

[CASE STUDY]**Clinical Documentation using ICF for a 12 years old Child with Cerebral Palsy- A Case Study Approach.****Dr. Eram Kazi¹, Dr. Suvarna Ganvir (PT)², Dr. Maheshwari Harischandre(PT)³**¹Post Graduate Student, ²Professor & H.O.D, ³Associate Professor, Department of Neurophysiotherapy, D.V.V.P. F's College of Physiotherapy, Ahmednagar.**ABSTRACT :**

Cerebral Palsy (CP) is a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to nonprogressive disturbances that occurred in the developing fetal or infant brain. The purpose of the study was to present a framework for developing an ICF-based documentation system in Cerebral Palsy rehabilitation across the continuum of care by using a case study approach. A Case Report of a 12-year-old boy suffering from chore-athetoid cerebral palsy since birth. The report describes the integration of the ICF-based documentation tools into the patient's examination, evaluation, prognosis, diagnosis, and intervention while he participated in a physiotherapy rehabilitation program for 4 months and the outcome measures used were GMFM and UFMG SYDENHAM'S CHOREA RATING SCALE at the baseline and after 4 months. The ICF-based documentation for physical therapists summarizes all relevant information to aid the physical therapist's patient management. It also demonstrates, a viable framework both for physical therapy and multidisciplinary management and for clinical documentation.

Keywords: Cerebral Palsy, ICF core sets, ICF Qualifiers, Physiotherapy Rehabilitation.**Introduction:**

Cerebral Palsy (CP) is a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to nonprogressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of Sensation, Perception, Cognition, Communication and behavior: by epilepsy, and by secondary musculoskeletal problems.⁽¹⁾ The incidence rate of CP according to Center for Disease Control is 3.6 per thousand live birth and a prevalence of 2-2.8/1000. Cerebral palsy has traditionally been identified as part of a spectrum of neurodisability, caused due to a static lesion in the developing brain which causes permanent motor impairment in children. Lesions are caused by developmental defects like lissencephaly, infarction i.e., middle cephalic occlusion of the artery in neonates, trauma during pregnancy, and after

delivery⁽²⁾⁽³⁾. There are two factors which cause cerebral palsy; one is premature delivery which is the most common cause and secondly difficult labour with neonatal asphyxia. In full-term infants, who account for the majority of cases of cerebral palsy, signs of birth depression, such as low Apgar score.⁽³⁾

One of the main objectives while dealing with cerebral palsy children is to improve mobility. Various methods of physiotherapy are required to improve the child's functional status.⁽⁴⁾

The International Classification of Functioning, Disability and Health, known as ICF. It belongs to the "family" of international classifications developed by the World Health Organization (WHO) for application to various aspects of health. The WHO family of international classifications provides a framework to code a wide range of information about health (e.g., diagnosis, functioning and disability, making it easier to understand for health care workers) as it sets a standardized common language

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permitting communication about health and health care across the world in various disciplines and sciences. ICF is a multipurpose classification designed to serve various disciplines and different sectors with the overall aim of providing a unified and standard language and framework for the description of health and health-related states. It defines components of health and some health-related components of well-being (such as education and labour). The domains contained in ICF is classified ad health domains and health related domains. These domains are described from the perspective of the body, the individual and society in two basic lists: ⁽¹⁾ Body Functions and Structures; and ⁽²⁾ Activities and Participation. ⁽⁵⁾⁽⁶⁾

So, the aim of the study was to present a framework for developing an ICF-based documentation system in Cerebral Palsy rehabilitation across the continuum of care by using a case study approach

Case Description:

The child is 12 years old boy diagnosed with chore-athetoid Cerebral Palsy.

Prenatal History: His mother had 2 pregnancies with no history of Blood Pressure or Diabetes or Thyroid at the time of Pregnancy.

Perinatal History: He was born in 10-month, Normal delivery and had a delayed cry (after 4 hrs) and had a birth weight of 1.5 kg at the time of birth.

Postnatal History: His feeding was through spoon till 5-6 days after delivery and had a slow cry. No History of Jaundice, Trauma, Convulsion or fever.

Developmental History:

Gross Motor: All his Milestones were delayed.

Neck Holding	Achieved after 2-3 years
Sitting	Achieved after 3 years
Crawling	Achieved after 4 years
Standing	Achieved after 5 years
Walking	Achieved after 6 years

Fine Motor:

Hand Grasp	Achieved after 3 years
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Social History: Recognise Mother after 1 year. His speech was slurred.

Clinical Presentation:

Neurological Examination:

Higher Mental Function: He was attentive and oriented

Oro motor Function: His Lip Closure was not present; Jaw Control and chewing was present.

There was Presence of Involuntary Movement-Chorea

Reflexes:

There was withdrawal reflex in plantar response and rest all deep reflex were absent.

