Identifying the type of impairments among children with disabilities: An observational study of the Divulapitiya Divisional Secretariat Area

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Abstract

Children with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which, in combination with various barriers, may hinder their full and effective participation in society on an equal basis, according to the Convention on the Rights of Persons with Disabilities. The demographics of children with impairments are quite different. They include children who were born with an inheritable condition that impacts their physical, mental, or social development; those who had an infection, serious injury, or nutritional shortfall that had long-term functional effects; and those who were exposed to environmental toxins that caused learning disabilities or developmental delays. Children with impairments might also be individuals whose difficult life situations cause them to experience anxiety or sadness. There are about 240 million children worldwide who struggle with disabilities. In Sri Lanka, 1.67% of children aged 5-14 were identified as disabled in 2012. An observational study was conducted in the Divulaptiya divisional Secretariat area to understand the type of impairments among children with disability. The study found that 46% of the 72 children had brain function disorders (*Manodaurbalya*), 33% had nervous system disorders, 1.4% had muscular dystrophies, 1.4% had visual disorders, 1.4% had mutism disorders, and 2.7% had growth deformities. The study highlights the need for more community knowledge, better resource allocation, and focused interventions to identify and manage these children. The findings emphasize the need for research conducted in all divisional secretariats to increase awareness and support children with disabilities nationwide.

Keywords: Children, Disabilities, Observational study

Introduction

Children with disabilities are a varied population that requires specialized solutions due to their many sorts of disabilities. To understand the unique requirements and problems of these youngsters in various locations in Sri Lanka, local studies are essential. This study aims to identify the various types of impairments among children with disabilities in the Divulapitiya Divisional Secretariat area and examine their impact on the community, healthcare, and educational services. The research will explore physical, sensory, intellectual, developmental, psychological, and demographic factors, as well as the challenges these children face in accessing community support, healthcare, and education. The national disability data offer a broad picture, but localized research that can guide focused treatments and policy is extremely limited. Concerning these services, the study intends to determine the most prevalent forms of developmental, psychological, intellectual, physical, sensory, and demographic challenges that these children encounter.

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Children with disabilities require continuous attention and assistance beyond the expected amount for their age group. The Convention on the Rights of Persons with Disabilities (CRPD) defines children with disabilities as those who have difficulties with chronic physical, mental, intellectual, or sensory impairments that may impede their full and effective involvement in society[1]. The World Health Organization defines disability in three distinct instances: impairment affecting a person's physical structure or abilities, or their mental state; loss of limbs, eyesight loss, or memory loss are a few instances of impairments. Activity constraints include trouble walking, hearing, seeing, or solving problems[2]. To adequately address the needs of children with disabilities and eliminate current inequities, the Sustainable Development Goals (SDGs) place a significant focus on policy interventions[3]. These children frequently experience challenges within their families as well as their communities. Further, they share disproportionately and fall behind normal children in terms of education, health care, and social protection[4].

As estimated by UNICEF, approximately 10% of children aged 0–19 years globally necessitate assistance to meet their specific health and social demands[5]. As evidenced by the Census of Population and Housing in Sri Lanka, 1.67% of children aged 5-14 were categorized as disabled in Sri Lanka[6]. This emphasizes the significance of addressing children with disabilities both locally and globally.

International Classification of Functioning of Disability and Health (ICF) of WHO and the Washington Group on Disability Statistics offer key frameworks for regulating disability evaluation[7]. Additionally, the CRPD emphasizes the obstacles that children with disabilities experience in society through implementing the definition of those children in the same year[8]. Additionally, the worldwide estimated number of children with disabilities has increased from 150 million in 2001 to 240 million in 2024[9], necessitating immediate global and local discussions and interventions.

The Brazilian typology of care divides Children with disabilities into development, technology, health, modified standards, and mixed demands. The development needs include children with a neuromuscular impairment who need social and psychomotor rehabilitation[10]. Technology dependence exists within the desire for technology. There are drug-dependent individuals in the medical sector. Children in modified standard demand depend on adjustments to their regular care routine. The mixed category includes one or more criteria together. This categorization emphasizes the varied nature and complexities of children with disabilities[11].

