



# **PRENATAL AND PERINATAL CLINICAL- ANAMNESTIC RISK FACTORS ASSOCIATED WITH AUTISM SPECTRUM DISORDERS IN CHILDREN**

**Sh.Sh.Shamansurov**

**N.R.Mirdjuraeva**

**Z.M.Mirakbarova**

**Center for the Development of Professional Qualification of Medical  
Workers under the Ministry of Health of the Republic of Uzbekistan,  
Tashkent, Uzbekistan**

**U. K. Kurbanov Republican Children's Psychoneurological Hospital,  
Tashkent, Uzbekistan**

**Institute of Biophysics and Biochemistry, National University of  
Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan**

**<https://doi.org/10.5281/zenodo.19018383>**

## **ARTICLE INFO**

Received: 09<sup>th</sup> March 2026

Accepted: 11<sup>th</sup> March 2026

Online: 13<sup>th</sup> March 2026

## **KEYWORDS**

*In addition, studies demonstrate that maternal obesity and gestational diabetes are associated with an approximately 1.3–2-fold increased risk of ASD in children*

## **ABSTRACT**

*Autism spectrum disorders (ASD) represent a group of neurodevelopmental conditions characterized by impairments in social interaction, communication difficulties, and the presence of restricted and repetitive patterns of behavior. According to current epidemiological data, the prevalence of ASD is approximately 1–2% of the pediatric population and continues to increase in many countries worldwide. The etiology of ASD is considered multifactorial and involves a complex interaction of genetic, prenatal, perinatal, and environmental factors.*

Autism spectrum disorders (ASD) represent a group of neurodevelopmental conditions characterized by impairments in social interaction, communication difficulties, and the presence of restricted and repetitive patterns of behavior. According to current epidemiological data, the prevalence of ASD is approximately 1–2% of the pediatric population and continues to increase in many countries worldwide. The etiology of ASD is considered multifactorial and involves a complex interaction of genetic, prenatal, perinatal, and environmental factors (1,2).

In recent years, considerable attention has been given to the study of prenatal factors influencing the development of ASD. A number of studies indicate that the health status of the mother during pregnancy may have a significant impact on fetal neurodevelopment. Particular interest has been focused on maternal metabolic disorders, including diabetes mellitus and obesity (2,5). According to meta-analysis data, intrauterine exposure to maternal diabetes is associated with an increased risk of ASD in offspring: the odds ratio is approximately 1.48 for type 2 diabetes, 1.73 for type 1 diabetes, and 1.31 for gestational diabetes. It is assumed that hyperglycemia, metabolic disturbances, and inflammatory processes may affect the formation of neuronal networks and brain development in the fetus (1,4,5).

In addition, studies demonstrate that maternal obesity and gestational diabetes are associated with an approximately 1.3–2-fold increased risk of ASD in children. One of the

possible mechanisms is believed to be chronic inflammation and elevated levels of pro-inflammatory cytokines, which can cross the placental barrier and affect the developing fetal nervous system (4,6).

Among other significant prenatal factors, maternal thyroid disorders have also been discussed. Some studies have shown that the presence of thyroid peroxidase antibodies during pregnancy may increase the likelihood of ASD in offspring by nearly 80%. These findings highlight the important role of endocrine and immunological disturbances in the development of neurodevelopmental pathology (1,5,7).

Perinatal factors also play an important role. Preterm birth is considered one of the risk factors for ASD. Large cohort studies have demonstrated that maternal diabetes is associated with an increased likelihood of preterm delivery, and part of the increased risk of ASD in children may be mediated through this factor. Prematurity, hypoxic-ischemic lesions of the central nervous system, and complications during delivery may disrupt brain maturation processes and increase the vulnerability of neuronal structures (8).

Despite the large number of studies, the mechanisms underlying the development of ASD remain insufficiently understood. Most authors agree that the formation of this disorder is determined by the interaction between genetic predisposition and adverse prenatal and perinatal environmental factors. Therefore, the identification of clinical and anamnestic risk factors is of great importance for the development of early screening programs and preventive strategies aimed at reducing the risk of neurodevelopmental disorders in children (3,7,9).

