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Physician awareness of autism as an indicator for early psychological and pedagogical support

Abstract

Autism is currently the fastest - growing neurodevelopmental disorder worldwide. In recent years, Kazakhstan has been actively developing and implementing programs for early diagnosis and correctional support for children with autism. Centers assisting children with autism have been established, and since 2022, autism screening has been introduced as part of the primary health care (PHC) system [1]. However, no studies have yet been conducted to assess the level of autism awareness among PHC physicians. Therefore, it is highly relevant to examine the awareness of PHC physicians in Almaty-the largest metropolis in Kazakhstan and a key center for providing psychological, medical, and pedagogical support to children with disabilities. It is of paramount importance that primary health care (PHC) physicians not only possess primary screening skills but also maintain a clear orientation within the regional infrastructure of psychological and pedagogical assistance. Timely risk identification represents only the initial stage; the efficacy of early intervention is directly contingent upon the physician's ability to promptly refer families to specialized educational organizations and correctional centers. In the context of Almaty, which hosts a high concentration of leading Psychological-Medical-Pedagogical Consultations (PMPC) and Rooms of Psychological-Pedagogical Correction (RPPC), physicians' understanding of patient referral pathways becomes a decisive factor. Insufficient awareness among medical professionals regarding available pedagogical resources creates barriers to interdisciplinary collaboration, thereby delaying the initiation of correctional work during the child's most sensitive developmental period. Consequently, assessing physicians' knowledge of the comprehensive support system's capabilities will allow for the optimization of the transition from medical diagnosis to psychological and pedagogical rehabilitation, ensuring the continuity and integrity of support for children with autism.

Objective. To evaluate the professional awareness of primary health care physicians in Almaty regarding the etiology, diagnosis, and referral pathways for children with autism, and to identify barriers hindering the timely initiation of psycho-pedagogical support

***Keywords**:* autism, early diagnosis, physician awareness, medical awareness, screening.

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Осведомленность врачей об аутизме как индикатор ранней психолого-педагогической поддержки

Аннотация

На сегодняшний день аутизм является самым быстрым по скорости распространения нарушением нейроразвития. В последние годы в Казахстане активно разрабатываются и внедряются программы ранней диагностики и оказания коррекционной помощи детям с аутизмом, открываются центры по поддержке детей с аутизмом, с 2022 года в рамках организации первичной медико-санитарной помощи (ПМСП) проводится скрининг на аутизм. Однако, исследования, посвященные оценке уровня информированности врачей ПМСП по вопросам аутизма, не проводились. В связи с этим актуальным является изучение уровня осведомленности врачей ПМСП города Алматы как крупнейшего мегаполиса Казахстана и ключевого центра по оказанию психолого-медико-педагогической помощи детям с ограниченными возможностями. Цель исследования. Оценить уровень профессиональной осведомленности врачей первичной медико- санитарной помощи г. Алматы по вопросам этиологии, диагностики и маршрутизации детей с аутизмом, а также выявить барьеры, препятствующие своевременному началу их психолого-педагогического сопровождения. Крайне важно, чтобы врачи ПМСП не только владели навыками первичного скрининга, но и четко ориентировались в региональной инфраструктуре психолого-педагогической помощи. Своевременное выявление рисков — это лишь первый этап; эффективность раннего вмешательства напрямую зависит от того, насколько оперативно врач сможет направить семью в специализированные организации образования и коррекционные центры. В условиях Алматы, где сконцентрированы ведущие психолого-медико-педагогические консультации (ПМПК) и кабинеты психолого-педагогической коррекции (КППК), понимание врачами маршрутизации пациента становится решающим фактором. Недостаточная информированность медиков о доступных педагогических ресурсах создает барьеры для междисциплинарного взаимодействия, задерживая начало коррекционной работы в наиболее сенситивный период развития ребенка. Таким образом, оценка знаний врачей о возможностях комплексной системы поддержки позволит оптимизировать процесс перехода от медицинской диагностики к психолого-педагогической реабилитации, обеспечивая непрерывность и полноту сопровождения детей с аутизмом

Ключевые слова: аутизм, ранняя диагностика, информированность врачей, осведомленность врачей, скрининг.

