

FREQUENCY OF AUTISM SPECTRUM DISORDER IN CHILDREN AGED 16-30 MONTHS PRESENTING TO MAYO HOSPITAL LAHORE

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ABSTRACT

Objective: To determine the frequency of autism spectrum disorder in children aged 16 – 30 months in child psychiatry OPD of Mayo Hospital Lahore.

Study Design: Cross- Sectional Study

Place and Duration: The research was conducted in child psychiatry OPD of Mayo Hospital Lahore for duration of 6 months from March 2025 to August 2025.

Methodology: A Modified Checklist for Autism in Toddlers, (MCHAT- R/F) translated into Urdu updated with follow-up, was used to test 125 children aged 16 to 30 months. To identify the association between risk of ASD in children with gender, age of child, age of mother at delivery, medical issues during pregnancy, pregnancy duration, child's weight at the time of birth, complications at birth Chi square test was applied.

Results: Screening results showed that 98 (78.4%) children were at low risk, 11 (8.8%) at moderate risk, and 16 (12.8%) at high risk of autism spectrum disorder. A significant association resulted between ASD Risk and age of mother at delivery, medical issues during pregnancy and pregnancy complications. The association was not statistically significant for gender, age of the child, pregnancy duration, child's weight at the time of birth. ($p > 0.05$).

Conclusion: This research concluded that frequency of children at risk of ASD in sample is 21.6%, with 12.8% in the high-risk category and 8.8% in moderate risk. These results emphasize the value of early screening as a crucial component of routine paediatric examinations in outpatient clinics.

KEYWORDS: Risk of Autism Spectrum Disorder, Screening, Prevalence

INTRODUCTION

A neurological condition or deficiency known as autism spectrum disorder (ASD) predominantly impacts communication, attitudes, and behaviors.¹ When it first appears in children, the condition is likely to persist throughout life. ASD has a profound impact on a person's social functioning, may have a detrimental effect on the whole family of the affected person, and causes great financial hardship and psychological misery for families, communities, and countries.² ASD has been the subject of numerous research, the causes of which have been attributed to genetic, immunological, perinatal, neuroanatomical, environmental and biochemical factors.³ The autism spectrum includes a number of illnesses, such as pervasive developmental disorder, Rett syndrome, Asperger syndrome, and autistic disorder.⁴

The World Health Organization claims that 1% of all children worldwide are thought to have ASD.⁵ Though the frequency varies significantly across different regions, autism is on the rise globally, with an average prevalence of 1 in 54.⁶ From 0.5% to 1%, autistic spectrum disorder is becoming more common worldwide. Among children aged 0 to 17 years and other people in south-east Asia, the prevalence of autism spectrum disorder ranges from 0.09% to 1.07%, according to a recent comprehensive study.⁷ According to the Autism Society, 350,000 children in Pakistan have this condition.⁸ The results of a research conducted recently at a teaching hospital in Rawalpindi showed the frequency of autism in children to be 3% concluding that Level 1 screening must be a mandatory component of children's routine examinations.⁹

During the first 12 to 18 months of life, ASDs' initial indications and symptoms may be noticed.¹⁰ The screening process is improved by using standardized tools. Modified Checklist for Autism in Toddlers is recommended by the American Academy of Paediatrics (AAP) guidelines as a reliable and frequently used screening tool as per AAP recommendations. In the first two years, developmental deficits should be screened often (every 9, 18, 24 or 30 months).¹¹ Early diagnosis of ASD is essential due to the rising incidence of cases, high level of disease and impairment, economic burden, and healthier therapeutic outcomes.¹²

There are currently no well-grounded epidemiological data on the prevalence of autism in Pakistan. More than half of general practitioners in Karachi, according to the results of a survey, had never heard the word autism.¹³ Governments must evaluate the prevalence rates of ASD in order to decide what financial and medical support will be given to ASD patients and their families. Additionally, it aids in locating regional and environmental risk factors for ASD.¹⁴ This study was conducted to determine the frequency of autism spectrum disorder in children aged 16 – 30 months in child psychiatry OPD of Mayo Hospital Lahore.

METHODOLOGY

With the approval from the Institutional Review Board of the University this cross-sectional study was conducted in child psychiatry OPD of Mayo Hospital Lahore for a period of 6 months from March 2025 to August 2025. The target population comprised of all the children in the age range of 16-30 months visiting child psychiatry OPD suffering from any psychiatric complaints like anxiety, depression, eating, personality, bipolar disorder and others. Children diagnosed with congenital neurological disorders like cerebral palsy, microcephaly, anencephaly, hydrocephalus were excluded from our study.

The sample size of 125 patients is calculated by open-epi version 3 using 95% confidence level, 3% absolute precision with expected percentage of prevalence of reference population with autism was 3%.⁹

Although we realize that the results obtained from random sampling approaches are more authentic, the sampling methodology used was Non-Probability Convenient sampling due to financial and scheduling restrictions.