Sensory Examination Assessment:

All his superficial and deep sensations were Intact.

Motor Examination:

Tone Assessed using Modified Ashworth Scale (MAS)

On assessing the Tone, Present in Lt. Elbow Flexor-Grade 1, Bilateral knee Flexor- Grade 1

Tightness: mild Tightness present in Bilateral Hip Flexor, Hamstrings and Adductors.

Hand Functions: could perform overhead reaching bilaterally Cylindrical, Spherical Grasp was poor and Voluntary Release was present.

Gait- Walked with assistance and had jerky movements with shoulder protracted, lordotic posture and Bilateral Knee Flexed.

Hip flexion was reduced and reduced ankle dorsiflexion in swing phase

Outcome Measure:

GMFM Score: 60.5% on first day.

Ufmg Sydenham's Chorea Rating Scale: 47/84

Problem List: Problem List are set according to ICF core set:

ICF core set for Body Function

ICF core set for Body Function

ICF CODE	ICF CATEGORY TITLE
<p>b 735</p> <p>Functions related to the tension present in the resting muscles and the resistance offered when trying to move the muscles passively.</p> <p>Inclusions: functions associated with the tension of isolated muscles and muscle groups, muscles of one limb, one side of the body and the lower half of the body, muscles of all limbs, muscles of the trunk, and all muscles of the body; impairments such as hypotonia, hypertonia and muscle spasticity, myotonia and para-myotonia</p>	<p>Muscle Tone:</p> <p>Tone present in Bilateral Elbow Flexor and Knee Flexor Grade 1</p>
<p>b 760</p> <p>Functions associated with control over and coordination of voluntary movements.</p> <p>Inclusions: functions of control of simple voluntary movements and of complex voluntary movements, coordination of voluntary movements, supportive functions of arm or leg, right left motor coordination, eye hand coordination, eye foot coordination; impairments such as control and coordination problems, e.g. clumsiness and dysdiadochokinesia</p>	<p>Control of Voluntary Movement Function :</p> <p>Grade 3 in Elbow and Knee which causes difficulty in performing coordinated movement</p>

ICF core set for Activities and Participation

ICF CODE	ICF CATEGORY TITLE
<p>d 230</p> <p>Carrying out simple or complex and coordinated actions in order to plan, manage and complete the requirements of day -to-day procedures or duties, such as budgeting time and making plans for separate activities throughout the day.</p> <p>Inclusions: managing and completing the daily routine; managing one's own activity level</p>	<p>Carrying out Daily Routine: difficulty in managing activities of daily living like dressing, standing and walking</p>
<p>d 415</p> <p>Staying in the same body position as required, such as remaining seated or remaining standing for work or school. Inclusions: maintaining a lying, squatting, kneeling, sitting and standing position</p>	<p>Maintaining a Body Position:</p>
<p>d 440</p> <p>Performing the coordinated actions of handling objects, picking up, manipulating and releasing them using one's hand, fingers and thumb, such as required to lift coins off a table or turn a dial or knob. Inclusions: picking up, grasping, manipulating and releasing</p>	<p>Fine Hand Use: Difficulty in grasping and gripping object but has release</p>
<p>d 450</p> <p>Moving along a surface on foot, step by step, so that one foot is always on the ground, such as</p>	<p>Walking: Difficulty in walking small distance independently</p>

when strolling, sauntering, walking forwards, backwards or sideways. Inclusions: walking short or long distances; walking on different surfaces; walking around obstacles	
d 460 Walking and moving around in various places and situations, such as walking between rooms in a house, within a building, or down the street of a town. Inclusions: moving around within the home, crawling or climbing within the home; walking or moving within buildings other than the home, and outside the home another building	Moving around in different locations
d 550	Eating:

GOALS:

ICF Categories	Short term goals	Time frame
b735	To normalize the tone	1-1/2 Month
b 760	To improve voluntary control	1 month
d230	To improve functional independence in activities of daily living	1-2 months
d 415	To improve balance in sitting	3 months
d 440	To improve grasp and release	2 months
d 450	To improve walking approx. 30 meters	1-1/2 month

ICF Categories	Long term goals
b 760	To improve strength
d 415	To improve balance in standing
d 440	To improve fine motor functions
d 450	To improve walking

Physiotherapy Management:

1. To normalize tone of elbow and knee flexor from Grade 1: Patient was given Sustained Stretching of elbow flexor muscles and knee flexor muscles bilaterally 30 second hold for 3 repetitions
2. To reduce Involuntary Movement: Patient was given the Weightbearing activities such as Quadruped, half kneeling and standing which reduced the voluntary movements at rest.
3. To improve normal control of the extremities: The patient was made to do Multiple angles holds for both his upper and lower limb for 10 repetitions each.
4. To improve functional activities of daily living: Patient was trained for the activities such as brushing with holding something, dressing upper body- 10 repetitions standing for 30 seconds.

