

Evaluation of Child Development Centre Based Intervention for Children with Multiple Disability

Mustafa Mahbub¹, Humaira Rafiq², Dilara Begum³

¹Professor & Head, Department of Pediatric Neuroscience, Bangladesh Institute of Child Health & Dhaka Shishu Hospital, Dhaka, Bangladesh; ²Assistant Professor, Pediatric Neuroscience Department, Bangladesh Institute of Child Health & Dhaka Shishu Hospital, Dhaka, Bangladesh; ³Developmental Therapist, Department of Pediatric Neuroscience, Bangladesh Institute of Child Health & Dhaka Shishu Hospital, Dhaka, Bangladesh

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Abstract

Background: Children with multiple disabilities usually have more than one significant disability that may include speech, physical mobility, learning, mental retardation, visual, hearing, and possibly others. **Objective:** The purpose of the present study was to evaluate the types of multiple disabilities in children with cerebral palsy and epilepsy and their fate after the intervention. **Methodology:** This retrospective observational study was conducted at Dhaka Shishu hospital from January 2011 to December 2011. Children with multiple disabilities were referred to the child development center of Dhaka Shishu Hospital and were assessed for impairments and appropriate intervention done in special clinics. **Result:** Out of 540 children 66% were male. 43% of children were age group from 12-23 months. 58% had tetraplegic cerebral palsy (CP) with epilepsy and the second-highest group was diplegic CP with epilepsy 75(14.0%). Among 72 selected children who came in regular follow up, all children had motor disabilities. Cognitive delay, speech delay, vision and hearing impairment were found in 50%, 79%, 58% and 54% respectively. After intervention more improvement was found in motor function (92%). **Conclusion:** Intervention in specialized clinics improved the quality of life of children with multiple disability. [*Journal of National Institute of Neurosciences Bangladesh, January 2021;7(1): 38-41*]

Keywords: : Multiple disabilities; cerebral palsy; intervention

Correspondence: Dr. Mustafa Mahbub, Professor & Head, Department of Paediatric Neuroscience, Dhaka Shishu (Children's) Hospital, Sher-E-Bangla Nagar, Dhaka-1207, Bangladesh; Cell no.: +8801713209069; Email: mm231956@gmail.com

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Introduction

Children with multiple disabilities will have a combination of various disabilities that may include issues with: speech, physical mobility, learning, mental retardation, sight, hearing, brain injury, and possibly others. Along with multiple disabilities, they can also exhibit sensory losses as well as behavior and/or social problems¹. Child with multiple disabilities have unique needs and challenges. Many of these young children struggle to communicate their wants and needs, to freely

move their body to access and engage their world, and to learn abstract concepts and ideas². Four areas of need - medical, physical, learning, and social-emotional needs should be addressed in developing interventions for young children with multiple disabilities².

Early intervention is necessary as soon as possible with the involvement of the appropriate professionals, i.e. occupational therapists, speech or language therapists, physiotherapists' like¹. In children with cerebral palsy (CP), lesions of the central nervous system (CNS) could

cause motor-sensory impairments that progressively deteriorate over time. The primary challenge for CP is gross motor dysfunction^{3,4}. The motor problems of CP arise fundamentally from CNS dysfunction, which interferes in the development of normal postural control against gravity and impedes normal motor development⁵⁻⁷. Occupational therapy in children with CP is performed to avoid abnormal muscle tone and posture, to treat muscle and joint deformities, and to reduce motor and sensory disorders⁸⁻⁹. In multiple disabilities, we take into consideration that the evaluation and intervention must be carried out individually as each person is considered unique according to the developmental profile¹⁰. The intervention begins with early communication with children with multiple disabilities includes mutual attention, shared topic, common language, comfortable pace, turn-taking, and balance of turns, comfortable positioning, and mutual caring¹¹. The development of communication involves interaction. The caregiver must be aware of the child's signals and behaviors and forms of communication, interpret them accurately, and give a response so that The Child feels that he is understood. Studies of intensive interaction have shown that this approach determined an increase in the children's attention to their interaction and communication partner, an increase of positive affect, proximity, and attention to the wider environment¹². Many children with multiple disabilities exhibit tone problems. Specifically, their tone may be too high like hypertonia, which results in stiffness that interferes with movement, or muscle tone that is too low (i.e., hypotonic), which makes it difficult to stabilize joints in preparation for movement or to maintain a position. Children's muscle tone may also fluctuate from being too high to too low yet seldom in a state of normal tone. Abnormal muscle tone not only affects a child's ability to maintain and move within positions but also interferes with active movement and the use of one's extremities. Thus, professionals working with children with multiple disabilities may encounter numerous approaches to provide intervention directed toward these problems¹³. Child Development Centre, Dhaka Shishu Hospital provides services for children with multiple disabilities by arranging special clinics such as multiple disability clinic (MDC), speech-language and communication clinic (SLC), sitting and feeding clinic, low vision clinic. Here a multi-disciplinary team consisting of a child health physician, psychologist, developmental therapist, and the parents and educational specialists, work together to plan and coordinate necessary services to be given to a child with multiple disabilities.

