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Original Article

Prevalence and Risk Factors of Speech and Language Disorders in Young Children: A Cross-Sectional Study in a Pediatric Rehabilitation Ward

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ABSTRACT

Background: Speech and language disorders in young children can have substantial impacts on their social, emotional, behavioral, and cognitive development. Understanding the prevalence and risk factors associated with these disorders is crucial for early intervention and effective treatment strategies.

Objective: This study aimed to assess the prevalence and risk factors of speech and language disorders in young children presenting to a Pediatric Rehabilitation Ward, to identify the demographic and socioeconomic characteristics associated with these conditions, and to evaluate the therapy patterns utilized in management.

Methods: An observational cross-sectional study was conducted at the Pediatric Rehabilitation Ward of Liaquat University Medical and Health Sciences, Jamshoro Hospital, from May to August 2022. A total of 400 patients, aged 2-10 years and diagnosed with speech-language disorders by a psychiatrist, were included through non-probability convenience sampling. Data on demographics, socioeconomic status, therapy patterns, and diagnostic information were collected through questionnaires and analyzed using SPSS version 25.

Results: The study found that language delay was the most prevalent disorder, affecting 61.8% of the children. Males were more frequently affected (68.5%). Seizures were the most commonly reported medical condition in the sample (18.5%). The mean age at diagnosis was 3.58 years. A considerable number of children (38.0%) had a positive family history of speech-language disorders. Socioeconomic analysis revealed that a majority of the children (68%) came from middle-class families. The study also found that combined speech and behavioral therapy was the most common treatment approach (28.8%).

Conclusion: Language delay is the most common speech-language disorder among children in this study, with a higher prevalence in males and those from middle-class families. Early detection and a multidisciplinary approach to treatment, including both speech and behavioral therapy, are imperative for effective management.

Keywords: Speech-Language Disorders, Language Delay, Pediatric Rehabilitation, Developmental Disorders, Early Diagnosis, Behavioral Therapy, Socioeconomic Factors, Cross-Sectional Study.

INTRODUCTION

Communication disorders encompass impairments in an individual's capacity to understand, articulate, and effectively utilize language, which can detrimentally affect academic achievement (1). The significance of speech and language in the multifaceted domains of a child's development—social, emotional, behavioral, and cognitive—cannot be overstated (2). These disorders are prevalent, with up to 15% of toddlers identified as delayed talkers and approximately 7% of children experiencing persistent impairments in language development (3). Speech disorders are typically categorized into three distinct types: articulation disorders, which involve difficulties in speech-sound production; fluency disorders, such as stuttering; and phonation disorders, which affect

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the quality, pitch, loudness, and resonance of vocal production (4). Articulation disorders are characterized by dysfunction in speech production mechanisms, whereas phonation disorders relate to the production and amalgamation of speech sounds into coherent speech (5). Developmental delays and conditions such as autism frequently result in pronounced language development delays, with dysarthria—a motor speech disorder impacting breathing, laryngeal function, and articulation—contributing to speech clarity and quality issues (6, 7). Cerebral palsy, a leading cause of motor abnormalities, is marked by abnormal muscle tone, posture, and movement (8). Attention-deficit/hyperactivity disorder (ADHD) is a prevalent neurobehavioral condition affecting 4-12% of school-aged children, influencing academic success, well-being, and social interactions; speech-language and communication difficulties are often concurrent (9, 10). Children with mental retardation and Autism Spectrum Disorders (ASD) may exhibit abnormal speech development levels, necessitating assessments by speech-language pathologists for accurate diagnosis and treatment (11, 12). The etiology of speech and language disorders is complex and multifaceted, with genetic associations playing a significant role (13). In children with cerebral palsy, language issues were found to be more common than swallowing difficulties (14).

Risk factors for speech disorders include gender, being an only child, familial history of speech-language pathology, audiological changes, harmful oral habits, and extended postnatal hospitalization (15). Cognitive conditions—such as hearing impairments, genetic anomalies, brain abnormalities, metabolic disorders, exposure to toxins, nutritional deficits, brain trauma, and epilepsy—also contribute significantly (16). A study testing a representative sample of 1,655 five-year-old kindergarten children identified 180 with speech or language impairments, highlighting the need for comprehensive assessment (17). Research in the United States has explored the relationship between demographic and socioeconomic factors and the prevalence of developmental disabilities, including ASD, noting significant trends between 2009 and 2017 (18). However, limitations in referral systems hinder effective care and progression (19). A 2010 study in Pakistan pointed out the substantial neglect of learning difficulties among children in both government and public sectors, with no significant efforts made towards remediation (20, 21).

The importance of developmental surveillance in identifying children with developmental delays cannot be understated, emphasizing the need for region-specific risk factor analyses in Pakistan and annual trend studies on the prevalence and incidence of speech-language disorders. Such research should include descriptive analyses of sociodemographic variables to enhance understanding and intervention strategies. Early diagnosis and intervention, particularly during the critical language learning period of 2-10 years, are crucial for a child's behavioral progress. Moreover, assessing the association between a child's medical history and diagnosed disorder is vital for uncovering the underlying etiologies of speech-language disorders, whether primary or secondary to the issues outlined in this study.

