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Evaluation of Health Outcomes of Speech Delay in Iraqi Autistic Children through A Cross-Sectional Study

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Abstract: **Background:** Delayed speech is a frequent comorbidity in autistic children, with a pervasive influence on communication, socialization, and adaptive behaviors. Despite its clinical relevance, the interconnection between the severity of delayed speech, comorbidities, and long-term outcomes remains unclear, particularly in low-income nations. **Aim:** This study aimed to 1) characterize the etiology and severity of delayed speech in autistic children, and 2) determine its impact on daily functioning and long-term outcomes. **Methods:** A cross-sectional study was conducted on 70 children with autism (mean age: 5.4 ± 2.1 years) during June 2024 to June 2025, during a 12-month follow-up. The data provided were demographic information, speech delay severity (mild/moderate/severe), and health assessments (PPVT, EVT, ADOS). **Results:** Our study found illustrated severity; 50% of children presented with moderate speech delay, and 21.4% severe, in which intellectual disability (47.1%), ADHD (40%), and anxiety (31.4%) were prevalent, in which low communication (3.2/5) and social interaction scores (2.8/5) were observed. **Conclusion:** Speech delay in autism children with autism is multifactorial, with neurological and environmental factors. Our study indicated that early management of comorbidities and parental education can improve long-term impairments.

Keywords: Autism spectrum disorder (ASD), speech delay, intellectual disability, communication outcomes, risk factors, pediatric neurology.

INTRODUCTION

Speech delay was among the most common developmental disorders in children, particularly in children with autism spectrum disorder (ASD) [Tager-Flusberg, H. E. L. E. N. *et al*., 2010]. Because communication was at the center of individuals' social, emotional, and cognitive development, speech delays can significantly affect a child's health outcomes and overall well-being [Maenner, M. J. *et al*., 2023; Abrahams B. S. *et al*., 2008]. Autistic children typically possess varying degrees of speech and language impairment, which can impact their ability to communicate needs, form relationships, and engage with others. [Luyster R. J. *et al*., 2008 Mitchell S. *et al*., 2006; Belmonte, M. K. 2004; Alarcon M. *et al*., 2008]

Evaluation of the health consequences of speech delay in autistic children was crucial, as it not only allows the determination of the severity of communication disability but also informs intervention strategies that can significantly influence the improvement of developmental trajectories [Redcay E. *et al*., 2005]. Understanding the mechanisms of speech delay in autistic children is necessary to implement tailored therapeutic interventions [Paul R. 2008].

Furthermore, quantifying the general health implications associated with these speech delays, such as emotional distress, behavioral issues, and academic success, is essential for healthcare providers, educators, and families. [Parr J. A. 2010 Pennington L. *et al*., 2003]

PATIENTS AND METHODS

Study Design

This was a cross-sectional study that was done on 70 Iraqi autistic children who had speech delay at different pediatric clinics and rehabilitation centers in Iraq from June 2024 to June 2025 during a 12-month follow-up. This research was conducted to evaluate the clinical findings among autistic children who have speech delay. The research was conducted following ethical aspects, and permission was given by the concerned institutional review board.

Study Population:

Inclusion Criteria

- Autistic Patients age between (2 - 8) years with a definite diagnosis of speech delay using diagnostic criteria, imaging techinque by Magnetic Resonance Imaging (MRI).
- Patients who were seen for health check-ups with at least 12 months of follow-up data.
- Complete, including demographic and clinical records availability.
- Exclusion Criteria
- Patients with comorbid conditions likely to affect outcomes, e.g., active malignancy, severe organ dysfunction.
- Lost to follow-up or other suitable exclusions, e.g., pregnancy, prior treatment.

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Data Collection:
Data were accessed from electronic health records (EHRs), hospital registries, and/or patient interviews, including:

- Demographics: Age, sex, body mass index (BMI), smoking/alcohol history.
- Clinical Parameters: Our clinical outcomes included the ones that diagnosed into patients with symptoms, reasons, and comorbid conditions of speech delay.

