

Provision of health services for children with learning difficulties: A retrospective study at a tertiary centre in Malaysia

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Abstract

Background & Objective: Learning difficulties pose significant challenges for academic achievement and skill development in children. This study explored characteristics of children with learning difficulties and assessed existing practices at a tertiary medical centre in Malaysia. **Methods:** A retrospective study was conducted at the Universiti Malaya Medical Centre, including children aged 6 to 18 with learning difficulties. Data was obtained from electronic medical records, and 187 cases were analysed for demographic details, referral patterns, diagnoses and associated conditions. **Results:** The study revealed that learning difficulties often emerged by age 5, and primarily affected males, characterised by behavioural concerns. Half of the children were in mainstream education without additional support. Challenges in the assessment process were due to limited healthcare professionals, and absence of standardised, linguistically and culturally applicable tools. Associated conditions, including developmental delays, language disorders, and attention-deficit hyperactivity disorder were commonly found.

Conclusion: The study identified service gaps in the healthcare setting vital for planning future services, necessitating increased resources and funding for child development centres nationwide. Such challenges necessitate the shift from diagnosis-focused approaches, to identifying accommodations for learning within existing structures. Future research should prioritise reliability and validity of locally-developed assessment tools to enhance the assessment process. Larger-scale audits are crucial for accurate insights into current practices of assessing learning difficulties in Malaysia.

Keywords: Learning difficulties, learning disabilities, developmental disorders, health services

INTRODUCTION

The term learning difficulty is used to describe challenges in learning and gaining skills for academic tasks due to a variety of reasons.¹ Causes include (i) neurodevelopmental causes such as autism, specific learning disorder (SLD), attention-deficit hyperactivity disorder (ADHD) and intellectual disability (ID), (ii) biological causes such as sensory impairment, (iii) socio-economic determinants such as economic disadvantage and family violence that result in lack of opportunity and school absences, and (iv) challenges with self-regulation such as a lack of motivation to learn. Some causes are more easily modifiable compared to others.¹ For causes that are non-cognitive in nature, children

can achieve age-appropriate levels once provided with programmes that incorporate support and evidence-based instruction.

The prevalence of learning difficulty varies depending on the criteria and terminologies used. The term *learning disability* refers to long-standing and generalised learning problems linked to the field of special education. The term *learning disorder* refers to learning problems within a specific field not befitting the general aptitude of the person. The prevalence estimate of learning disorders by the National Center for Education Statistics, United States of America (USA), is 15% of all public school students.² In Malaysia, the Social Welfare Department reported that in 2023, 36% of registered persons with disabilities

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have ‘learning disabilities’.³ The inconsistent use of different terminologies highlights the need for standardisation for better communication and comparison among researchers from different countries and backgrounds.

Neurodevelopmental causes of learning difficulty

Neurodevelopmental causes of learning difficulty are due to disruptions or abnormalities in growth and development of the brain, impacting cognitive functions and affecting an individual’s ability to learn and perform academically. Specific learning disorder (SLD) is a neurologically based processing problem that is internal, and academic difficulties continue despite evidence-based intervention. SLD affects areas like reading, writing and/or mathematics.⁴ Prevalence rates range between 5% to 15% for school-aged children.^{5,6} ID involves deficits in intellectual and adaptive functioning, and a verification that the disability originated during the developmental period. Limitation in intellectual functioning is defined by an intelligence quotient (IQ) score of two standard deviations below the mean. Adaptive function deficit is expressed as limitation in conceptual, social, and practical adaptive skills. ID has a global prevalence of 3.2%.⁷

Associated conditions of learning difficulty

Learning difficulties can be seen in ADHD and language disorders.⁸⁻¹⁰ ADHD, for instance, commonly coexists with SLD, affecting cognitive processes crucial for learning.¹¹ Similarly, language disorders impact reading comprehension, contributing to the complexity of learning difficulties.¹²