MATERIAL AND METHODS

This observational cross-sectional study was conducted at the Pediatric Rehabilitation Ward of Liaquat University Medical and Health Sciences (LUMHS), Jamshoro Hospital, from May to August 2022. Utilizing a non-probability convenience sampling technique, data were collected from 400 patients visiting the Pediatric Rehabilitation Ward. The research protocol received approval from the Research Ethics Committee of LUMHS, Jamshoro (LUM/REC/-91) on May 9, 2022, ensuring compliance with the ethical standards stipulated in the Declaration of Helsinki. Prior to participation, written informed consent was obtained from the parents of the patients, with a strict adherence to the principles of anonymity and confidentiality of participants' information throughout the study. Eligibility criteria included both male and female patients aged between 2 and 10 years, diagnosed with speech-language disorders by a psychiatrist. The study excluded cases with incomplete data and those falling outside the domain of speech-language pathology. Data collection encompassed demographic, socioeconomic variables, therapy patterns, and diagnostic and therapeutic management strategies by parents and speech therapists. Variables such as age, gender, birth weight, family size, family history of speech-language disorders, consanguinity, education levels of the child and parents, residential status, socioeconomic status, medical history, age at diagnosis, type of diagnosis, and therapy patterns were meticulously recorded. Diagnostic information was verified by a psychiatrist, while therapy-related data were provided by speech therapists, and parental information was furnished by the parents themselves. Given the clinical setting of speech-language therapy clinics, it was presumed that patients were referred to speech therapists following a psychiatric diagnosis.

Data compilation was carried out using Microsoft Excel, and subsequent descriptive analysis was conducted using SPSS version 25. Statistical significance was established at a probability value of ≤0.05. Quantitative variables, such as the age of diagnosis, were presented as mean ± standard deviation (SD) in histograms. In contrast, qualitative variables, including therapy patterns and the type of disorder diagnosed, were depicted in graphical formats. Frequency and percentage in cross-tabulation tables represented all other qualitative variables.

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RESULTS

In the investigation of speech and language disorders among young children, the study delineated several key findings. The demographic profile, as outlined in Table 1, indicated a preponderance of disorders in males, accounting for 68.5% of the cases. A substantial majority of the children (78.3%) had a normal birth weight. However, a noteworthy 20.5% of the participants had a birth weight lower than 2.5 kilograms, with a minimal 1.3% exceeding 4 kilograms. A diverse representation of ethnicities was observed, with Sindhi children constituting the majority at 69%, followed by Punjabi (20.5%), Urdu-speaking (6.8%), and Balochi (3.8%). An almost even split was evident in residential status, with urban dwellers slightly surpassing their rural counterparts at 56%.

Table 1: Demographic Characteristics of Study Participants

Variables	Frequency	Percentage (%)
Birth Weight		
Normal (2.5-4 kg)	313	78.3
Less than normal (<2.5 kg)	82	20.5
Greater than normal (>4 kg)	5	1.3
Gender of Child		
Male	274	68.5
Female	126	31.5
Family History of Disorder	152	38.0
No	248	62.0
Ethnicity of Child		
Sindhi	276	69.0
Urdu Speaking	27	6.8
Punjabi	82	20.5
Balochi	15	3.8
Residential Status		
Urban	224	56.0
Rural	176	44.0
Performance of Child		
Satisfactory	32	8.0
Average	155	38.8
Dissatisfactory	213	53.3

Table 2: Demographic and Family Characteristics of Study Participants

Variables	Frequency	Percentage (%)
Education of Mother		
Less than high school	133	33.3
High school or some college	207	51.8
College or above	60	15.0
Education of Father		
Less than high school	70	17.5
High school or some college	235	58.8
College or above	95	23.8
Socioeconomic Status		
Lower class	41	10.3
Middle class	272	68.0
Upper class	87	21.8
Cousin Marriage		
Yes	196	49.0
No	204	51.0

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Variables	Frequency	Percentage (%)
Age at Which Parents Notice There is a Problem	74	18.5
Above one year	326	81.5
Who Noticed Disorder		
Parents	357	89.3
Teachers	8	2.0
Others	35	8.8