Children with disabilities show dependent behavior to fulfill their needs, and this behavior may lead to stress for families and more specifically parents of children with disabilities[12]. In considering this, the growth of Children in modified standard demand depends on adjustments to their regular care routine. The mixed category includes one or more criteria together. This categorization emphasizes the varied nature and complexities of children with disabilities[11] could be associated with parental stress. The burden of providing this care can have an impact on both the quality of life of parents of children with disabilities and the children themselves[13].

Sri Lanka has made great legislative strides in the area of disability rights with the enactment of the 1996 Act for the Protection of Rights of Persons with Disabilities and constitutional protections[14]. Due to societal challenges, such as persistent stigmas and negative attitudes about impairments, there are significant barriers to the effective execution of these rights. In addition, delivering services to a significant proportion of disabled people becomes a challenge when resources are limited, particularly in middle-income and low-income countries like Sri Lanka[15].

Research done in Turkey, it has found that countries such as the United States, England, Australia, the Netherlands, Canada, Italy, Taiwan, Spain, and China, have become prominent contributors in the field of research on children with disabilities. Further, it illustrates that there is a relationship between the h-index of countries and the quantity of research they produce on children with

disabilities, which shows an interesting pattern. Furthermore, data indicates that there is a positive correlation between the (Gross Domestic Product) GDP per capita of a country and its h-index[16]. However, countries such as Sri Lanka are falling behind as it has been recorded fewer research projects related to children with disabilities. Despite having few resources in countries like Sri Lanka, it makes a substantial contribution to the field of children with disabilities. This emphasizes the need to promote and expand research that benefits children with disabilities.

The purpose of this observational study is to examine the distribution and prevalence of impairments among children with disabilities aged 5 to 19 years in the Divisional Secretariat of Divulapitiya, Sri Lanka. Additionally, find out more about the approaches taken to manage them and address the health problems associated with them in this specific area.

The Divulapitiya Divisional Secretariat area is comprised of 123 Grama Niladhari divisions, within which special centers serve children with disabilities. Three of these centers are attached to schools and the other one functions by volunteers. This study was focused on four distinct centers. Those centers were The Ananda Vidyalaya Center for children with disabilities in Maradagahamula, Kudagammana Maha Vidyalaya, the Center for children with disabilities, Ullalapola Kanishta Vidyala Center for children with disabilities and Halpe's Footpath Center.

These centers are essential to the education of children between the ages of 5 to 19. The Maradagahamula Center also functions as an institution for vocational training. In addition to offering educational programs, these play an important part in the community by supporting children with disabilities who are under five years old and have been referred to Ayurveda medical clinics at the secretariat division.

This study focuses on children with disabilities and focuses on their background for the first time in the Divulapitiya Divisional Secretariat area as well as in Sri Lanka. The growing number of children with disabilities locally as well as globally highlights the necessity of thorough discussions and research to develop interventions and policies such as Advancement and Protection of Rights of Persons with Disabilities, that address the unique requirements of these children. These interventions should especially focus on the health and well-being of the children. It is also crucial to assess the effects on families of children with disabilities, and this illustrates the need for additional study in similar settings.

Methodology

Study design

This study was planned as an observational study to investigate the prevalence and distribution of children with disabilities under different age categories in the Divulapitiya Divisional Secretariat area, Sri Lanka.

Study population

The study population comprised 72 children between the ages of 5 and 19 years. All are identified as children with disabilities who live within the Divulapitiya Divisional Secretariat area.

Data collection

The data were obtained from clinical observation records compiled during a special clinic conducted by Ayurvedic Community Medical Officers. The observations focused on a range of impairments, such as muscular dystrophies, visual disorders, mutism disorders, growth deformities, Down syndrome, ASD (autism spectrum disorder), ADHD (attention deficit hyperactivity disorder), nervous system disorders, including cerebral palsy (global developmental delay and mental development delay) and Meningomyelocele.

Data analysis

The MS Excel 2010 software was used for statistical analysis. The collected data were systematically arranged in an MS Excel spreadsheet. Averages and percentages were calculated to provide a comprehensive understanding of the prevalence of different impairments among the children with

disabilities in the study population. After the statistical analysis, the data were interpreted to draw meaningful conclusions. The study aimed to identify patterns, trends, and associations among the various impairments observed in children with disabilities within the Divulapitiya Divisional Secretariat area.