Current guidelines in the assessment of children with learning difficulty

Assessing learning difficulties involves a comprehensive approach, integrating clinical evaluation followed by psychometric testing.¹³ Clinical evaluation involves taking a thorough medical history, physical examination, behavioural observation and assessment of reading, writing and mathematical skills. A report from the class teacher is often requested.^{13,14} Psychometric testing includes standardised IQ tests such as the Weschler Intelligence Scale for Children (WISC), the Weschler Preschool and Primary Scale of Intelligence (WPPSI), and measures of adaptive function such as the Vineland Adaptive Behaviour Scales. Standardised academic tests include the

Weschler Individual Achievement Test (WIAT), Woodcock-Johnson III/IV Tests of Achievements (WJ-III/IV), etc.

Review of Malaysian literature

In Malaysia, limited research exists on learning difficulties. Existing studies include reviews of the assessment process for learning difficulties and types of intervention for children with dyslexia, exploration of stakeholders’ understanding of learning disorders, and cognitive deficits in the LD population.¹⁴⁻²²

Rationale of study

Addressing the knowledge gap on children with learning difficulties in the healthcare setting is crucial for improving service provision in Malaysia. This study aimed to describe the characteristics of such children and evaluate assessment practices against best practice guidelines.

METHODS

Study population

A retrospective analysis was conducted at Universiti Malaya Medical Centre (UMMC), a tertiary hospital in Kuala Lumpur, including children aged 6 to 18 presenting with learning difficulties from 1st January 2020 until 30th September 2021. All children with confirmed learning difficulties were included in the sample. These included newly-diagnosed as well as follow-up patients. Records of 187 children were analysed, excluding duplicates and incomplete data.

Assessment process

Comprehensive evaluations were conducted at the Developmental Paediatrics clinic, including a thorough history of medical, developmental, behavioural, learning, and educational information. Physical examination, including neurology and neuromaturation was performed, and assessments of reading, writing, and mathematical skills were conducted. If available, school reports were reviewed to strengthen the understanding of a child’s academic performance. If intellectual disability was suspected, the Test of Nonverbal Intelligence, Fourth Edition (TONI-4) was used. It is a language-free cognitive assessment tool which examines intelligence, aptitude, abstract reasoning and problem solving.

In addition to receiving a diagnosis, families were given advice and support. Referral to other agencies (such as the Dyslexia Association of Malaysia) for intervention was also arranged, if relevant. At our centre, children are generally followed up until they are 18 years old, or until transition to further education or training is made.

Data analysis

Data was analysed using the Statistical Package for Social Sciences (SPSS) version 25 software programme. Descriptive analysis with frequencies was used to report all data.

RESULTS

Demographic details

Table 1 shows the demographic details of the sample. Mean age of the sample was 121 months (SD = 29.7). Most children were male (73.8%), with a male: female ratio of 2.8: 1. The majority had Malay as their first language (72.7%), and attended primary school (79.1%). Around half (51.3%) of the children were in mainstream education while one third (37.4%) attended special education classes.

Referral patterns

Referring to Table 2, 56.1% presented with concerns of learning difficulties. The person(s) with such concerns were mainly main carers (66.3%), followed by teachers (26.2%) and healthcare professionals (7.5%). The average age of first concern was 60 months (SD = 25.0).

Diagnosis patterns

The majority of children (77%) had difficulties across all academic areas and were diagnosed with broad-based learning difficulty.

Causes and associated conditions of learning difficulty

Figure 1 shows that developmental delays were common. Fifty-two percent (52%) had a history of delays in at least one developmental domain and 22.5% had a history of delay in two or more domains. A history of language delay was present in almost half of children presenting with learning difficulties.

One third (35.9%) had two or more associated conditions (Figure 2). The most common conditions were physical health problems (36.9%)

and neurodevelopmental problems (39.6%). ADHD was the commonest neurodevelopmental problem (23.9%). A small number of children were suspected to have mild intellectual disability or language-related problems. Those with no associated conditions meant that the cause of learning difficulty was unknown.