Methodology

This retrospective observational study was conducted at the Pediatric Neuroscience Department of Dhaka Shishu Hospital (DSH) from January 2011 to December 2011 for a period of one year. Children with multiple disabilities referred to the child development Centre of Dhaka Shishu Hospital were assessed for impairments and appropriate intervention was done in different clinics. In the child development center, there is a weekly multiple disability clinic. In addition to this clinic, CDC provides other specialized clinics such as more than words clinic, speech, language & communication clinic, feeding and seating clinic, low vision clinic, and epilepsy clinic. The core team includes child health physicians, developmental therapists, and psychologists. For study purposes, children were classified as having multiple disabilities if they had two or more disabilities concurrently⁷. We had searched from the record book and purposively selected the cases who had disabilities and came for follow up regularly. To assess the development of the child Rapid neurodevelopmental assessment (RNDA) tool was applied¹⁴. Rapid neurodevelopmental assessment (RNDA) is an assessment tool designed to ascertain functional status like neurodevelopmental impairments (NDIs), across multiple neuro developmental domains; such as motor, cognition, vision, hearing, speech with grades of severity for each domain determined, so that appropriate intervention can be planned, and prioritized, according to the child's ascertained NDI profile. Data were analyzed in SPSS version 21.

Results

Out of 540 children, 66% were male and 43 % of children were from the age group 12 to 23 months.

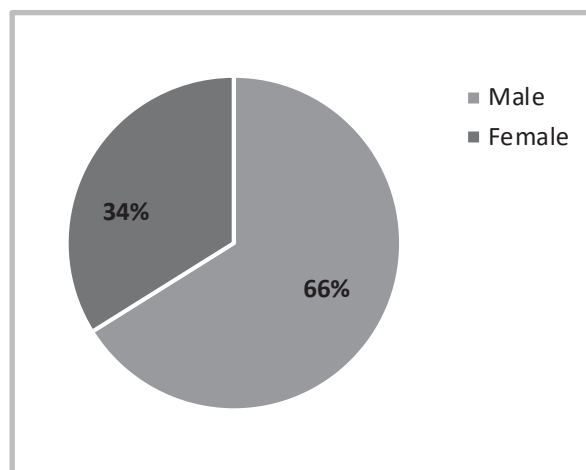


Figure I: Gender Distribution of the Study Patient

Table 1: Age Group of Study Patient (n=540)

Variables	Frequency	Percent
Less Than 12 months	87	16.0
12 to 23 months	234	43.0
24 to 35 months	138	26.0
36 to 47 months	36	7.0
More Than 48 months	45	8.0
Total	540	100.0

Tetraplegic CP with epilepsy were more (58%). Then other types of CP, like Diplegic CP, Hemiplegic CP, Dyskinetic CP were 14%, 11%, and 11% respectively. (Table 2)

Table 2: Diagnosis of the Study Patients (n=540)

Diagnosis	Frequency	Percent
Tetraplegic CP with Epilepsy	315	58
Diplegic CP with Epilepsy	75	14
Hemiplegic CP with Epilepsy	60	11
Dyskinetic CP with Epilepsy	60	11
Seq. of Meningitis/Encephalitis	12	2.5
Chromosomal Syndrome	9	2.0
Neuro-metabolic Disorder	3	0.5
Erb's Palsy	3	0.5
Worster-Drought syndrome	3	0.5

Among 72 selected children who came in regular follow-up, the initial assessment showed that motor disability was present in all 72(100%) children. Cognitive delay, speech delay, vision and hearing impairment were found in 50%, 79%, 58% and 54% respectively. After intervention more improvement was found in motor function (92%) (Table 3).

