, communication, stereotyped behavior and non-specific problems (ICD-10) and a dyad of violations of social interaction, limited and repetitive patterns of behavior and / or interests. Autism is a severe disorder of mental and emotional development that causes problems in communication, relationships with others and learning. The disease manifests itself in the first three years of a child's life, it is quite difficult to diagnose and is practically incurable. Classic childhood autism manifests itself in the form of asynchronous disintegrative autistic dysontogenesis with incomplete and uneven maturation of higher mental functions, inability to form com-

munication and is characterized by the presence of a "triad" of the main areas of impairment: lack of social interaction (detachment, rejection, scarcity of eye contact, lack of adequate reactions to emotions other people), lack of mutual communication, as well as the presence of regressive forms of behavior. It is classified by the American Psychiatric Association as a neurological disease that is believed to be caused by brain damage [2].

Children with autism spectrum disorders (ASD) do not look different from other children and have a normal life expectancy. However, their ability to socialize is significantly reduced, which is confirmed by the symptoms of the underlying disease.

For the diagnosis of autistic disorder, based on the criteria of the International Classification of Diseases of the 10th revision, the following symptoms were taken into account: qualitative disorders of social interaction; qualitative changes in communication; limited and repetitive stereotypical patterns in behavior; non-specific problems (fears, phobias, agitation, sleep disturbances and eating habits, fits of rage, aggression, self-harm); manifestation of symptoms before the age of three [3].

Due to the increase in people with ASD, every dentist may encounter these patients. According to British studies, 97% of dentists have met with an autistic patient at least once in their lives, but only half knew about the methods and methods of treating patients and were able to apply them.

#### **Features of dental health in children with ASD**

Dental status affects comorbid pathology, making it worse. At the same time, dental morbidity in patients with somatic pathology tends to increase and reaches 95-98%.

High prevalence and intensity of the pathology of the dentoalveolar system, inflammatory diseases of periodontal tissues, foci of odontogenic infection against the background of very poor oral hygiene are the hallmark of most patients with psychoneurotic disorders [4, 5, 6, 7].

According to a study conducted in Brazil, in Sao Paolo, where the state of the oral cavity in children with ASD from 3 to 13 years old was examined, there are high rates of dental caries. Data provided by the researchers from the UAE, when examining 61 children with ASD aged 6 to 16 years, determined that caries intensity rates in patients with ASD were not much higher than in healthy children [8].

According to studies from Israel, 11-year-old children with autistic disorders have a high need for treatment of periodontal diseases. From the data of a study in the European Archives of Pediatric at the state of the oral cavity of patients with ASD, it was revealed that poor individual oral hygiene contributes to periodontal tissue diseases and multiple caries [9].

Also, quite often among the disorders there are periodontal diseases and bite problems- due to bad habits (sucking fingers, chewing on foreign objects, etc.)

Children with ASD are characterized by dyspraxia (a movement disorder in which the child has difficulty in coordinating and performing complex and purposeful movements), which leads to frequent injuries of the oral mucosa and poor

oral hygiene. The prevalence of caries in primary teeth in children with ASD is slightly higher than in the general population [10].

This is due to a late change of bite, and children with this condition are also characterized by moderate gingivitis. In ASD, there is a significant decrease in the rate of secretion of the oral fluid, which causes a decrease in pH and a change in the microbial composition, respectively. With the addition of inflammatory processes in this case there is their frequent chronization and a long, severe course [11, 12, 13]. A study by and showed that there was a significant prevalence of dental caries and periodontal diseases among the kids. The study especially recommends the education of the children and their parents and tutors on the need for diet changing, good oral hygiene and regular visits to the dentist. In addition, there is a large oral health program that the RAK Rehabilitation Center for the Disabled must complete. [14, 15, 16].

#### **Features of providing dental care to children with ASD**

Good preparation for a dental appointment can greatly facilitate and improve care. A dentist working with children with ASD should be aware of the various methods of managing problem behavior in a child with developmental disabilities. [17, 18, 19].

From studies of foreign and domestic literature, the following methods are distinguished: TEACCH Son-rise, ABA, subject therapy.

TEACCH therapy consists in creating a comfortable environment, which is provided by the "correct" state of things for the child in a certain order, which remains unchanged. In order to form the right behavior a clear daily schedule for the day of the child is used.

ABA is short for Applied Behavioral Analysis and is often referred to as the "gold standard" for autism treatment. Applied Behavior Analysis (ABA) is an autism treatment system based on the formation of desired behavior through a reward system. While the idea of using rewards for learning outcomes is probably as old as human civilization, the idea of carefully applying rewards to achieve specific goals (skills) is relatively new. This technique is designed to "repay" unwanted behavior and teach the desired behavior and skills. [20, 21, 22].