DISCUSSION

The findings revealed the characteristics of children referred for assessment due to learning difficulty. The age of initial concern averaged at 5 years old, significantly earlier than observed in other studies where concerns typically surfaced in later primary school years.^{23,24} Those studies specifically focused on children diagnosed with specific learning disorder, while this study included both newly diagnosed children as well as children undergoing continual reviews for a history of developmental delay (first detected before the age of 5 years) and suspected intellectual disability, resulting in parental concerns arising at an earlier age.

The population comprised primarily boys, with some presenting with behavioural concerns (17.1%). We postulate that boys with learning difficulties are picked up quickly due to externalising behaviours that attract teachers and caregivers' attention to a learning problem. Research has consistently demonstrated that boys tend to display more externalising behaviours.²⁵⁻²⁷ Prior's study indicated that boys, compared to girls, face greater challenges with temperament and lower levels of persistence in the face of difficulties, from the age of 5 years. Mothers reported that boys were more prone to adaptive behaviour difficulties, displaying behaviours such as hyperactivity and aggression. Teachers have reported that boys encounter more challenges in both academic performance and behaviour during the initial three years of school.²⁶ A Chinese study involving approximately 10000 children showed that primary school-aged boys had higher scores on the Child Behaviour Checklist (CBCL) for aggression, hyperactivity and social problems.²⁷ Another study across 12 cultures, utilising the CBCL, demonstrated that boys scored higher on the Total and Externalising scales but lower on Internalising scores compared to girls.²⁵

The present study found that half of children with learning difficulties continue their education in mainstream settings without receiving additional classroom support. Many countries have adopted differentiated instruction and modified curricula

Table 1: Demographic profile of children

Age	Months	
Age range	75 to 214	
Mean	121	
Standard deviation	29.71	
Age at first concern		
Age range	12 to 192	
Mean	60	
Standard deviation	25.04	
Sex	Frequency (n)	Percentage (%)
Male	138	73.8
Female	49	26.2
First language		
English	18	9.6
Malay	136	72.7
Chinese	24	12.8
Tamil	9	4.8
Ethnicity		
Malay	140	74.9
Chinese	28	15
Indian	18	9.6
Non Malaysian	1	0.5
Current level of education		
Preschool	14	7.5
Primary	148	79.1
Secondary	25	13.4
Type of education		
Mainstream	96	51.3
Mainstream with remedial	21	11.2
Special education	70	37.4

for children with special education needs. Numerous studies have highlighted several benefits associated with these approaches, including positive correlations with students' academic progress, attitude towards education,

reduced instances of disruptive behaviours, and fewer negative behaviours in the classroom.²⁸⁻³⁰ However, systemic challenges in education persist, including issues such as class size, a standardised curriculum and national exams.³¹ Notably, the

Table 2: Concerns at first presentation

	Frequency (n)	Percentage (%)
Presenting concerns		
Learning difficulties	105	56.1
Behavioural concerns	32	17.1
Developmental delay	50	26.7
Person with concerns		
Main carer	124	66.3
Teacher	49	26.2
Healthcare professionals	14	7.5

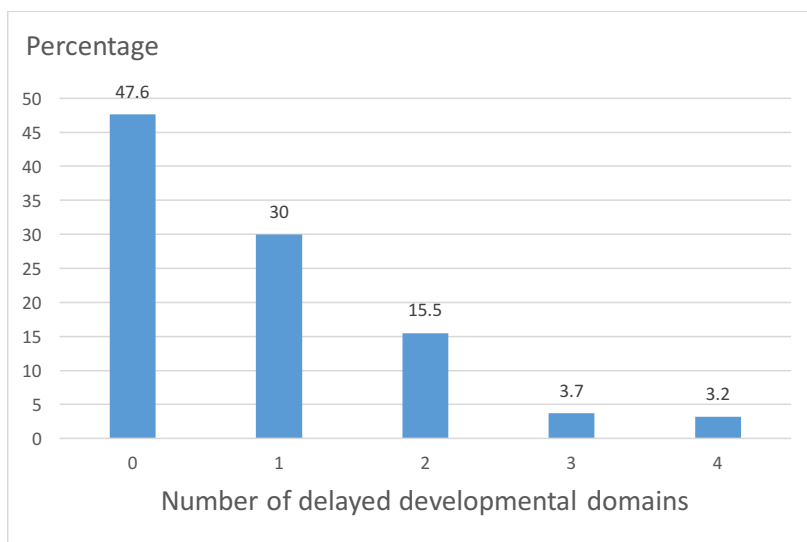


Figure 1. Number of delayed developmental domains for each child.

