

Original Research Article

Profile of children presenting with speech delay without any specific diagnosis

Kripa Soman^{1*}, Anupa Lucas¹, Nadia E. Paul², Aswanth Krishna¹, Brinda Poornima¹,
Ansila Thayyil¹, Ardra Satheesh¹

¹Department of Community Medicine, GMC, Kottayam, Kerala, India

²Regional Early Intervention Centre (REIC), Institute of Child Healthcare (ICH), Medical College Hospital, Kottayam, Kerala, India

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*Correspondence:

Dr. Kripa Soman,

E-mail: kripashish125@gmail.com

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ABSTRACT

Background: Speech delay, characterized by a child's failure to develop age-appropriate language skills, is a major concern in paediatric healthcare. Speech delay can be attributed to underlying conditions such as hearing impairment, neurological disorders, or genetic syndromes. While, a considerable proportion of cases remain without a clear aetiology. Psychological deprivation, inadequate stimulation, seizure disorders, intellectual disability, and excessive screen time may predispose children to speech delay. The repercussions of speech delay, including poor academic achievement, social anxiety, and stress, may negatively impact a child's future.

Methods: A record-based cross-sectional study was conducted among children who attended therapy at the Regional Early Intervention Centre (REIC), Medical College, Kottayam. With the assistance of a speech therapist employed at the centre, a semi-structured proforma based on the receptive-expressive emergent language scale (REELS) was prepared. Data were entered into Microsoft Excel and analysed using IBM SPSS version 20.0.

Results: The mean age of the study participants was 4.06±2.14 years. The majority of children (39.3%) belonged to 3-5-year age group and were males (75.3%). Speech delay alone was the presenting complaint in 73.5% of children. Speech delay was observed in 77% of children with excessive screen time and in 87.5% of children with feeding problems, with these associations being statistically significant ($p<0.05$).

Conclusions: Speech delay without any specific diagnosis was observed in 63% of children. A statistically significant association was found between speech delay and a history of feeding problems and excessive screen time.

Keywords: Speech delay, Receptive language age, Expressive language age, Combined language age

INTRODUCTION

Speech is an essential tool for humans to communicate and connect with each other in their daily lives. Verbal communication relies on speech which is the vehicle for expressing thoughts through combined sounds. Speech is the verbal expression of language, whereas language is the intellectual interpretation of communication. Language consists of two parts: receptive language

(understanding) and expressive language (the ability to convey information, feelings, thoughts, and ideas).¹

A child's overall growth and intelligence can be gauged by their intelligent speech and language. Speech disorders refer to impediment in effective communication with others. Speech delay is when, a child is not developing speech milestones at expected time.

The prevalence of speech delay varies across populations, ranging from 5% to 15% in preschool children.^{2,3} A higher prevalence has been observed in developing countries.⁴ Several factors have been implicated in the development of speech delay, including genetic predisposition, environmental influences, and socioeconomic factors. Psychosocial deprivation, developmental disorders, intellectual disability, inadequate stimulation, multilingual environment and increased screen time⁵ are some of the risk factors associated with speech delay. An increase in speech delay has been reported in the post-COVID period, possibly due to psychosocial deprivation and increased screen exposure. Speech delay may adversely affect academic performance, psychosocial development, and mental health in later life, which include low self-esteem, poor scholastic performance, social anxiety, emotional stress and mental illness.

Early identification of speech delay in children is crucial for effective intervention as it lessens the consequences and enhance the child's social skills and academic achievement. The interventions include speech therapy, parent participation, augmentative and alternative communication, and therapies.^{6,7} Therefore, early identification of risk factors and intervention is beneficial to a child's mental health, academic performance, and social welfare. The findings of this study will contribute a better understanding of the multifaceted nature of speech delay and provide valuable insights for clinicians and public health professionals. This study aimed to describe the profile of children presenting with speech delay without any specific diagnosis at a tertiary care early intervention centre and to identify associated clinical and sociodemographic factors.