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Аутизм мәселелері бойынша дәрігерлердің хабардарлығы: балаларға ерте психологиялық-педагогикалық көмек көрсету көрсеткіші

Аңдатпа

Бүгінгі таңда аутизм нейродаму бұзылыстарының ең жылдам таралып келе жатқан бұзылысы болып табылады. Соңғы жылдары Қазақстан аутизмы бар балаларға ерте диагностика және түзету көмегі бағдарламаларын белсенді түрде әзірлеп, еңгізіп келеді, сондай-ақ аутизмы бар балаларға арналған қолдау орталықтары ашылып, ал 2022 жылдан бастап медициналық-санитарлық алғашқы көмек (МСАК) ұйымдарында аутизмді анықтауға

скрининг өткізіледі. Бірақ, медициналық-санитарлық алғашқы көмек ұйымдарының дәрігерлерінің аутизм мәселелері бойынша хабардарлық денгейін бағалау үшін зерттеулер жүргізілмеген. Осыған байланысты, Қазақстандағы ең ірі мегаполис және мүмкіншілігі шектелген балаларға психологиялық -медициналық -педагогикалық көмек көрсететін негізгі орталық Алматыда медициналық-санитарлық алғашқы көмек ұйымдарындарының дәрігерлерінің хабардарлығын зерттеу өзекті болып табылады. Зерттеу мақсаты. Алматы қаласындағы алғашқы медициналық-санитарлық көмек (АМСК) дәрігерлерінің аутизмі бар балалардың этиологиясы, диагностикасы және маршрутизациясы мәселелері бойынша кәсіби хабардарлық деңгейін бағалау, сондай-ақ оларды психологиялық-педагогикалық сүйемелдеуді уақтылы бастауға кедергі болатын факторларды анықтау. БМСК (біріншілік медико-санитарлық көмек) дәрігерлерінің тек алғашқы скрининг дағдыларын меңгеріп қана қоймай, сонымен қатар психологиялық-педагогикалық көмектің өңірлік инфрақұрылымын нақты бағдарлай білуі аса маңызды. Қауіп-қатерлерді дер кезінде анықтау — бұл тек алғашқы кезең; ерте араласудың тиімділігі дәрігердің отбасын мамандандырылған білім беру ұйымдары мен түзету орталықтарына қаншалықты жедел бағыттай алатындығына тікелей байланысты. Алматы жағдайында жетекші психологиялық-медициналық-педагогикалық консультациялар (ПМПК) мен психологиялық-педагогикалық түзету кабинеттері (ППТК) шоғырланғандықтан, дәрігерлердің пациент маршрутизациясын түсінуі шешуші факторға айналады. Медицина мамандарының қолжетімді педагогикалық ресурстар туралы хабардарлығының төмендігі пәнаралық өзара іс-қимылға кедергі келтіреді, бұл бала дамуының ең сенситивті кезеңінде түзету жұмыстарының басталуын кешіктіреді. Осылайша, дәрігерлердің кешенді қолдау жүйесінің мүмкіндіктері туралы білімін бағалау медициналық диагностикадан психологиялық-педагогикалық оңалтуға көшу процесін оңтайландыруға мүмкіндік береді, бұл аутизмі бар балаларды сүйемелдеудің үздіксіздігі мен толықтығын қамтамасыз етеді

Түйін сөздер: аутизм, ерте диагностика, дәрігерлердің хабардарлығы, скрининг

Introduction. According to the World Health Organization (WHO), the global prevalence of autism is rising, currently estimated at approximately l in 100 cases [1, 2]. Data from the Ministry of Health of the Republic of Kazakhstan (RK), as reported by Ranking.kz, indicate that the number of children with autism reached 14500 in 2025, representing a 17,8% increase over the 2024 figures. In Kazakhstan, the verification of the diagnosis of “Childhood Autism” is performed by child psychiatrists in accordance with the International Classification of Diseases, 10 th Revision (ICD-10), where it is categorized under “Disorders of Psychological Development” [3].

Data from the Centers for Disease Control and Prevention (CDC) demonstrate a steady increase in autism detection rates in recent years. This trend is attributed to the expansion of diagnostic criteria, the proactive implementation of screening tools, and heightened awareness among parents, healthcare professionals, and society.