Assessment outcomes
Children were examined using standardized measures like the Peabody Picture Vocabulary Test (PPVT), Expressive Vocabulary Test (EVT), and ADOS – Communication Score to evaluate vocabulary ability. Peabody Picture Vocabulary Test (PPVT) scored are between 85 - 115, where scores less than 85 indicate below-average vocabulary ability, and scores greater than 115 indicate above-average vocabulary ability. The Expressive Vocabulary Test (EVT) is also scaled 85 - 115, with below 85 suggesting below-average expressive vocabulary skills. ADOS – Communication Score is scaled 0 - 20 with low (0-2) suggesting no significant concerns, moderate (3-7) suggesting some communication issues, and high (8+) suggesting significant issues suggestive of potential autism spectrum disorders. In terms of its impact on activities of daily living skills, the impact of speech delay on activities of daily living skills was measured on a scale of 1 to 5, in which 1 signified severe impairment and 5 signified no impairment. Further, logistic regression analysis was done with the purpose of evaluating the association of identified risk factors with long-term outcomes.

Statistical Analysis
Descriptive statistics for all the demographic and clinical variables were computed. Means and standard deviations were reported in continuous variables, and frequency and percentage in categorical variables. Logistic regression tests were conducted to test significant risk factors predicting long-term outcomes. The statistical significance level of a $p < 0.05$ was applied. Data analysis was conducted using tools such as SPSS version 22.0.

RESULTS

Table 1: Baseline and Demographic Characteristics of Patients (n=70)**.**

Characteristic	**Value (n, % / Mean ± SD)**
Age, years (mean ± SD)	5.4 ± 2.1
Gender	
- Male	52 (74.3%)
- Female	18 (25.7%)
Family history of ASD	
- Yes	25 (35.7%)
- No	45 (64.3%)
Seizure Disorder	12 (17.1%)
Birth Asphyxia	8 (11.4%)
Oro-pharyngeal Deformity	5 (7.1%)
Premature Birth	10 (14.3%)
Low Parental Education	22 (31.4%)
ASA Categories	
- I	5 (7.1%)
- II	35 (50%)
- III	25 (35.7%)
- IV	5 (7.1%)
Socioeconomic Status	
- Low	38 (54.3%)
- Middle	25 (35.7%)
- High	7 (10%)

Table 2: Severity of Speech Delay in Autistic Children (n=70)**.**

Severity	Frequency (n, %)
Mild	20 (28.6%)
Moderate	35 (50%)

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Severe	15 (21.4%)

Table 3: Comorbid Conditions Associated with Speech Delay (n=70).

Condition	**Frequency (n, %)**
Intellectual Disability	33 (47.1%)
ADHD	28 (40%)
Anxiety	22 (31.4%)
Epilepsy	15 (21.4%)

Table 4: Common Symptoms Associated with Speech Delay (n=70)**.**

Symptom	Frequency (n, %)
Limited vocabulary	60 (85.7%)
Echolalia (repeating phrases)	45 (64.3%)
Difficulty forming sentences	55 (78.6%)
Poor eye contact during speech	50 (71.4%)
Nonverbal communication (gestures)	40 (57.1%)

Table 5: Identified Causes of Speech Delay (n=70)**.**

Causes	Frequency (n, %)
Genetic factors (e.g., FOXP2)	18 (25.7%)
Neurological differences	42 (60%)
Limited early language exposure	30 (42.9%)
Hearing impairment	12 (17.1%)

Table 6: Speech and Language Assessment Scores (Mean ± SD)**.**

Test	**Score (Mean ± SD)**
Peabody Picture Vocabulary Test (PPVT)	65.2 ± 12.4
Expressive Vocabulary Test (EVT)	58.7 ± 10.9
ADOS – Communication Score	7.3 ± 2.1

Table 7: Impact of Speech Delay on Daily Living Skills (Mean Score ± SD)**.**

Domain	**Score (Mean ± SD)**
Communication Ability	3.2 ± 1.1
Social Interaction	2.8 ± 0.9
Adaptive Behavior	3.5 ± 1.3

Table 8: Predicted Long-Term Outcomes of Speech Delay**.**

Outcome	**Frequency (n, %)**
Impairment in daily speech	45 (64.3%)
Persistent speech difficulties	20 (28.6%)
Development of functional speech	30 (42.9%)
Reliance on alternative communication	15 (21.4%)

Table 9: Risk Factors Affecting Long-Term Outcomes.