Given the children's lack of understanding and mental competence to consent to research, parental or legal guardian informed consent was obtained. Data was collected with the help of Preformed diagnostic questionnaire proforma from all the 125 eligible cases filled by the interviewer and it consisted of two parts. First section of the proforma consisted of Demographic characteristics which include child's age, gender, age of mother at delivery, medical issues during pregnancy, pregnancy duration, weight of the child at the time of birth, complications at birth. Second section consisted of The Modified Checklist for Autism in Toddlers, revised (M-Chat-R/F) to assess the risk of ASD.

The Modified Checklist for Autism in Toddlers, revised (M-CHAT-R/F) is a validated screening tool used to evaluate the risk of ASD. It is valid for children of ages from 16 to 30 months. The findings inform us if additional testing is needed. MCHAT-R/F's main objective is to evaluate the risk for ASD or as a Level 1 screening tool to enhance sensitivity. Children with other neurodevelopmental problems are also screened by MCHAT.¹⁵ This screening method was utilized in an Urdu translation that has already been translated and verified.¹⁶

Scoring of MCHAT-RF:¹⁵ Low-Risk: Additional screening is required after 2 years if the total score is between 0 and 2 and the child is less than 2 years. Medium-Risk: A follow-up screening is necessary if the total score falls between 3 and 7. The child is deemed positive and a diagnostic evaluation ought to be conducted if the score stays above 2. High-Risk: A score between 8 and 20 necessitates prompt diagnostic testing.

The Data was analysed Using IBM Statistical Package for Social Sciences version 25. Qualitative variables like Risk of ASD, gender, age of child, age of mother at delivery, medical issues during pregnancy, pregnancy duration, physical illness during pregnancy, child's weight at the time of birth, complications at birth, were evaluated in frequency and percentages. To identify the association between risk of ASD in children with gender, age of child, age of mother at delivery, medical issues during pregnancy, pregnancy duration, physical illness during pregnancy, child's weight at the time of birth and complications at birth Chi square test was applied.

RESULTS

A sum of 125 children was included in the study, out of which 86(68.8%) were males and 39 (31.2%) females. The sample was therefore male-dominant. Among the study participants, 83 (66.4%) were aged 26–30 months, 30(24.0%) were 21–25 months, and 12(9.6%) were 16–20 months. Most of the children were in the older age range (26–30 months). More than half of the mothers, 66(52.8%) were between 26–30 years at the time of childbirth. A smaller proportion 36(28.8%) were above 30 years, while 23(18.4%) were between 20–25 years of age. Most children 76(60.8%) were born at full term (9 months), while 26(20.8%) were preterm and 23(18.4%) were post-term. Thus, almost two-fifths of the children were born outside the normal gestational period. Regarding maternal health, 74(59.2%) mothers reported anaemia, 33(26.4%) had hypertension, and 18(14.4%) experienced gestational diabetes during pregnancy. Birth weight information was available for 112 children. 93(74.4%) children weighed 5–7 pounds at birth, while 19(15.2%) weighed between 7.1–9 pounds. Data were missing for 13(10.4%) children. Birth-related complications were reported in 67(53.6%) cases, while 58(46.4%) had no complications (Table 1).

Table 1: Demographic Characteristics

Gender	N	%
Male	86	68.8%
Female	39	31.2%
Age of the Child		
16-20m	12	9.6%

21-25m	30	24%
26-30m	83	66.4%
Mother's Age at Time of delivery		
20-25 years		
26-30 years	23	18.4%
31-35 years	66	52.8%
36-40 years	28	22.4 %
	8	6.4%
Medical Issues During Pregnancy		
Anaemia		
Gestational Diabetes	74	59.2 %
High Blood Pressure	18	14.4%
	33	26.4%
Pregnancy Duration		
9 months	76	60.8%
Before 9 months	26	20.8%
After 9 months	23	18.4%
Weight of the child at birth		
5-7 pounds	93	74.4%
7.1- 9 pounds	19	15.2%
Missing Cases	13	10.4%
Complications during Birth		
Yes	67	53.6%
No	58	46.4%

Screening results showed that 98 (78.4%) children were at low risk, 11 (8.8%) at moderate risk, and 16 (12.8%) at high risk of autism spectrum disorder. Overall, 27 (21.6%) children were classified as at risk of ASD (moderate or high) (Table 2).

Table 2: Risk of Autism Spectrum Disorder

Risk of ASD	N	%
Low Risk	98	78.4%
Moderate Risk	11	8.8%
High Risk	16	12.8%
Total	125	100%

In Inferential Analysis a chi-square test was performed. (Table 3) The association was not statistically significant for gender, age of the child, pregnancy duration, child's birth weight. ($p > 0.05$). The p value for Mother's Age at the time of delivery ($p < 0.001$) was statistically significant. P value for Medical Issues during Pregnancy ($p = 0.034$) was also statistically significant. A Chi-square test also showed a statistically significant association for Complications during Birth and ASD risk ($p < 0.001$).