Results and Discussion

Among the 72 children with disabilities included in this study, males made up the majority (59.72%). The research sample was then split up into age groups to investigate the characteristics and variables relevant to every developmental stage in Divulapitiya Divisional Secretariat area. Table 1 illustrates the gender distribution of the children with disabilities in the study sample. The study population showed a higher proportion of males compared to females, as reflected in the demographic distribution table.

Table 1: Gender-wise Classification of children with disabilities in the Study Population

Gender	Male	Female
Amount	43	29
Percentage	59.72%	40.27%

Table 2 illustrates the distribution of children with disabilities across different age groups, categorized by gender. The age grouping used in this study follows the classification set by the World Health Organization in 2013[17].

The age-wise distribution indicates that most children with disabilities in the study fall within the 5-9 age group. The greater percentage of males, especially in the youngest age range, possibly suggests a need for targeted interventions and support services that address the specific challenges faced by young males with disabilities in the Divulapitiya Divisional Secretariat area.

Table 2: Age-wise Distribution of children with disabilities by Gender

Age groups	Gender			
	Males	Percentage	Females	Percentage
5-9 years	21	29.16%	11	15.27%
10-14 years	09	12.5%	09	12.5%
15-19 years	13	18.05%	09	12.5 %
Total	43	59.72%	29	40.27%

Table 3 presents the distribution of children with disabilities in Divulapitiya based on disease type. Out of 72 children who attended the medical clinic conducted by the Ayurveda community medical officers it could classify the children based on six different types of diseases. The count in each category represents the number of individuals identified with the respective conditions.

Table 3: Distribution of children with disabilities by Type of Disease

Type of Disease	Name of Disease	Amount	Percentage
Brain function disorders (33) (*Mano daurbalya*)	Down syndrome	13	18%
	ASD	05	6.94 %
	ADHD	15	20.83%
Diseases related to the Nervous System (24)	Cerebral palsy	Mental development delay -08	11.11%
		Global development delay- 12	16.66%
	Meningo myelocele	04	5.55%
Learning Disability		10	13.8%
Muscular Dystrophies	DMD	01	1.38%
Visual Defects		01	1.38%
Spinal cord-related disorders	Scoliosis	01	1.38%
Mutism		01	1.38%
Growth deformities	Dwarfism	02	2.70%

It is evident from the above table that a considerable portion of the children with disabilities in Divulapitiya have brain function disorders, with Down syndrome, ASD, and ADHD. It can be further observed that out of the three diseases; the prevalence of ADHD is significant.

The conducted study has significantly contributed to understanding the relationship between ADHD and ASD through the observed case record forms. The findings provide a clear comorbidity between ADHD and ASD, as evidenced by the presence of ADHD features among individuals with ASD in the study population. This observation aligns with existing literature, which reports a prevalence of ADHD in people with ASD ranging from 50% to 70%. (18). The study indicated a high frequency of nervous system-related problems, which constitutes the third highest category of diseases. This category includes mostly health conditions like meningomyelocele and cerebral palsy. The study highlights an important comparison between mental development delay and global development delay within the subgroup of cerebral palsy. The results indicate that there is a greater incidence of global developmental delay than mental developmental delay, which aligns with the perspective expressed by the American Academy of Neurology[19]. Further, these results highlight the multifaceted nature of health problems among children with disabilities in Divulapitiya.

Table 4 shows the prevalence of children with disabilities associated with nutrient deficiency in Divulapitiya across various age groups. Nutritional deficiencies, which are a major health concern, were examined under three age brackets, providing insights into the distribution of malnutrition in the study population.

The obtained results show that malnutrition was most prevalent among disabled children aged 5–9, and least common in those aged 15–19.

Table 4: Prevalence of children with disabilities associated with nutrient deficiency as per age groups

Name of Disease	Age group (Years)	Amount	Prevalence
Nutritional deficiency	5-9	12	46.15%
	10-14	08	30.76%
	15-19	06	23.07%
Total		26	100%

Table 5 presents the distribution of parental occupation among children with disabilities in the desired study location. This data can be used to understand how parental occupation may affect the well-being of children. The graph shows that parents come from a diverse range of occupational backgrounds, including self-employment, government service, private sector work, and unemployment. The relevant columns provide the number of parents, and the prevalence is shown in brackets.

