

Behavioural Profile, Linguistic skills, Adaptive Behaviours and Intellectual Functioning of School aged Children with History of Early Language Delay

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Abstract

Introduction: Language is a fundamental skill and a foundation stone for multiple cognitive and socio-emotional aspects of development. Considering that well-developed language abilities enable children to negotiate the social-relational demands of school life and provide the foundational knowledge upon which academic skills are built, there is a higher chance of scholastic difficulties, social and, behavioural and emotional maladjustments resulting in poor mental health in those who have language delay.

Methods: An ambispective study was conducted at a tertiary centre after taking ethical approval from the institutional review board. Children with isolated early language delay were reassessed at school age for intelligence quotient, language development, adaptive behaviours and behavioural issues.

Results: Out of 57 children, persistence of poor language skills was seen in 65%, mean IQ score was 90 (± 17.067) and mean VABS score was 94 (± 15). 61.4% children had significant behavioural issues. On interview, most worrisome issue reported by children was 'being teased by friends' due to poor language skills. Additionally, lower social competence level was noted in children who had poor language skills.

Conclusions: Persistence of language, cognitive and behavioural dysfunctions in children with seemingly benign 'speech and language delay' at an early age, emphasizes the importance of comprehensive reassessment of these children at school age for early recognition and management.

Introduction

Language acquisition is one of the most important components of a child's development and represents actions in symbolic form, communicating ideas, intentions, and emotions. Effective communication is necessary for social-emotional development, learning, and effective functioning in society. The failure of attainment of a predictive pattern of language development can lead to social incompetence and hence poor emotional and behavioural development and academic underachievement.

A young child is labelled as having a "delayed speech" when their speech and / or language development is lower as compared to other children matched for age, sex, cultural background, and intelligence.¹ Speech delay is a common condition and around 30% of parents have concerns about the language development of their children during primary visit to a paediatrician.² Atypical language development in children can be a secondary characteristic of other physical and neurodevelopmental disorders

that may manifest as language delay in early life. However, when no other etiology can be attributed, it is termed as primary language delay (PLD).³ Approximately 5 - 16% of children aged two to five years are reported to have a PLD, not associated with any other developmental or neurological problem with a higher proportion in boys, twice as likely as girls.¹ Exclusive expressive language delays, on the other hand, are reported in 13.5 - 17.5% of children at the age of 18 - 36 months.⁴ In India, the estimated prevalence of speech and language delay in toddlers ranges from 2 - 27% depending on the age, the test used, region screened, and presence of any underlying neurodevelopmental disorder.⁵⁻⁸

Though language disorders are common in young children, their effect on behaviour, adaptive functions and emotional development in these children, later in life is understudied. This study aims to find out the language development, intelligence quotient (IQ), adaptive functioning and behavioural issues of young children with PLD when they reach school age.

Methods

An ambispective study conducted at the Child Development Centre in Kerala, India, over a period of six months (from 1 June 2019 to 30 November 2019), among 57 school aged children (Six to eight years). The study was approved by the Institutional Ethics Committee. Children aged six to eight years and attending regular school with a history of PLD, were included. The diagnosis of PLD was made in these children at the age of 24 to 30 months using receptive and expressive language scale (REELS) with composite language measure < -1.25 SD below the mean.⁹ All children in whom delay in early language development could be explained by underlying developmental disorder and sensory impairments (E.g. autism spectrum disorder, global developmental delay, cerebral palsy, major congenital malformations metabolic disorders and genetic syndromes, neuromuscular disorders, high risk neonates, and hearing and vision impairment) were excluded. Medical history and sociodemographic data of these children were retrospectively documented from the previous records and note was made for receipt of regular speech therapy after the initial diagnosis of PLD. These children were prospectively assessed for language, cognition and behaviour at six to eight years of age and performance in school, and peer interaction were recorded. Language skills were assessed by linguistic profile test (LPT), translated into Malayalam.¹⁰ The test measures receptive and expressive language and is a comprehensive norm based