Table 3: Initial Impairment in Followed-Up Children (n=72)

Impairment	Frequency	Percent
Motor	72	100
Speech	57	79
Feeding difficulties	48	67
Vision	42	58
Hearing	39	54
Cognition	36	50
Seizure	33	45

*Percentages and totals based on multiple response analysis

Out of 72 children 66(92.0%) cases improved in motor function, 27(38.0%) cases improved in cognitive function, 36(50.0%) cases improved in speech,

30(43.0%) cases improved in feeding, 24(33.0%) cases improved in vision and 24(33.0%) cases improved in hearing (Table 4).

Table 4: Impairment VS Improvement (n=72)

Disabilities	Impairment	Improvement	Percent of improvement
Motor	72	66	92 %
Speech	57	36	63 %
Feeding	48	30	63 %
Vision	42	24	57 %
Hearing	39	24	61 %
Cognition	12	27	75 %
Seizure	33		Different % of remission

Discussion

In this study, we found male 66% and female 34%, and most of the patients were in between 12-23 months. In a recent study, Britto et al¹⁶ showed that of the 123 children, 71 were males, 52 were females and 48 were in the age group 0–5 years. Developing countries have the largest number of disabled children below 15 years of age, estimated at 85% cases¹⁶. In our study, we found girls with disabilities are less than the boys. The reason may be that parents are not coming with their girls because girls are less likely than boys to receive care and are more likely to be left out of family interactions and activities. Girls with disabilities are also less likely to get an education, receive vocational training, or find employment than are boys with disabilities or girls without disabilities¹⁷. In this study Tetraplegic CP with epilepsy was 58.0%. A survey which was done in the year 2000 found 77.4% of the children identified with CP had spastic CP¹⁸. Approximately 60% of 8-year-old children with CP had another developmental disability. More than 40% of children with CP had an intellectual disability, 35.0% had epilepsy, and more than 15.0% had vision impairment¹⁸.

Nearly 1 in 4 children with CP had both intellectual disability and epilepsy¹⁹. Our study differs from other studies where, almost all children with multiple disabilities had motor impairment (100.0%). Developmental therapy and stimulation and neuro-rehabilitation approaches are important components in the treatment of children with CP. After intervention among 72 children, 92 % improved in motor function. In a recent study Labaf et al showed significant improvement in rolling and laying, sitting, crawling, and standing abilities in children with spastic diplegia and quadriplegia after application of

neurodevelopmental therapy²⁰. Ketelaar et al²¹ showed significant differences in rolling, sitting, and kneeling after neurodevelopmental intervention. Fetters and Kluzik²² reported that the use of neurodevelopmental treatment for children with CP improved motor skills functionality²².

Children develop rapidly during the first three years of life, so early detection and intervention are particularly important. Developmental screening is an effective means of detecting disability in children. It can take place in primary health-care settings, for example, during immunization visits or growth monitoring check-ups at community health centers. The purpose of screening is to identify children at risk, to refer them for further assessment and intervention as needed, and to provide family members with vital information on disability. Screening involves vision and hearing examinations as well as assessments of children's progress against such developmental milestones as sitting, standing, crawling, walking, talking, or handling objects. Parents can bring their children to Child Development Centers.

Child Development Centers (CDCs) have been established within government medical college tertiary hospitals across Bangladesh. Services entail a parent-professional partnership in a child and family-friendly environment with a focus on assessment, diagnosis, and management of a range of neurodevelopmental disorders in children and adolescents 0 to 16 years of age. Services are provided by a multidisciplinary team of professionals (child health physician, child psychologist, and developmental therapist) who emphasize the quality of services over the numbers of children seen.

Conclusion

This study shows that children with multiple disabilities are at risk of neurodevelopmental impairment. Regular follow up with appropriate therapy and intervention in different specialized clinic are effective in improvement of neurodevelopmental outcome of children with multiple disabilities.

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