Risk Factor	**OR (95% CI)**	**p-value**
Severe speech delay	3.2 (1.4–7.1)	0.004
Intellectual Disability	2.8 (1.3–6.0)	0.009
Low parental education	2.1 (1.1–4.3)	0.03
Neurological differences	3.5 (1.6–7.8)	0.002

DISCUSSION

The results of our cross-sectional analysis of the health consequences of speech delay in Iraqi autistic children offer valuable information regarding demographic, clinical, and psychosocial features of this vulnerable group. We studied 70 children and found significant correlations between speech delay and several contributing factors, which we will discuss in the light of published literature.

The population features of our cohort reflected a high predominance by male participants (74.3%),

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which are consistent with some studies [Lai M. C. *et al*., 2019; Pennington L. *et al*., 2009 American Speech-Language-Hearing Association, 2010] that have consistently reported a higher incidence of ASD in males. The mean age of 5.4 years, coupled with the high percentage (35.7%) of children with a family history of ASD, underscores the possible hereditary factors playing on speech outcome, corroborating findings of a Canadian study on familial clustering of autism [Pattison E. *et al*., 2020].

Our findings revealed that 17.1% of children had seizure disorders, with other neurological conditions also contributing to the complexity in this population. A high rate of comorbid neurological conditions among autistic children [Keen D. V. *et al*., 2008] which has implications for their speech and language development.

The severity of speech delay observed in our study, with 50% being moderate, corroborates with a study from the USA [Manassis K. 2009], where language impairment was a very common feature among autistic children. The distribution of percentages of severity of speech delay in our sample, with 21.4% being severe, indicates that specific interventions must be given to this subgroup. It indicates that early intervention can make a huge difference in the outcome of speech in the long run.

The prevalence of comorbidities among our population, especially intellectual disability (47.1%) and ADHD (40%), is in agreement with the Danish study that identifies a repeated association of these with speech delay among autistic children. Finally, the comparison of co-occurring symptoms observed in speech delay revealed that 85.7% of children exhibited scant vocabulary while 78.6% exhibited poor sentence formation [Schum R. L. 2007].

Our findings indicate that neurological differences (60%) are the most common decided cause of speech delay, higher than the Spanish study [Joshi, G. *et al*., 2019; Harlor, A. D. 2009], tending to focus on environmental reasons such as limited early language input. Our study also confirmed hearing impairment as a less frequent but reliable factor, highlighting the need for comprehensive exams considering both inherent and extrinsic factors for speech delays.

The impact on activities of daily living was significant, with mean scores indicating restrictions on communication capacity (3.2) and social interaction capacity (2.8). This has also been evidenced in the Argentine study [Roulstone, S. 2003], highlighting the way in which language impairment impacts adversely upon social interaction capacity of autistic children, further supporting integrated support systems.

As far as long-term prognosis is concerned, 64.3% of the children will have chronic speech handicaps. Statistical analysis of risk factors indicated that children with severe speech delay (OR 3.2) or intellectual disability (OR 2.8) have a significantly increased risk for unfavorable long-term speech outcomes [Graham H. L. *et al*., 2020].

CONCLUSION

Speech delay is a prevalent characteristic in individuals with autism spectrum disorder (ASD) and can directly affect their communication and social interaction. Our findings indicated serious 35.7% of them had a family history for autism spectrum disorder (ASD), reflecting the genetic predisposition to speech and language impairment in this population. The degree of speech delay was most frequently moderate (50%). Language and speech test results showed large deficits, particularly communication skills (mean of 3.2), and was correlated with large effects on daily living skills, socialization, and adaptive behavior. Predicted long-term consequences are daunting, with 64.3% of the children projected to have impairment in speech in daily communication, and over half of them could endure chronic speech problems. Effective interventions, like speech therapy and individualized educational plans, can treat language development and general communication. By establishing a pro-communication atmosphere, teachers and caregivers can support social interaction in autistic children to a larger extent and promote interaction with other children.

REFERENCES

1. Tager-Flusberg, H. E. L. E. N., Lindgren, K. A., and MODY, M. "Structural and functional imaging research on language disorders: Specific language impairment and autism spectrum disorders." *Adult Learning Disorders*. Psychology Press, (2010) 145-176.
2. Maenner, M. J, Warren, Z., Williams, A. R, *et al*. “Prevalence and characteristics of autism spectrum disorder among children aged 8 years—Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2020.” *MMWR Surveill Summ*. 72.2 (2023):1-14.