Objectives

Primary objectives were to describe the profile of children presenting with speech delay without any known diagnosis to REIC, Medical College Kottayam. Secondary objectives were to determine the clinical and sociodemographic factors associated with speech delay without any known diagnosis.

METHODS

Study design and setting

A record-based cross-sectional study was conducted at the REIC, Institute of Child Healthcare (ICH), Medical College Hospital, Kottayam.

Study population

The study population comprised children aged 2-12 years who presented with speech delay to REIC, ICH, Kottayam, without any underlying specific diagnosis such as autism spectrum disorder, attention deficit

hyperactivity disorder, or gross motor developmental delay.

Inclusion criteria

Case records of children presenting with speech delay to REIC, ICH, Kottayam, without any specific diagnosis such as autism spectrum disorder, attention deficit hyperactivity disorder, or gross motor developmental delay were included.

Exclusion criteria

Case records with incomplete or missing details were excluded from the study.

Sample size

All case records of children presenting with speech delay without a specific diagnosis during the period from January 2022 to December 2022 were included. A total of 506 case records were screened and analysed.

Operational definitions

Speech delay

A condition in which a child fails to develop speech abilities within the expected age-appropriate developmental period.⁸

Feeding problems

Presence of difficulty in sucking or swallowing (poor latch during breastfeeding, weak sucking reflex), refusal to feed, or gastroesophageal reflux.

Expressive language

The processes and skills involved in encoding meaning into oral language for communication. The highest age interval for which the child achieved at least two out of three predefined expressive language milestones was considered the expressive language age (ELA).⁹

Receptive language

The coordinated sensory-neural and auditory-perceptual processes involved in decoding and comprehending oral language. The highest age interval for which the child achieved at least two out of three predefined receptive language milestones was considered the receptive language age (RLA).⁹

Combined language age

Combined language age (CLA) is calculated from the ELA and RLA. Scoring for CLA is described as the arithmetic mean of the lower limits of RLA and ELA. i.e., $CLA = (RLA + ELA) / 2$

All children with CLA inappropriate to age were considered to have speech delay.

Study procedure

After obtaining permission from the Medical Officer at REIC, ICH, Kottayam, case records of children who attended the centre were reviewed with the assistance of the speech therapist employed at the centre. All case records of speech delay with a specified diagnosis like autism were excluded from the study and data were collected using a semi-structured proforma based on the REELS, developed with the assistance of the speech therapist. Speech delay was assessed by speech therapist using calculated CLA. Those children with CLA inappropriate to age were considered to have speech delay.¹⁰

Data analysis

The data obtained from the case records were entered into MS excel which was coded and analysed using IBM SPSS version 20. Qualitative data was expressed as proportions and quantitative data expressed as mean and standard deviation.

Associations between speech delay and categorical variables were assessed using the chi-square test or Fisher's exact test, as appropriate. A $p < 0.05$ was considered statistically significant.

RESULTS

During the study period, a total of 1613 children with speech delay attended the REIC. Of these, 506 children without any specific underlying diagnosis were included for analysis. Most children (73.5%) presented with speech delay as the sole complaint, while a substantial proportion had additional developmental or behavioural concerns.

The study population predominantly comprised preschool-aged children, with a male preponderance. The mean age of the study subjects was 4.06 years with a standard deviation of 2.14. The median age group was 3.5 years with an interquartile range of 2.5. Majority of the study subjects (39.3%) were in the age group 3-5 years and were males (75.3%). A larger proportion of children belonged to families below the poverty line. Parental occupational profiles showed that a majority of mothers were unemployed, while fathers were predominantly engaged in skilled or semi-skilled occupations (Table 1).

Mean maternal age was 27.95 ± 4.66 years and mean paternal age was 33.16 ± 4.90 years. With respect to maternal and perinatal factors, most children were first-born and were delivered at term. A small proportion had not cried immediately after birth. Feeding-related difficulties and oromotor weakness were noted in a subset of children (Table 2).