Early detection of autism ensures the timely intervention services, which leads to a more favorable prognosis for the child’s social functioning and a subsequent improvement in their quality of life. Clinical guidelines in many countries emphasize the necessity of conducting screening within the Primary Health Care (PHC) system [4]. According to regulatory documents in Kazakhstan, “primary health care is the point of first access to medical services oriented toward the needs of the population, encompassing the prevention, diagnosis, and treatment of diseases and conditions provided at the individual, family and community levels” [5]. PHC physicians manage patient flows and coordinate their trajectory among narrow specialists. As the first level of contact between the population and the healthcare system, PHC fulfills the functions of prevention, early diagnosis, follow-up care, and patient referral to specialized professionals. Consequently, PHC physicians are typically the first point of contact for parents when initial signs of developmental delay appear in a child. Undoubtedly, the level of awareness among primary care physicians regarding clinical manifestations, risk factors, contemporary views on etiology and pathogenesis, and referral

algorithms for suspected autism directly impacts the timeliness of diagnosis. Current research suggests that a lack of autism-related knowledge among primary care providers can lead to delayed diagnosis and late referral to specialists, which ultimately undermines the effectiveness of the intervention provided [6].

Materials and methods. The study employed sociological survey methods, descriptive statistics, and statistical analysis. A survey of 375 physicians across various specialties within Primary Health Care (PHC) organizations in Almaty was conducted using a structured, author-designed questionnaire. The study population comprised pediatricians (53.6%), general practitioners (GPs) (26.4%), pediatric neurologists (7.5%), and other specialists (12.5%).

The survey was administered anonymously and voluntarily in an online format from December 2025 to January 2026 via the Google Forms platform. The questionnaire consisted of 20 questions, categorized into thematic blocks addressing: prevalence and causal factors of autism, early clinical manifestations, autism screening practices in Kazakhstan, diagnostics and healthcare delivery.

The primary inclusion criteria for the study were active professional engagement with the pediatric population and current employment as a physician in a PHC organization at the time of data collection.

Informed consent was obtained from all participants in compliance with the principles of the World Medical Association Declaration of Helsinki. All respondents were provided with detailed information regarding the research objectives and the survey procedures.

Results. The survey results indicate that the majority of respondents have observed an upward trend in the prevalence of autism within the country in recent years. Specifically, 284 physicians (75.8%) reported an increase in the number of children diagnosed with autism, while 33 (8.8%) believed the prevalence remained stable. Furthermore, 49 respondents (13%) were undecided, and only 9 (2.4%) perceived a downward trend. Notably, all respondents who reported a decrease in the number of children with autism either pediatricians or general practitioners.

These findings correlate with international epidemiological data, which have demonstrated a consistent rise in autism rates over the past few decades. According to the Centers for Disease Control and Prevention (CDC), the prevalence of autism increased from 1 in 150 children in 2000 to 1 in 36 in 2020. Researchers attribute this growth to improved diagnostic methods, the expansion of diagnostic criteria, and heightened awareness among both parents and professionals [7].

An analysis of physician perspectives on the causes of this increase revealed that out of 284 respondents, 74 (26%) associated autism with the frequent use of digital devices (gadgets), 65 (22.9%) identified environmental degradation as a significant factor, and 43 (15.1%) cited maternal illnesses during pregnancy and childbirth.

Current scientific consensus emphasizes the polyetiological (multifactorial) and polynosological nature of autism, highlighting its manifestation within various pathologies. Ongoing debates focus on the etiology of autism and the extent to which environmental and genetic factors contribute to the heterogeneity of cognitive and behavioral impairments. Among those surveyed, 216 physicians (57.6%) identified genetic factors as the primary cause of autism, reflecting the dominance of the biomedical model and the perception of autism as a neurobiological condition. While the genetic factor is currently regarded as a leading and key element, it is not considered the sole cause, rather, the focus has shifted toward the interaction between genetic and environmental factors [8,9]. Genetic research indicated that the heritability of autism reaches 70-80% [10]. Additionally, environmental factors, including maternal metabolic disorders, intrauterine infections, and pregnancy complications, are recognized as significant components of autism's pathogenesis [11]. 88 physicians (23.5%) linked the development of autism to adverse environmental factors, while 37 (9.9%) attributed it to improper upbringing. A group of 28 respondents (7.4%) noted a polyetiological framework, including in intrauterine infections, maternal health during pregnancy and delivery, advanced parental age, and medication use during pregnancy. It is important to note that, to date, the hypothesis regarding a direct

causal link between digital device usage and the development of autism lacks scientific evidence and requires further investigation.