To improve balance in sitting: As the patient had static balance, he was trained for dynamic balance. Patient was trained for dynamic sitting position by reach outs sitting on a chair indifferent direction

As the patient achieved the dynamic sitting balance on normal surface, patient was trained on vestibular ball reach outs, in all planes, picking up the objects from the floor.

5. To Improve Gross Motor Activity: Patient was initially assisted by the therapist for both his hand functions with the pegboard, putty exercise, ball squeezing for releasing
6. To Improve Walking: The patient was initially made to walk approximately for 30 meters with the help of walker and AFO with weight cuffs tied around the waist to reduce the involuntary movements.

Long Term Rehabilitation:

1. To Improve Balance in standing: Initially the patient was trained for static standing with AFOs. Later, was progressed to Dynamic Standing with reach outs in various planes and one leg standing.
2. To Improve Fine Motor Function: Patient was made to do small peg boards and to remove the pegs from the putty.
3. To improve walking and moving around in different location: The patient was initially made to walk 5 rounds without the walker with AFO and weight cuffs tied around the waist to reduce the involuntary movements while walking. Later was progressed to treadmill walking with therapist support and to progress the support was withdrawn.

Outcome After Re-Assessment:**Clinical presentation - Functional status**

1. ADLs: The patient is now able to dress upper part, brush on his own, eat independently and walk around the hospital corridors.
2. Standing: Patient is now able to stand independently without the loss of balance.
3. Involuntary Movements: There is reduce involuntary movements observed at rest.
4. Walking: The patient is now able to walk from the hospital ward to the OPD independently.

Re-assessment was done to see the achievement of goal in Activation and participation (Performance).

ICF categories	Outcome measures	Pre-Value	Post Value	Generic Qualifier Scale	
				Pre value	Post value
b 735 Muscle Tone :	Modified Ashworth Sale	1	0	1	0
b 760 Control of Voluntary Movement Function	UFMG Sydenham's chorea rating scale:	47/84	34/84	2	1
	GMFM Scale	60.5	95.2	3	1

Generic Qualifier Scale: (0= No Impairment, 1= Mild Impairment, 2= Moderate Impairment, 3= Severe Impairment, 4= Complete Impairment)

Discussion:

The purpose of the study was to use the ICF frame in Physiotherapy management in Cerebral Palsy. The child received Physiotherapy for 4 months, and have showed improvement clinically.

After physiotherapy intervention for 4 months, there was normalisation of tone seen in elbow and knee flexors from Grade 1 to 0 according to Modified Ashworth Scale (MAS) after Sustained Stretching. Shamsoddini A et al: Sustained Stretching have found to be effective by lengthening the muscle and providing relaxation.⁽⁷⁾ It also has been found to increases in motor neuron excitability, decreases development of contracture, increases range of motion, improves gait pattern and also reduces the energy during walking.⁽⁸⁾ Also, there was reduction in involuntary movement at rest after weight-bearing activities such as kneeling and standing. It also improved static standing.

There was improvement in the activities of daily living after physiotherapy as there was repetition of task based on motor learning. The GMFM scores improved in sitting, kneeling standing and walking components as functional physical therapy improves motor abilities of children with CP. The results also indicated that differences in GMFMS levels between pre- and post-treatment are clinically meaningful and it is essential to assess, monitor, and provide interventions to promote development and acquisition of skills, thus optimizing potential. Therapies are most effective when started early.

Qualifiers are codes are used to record the extent of functioning or disability in a domain or category, or the extent to which an environmental factor is a facilitator or barrier. A uniform or 'generic' qualifier scale is provided to record the extent of the 'problem' in relation to impairment, activity limitation and participation restriction.⁽⁹⁾. Based on the condition

the short-term goals were set and the parent's expectation was set in the long-term goal, after that they were placed according to the ICF core sets. The ICF is suitable for use in community-based life and care, and across multi-disciplinary care. The model can be used to underpin case planning, monitoring of progress, and outcomes evaluation. It is consistent with an approach to care and treatment that is person-centred, a partnership, and holistic. ICF can be used as an outcome measure rather than using various scales in Clinical setups. The ICF includes the patient perspective and thereby adds rich information to the ICF categories about the patient's own experience which other clinical scales fail to do so. It also supports the diagnostic process by facilitating the identification of hypothesized relationships between problems and their causes, which is an important step in the clinical reasoning process. It helps enhance professional working relationship between the physiotherapist and other team members by outlining their roles.⁽¹⁰⁾

Conclusion:

There is an effect of 4 months of Physiotherapy Rehabilitation in the management of Choreoathetoid cerebral palsy as there was an improvement in the gross motor and fine motor activities. Also, ICF helped in framing the problem list and goals effectively.

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