Assessment of language development using CLA revealed that nearly two-thirds of the children had language age inappropriate for their chronological age, indicating speech delay (Figure 1). Total 320 subjects (63.2%) with a calculated CLA inappropriate to age were considered to have speech delay.

Environmental and biological factors associated with speech delay are presented in Table 3. Excessive screen time exposure and feeding problems were found to have a statistically significant association with speech delay on univariate analysis. No significant association was observed between speech delay and factors such as gender, socioeconomic status, maternal occupation, or history of delayed cry after birth (Table 5).

A considerable proportion of children presented with additional complaints alongside speech delay. These included behavioural, scholastic, and social interaction difficulties, highlighting the coexistence of multiple developmental concerns in this population (Table 4). No statistically significant association was observed with speech delay and other factors like gender, socioeconomic status, occupation status of mother etc.

Table 1: Distribution of study participants based on demographic details.

Variables	Parameters	N	Percentage
Age group (in years)	Less than 3	160	31.6%
	3-5	199	39.3%
	5-7	82	16.2%
	More than 7	65	12.8%
Gender	Male	381	75.3%
	Female	125	24.7%
Socio economic status	APL	227	44.9
	BPL	279	55.1
Occupation of father	Unemployed	3	0.6
	Unskilled	102	20.2
	Semiskilled	42	8.3
	Skilled	183	36.2
	Clerical/ shop owner	98	19.4
	Semi-professionals	34	6.7
	Professionals	41	8.1
Occupation of mother	Unemployed	343	67.8
	Unskilled	9	1.8
	Semiskilled	11	2.2
	Skilled	34	6.7
	Clerical/ shop owner	13	2.6
	Semi-professionals	23	4.5
	Professionals	73	14.4
One of the parents abroad	Yes	40	7.9%
	No	466	92.1%

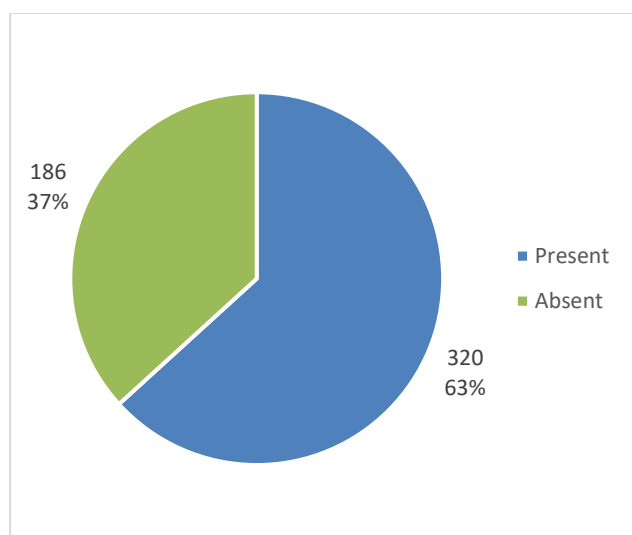


Figure 1: Distribution of study subjects with speech delay based on CLA.

Table 2: Distribution of study participants based on maternal factors and postnatal factors.

Variables	Parameters	N	Percentage
Birth order	1	296	58.5%
	2	174	34.4%
	3	34	6.7%
	4	2	0.4%
Maturity at delivery	Preterm	39	7.7%
	Term	465	91.9%
	Post term	2	0.4%
Cried immediately after birth	Yes	461	91.1%
	No	45	8.8%
Other maternal complications	GDM	36	7.1
	Gestational hypertension	9	1.8

Table 3: Distribution of study subjects based on biological and environmental factors.

Biological and environmental factors	N	Percentage	
Feeding problem	24	4.7 %	
Oromotor weakness	62	12.3%	
Gross motor delay	42	8.3%	
Handedness	Left	19	3.8
	Right	483	95.5
	Forced switch	4	0.8
Excessive screen time	100	19.8	
Unclear speech	162	32.01	
Other complaints	372	73.5	

Other complaints include hyperactivity, poor scholastic performance, poor eye contact, speech regression, stubborn behaviour, poor mingling with peers, writing difficulty, difficulty in concentration, aggressive behaviour, poor response to call.