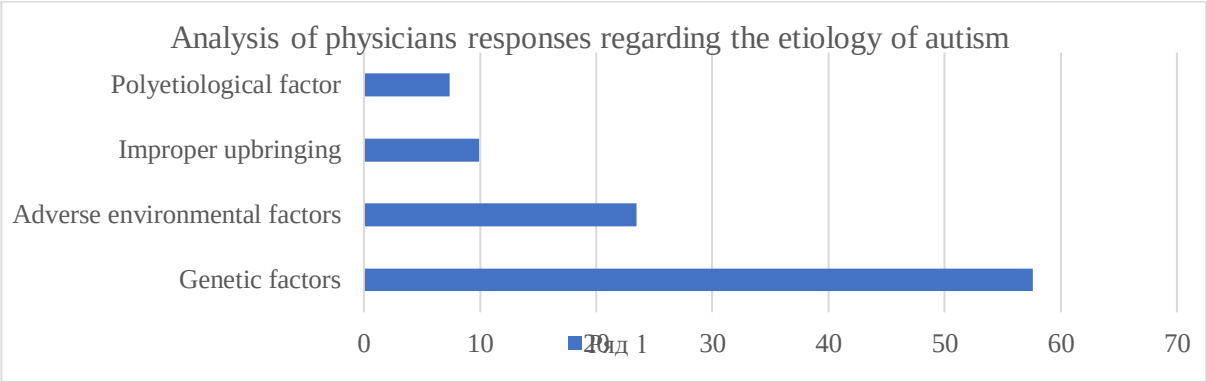

Figure 1- Analysis of physician perspectives on the rising number of children with autism

Regarding the controversial link between vaccination and autism, only 244 physicians (65.1%) provided a definitive negative response. Conversely, 3.7% of respondents answered affirmatively, 6.7% chose “likely yes”, and 24.5% were undecided. These figures indicate a statistically significant predominance of negative attitudes toward the vaccine-autism hypothesis (χ^2, $p < 0{,}001$). However, within the block specifically addressing etiology, 6 respondents (1.6%) still explicitly listed vaccination as a cause. The most recent analysis of scientific data by the WHO Global Advisory Committee on Vaccine Safety concluded that no causal relationship exists between vaccines and autism [1]. The persistence of such misconceptions among respondents suggests insufficient awareness, potentially influenced by emotionally charged information from mass media and social networks, where parents often report a temporal association between the first symptoms of autism and vaccination. This belief may also stem from the fact that the initial symptoms of autism typically emerge at 18 to 24 months of age, which coincides with the routine childhood immunization schedule.

An analysis of physician awareness regarding screening protocols that only 157 respondents (41.9%) were aware that autism screening is officially implemented in Kazakhstan. In contrast, 122 physicians (32.5%) believed that no such screening exists, and 91 (24.3%) assumed it was still in the development stage. This lack of awareness among Primary Health Care (PHC) providers concerning existing screening tools in Kazakhstan points to significant gaps in postgraduate medical education and the integration of clinical guidelines into clinical practice. Given that PHC physician play a pivotal role in early detection, insufficient knowledge of screening protocols constitutes a major risk factor for delayed diagnosis and the subsequent sup-optimal effectiveness of intervention services.