The predominant occupation among fathers of children with disabilities in Divulapitiya is self-employment. The majority of these self-employed fathers are mainly engaged in farming and business and minority being unemployed. There is a marginal change in the prevalence of fathers in government and private sectors. Conversely, among mothers, a considerable majority are unemployed, while a minority are engaged in government work. The variations in parental occupations across different disease conditions suggest potential impacts on the well-being of children with disabilities.

However, further studies are needed to study the potential relationship between parental employment and the type of disability. Additionally, should focus on determining whether parents of children with disabilities had to give up their jobs to care for them, as well as the way family economies affect the general well-being and the quality of life of both the parents and the children with disabilities.

Table 6 elaborates on the educational background of parents of children with disabilities in Divulapitiya, categorized by disease type. In this tabulation, the educational levels of both fathers and mothers are

outlined, ranging from those who have not attained formal education to those with higher education qualifications. In each column, it mentioned the amount as well as prevalence are mentioned based on the total number of cases.

The table shows that the majority of parents were educated and had finished their schooling up to ALs. It also shows that parents came from a variety of educational backgrounds. It is also further observed that, regardless of parental education, dietary deficits are common throughout a range of educational levels. Overall results encourage more research to be carried carried out to find out if there is any connection between the type of disease, parental education, and its effect on the well-being of children with disabilities. This study provides the framework for further research and specially designed interventions based on the particular requirements connected to each type of disease.

The data in Table 7 describe the prevalence of family history among children with disabilities with different health conditions in Divulapitiya. It indicates the number of cases where family history is present or absent for each specific condition.

The majority of cases across various diseases exhibit the absence of a family history, indicating that these conditions are not primarily hereditary. ADHD and ASD reflect that there is a relationship more toward family history.

Table 5: Distribution of parental occupation by disease type in children with disabilities

Disease Type	Parental Occupation							
	Father				Mother			
	Govern-ment	Private sector	Self-employed	No occupation	Govern-ment	Private sector	Self-employed	No occupation
Down Syndrome	03 (4.16%)	04 (5.55%)	05 (6.94%)	01 (1.38%)	03 (4.16%)	04 (5.55%)	02 (2.77%)	04 (5.55%)
ASD	02 (4.16%)	02 (4.16%)	01 (1.38%)	-	01 (1.38%)	03 (4.16%)	01 (1.38%)	-
ADHD*	04 (5.55%)	04 (5.55%)	06 (4.16%)	-*	04 (5.55%)	03 (4.16%)	02 (4.16%)	06 (8.33%)
Cerebral palsy (Mental Development Delay)	01 (1.38%)	02 (4.16%)	04 (5.55%)	01 (1.38%)	-	01 (1.38%)	02 (4.16%)	05 (6.94%)
Cerebral palsy (Global Development Delay)	05 (6.94%)	02 (4.16%)	04 (5.55%)	01 (1.38%)	01 (1.38%)	02 (4.16%)	03 (4.16%)	06 (4.16%)
Meningomyelocele	01 (1.38%)	01 (1.38%)	02 (4.16%)	-	-	01 (1.38%)	01 (1.38%)	02 (4.16%)
DMD	01 (1.38%)	-	-	-	-	-	-	01 (1.38%)
Scoliosis	01 (1.38%)	-	-	-	-	-	-	01 (1.38%)
Dwarfism	-	01 (1.38%)	01 (1.38%)	-	01 (1.38%)	-	-	01 (1.38%)
Visual disorders	-	01 (1.38%)	-	-	-	-	01 (1.38%)	-
Mutism disorders*	-	-	-	-*	-	-	01 (1.38%)	-

* Indicates cases where the father has passed away

Table 6: Distribution of parental education of children with disabilities by disease type