average Malaysian classroom size is 26-27 pupils per class.³² This information highlights the inadequacy of support for children struggling with learning, and exposes gaps in the Malaysian education system.

This study identified a range of difficulties, from a single area across to all areas of reading, writing and maths, emphasising the need for holistic assessments and interventions. However, achieving a specific diagnosis is not always feasible during these assessments due to inadequate information to meet diagnostic criteria. This limitation stems from the absence of a clinical psychologist within the hospital to conduct standardised cognitive assessments and a

lack of documented evidence-based intervention within the educational setting, for at least a duration of six months. Thus, a specific diagnosis of SLD was challenging. Additionally, many of the children had more than one SLD, e.g. dyslexia with dyscalculia.

Causes and associated conditions of learning difficulty

The majority of the cohort had a history of developmental delays, with approximately 1 in 5 experiencing delays in two or more domains. Systematic reviews have consistently identified associations between poor early development

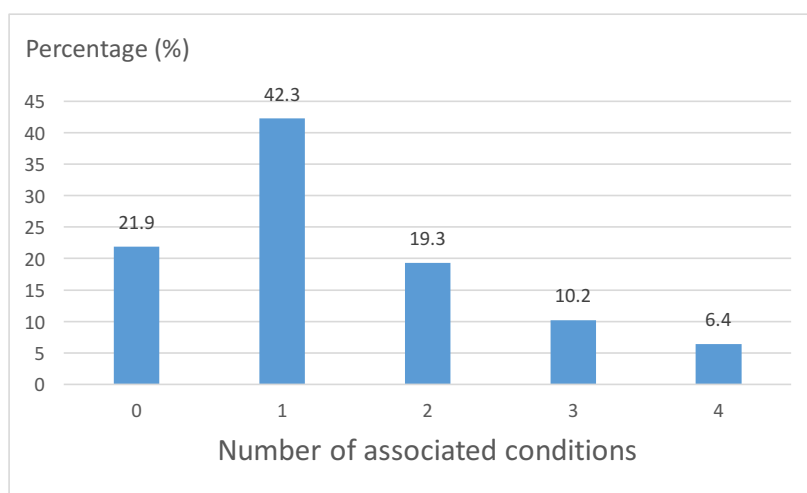


Figure 2. Proportion of children with associated conditions.

and subsequent educational difficulties.^{33,34} Children with developmental delays often have limitations in cognition, attention, memory, executive function, communication and language, motor skills, visuospatial and visual-motor skills, psychosocial and behavioural functioning. These limitations contribute to low academic performance in affected children.³³

While there is a high prevalence of language delay in early childhood, the persistence of language problems reduces to 7% at school-going age. Toddlers with early language delay may follow two distinct language trajectories, with approximately half catching up to children with typical language development and the other half experiencing persistent language delay.^{35,36} The low prevalence of persistent language problems in later childhood may be attributed to underdiagnosis and a lack of formal assessment by speech-language pathologists. Substantial evidence supports an association between early language delay and later reading difficulties, depending on the duration and severity of the early language delay.^{37,38}

The prevalence of intellectual disability in this cohort is likely to be higher than recorded due to the unavailability of culturally and linguistically applicable standardised cognitive assessments, limiting the ability to formally diagnose intellectual disability. One is suspected to have intellectual disability if there are difficulties in adaptive function, a history of global developmental delay and occasions when the Test of Nonverbal Intelligence, Fourth Edition was used during assessment, and the index score was low (70 or below).