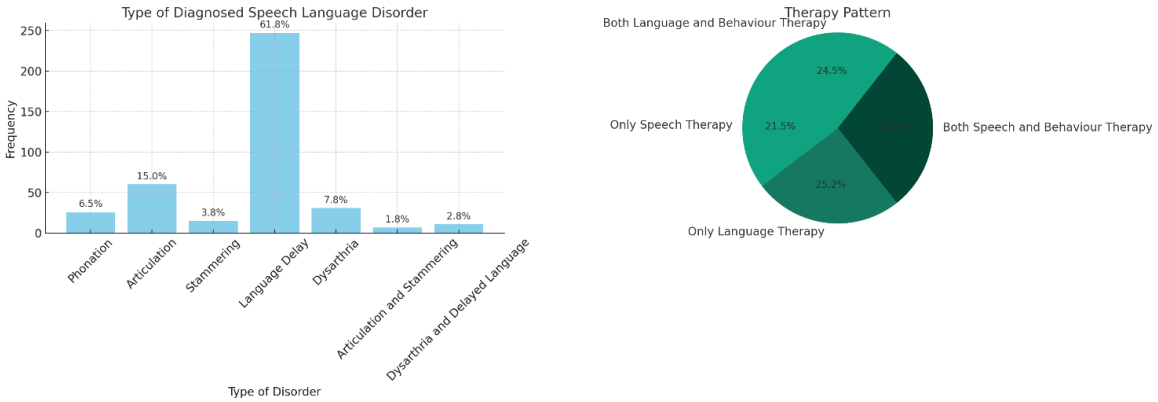

Figure 1 Disorder Type and Therapy Pattern

In terms of family characteristics depicted in Table 2, it was apparent that a higher level of education was more prevalent among fathers than mothers, with 58.8% of fathers having completed high school or attended some college, compared to 51.8% of mothers. Interestingly, a considerable 49% of the children came from families with a history of cousin marriages. Regarding the age at which parents first noticed a problem, the majority (81.5%) observed issues after the first year of the child's life, with parents being the first to identify the disorder in 89.3% of cases.

The types of speech and language disorders diagnosed among the participants varied significantly, as represented in Figure 1. Language delay was by far the most common diagnosis, constituting 61.8% of the cases. Other disorders such as articulation and phonation disorders were also reported, with frequencies of 15% and 6.5%, respectively. Stammering, dysarthria, and combined conditions of articulation and stammering, as well as dysarthria with delayed language, were less common, each accounting for less than 4% of cases.

The therapeutic interventions, as indicated in Figure 2, demonstrated a diverse range of approaches, with the majority of children receiving both speech and behavior therapy (28.7%). Notably, only language therapy was prescribed in 25.2% of cases, and only speech therapy was utilized in 21.5%. These patterns underscore the tailored approach to managing speech and language disorders, emphasizing the unique needs of each child within the cohort.

In summation, the study provided an insightful overview of the prevalence and management of speech and language disorders in children, highlighting the critical role of early detection and the adaptability of therapeutic interventions to optimize communication outcomes for this young population.

DISCUSSION

The findings of this study underscore the predominance of language delay as the primary speech-language disorder, affecting a significant 61.8% of the cohort. This is at variance with studies from the western region of São Paulo, which have identified Phonological Disorder as the prevalent condition among children (2). A notable medical condition coinciding with speech-language disorders was seizures, reported in 18.5% of the sample, aligning with literature asserting a high prevalence of seizures among children with developmental issues (22). Diagnoses were made at an average age of 3.58 years, reinforcing the notion that earlier diagnosis facilitates more favorable outcomes, as substantiated by other studies (23).

The gender disparity observed, with a higher incidence in males (68.5%), mirrored findings from a similar study in Islamabad (16). Contrary to research suggesting no link between socioeconomic status and language delay (24), the majority of participants hailed from middle-class backgrounds (68%), prompting contemplation over potential socioeconomic implications. The study contradicted a pilot study indicating lower birth weight as a risk factor for speech-language delay, as most children in this sample were within the normal birth weight range (25).

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The correlation between family history and speech-language disorders was reinforced, with 38.0% of cases having a positive family history, resonating with existing research (22). However, a discrepancy emerged when considering educational impact: while the study reported 53.3% of children performing unsatisfactorily, other research found that children with learning difficulties often have satisfactory performance (20). The cultural practice of cousin marriages, common in Pakistan and accounting for 49% in this study, was also associated with a higher frequency of speech-language disorders, consistent with prior studies (26).

Parental vigilance in detecting developmental problems was evident, with many parents seeking therapeutic interventions at an early age—a practice in line with the current trend towards early intervention, which is acknowledged to enhance outcomes. This study revealed diverse therapy patterns, with 28.8% of patients receiving both speech and behavioral therapy, suggesting a preference among parents for combined therapies over singular approaches. However, the study fell short of exploring the impact of physiotherapy, marking a direction for future research.

This study also identified a significant link between medical history and the specific disorders diagnosed, highlighting the importance of thorough medical histories in developing diagnostic strategies. Yet, this study's findings on birth weight as a non-contributory factor to speech-language impairment diverge from established research, suggesting an area ripe for further investigation.

Reflecting upon the study's contributions and limitations, the emphasis on language delay as the most prevalent disorder provides a salient focal point for future interventions. The study's strengths lie in its comprehensive demographic analysis and its examination of therapy patterns. However, its limitations include a non-probability sampling method, potential biases inherent in parental reporting, and its restriction to a single medical center, which may not provide a comprehensive view of the wider population.

CONCLUSION

In conclusion, the present research contributes valuable insights into the prevalence and nature of speech-language disorders in the Pakistani context, emphasizing the need for early diagnosis, the potential influence of socioeconomic factors, and the benefit of multi-faceted therapy approaches. The study's findings point to a significant gender predilection and underscore the role of parents in early detection and intervention. It calls for multidisciplinary treatment modalities and suggests that further research should examine the broader implications of socioeconomic status and the integration of various therapies, including physiotherapy, in the management of speech-language disorders.

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