Table 3: Association between Risk of ASD and Demographic Variables

Gender	N	%	Chi- Square (P value) *Sig
Male	86	68.8%	0.101
Female	39	31.2%	
Age of the Child			0.240
16-20m	12	9.6%	
21-25m	30	24%	
26-30m	83	66.4%	
Mother's Age at Time of delivery			P< 0.001
20-25 years	23	18.4%	
26-30 years	66	52.8%	
31-35 years	28	22.4 %	
36-40 years	8	6.4%	
Medical Issues During Pregnancy			P= 0.034
Anaemia	74	59.2 %	
Gestational Diabetes	18	14.4%	
High Blood Pressure	33	26.4%	

Pregnancy Duration			
9 months	76	59.2%	0.102
Before 9 months	26	14.4%	
After 9 months	23	26.4%	
Weight of the child at birth	93	74.4%	0.505
5-7 pounds	19	15.2%	
7.1- 9 pounds	13	10.4%	
Missing Cases			
Complications during Birth			P < 0.001
Yes	67	53.6%	
No	58	46.4%	

*Chi- Square P value <0.05 is significant

DISCUSSION

This study estimated that 11 (8.8%) children were at moderate risk, and 16 (12.8%) were at high risk of autism spectrum disorder. Overall, 27 (21.6%) children were classified as at risk of ASD (moderate and high), which is relatively higher than worldwide prevalence estimated in children.⁵ This is expected because our sample is hospital-based (child psychiatry OPD Mayo Hospital Lahore), not general population. Parents bring children to hospital when they notice developmental concerns, which inflates prevalence compared to community surveys. Our study's findings, however, are consistent with a prior study conducted in a Rawalpindi tertiary healthcare facility that found that 8.6% of patients screened in an adult psychiatric ward were diagnosed with ASD which is a considerably higher percentage.⁸

It is challenging to extrapolate these findings to other contexts because the local literature on prevalence is restricted to hospital-based groups or autistic children attending special schools.⁹ Given the lack of verified autism prevalence statistics for Pakistan, this study emphasizes the necessity of obtaining precise and trustworthy national estimates of autism prevalence.

This study also assessed the potential association of perinatal and maternal factors with the risk of autism spectrum disorder (ASD) in children aged 16–30 months.

Our findings indicate that maternal age at the time of birth was significantly associated with ASD risk, with higher maternal age conferring greater risk. This aligns with a previous study reporting increasing maternal age as a risk factor for neurodevelopmental disorders, possibly due to increased likelihood of obstetric complications and genetic mutations.¹⁷ In contrast, child's gender, age at screening, weight at birth, and gestational duration were not significantly associated with ASD risk, which is consistent with some studies^{18,19} but differs from others that suggest male gender and prematurity as potential risk factors.²⁰

Pregnancy-related complications, including maternal anaemia, hypertension, and gestational diabetes, were significantly associated with ASD risk. This is consistent with results from an earlier study in Egypt which sought to identify maternal and neonatal risk factors for ASD, showing history of diabetes, previous abortion, multiple gestation, exposure to passive smoking during pregnancy, vaginal bleeding during pregnancy, hypertension with pregnancy being associated with the enhanced risk of ASD²¹ and is also consistent with results from a population-based study on maternal health around pregnancy and autism risk.²² Similarly, complications during birth demonstrated a strong association with ASD risk, supporting prior evidence from a case control study conducted on Lebanese subjects which showed that maternal infections and complications during birth were risk factors for ASD.²³

The strengths of this study involve the use of validated screening methods and detailed collection of perinatal data. However, some limitations must be considered. The relatively small sample size and reliance on screening rather than diagnostic confirmation may limit generalizability. Additionally, recall bias from maternal reporting of pregnancy-related complications cannot be excluded.

Despite these limitations, the study highlights potentially modifiable risk factors for ASD. Public health strategies aimed at optimizing maternal health during pregnancy and ensuring safe childbirth may contribute to lowering ASD risk. To confirm these correlations and investigate underlying mechanisms, larger, longitudinal cohort studies and diagnostic confirmation are necessary in the future.

CONCLUSION

This study identified a relatively high proportion of children at risk of autism spectrum disorder in a hospital-based sample, reflecting the necessity of making screening a crucial part of routine paediatric examinations at outpatient clinics. The findings also underscore the significance of maternal and perinatal health in early neurodevelopment. Given the absence of national prevalence data for Pakistan, these results emphasize the urgent

need for large-scale, population-based studies with diagnostic confirmation to establish accurate estimates and guide policy.

ETHICAL APPROVAL

The ethical approval for this study was obtained from the institutional review board of the University. IRB No 514/RC/KEMU; Dated 28/06/2025.

PATIENT CONSENT

Given the children's lack of understanding and mental competence to consent to research, parental or legal guardian informed consent was obtained.

COMPETING INTEREST

All the Authors declare no competing interests.

DISCLOSURES

None

AUTHOR'S CONTRIBUTION

After reviewing the final draft for publication, all authors agreed to take responsibility for every part of the work. Supervision: Saira Afzal

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