The findings of ADHD in this cohort of children with learning difficulties aligns with many studies.^{8,39,40} Children with ADHD often exhibit deficits in working memory, processing speed and high levels of distractibility, all contributing to poor concentration in learning settings.⁴⁰ Probable ADHD in children as young as 4 years old has been linked to struggles in school, affecting academic attainment, attendance, classroom behaviour and attitude towards school.⁴¹ Moreover, SLD and ADHD are commonly observed in the same cohort of patients, due to shared pathophysiology and genetic influences.^{11,42}

Around 1 in 5 children in the cohort had no associated medical or diagnosed neurodevelopmental conditions. These children are likely to have SLD for which a confirmative diagnosis cannot be made due to various reasons. They may not have had a complete

psychoeducational assessment or 6-months of educational intervention. Other reasons for their learning difficulty could be borderline intellectual ability at the 'Low Average' range or executive function deficits.

Current limitations in the assessment of children with learning difficulty

The provision of assessment services for children with learning difficulties is fraught with challenges. The availability of healthcare professionals essential for evaluating these children, such as developmental paediatricians and clinical psychologists is limited. Notably, educational psychologists in Malaysia are mainly found in the private sector. Clinical psychologists, tasked with conducting standardised cognitive assessments crucial for establishing a diagnosis, are scarce in the public sector. Consequently, access to assessments is mainly confined to the private sector, where costs pose a substantial barrier to access for many.

Furthermore, the lack of locally, linguistically, and culturally sensitive standardised assessment tools compounds the challenges. While 72.7% of children in this study use Bahasa Malaysia as their first language, there is a lack of reliably translated versions for conducting assessments. Despite English being a second language taught in all schools, varying levels of proficiency may impact the applicability and validity of the results.

Compounded by extended wait times for assessments and the lengthy duration of each assessment, our centre faces time constraints. Hence, the emphasis is placed on functional assessments of social, academic and occupational performance, which are most applicable to the local setting. Thus, other than achieving a diagnosis, assessments conducted at our centre focus on identifying accommodations and providing recommendations to improve learning and development within the existing educational framework.

In conclusion, numerous children referred to our centre for learning difficulty assessments lack sufficient educational setting information to meet standard diagnostic criteria. The absence of standardised school-based academic assessments specifically assessing dyslexia, dyscalculia and dysgraphia result in a gap in psychoeducational information that is crucial for diagnostic confirmation of SLD. Many also do not receive adequate support in the classroom. These findings highlight significant gaps in the support

provided to these children, in both educational and therapeutic settings. Consequently, our centre has been compelled to expand its repertoire of services beyond merely obtaining a diagnosis to include identification of accommodations and recommendations aimed at enhancing learning within the current educational structure.

Identification of service gaps is important for planning of future services. Improvement in staffing is imperative to establish a multidisciplinary team for a comprehensive assessment approach. This team would ideally comprise of developmental paediatricians to oversee and integrate the management, clinical psychologists specialising in conducting standardised cognitive assessments, paediatric speech-language pathologists for language assessments and occupational therapists to optimise adaptive functioning. This underscores the need for increased resources and funding for child development centres nationwide. A strategic shift in diagnostic efforts involves upskilling general paediatricians and family medicine specialists, as well as first-line medical officers in public health clinics. This has been undertaken by our centre and similar centres through professional training courses, thereby expanding the pool of professionals capable of conducting assessments and addressing the current shortage in expertise.

Future research concentrating on the reliability and validity of linguistically-appropriate assessment tools holds the potential to enhance the assessment process. This would consequently improve the applicability of standardised cognitive assessments within the local context. Currently, there is a scarcity of nationwide prevalence data on learning difficulties. Additionally, the data that is available is not to a level of detail that is sufficient for identification of specific areas of concern and support. This impedes accurate audits and comprehensive reflections on the broader landscape. Conducting larger-scale audits of services for assessing learning difficulties in Malaysia would provide a clearer and more accurate depiction of the current practices within the real-world setting.

DISCLOSURE

Conflict of interest: None

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