Disease Type	Parental education									
	Father					Mother				
	Not attain to school	Up to grade 5	Up to O/L	Up to A/L	Higher education	Not attain to school	Up to grade 5	Up to O/L	Up to A/L	Higher education
Down Syndrome	-	-	05 (6.94%)	07 (9.72%)	01 (1.38%)	-	-	07 (9.72%)	05 (6.94%)	01 (1.38%)
ASD	-	-	01 (1.38%)	03 (4.16%)	01 (1.38%)		-	02 (2.77%)	03 (4.16%)	-
ADHD*	-	-	03 (4.16%)	11 (15.27%)	01 (1.38%)			03 (4.16%)	10	02 (2.77%)
Cerebral palsy (Mental Development Delay)	-	01 (1.38%)	03 (4.16%)	01 (1.38%)	-	-	-	05	03 (4.16%)	-
Cerebral palsy (Global Development Delay)	-	01 (1.38%)	04 (5.55%)	06 (8.33%)	01 (1.38%)	-	-	06 (8.33%)	06 (8.33%)	-
Meningo myelocele	-	-	02 (2.77%)	02 (2.77%)	-	-	-	01 (1.38%)	03 (4.16%)	-
DMD	-	-	-	01 (1.38%)	-	-	-	-	01 (1.38%)	-
Scoliosis	-	-	-	01 (1.38%)	-	-	-	-	01 (1.38%)	-
Dwarfism	-	-	-	02 (2.77%)	-	-	-	-	02 (2.77%)	-
Visual disorders	-	-	-	01 (1.38%)	-	-	-	-	01 (1.38%)	-
Mutism disorders*	-	-	-	01 (1.38%)	-	-	-	01 (1.38%)	-	-

* Indicates cases where the father has passed away.

Table 7: Family history of children with disabilities by disease type

Name of Disease	Family History present	Family History absent
Down syndrome	06 (44.15%)	07 (53.84%)
ASD	03 (60%)	02 (40%)
ADHD	08 (53.33%)	07 (46.66%)
Cerebral palsy (Mental Development Delay)	03 (37.5%)	05 (62.5%)
Cerebral palsy (Global Development Delay)	4 (33.33%)	08 (66.66%)
Meningomyelocele	-	04 (100%)
DMD	-	01(100%)
Scoliosis	-	01 (100%)
Dwarfism	-	02 (100%)
Visual disorders	01 (100%)	-
Mutism disorders	01 (100%)	-

The majority of cases do not have a family history, highlighting the impact of environmental and nutritional factors in this category. Further genetic studies and detailed family histories can contribute to a deeper understanding of the aetiology of these conditions, guiding more effective interventions and support strategies.

Table 8 provides an overview of the age at which children with disabilities in Divulapitiya were first diagnosed and categorized by different health conditions. All cases of Down syndrome were diagnosed at birth, emphasizing the congenital nature of Down Syndrome.

Table 8: Age at first diagnosis for children with disabilities by disease type

Name of Disease	At birth	At the age of 1 year	At the age of 2 years	Less than 5 years	More than 5 years
Down syndrome	13 (100%)	-	-	-	-
ASD	-	-	02 (40%)	03 (60%)	-
ADHD	-	-	01 (6.67%)	10 (66.7%)	04 (26.7%)
Cerebral palsy (Mental Development Delay)	-	08 (100%)	-	-	-
Cerebral palsy (Global Development Delay)	-	12 (100%)	-	-	-
Meningomyelocele	04 (100%)				
DMD	-	-	-	01 (100%)	-
Scoliosis	-	-	-	01 (100%)	01 (100%)
Dwarfism	-	01 (50%)	01 (50%)	-	-
Visual disorders	-	-	-	01 (100%)	-
Mutism disorders	-	-	01 (100%)	-	-

Table 9: Parental awareness of children with disabilities by disease type

Name of Disease	Awareness present	Awareness absent
Down syndrome	07 (53.8%)	06 (46.1%)
ASD	03 (60%)	02 (40%)
ADHD	09 (60%)	06 (40%)
Cerebral palsy (Mental Development Delay)	06 (75%)	02 (25%)
Cerebral palsy (Global Development Delay)	11 (91.7%)	01(8.3%)
Meningomyelocele	04 (100%)	-
DMD	01 (50%)	01(50%)
Scoliosis	01 (100%)	-
Dwarfism	02 (100%)	-
Visual disorders	01 (100%)	-
Mutism disorders	01 (100%)	-