**Keywords:** autism spectrum disorders, prenatal factors, perinatal pathology, maternal diseases, risk factors, neurodevelopment.

**Objective:** To analyze clinical and anamnestic characteristics of children with autism spectrum disorders and to identify prenatal and perinatal factors potentially associated with the development of ASD.

**Materials and Methods:** A comparative observational study was conducted including 169 children aged 2–9 years with confirmed ASD who underwent rehabilitation at the U. K. Kurbanov Republican Children's Psychoneurological Hospital. The control group consisted of 30 healthy children without neurological or developmental disorders. ASD diagnosis was established according to ICD-10 criteria. Clinical-anamnestic analysis included maternal somatic diseases during pregnancy, gestational age at birth, perinatal complications, neonatal condition assessed by the Apgar score, and early developmental history. Statistical analysis was performed using descriptive statistics,  $\chi^2$  test, and odds ratio (OR) calculation with a 95% confidence interval.

**Results:** The study demonstrated a pronounced predominance of boys among children with ASD (86.98% boys vs. 13.02% girls). The highest frequency of ASD detection was observed between 3 and 6 years of age, reflecting the typical period of clinical manifestation of social-communication deficits.

Analysis of maternal health status revealed that diabetes mellitus during pregnancy was significantly more common in mothers of children with ASD (27.8%) compared with the control group (10.0%). Statistical analysis showed a significant association between maternal diabetes and ASD ( $\chi^2 = 5.90$ ;  $p = 0.015$ ), with an increased risk of ASD in offspring (OR = 4.23;

95% CI: 1.22–14.65). Other maternal conditions, including hypothyroidism, anemia, and obesity, were also observed more frequently in the ASD group, although these differences did not reach statistical significance.

Evaluation of perinatal characteristics indicated that preterm birth occurred only in the ASD group (8.3%), although the difference compared with the control group was not statistically significant. Assessment of neonatal adaptation showed that children with ASD more frequently had Apgar scores of 7–8, whereas healthy children predominantly had higher scores (9 points), suggesting relatively better neonatal adaptation in the control group.

**Conclusion.** The findings support the multifactorial nature of autism spectrum disorders and emphasize the potential contribution of maternal metabolic disorders and certain perinatal factors to ASD risk. Identification of such clinical-anamnestic characteristics may contribute to the optimization of early screening programs, early diagnosis, and preventive strategies aimed at improving outcomes in children with ASD.

#### References:

1. Garza-Martínez M.J., et al. Maternal diabetes during pregnancy and offspring's risk of autism spectrum disorder: a systematic review and meta-analysis. *Journal of Psychiatric Research*. 2025.
2. Li M., Fallin M.D., Riley A. et al. The association of maternal obesity and diabetes with autism spectrum disorders. *BMC Medicine*. 2024.
3. Lyall K., Croen L., Daniels J. et al. The changing epidemiology of autism spectrum disorders. *Annual Review of Public Health*. 2017.
4. Xiang A.H., Wang X., Martinez M.P. et al. Association of maternal diabetes with autism in offspring. *JAMA*. 2023.
5. Kong L., Norstedt G., Schalling M., Gissler M., Lavebratt C. Maternal type 1 diabetes and risk of autism spectrum disorder in offspring. *International Journal of Epidemiology*. 2022.
6. Brown A.S., et al. Prenatal risk factors for autism spectrum disorders. *Biological Psychiatry*. 2014.
7. Gardener H., Spiegelman D., Buka S. Prenatal risk factors for autism: systematic review and meta-analysis. *British Journal of Psychiatry*. 2009.
8. Brown A.S. Epidemiologic studies of exposure to prenatal infection and risk of schizophrenia and autism. *Developmental Neurobiology*. 2012.
9. Goines P., Ashwood P. Cytokine dysregulation in autism spectrum disorders. *Brain, Behavior, and Immunity*. 2013.