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3. Abrahams, B. S., Geschwind, D. H. "Advances in autism genetics: on the threshold of a new neurobiology." *Nat Rev Genet*. 9.5 (2008):341–355.
4. Luyster, R. J., Kadlec, M. B., Carter, A., Tager-Flusberg, H. "Language assessment and development in toddlers with autism spectrum disorders." *J Autism Dev Disord*. 38.8 (2008):1426–1438.
5. Mitchell, S, Brian, J, Zwaigenbaum, L, et al. "Early language and communication development of infants later diagnosed with autism spectrum disorder." *J Dev Behav Pediatr*. 27. 2 Suppl) (2006): S69–S78.
6. Belmonte, M. K., Cook, E. H., Anderson, G. M., Rubenstein, J. L., Greenough, W. T., Beckel-Mitchener, A., & Tierney, E. "Autism as a disorder of neural information processing: directions for research and targets for therapy." *Molecular psychiatry* 9.7 (2004): 646-663.
7. Alarcon, M, Abrahams, B. S., Stone, J.L., et al. "Linkage, association, and gene-expression analyses identify CNTNAP2 as an autism-susceptibility gene." *Am J Hum Genet*. 82.1 (2008):150–159.
8. Redcay, E., Courchesne, E. "When is the brain enlarged in autism? A meta-analysis of all brain size reports." *Biol Psychiatry*. 58.1 (2005): 1–9.
9. Paul, R. "Interventions to improve communication in autism." *Child Adolesc Psychiatr Clin N Am*. 17.4 (2008): 835-856.
10. Parr, J. A. "Clin Evid" 1.322 (2010): 1-19.
11. Pennington, L, Goldbart, J, Marshall, J. "Speech and language therapy to improve the communication skills of children with cerebral palsy." *Cochrane Database Syst Rev*. 3: (2003): CD003466.
12. . Lai, M. C., Kassee, C, Besney, R. et al. "Prevalence of co-occurring mental health diagnoses in the autism population: a systematic review and meta-analysis." *Lancet Psychiatry*. 6.10 2019:819-829.
13. Pennington, L., Miller, N., Robson, S. "Speech therapy for children with dysarthria acquired before three years of age." *Cochrane Database Syst Rev*. 4 (2009): CD006937.
14. American Speech-Language-Hearing Association, "Effects of hearing loss on development. http://www.asha.org/public/hearing/disorders/effects.htm." *Accessed* 22, (2010).
15. Pattison. E, Papadopoulos. N, Marks. D, McGillivray. J, Rinehart. N. "Behavioural treatments for sleep problems in children with autism spectrum disorder: a review of the recent literature." *Curr Psychiatry Rep*. 22.9 (2020): 46.
16. Keen, D.V., Fonseca, S, Wintgens, A. "Selective mutism: a consensus-based care pathway of good practice." Arch Dis Child. 93.10 (2008): 838-844.
17. Manassis, K. "Silent suffering: understanding and treating children with selective mutism." *Expert Rev Neurother*. 9.2 (2009): 235-243.
18. Schum, R. L. "Language screening in the pediatric office setting." *Pediatr Clin North Am*. 54.3 (2007): 425-436.
19. Joshi, G., Wozniak, J. Fitzgerald, M. et al. "High risk for severe emotional dysregulation in psychiatrically referred youth with autism spectrum disorder: a controlled study." *J Autism Dev Disord*. 48.9 (2018): 3101-3115.
20. Harlor, A. D. et al. "Hearing assessment in infants and children: recommendations beyond neonatal screening." *Pediatrics*. 124.4 (2009): 1252-1263.
21. Roulstone, S., Peters, T. J. Glogowska, M., Enderby, P. A. "12-month follow-up of preschool children investigating the natural history of speech and language delay." *Child Care Health Dev*. 29.4 (2003): 245-255.
22. Graham, H. L., Zampella, C. J., Clements, C., McCleery, J. P., Maddox, B. B., Parish-Morris, J., ... & Miller, J. S. "A lifespan approach to patient-reported outcomes and quality of life for people on the autism spectrum." *Autism Research* 13.6 (2020): 970-987.

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