Table 10: Focus on continuous treatments for children with disabilities by disease type

Name of Disease	Focus on continuous treatments	Not focused on continuous treatments
Down syndrome	-	13 (100%)
ASD	01 (20%)	04 (80%)
ADHD	02 (11.8%)	15 (88.2%)
Cerebral palsy (Mental Development Delay)	05 (62.5%)	03 (37.5%)
Cerebral palsy (Global Development Delay)	09 (75%)	03 (25%)
Meningomyelocele	04 (100%)	-
DMD	01 (100%)	-
Scoliosis	-	01(100%)
Dwarfism	-	02 (100%)
Visual disorders	01(100%)	-
Mutism disorders	-	01(100%)

Table 11: Further management of children with treatments by disease type

Name of disease	Can be managed by Community Medical Officers	Directed to the National Ayurveda Teaching Hospital for further treatments
Down syndrome	06 (40%)	07 (60%)
ASD	-	05 (100%)
ADHD	-	15 (100%)
Cerebral palsy (Mental Development Delay)	-	08 (100%)
Cerebral palsy (Global Development Delay)	-	12 (100%)
Meningomyelocele	-	04 (100%)
DMD	-	01 (100%)
Scoliosis	-	01 (100%)
Dwarfism	02 (100%)	-
Visual disorders	-	01 (100%)
Mutism disorders	01 (100%)	-

The majority of ASD cases were diagnosed between the ages of 2 and 5 years, indicating that symptoms may become more noticeable as children reach certain developmental milestones. ADHD diagnoses occurred across various age groups, with the majority being identified before the age of 5, highlighting the early onset of symptoms. Cerebral Palsy with (Mental /Global Development Delays), both types were diagnosed by the age of 1 year, underlining the early recognition of developmental delays. Meningomyelocele, DMD, Dwarfism, Visual Disorders, and Mutism Disorders were predominantly diagnosed at birth or within the first year of life, indicating early detection.

Table 9 illustrates the level of awareness among parents regarding the condition of their children with disabilities. This information has been taken from a section of the case record form, assessing whether parents possess an understanding of their child's condition and are aware of the appropriate ways to interact and behave with them.

Parents of children with various disabilities, including Down syndrome, ASD, ADHD, and developmental delays, showed a reasonable level of awareness and understanding, and higher awareness was reported for conditions like meningomyelocele, scoliosis, dwarfism, visual disorders, and mutism.

Table 10 presents information about the extent to which parents or caregivers focus on providing continuous treatment for children with disabilities since the identification of the child's condition

Children with Meningomyelocele, DMD, and Visual Disorders receive consistent treatment, reflecting a strong commitment to their well-being. However, children with Down Syndrome, Scoliosis, Dwarfism, and mutism often lack continuous treatment. For children with ASD, ADHD, and various forms of Cerebral Palsy, maintaining consistent treatment presents challenges, indicating areas where support and intervention are needed to ensure continuous care.

Table 11 provides information on the recommended approach for managing children with disabilities following treatment. It depicts the percentage of cases for each disease type that can be managed by Ayurvedic Community Medical Officers and those directed to the National Ayurveda Teaching Hospital for further treatment.

Down Syndrome, Autism, ADHD, Cerebral Palsy (Mental Development Delay / Global Development Delay), Meningomyelocele, DMD, Scoliosis, Visual Disorders, and Mutism Disorders cases, show a significant percentage have been directed to the National Ayurveda Teaching Hospital for further treatment. For Dwarfism, a notable percentage can be managed by Ayurvedic Community Medical Officers, suggesting that ongoing care and treatments can be provided at the community level.

Conclusion

This observational study in the Divulapitiya Divisional Secretariat area of Sri Lanka provides valuable insights into the distribution and prevalence of impairments among children with disabilities aged 5 to 19. The study highlights varying parental awareness and challenges related to continuous treatment for different conditions. Notably, conditions like ADHD and nervous system disorders were more prevalent. The findings emphasize the need for targeted interventions and further research with a larger, more diverse sample to better understand the challenges and improve support services for children with disabilities in Sri Lanka.

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