For example, ABA can be used to reduce temper tantrums or to teach a child to sit still, use words to make requests, or wait their turn on the playground. ABA can also be used to teach simple and complex skills. For example, ABA can be used to reward a child for brushing their teeth properly or for sharing a toy with a friend. Although classic ABA can be used in a "natural" setting (such as a playground), it is not designed to develop emotional skills. There is a system of learning through the exchange of PECS cards, which was developed in 1985 to teach the skills of children with autism. Now this system is used when working with children and adults with different diagnoses. The first thing a child learns in PECS is to walk up to a person and give them a picture of a desired item in exchange for that item. When working with children with special needs, it is necessary



to take into account their current abilities and behavioral problems, as well as the types of reinforcers that may be effective. For this category of children, the praise of a doctor or teacher is not always a motivation. Thus, for a positive result of interaction with children with special needs, it is necessary to use a behavior motivator (reinforcer) [23, 24, 25, 26]. Ron Leaf believes that identifying a reinforcer requires creativity. A distinctive feature of children with ASD is the presence of unusual interests and stereotypical forms of behavior associated with their sensory characteristics. As a reinforcer, you can use sweets, toys, and sometimes auto stimulation. You can also give a child with special needs permission to line up objects in a row as a reinforcer [27, 28, 29, 30].

A study by Kuter B, Uzel I, called «Evaluation of oral health status and oral disorders of children with autism spectrum disorders by gender» found significant gender differences between CASD (child with autism specter disorder) and healthy children in terms of dental caries and oral disorders. There were also significant differences in dental caries and oral disease between GCASD (girls) and BCASD (boys) [31].

First of all, it is advisable to obtain information about violations of sensory sensitivity and other behavioral characteristics of the child, to coordinate the time of the visit. The number of "adaptive" techniques can be determined by questioning. It is recommended that parents receive images in photo or video format of a dental clinic, a dentist in advance, so that the child knows where and with whom he will have to interact. You can send parents a disposable dental kit that includes a dental mirror, gloves, mask and cotton swabs to

learn basic handling and touching of instruments. It is desirable to use only plastic instruments both in preparation and at the dental appointment itself. The presence of parents or accompanying persons at the reception allows you to quickly establish contact with the child. There are many stories and fairy tales for children with ASD about going to the dentist, which parents can read with their child. [32, 33]. Undoubtedly, the first step in providing assistance is to establish mutual understanding, contact with the patient. If contact cannot be established, dental care is provided under general anesthesia. Sanitation of the oral cavity can also be carried out under sedation with the preservation of consciousness. Sedation should be performed by an anesthesiologist with further monitoring of vital functions. The child is treated in a reclining position in the arms of an attendant sitting in a dental chair. The doctor works with an assistant. On average, in 70% of cases, sanitation requires only one visit, less often - two with an interval of 5-8 days. In Kazakhstan, there is an urgent need to create a system that guarantees the support of children with autism spectrum disorders from the moment of the earliest detection and throughout their lives. Since autism is not treated, the main thing that is required is the creation of conditions for children with special needs in education and life on the basis of a guaranteed volume of all types of necessary assistance. And one of the most important is dental care. The violation of dental health in autistic children depends on the somatic status, in this regard, there is a need for the active participation of dentists to develop skills in children to care for their oral cavity and improve its quality.

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*Сведения об авторах*

**Yerkibayeva Zhamilya**, PhD doctoral student, <https://orcid.org/0000-0001-6905-6692>, Tole-bi street 152, Almaty city, Kazakhstan, 8-777-987-2527, Zhami\_stom@mail.ru

# Ф А Р М А К О П Е Я



ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА



# ВОЗРОЖДЕНИЕ ЧУВСТВ ОБОНЯНИЯ НАЧИНАЕТСЯ, ДЫШИТЕ КОМФОРТНО И ГЛУБОКО!

Apisal Dead Sea Jet, спрей назальный, 125 мл для взрослых и детей представляет собой изотонический раствор воды Мертвого моря, обогащенный минералами, такими как Na, K, Mg, Ca, Br и Zn

Благодаря наличию минералов, морская вода оказывает смягчающий эффект на слизистую оболочку верхних дыхательных путей и оказывает противовоспалительное действие

## Область применения:

- профилактика и лечение острых и хронических воспалительных заболеваний полости носа, околоносовых пазух и носоглотки инфекционные, аллергические, атрофические
- ежедневное использование во время эпидемии сезонного аллергического ринита и гриппа (профилактика)
- ежедневная гигиена полости носа

Регистрационное удостоверение РК-ИМН-5N\*020954. Дата государственной регистрации (перерегистрации): 28.08.2020 г., действительно до: 28.08.2025 г.

Побочные действия (воздействие, индивидуальная непереносимость): Не выявлены.

Противопоказания для применения: Нет ограничений по применению продукта.

Производитель: Amman Pharmaceutical Industries, Иордания. Уполномоченный представитель производителя на территории РК: ТОО «R.T.A. GROUP». Республика Казахстан, г. Алматы, Алмалинский район, микрорайон Таста-3, ул. Аносова, д. 34, кв.34, тел.: +7 701 953 82 57

САМОЛЕЧЕНИЕ МОЖЕТ БЫТЬ ВРЕДНЫМ ДЛЯ ВАШЕГО ЗДОРОВЬЯ ПЕРЕД НАЗНАЧЕНИЕМ И ПРИМЕНЕНИЕМ  
ВНИМАТЕЛЬНО ПРОЧИТАТЬ ИНСТРУКЦИЮ ПО МЕДИЦИНСКОМУ ПРИМЕНЕНИЮ



Amman Pharmaceutical Industries  
شركة عمان للصناعات الدوائية