Discussion. In accordance with the Clinician Protocol for the Diagnosis and Treatment Pervasive Developmental Disorders [12] in Kazakhstan, exclusively child psychiatrists establish the formal diagnosis of “autism”. However, a plurality of respondents (170 physicians, 45.3%) erroneously believed that child psychiatrists, pediatric neurologists, and pediatricians could render the diagnosis alike. Furthermore, 41 physicians (10.9%) stated that several psychiatrists in an inpatient psychiatric setting establish the diagnosis collectively. These findings suggest an inadequate understanding of the regulatory framework and clinical protocols. Specifically, there appears to be a conceptual conflation between diagnostic assessment (which may be conducted by neurologists or clinical physiologists) and formal diagnostic verification (which remains the sole prerogative of a child psychiatrist). The frequent use of the term "multidisciplinary approach" also seems to foster a misconception that the diagnosis is made collegially, whereas, in practice, a single specialist formalizes it. Such misconceptions increase the risks of delayed referral to the appropriate specialist and the provision of inaccurate information to parents, further contributing to late-stage diagnosis and reduced efficacy of care.

The subsequent block of question evaluated the awareness of PHC physicians regarding the age of autism diagnosis. 147 respondents (39.2%) indicated that the diagnosis is established after the age of 3, while 114 (30.4%) believed it is made before age 3, and 89 (23.7%) after age 1. Responses regarding the necessity of hospitalization for a definitive diagnosis were highly heterogeneous. While 150 physicians (40%) considered hospitalization unnecessary, 68 (18.2%) deemed it required, and 101 (26.9%) believed the diagnosis must be made collectively by several doctors in an inpatient setting. International evidence suggests that autism should be diagnosed in outpatient settings and within the child's familiar environment to ensure a more accurate evaluation of social interaction and behavioral patterns. Hospitalization is generally reserved for cases requiring complex differential diagnosis or when the child exhibits severe behavioral disturbances [13]. According to current international classification systems, autism can be verified at any age, provided the symptoms meet the diagnostic criteria. There are no age-related restrictions or regulatory barriers to early-age diagnosis. Numerous studies demonstrate that earlier verification (before age 3) and timely intervention lead to significantly better outcomes. Our findings, however, highlight the persistent issue of delayed diagnosis. This with global trends were the average age of diagnosis in many countries remains between 3 and 5 years, despite the emergence of initial symptoms at a much earlier stage [14].

In the section regarding early manifestations of autism, physicians 98 (26.1%) identified "lack of response to name/addressing," 63 (16.8%) noted "lack of eye contact," and 57 (15.2%) highlighted "speech development delay." Other identified signs included "playing alone" (15 physicians, 4%) and "motor stereotypies" (29 physicians, 7.7%).

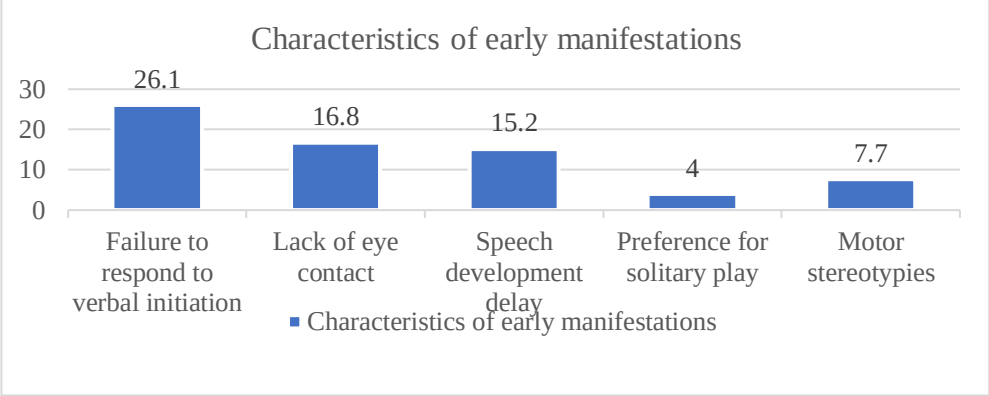

Figure 2 - Characteristics of early manifestations

These data suggest that the majority of surveyed physicians possess foundational knowledge of early clinical red flags for autism. However, regarding referral pathways for suspected autism, a majority of respondents indicated they would refer a child to a pediatric neurologist (237 physicians, 63.2%), while fever would refer to a psychiatrist (89 physicians, 23.7%) or a local Psychological-Medical-Pedagogical Consultation (PMPC) (41 physicians, 10.9%). A small fraction (2.2%) deemed additional instrumental diagnostic tests necessary. These results may indicate insufficient awareness of the standardized referral algorithms (routing) for children with suspected autism. Among the primary barriers to early detection, respondents frequently cited: late parental care-seeking (24.5%), inadequate awareness of early symptoms among both parents and specialists (15.2%), high physician workload (11.2%), parental denial or rejection of early symptoms (7.2%). Similar challenges are documented in international literature, where researchers identify insufficient training of primary care providers, limited consultation time, and low parental literacy regarding developmental milestones as key barriers to early diagnosis [15].