Table 4: Distribution of study subjects based on complaints reported along with speech delay.

Complaints other than speech delay	N	Percentage
Hyperactivity	37	7.3
Poor scholastic performance	40	7.9
Poor eye contact	10	2
Speech regression	10	2
Stubborn behavior	7	1.4
Poor mingling with peers	5	0.99
Writing difficulty	4	0.8
Difficulty in concentration	4	0.8
Aggressive behavior	5	0.99
Poor response to call	3	0.6
Others	17	3.4

Table 5: Summary of table showing variables statistically significant with speech delay on univariate analysis.

Factor with highest percentage			Chi square value	P value
Gender	Male	65.1%	2.27	0.132
Parents abroad	Yes	70.0%	0.85	0.352
Socioeconomic status	BPL	63.4%	0.11	0.918
Occupation of mother	Unemployed	65.6%	2.54	0.111
Cried immediately after birth	Yes	63.3%	0.22	0.882
Feeding problem	Present	87.5%	Fishers exact test	0.015
Excessive screen time	Present	77%	10.14	0.001

DISCUSSION

The current study found that a higher proportion of children with speech delay were males (75.3%). This is consistent with numerous studies conducted in India and globally, which have reported a higher prevalence of speech delay in male children.^{11,12} This finding is consistent with previous studies reporting a higher prevalence among males.

Previous Indian studies have reported a wide variation in the prevalence of speech and language delay. Using the Language Evaluation Scale Trivandrum (LEST) among children aged 0-3 years, the prevalence ranged from 7.5% to 13.5% across hospital- and clinic-based studies.¹⁶

In contrast, a study among children aged 1-5 years using standardized tools such as REEL-3 and DDST-II reported a higher prevalence of 32.5%, suggesting that prevalence

estimates vary with age group and assessment tools used.¹³

The study also shows that a majority (55.1%) of the children with speech delay came from families below the poverty line (BPL). However, this was not found to be statistically significant in the univariate analysis. This contradicts with some studies which have reported a significant association between lower SES and an increased risk of speech delay.¹⁴ This difference may be due to other factors in the study population, such as parental education or access to healthcare.

Several maternal and postnatal factors were explored in the study. It has found that a statistically significant association was observed between feeding problems during infancy and speech delay ($p=0.015$). Similar findings were observed in studies that highlight the importance of early feeding skills and oral motor development for speech and language acquisition. Children with feeding difficulties in infancy may have underlying oral motor impairments that also affect their speech development.

It has been observed that excessive screen time and speech delay has shown a statistically significant association with a $p<0.001$). With the increasing availability of electronic devices, children are exposed to more screen time especially post covid. Screen time may limit children's interaction with caregivers and peers, which is a crucial component for language development. Similar findings were observed in different studies done across the globe.^{5,12,17}

A significant proportion (73.5%) of children with speech delay presented with other complaints, including hyperactivity (7.3%), poor scholastic performance (7.9%), and unclear speech (32.01%). This is consistent with previous studies that have reported other developmental and behavioural problems along with speech delay.¹⁸

This highlights the importance of comprehensive assessment of children with speech delay to address any co-occurring conditions.

Limitations

The record-based cross-sectional design limits causal inference. As the study was conducted at a single tertiary care centre, generalizability to the community may be limited. Further research is needed to develop culturally appropriate interventions and support programs for families of children with speech delay.

CONCLUSION

The current study based on REELS, contributes valuable insights into the prevalence and associated factors of speech delay. Speech delay without a specific diagnosis

was observed in nearly two-thirds of children attending the REIC. A high rate of co-occurrence of other complaints, such as hyperactivity and poor scholastic performance was also observed in the study. Feeding problems and excessive screen time were significantly associated with speech delay. Early detection of speech delays, followed by timely interventions, parental education and support, is pivotal in enhancing children's communication skills and overall development.