standardized test consisting of all components of language. The raw scores and the total score were computed as per the manual for each child. Intelligence was assessed by Malin Intelligence Scale for Indian Children (MISIC), which measures verbal and performance abilities.¹¹ The cumulative score of the verbal and performance subscales was used to attain the full-scale IQ. Malayalam version of Childhood Behaviour Checklist, six to 18 years (CBCL), was used to screen for emotional, behavioral, and social problems in our study.¹² The questions are associated with problems on a syndrome scale in eight different categories and scoring is done on 3- point Likert scale. Scores are summed to give the internalizing problems score, externalizing problems score, and total problems composite score. These are converted to t scores with scores > 70 considered as "clinically significant." Adaptive functioning was assessed by Vineland Adaptive Behaviour scale-II (VABS-II) which measures a child's daily living and adaptive skills. It consists of four major domains: communication, socialization, daily living skills and motor skills with adaptive behavior composite score. It also consists of maladaptive behavior domain. The tool was administered and scored as per the manual. Standard scores and v-scale scores for each domain and sub domain were calculated to assess the adaptive level of the child.¹³ In presence of parental concerns or clinical features, children were further subjected to clinical evaluation of comorbidities like learning disability (LD) and Attention deficit hyperactivity disorder (ADHD) using Diagnostic and Statistical Manual of Mental disorders-5th edition (DSM-V).¹⁴ Data was entered using Microsoft word excel and analyzed by SPSS version 25. Descriptive statistics like frequency, mean, percentage, standard deviation were used to express the result. The difference between continuous variables was computed by student's t-test or ANOVA and the chi-square test was used for categorical variables. A p-value < 0.05 was considered significant.

Results

Out of 57 children, 41 were boys and 16 were girls (2.5:1). Mean age at initial diagnosis of PLD was 30.5 months (± 10.4 months) and at follow up was 7.1 years (± 1.2 years). Literacy rate was 100% in family, with slightly higher education status in mothers than fathers. None of the families belonged to lower socioeconomic status according to the modified Kuppuswamy scale and none had malnutrition according to WHO standards.¹⁵ (Table 1)

65% children showed persistent language problems (PLP) at

school age and 35% had appropriate language skills (ALS). On comparing children who had received speech therapy versus those who did not, it was seen that no child had PLP in speech therapy group as compared to 71% of those who had not received speech therapy (p value = 0.006). There was no significant difference in gender distribution of PLP at school age (61% boys vs 75% girls). The mean LPT score of the total study population was 235.4 (\pm 18.09), ALS group had 256.2 (\pm 3.6), and 224.2 (SD 11.5) in PLP group (p value = 0.002). The range of IQ score was 52 - 113 with a median of 95.17 children (30%) had IQ < 90 out of which 10 children's IQ score was < 70 and no significant difference in gender distribution. Among children with IQ < 70, none had age appropriate language skills (ALS) (p value = 0.003). The IQ range of five children who had received specific intervention for language delay at two to three years of age was 85 to 103 (mean and SD 93.6 \pm 6.5). The mean LPT score of children with IQ < 70 was 215.3 \pm 12.8 as compared to 231.8 \pm 5.8 in children having normal IQ with PLP (p value = 0.04). On VABS-II, the mean adaptive behaviour composite score was 94 (SD \pm 15). The mean communication domain score was 90 (\pm 17), and 32% children had low adaptive level with expressive subdomain most affected. The adaptive levels were low average in 15% children in socialization skills and 12% in daily living skills. Only two children were affected in motor skill domain. On maladaptive behaviour index 45% children showed clinically significant problems. There was no significant association between language skills and maladaptive behaviour index (p value 0.64), however, there was a significant association between low IQ levels and maladaptive behaviour index (p -value 0.042). It was seen that although the overall adaptive composite score of the group was average, the expressive communication was low in 28% children and the association of low LPT score with low expressive communication score was statistically significant (p -value 0.03). On CBCL, 33% children showed clinically significant internalizing problems and 16 children had significant externalizing behaviour issues. Among ALS children, internalizing issues were present in 35% whereas externalizing issues were present in 25%. The association between PLP and behavioural issues was clinically not significant (p value = 0.62). On competence scales, 89.5% of children had clinically significant low levels of competence. Although the overall competence level of the whole group was low, it was affected more in children with PLP (p -value < 0.05). 21% children with normal IQ had

clinical features of learning disability, out of which nine children had PLP (p -value = 0.410). Features of ADHD were present in 10 children in the whole study population, however, no significant association was seen between the PLP and ADHD (p -value = 0.704). On interview, at least 61% of children showed features of anxiety, anger issues, rule-breaking behaviour, and defiance. The most upsetting issue reported by children was 'being teased by friends' at school for their poor language skills.