Regarding pharmacological treatment, 196 physicians (52.2%) correctly stated that "no medical cure exists," while 82 (21.9%) believed treatments are currently under development. 69 respondents (18.4%) reported a lack of information, and 28 (7.5%) believed a pharmacological cure for autism is

available. Overall, these findings reflect the current clinical understanding of autism therapy: there is currently no specific medication to treat the core symptoms of autism affecting communication and socialization. The gold standard of care remains behavioral, psychological, and pedagogical interventions. Nevertheless, symptomatic pharmacotherapy may be utilized to mange co-occurring conditions such as aggression, hyperactivity, severe irritability, or sleep disturbance. The proportion of respondents believing in a "medical cure" likely reflects a common conceptual conflation between treating the underlying condition and managing comorbid emotional and behavioral symptoms.

Regarding awareness of state programs and referral pathways, 79 physicians (47.7%) claimed to be sufficiently informed but were unable to specify them. Furthermore, 127 (33.9%) reported having no information at all, and 69 (18.4%) stated they were not informed. This suggest that a significant portion of PHC physicians possesses only a vague awareness of state initiatives without the practical knowledge required to guide parents through the healthcare system.

The analysis also revealed gaps in knowledge concerning available support services. Thus, 174 physicians (46.4%) gave a positive response, 32 physicians (8.5%) gave a negative response, 59 physicians (15.7%) reported having no information at all, and 110 respondents (29.4%) selected the option "yes, but not sure." As of January 1, 2026, Kazakhstan operates 238 Psychological and Pedagogical Correction Cabinets (PPCC), 12 Autism Support Centers, and 14 Educational Rehabilitation Centers offering cost-free intervention services. Consequently, a substantial number of respondents lack comprehensive and accurate information about exiting social and rehabilitative programs.

Finally, the level of specialized training among PHC providers warrants particular attention. 246 physicians (65.6%) reported having never received formal training on childhood autism. The high percentage of physicians identifying their own lack of knowledge as a barrier to early detection underscores the urgent need for continuing medical education (CME), the expansion of specialized curricula for primary care providers, and the optimization of autism screening. The interpretation of the survey results is presented in Table 1.

Table 1. *Interpretation of Survey Results*

№	***Survey Results***	***Interpretation of Results***
1	The majority of physicians note an increase in the number of children with autism in the Republic of Kazakhstan	High level of autism awareness and clinical suspicion among PHC physicians
2	Predominance of genetic theory regarding the etiology of autism	Alignment with current scientific concepts
3	Rejection of the link between vaccination and autism	Sufficient level of evidence-based medical knowledge
4	Ambiguous or inconsistent responses regarding screening protocols	Insufficient awareness of the early detection system
5	The majority of physicians have not completed continuing education courses on autism	Urgent need for expanded professional training programs
6	Insufficient awareness of referral pathways (clinical routing) for children with autism	Necessity to develop mechanisms for interagency cooperation

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Conclusion. The results of this survey among Primary Health Care (PHC) physicians indicate that the majority of respondents recognize an increasing trend in the prevalence of autism within the pediatric population and possess foundational knowledge regarding its early clinical manifestation. However, significant gaps were identified in physician awareness concerning diagnostic procedure, treatment modalities, referral pathways, and the specific implementation of autism screening

protocols in Kazakhstan. These gaps in professional knowledge may result in delayed diagnosis, the issuance of inaccurate clinical recommendation to parents and a postponement of early intervention services, ultimately compromising the overall efficacy of care. A substation proportion of PHC physicians had trouble in identifying diagnostic algorithms and existing support programs. Consequently, these findings underscore the urgent necessity to enhance the professional qualifications and awareness of primary care providers. Targeted initiatives are required to improve early diagnostic proficiency and to streamline the delivery of specialized care for children with autism.

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