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REFERENCES

1. McLaughlin MR. Speech and Language Delay in Children. *AFP*. 2011;83(10):1183-8.
2. Sunderajan T, Kanhere SV. Speech and language delay in children: Prevalence and risk factors. *J Family Med Prim Care*. 2019;8(5):1642-6.
3. Binu A, Sunil R, Baburaj S, Praneesh M. Sociodemographic profile of speech and language delay up to six years of age in Indian children. *Int J Med Res Health Scie*. 2014;3(1):98.
4. Dey R, Kumar S, Kumar T, Davessar JL. Variety of speech and language disorders reporting at a tertiary care hospital in Malwa belt of Punjab, India. *Clin Epidemiol Global Heal*. 2017;5(2):48-51.
5. Varadarajan S, Venguidesvarane AG, Ramaswamy KN, Rajamohan M, Krupa M, Winfred Christados SB. Prevalence of excessive screen time and its association with developmental delay in children aged <5 years: A population-based cross-sectional study in India. *PLOS One*. 2021;16(7):e0254102.
6. Sunderajan T, Kanhere SV. Speech and language delay in children: Prevalence and risk factors. *J Family Med Prim Care*. 2019;8(5):1642-6.
7. Wallace IF, Berkman ND, Watson LR, Coyne-Beasley T, Wood CT, Cullen K, et al. Screening for Speech and Language Delay in Children 5 Years Old and Younger: A Systematic Review. *Pediatrics*. 2015;136(2):e448-62.
8. Developmental Language Disorder. NIDCD. 2023. Available at:

- <https://www.nidcd.nih.gov/health/developmental-language-disorder>. Accessed on 20 May 2026.
9. Speech and Language Developmental Milestones. NIDCD. 2022. Available at: <https://www.nidcd.nih.gov/health/speech-and-language>. Accessed on 20 May 2026.
 10. Appendix D - Tests of General Development and Specific Speech/language Assessment Tests for Young Children. Available at: https://www.health.ny.gov/community/infants_children/early_intervention/disorders/appendix_d.htm?utm_source=chatgpt.com#reel. Accessed on 20 May 2026.
 11. Nelson HD, Nygren P, Walker M, Panoscha R. Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force. *Pediatrics*. 2006;117(2):e298-319.
 12. Raheem A, Khan SG, Ahmad M, Alvi FJ, Saleem K, Batool S. Impact of Excessive Screen Time on Speech and Language in Children. *J Liaquat University Med Health Sci*. 2023;22(03):155-9.
 13. Sudarssanam S, Pradheep DR, Bharanidharan. Assessment of speech and language delay among 0-3 years old children attending well-baby clinics using Language Evaluation Scale Trivandrum. *Int J Med Pharmaceut Res*. 2026;7:2641-8.
 14. Mondal N, Bhat BV, Plakkal N, Thulasingham M, Ajayan P, Rudhan PR. Prevalence and Risk Factors of Speech and Language Delay in Children Less Than Three Years of Age. *J Comprehensive Pediatr*. 2016;7(2):1-7.
 15. Yudhasmara A, Adani AK, Dewi IN, Judarwanto W, Yudhasmara S. Picky Eating In Children: Oral Motor Disorder and Delayed Speech as Risk Factor. *J Social Sci*. 2024;3(2):1285-93.
 16. Kesavelu D, V P. Association of Screen time and Speech Delay among Pre-School Age Children – An Exploratory Study. *Indian J Pediatr*. 2023;90(12):1260.
 17. Alamri MM, Alrehaili MA, Albariqi W, Alshehri MS, Alotaibi KB, Algethami AM. Relationship Between Speech Delay and Smart Media in Children: A Systematic Review. *Cureus*. 2023;15(9):e45396.
 18. Reilly S, Tomblin B, Law J, McKean C, Mensah FK, Morgan A, et al. Specific language impairment: a convenient label for whom? *Int J Lang Commun Disord*. 2014;49(4):416-51.

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