Discussion

Well-developed language skills are a prerequisite for healthy social existence, behavioural development, and academic skills. Thus, a comprehensive reassessment of all children having a history of language delay is suggested when they reach school age, so as not to miss any associated behavioural, emotional, cognitive, language and academic problems. This study found that language and speech problems persisted in around 65% of children at school age. Earlier studies have shown a similar prevalence ranging from 40 - 60% depending upon the test used, profile of children, and sociodemographic factors.^{3,16} In this study, five children who had taken regular speech therapy at initial diagnosis of PLD had appropriate language skills at school age. The average language score of these children was better than the mean score of the total study population. Though a statistical significance could not be established in this study, the importance of early intervention cannot be overlooked. A similar study found that children with expressive language delay who received the structured intervention had better language skills after three years as compared to those who did not.¹⁷

Language delay and problem behaviours are frequently coexisting entities. It has been seen that behavioural issues are a common association with language delays in toddlers, pre-schoolers as well as older children. In this study, around 61% children had features of problem behaviours such as anger, anxiety, rule-breaking behaviour and defiance. A large longitudinal study in New Zealand among children with language delay at three years, predicted significantly higher behavioural problems at ages seven, nine and 11 years, compared with children having normal language development.¹⁸ Various other studies have seen language delay to be more common in children with problem behaviours.^{19,20}

On interviewing children, around 66% reported to have

difficulties at school e.g. problems in making friends, not feeling welcomed in the peer groups, being bullied and being teased by friends due to poor language skills. This is an interesting observation because many children might not share their struggles at school with the parents and may suffer from emotional and behavioural trauma leading to psychiatric issues later in life. It was seen that approximately 10 - 15% of children showed low adaptive levels in socialization and daily living skills. Although the total maladaptive behaviour index of the study population was low, all children with low IQ showed maladaptive behaviours. There are fewer studies which have explored the adaptive functioning of typically developing (TD) children with language delay at a later age, however, one study from Italy on preschool children showed lower sociability in those with expressive language delay as compared to those who did not.²¹ Another important observation of this study was the low overall competence level, more so in children with PLP (p value < 0.005), however, this low competence could be attributed to other factors like lack of opportunity, cultural practice, increased screen-time etc. To assess, whether the low competence in these children is due to speech and language delay or due to environmental and cultural factors, further studies are required.

Previous studies have shown that impaired language skills may be an early feature of neurodevelopmental disorders including ID, LD, ASD and ADHD. Frequently, delayed language acquisition is one of the first signs of ID and clinician needs to determine the accordancy of language skills with the nonverbal mental expectations. A study estimated that approximately 50% of children with nonspecific ID had language skills commensurate with nonverbal abilities.²⁰ In this study, even with normal development documented at an earlier age around 17% of children had subnormal IQ (IQ < 70) later at school age and all of them had PLP, as expected (p - value < 0.005). Previous literature has reiterated the fact that language delay, specifically receptive, may be a sign of mental sub-normality in children.²⁰ In this study, although none of the children had GDD as assessed by a screening tool at a younger age (usually present in children with ID), this important finding cannot be overlooked. Developmental screening tools may not be sensitive enough to pick mild GDD at a younger age and therefore, a detailed developmental assessment is warranted in all young children presenting with language delay initially.

In our study, 21% children with normal IQ had learning problems and 19% had ADHD. None of these belonged to

ALS category. A report by American Speech and Hearing Association reveals that 17 to 38% of children diagnosed with language disorders also have comorbid ADHD which is a frequently encountered challenge for school-based speech-language pathologists and other practitioners.¹ A study on language skills of children with ADHD showed that 50% of children with ADHD had been referred to a speech-language pathologist in their early preschool years.²² Also, literature suggests that six to eight years old children with learning problems showed significantly slower speech and language development as compared to the controls, without any difference in nonverbal ability.²³ Therefore, it is important to screen such children actively for ADHD later in life, to allow for timely intervention.

In today's competitive world, importance is only given to the child's academic performance, often forcing parents to overlook the critical clues to the emotional and behavioural problems; a child may be going through. These problems may be the root cause for scholastic difficulties and requires an early identification and timely intervention. Being centre-based with small sample size, this study does not allow generalization of the results. A lack of a control group has made it difficult to confirm the association between the language delay and the presence of behavioural issues and neurodevelopmental outcomes in our study. Further studies are recommended, especially community-based, which might help in the identification of the problem on a larger magnitude at the community level.

Conclusions

The long-term impact of early language delays on behaviour, adaptive functions and emotional development in later childhood is humongous yet understudied. These issues like persistence of poor linguistic skills, presence of externalizing and internalizing behavioural issues, poor cognition and academic underachievement may present later in children with history of early language delay.

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