

Comprehensive Evaluation based on ICF for Goal Setting in a Patient with Stroke since 7 years: A Case Report

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Abstract:-

Background: Physiotherapy management is evidence-based treatment approach that has short-term and long-term effect on functional outcome in patients with Stroke. The International Classification of Functioning, Disability and Health (ICF) play an important role in functioning and health for patient with stroke. So, the purpose of study was to use ICF for Physiotherapy Management in patient with Stroke.

Methodology: A case-based study on 45 years old man with 7 years Post-Stroke was conducted. The problems were enlisted by implementing ICF. Reassessment was done with the help of ICF Qualifier Score and Evaluation based Physiotherapy management was administered. **Results:** There was decreased in muscle tone, improvement in muscle strength, improved voluntary control of shoulder, improved balance and improvement in Hand function.

Conclusion: So, ICF can provide a structural framework for the problem list oriented comprehensive evaluation in rehabilitation. After receiving physiotherapy management improved the patient's functional status.

Keywords : Stroke , case report, ICF, Goal setting

I. INTRODUCTION

Stroke is commonest neurological cause of morbidity & mortality all over the world. A systematic review study reported Crude incidence of Stroke ranged from 108 to 172 people per year^[1] Impairment of upper limb functions contributes greatly to functional disability after Stroke.^[2] The International Classification of Functioning, Disability, and Health (ICF) is a common language and a classification system that indicates interaction between a person in physical, social, and psychological perspectives and also addresses the impact of such systems on the person's health status.^[3,4] So the aim of study is to use ICF for Physiotherapy Management in patient with Stroke.

II. CASE DESCRIPTION

A 45 year old man with no past medical history of Hypertension and Diabetes presented to the Neurophysiotherapy OPD. He had a fall on left side while driving his bike on 15/09/2015. After 6 days he experienced mouth deviation while drinking water followed by difficulty in holding glass. Patient admitted to hospital and

investigations were done. He achieved all bed mobility activities in Stroke centre. He visited our OPD 4 months back post Stroke – 7 years.

He had a family history of Rt. Cerebrovascular accident and was diagnosed as Rt. Cerebrovascular Accident with acute right subclavical artery thrombosis

III. INITIAL EXAMINATION

Written consent was taken from patient. Neurological Assessment was done by Physiotherapist. Patient chief complaint was difficulty in moving upper extremity and grasping and releasing objects.

IV. OBJECTIVE EXAMINATION

On observation, Built - endomorphic. Sensory Examination- Absent sensation on left hand palmar aspect and affected Deep and Cortical sensations. Spasticity - Elbow and wrist flexors (Modified Ashworth Scale) MAS. Brunnstorm recovery stage of hand was 1. Muscle strength for Shoulder, Elbow, knee extensors and Hip was 3, Wrist and knee flexors was 2 and Ankle and wrist extensors was Grade 1. Balance - Patient had difficulty in standing on one leg, tandem standing, stepping on stool. Observational Gait analysis – limited knee flexion and poor heel Strike was observed.

V. PROBLEM LIST BASED ON ICF

Categories present related to the component of body function, structure, activity and participation in ICF and documented in Table no.1-2.

Table no. 1 - ICF core set for stroke-categories of the component of body function

ICF Code	ICF Category (Body functions)
b235	Vestibular functions
b260	Proprioceptive function
b280	Sensation of pain
b455	Exercise tolerance functions
b710	Mobility of joint functions
b715	Stability of joint functions
b730	Muscle power functions
b735	Muscle tone functions

b740	Muscle endurance functions
b760	Control of voluntary movement functions
b770	Gait pattern functions

Table no. 2 ICF core set for stroke-categories of the component of Body Structures

ICF Code	ICF Category (Body structure)
s110	Structure of brain
s410	Structure of cardiovascular system
s720	Structure of shoulder region
s730	Structure of upper extremity
s750	Structure of lower extremity

Table 3: ICF core set for stroke-categories of the component of Activity and participation.

ICF Code	ICF Category (Activity and function)
d430	Lifting and carrying objects
d440	Fine hand use (picking up, grasping)
d445	Hand and arm use
d450	Walking

VI. PHYSIOTHERAPY INTERVENTION

The primary goal of rehabilitation was to prevent complications, minimize impairments and maximize function. Table 4-5 shows Short term and Long term Goals. **Patient Education** -Regular physical activity has many health benefits, such as controlling blood pressure, helping with weight loss, reducing cholesterol levels and reducing the risk of developing diabetes.^[5]

Table no. 4 - Short term Goals –Time Frame : 1 month

ICF Code	Goals
b735	To normalize muscle tone
b730	To improve muscle strength
b235	To improve the Berg Balance Score
d430	To improve lifting and carrying objects

Table no. 5 -Long term Goals – Time Frame : 3 month

ICF Code	Goals
d440	To improve hand function
d450	To improve walking

To normalize muscle tone Passive Sustained Stretching was given with the elbow, wrist, and fingers extended and maintained for 30seconds ^[6,7]. The hand was positioned in weight-bearing to the patient’s side and maintained for several minutes.

To improve muscle Strength Abdominals and Back Extensors - Core stabilization exercise consist of Bridging - For 15 secs hold with 10 repetitions and Initially curl-ups with Straight reaching for 10 secs hold with 10 repetitions . Squatting with hold of 10 secs and Lunges with 10 secs hold given.^[8] **To Improve Balance** -Double leg stance for 10 seconds, tandem stance for 10 seconds, step forward and backward, step sideways on exercise step, walking forward and backward in tandem walking pattern and perform single leg stance for 10 seconds. Balanced improved within 3 weeks of treatment and the score was improved for the same .**To Improve Upper extremity function- Postural shift toward the more affected side** with weightbearing on the extended arm was given to promote proximal stabilization and counteract the effects of excessive flexor hypertonus.

Weight-bearing activities in sitting and plantigrade standing positions were given to the patient.

Patients with limited voluntary control – practice initial reaching in a supported position.

Bruunstrom Hand Training for mass grasp – Pronation and supination activities were initiated .

Bilateral arm training with rhythmic auditory cueing (BATRAC)was practiced with wand and minimum support at the elbow joint to prevent flexion was given. **To improve Walking** Components of gait in preparation for walking included: symmetrical weight bearing training, weight shifting, stepping training . Prevention of abduction was with the help of therapist ad knee extension was prevented with the help of Knee Brace.

Endurance Training- Low intensity endurance training started initially with Upper arm Cycle ergometer and Treadmill training was initiated for 10 mintues.

Outcome Measures used were Modified Ashworth Scale, Berg Balance Scale, Dynamic Gait Index and Wolf Motor Function Test.

VII. RESULTS

Reassessment was done for the patient and following were the pre and 3 months post treatment results given in Table no. 6

Table no. 6 – Re-assessment post intervention

ICF Category	Goal	Pre treatment	Qualifier Score	Post treatment	Qualifier Score
b735 – Muscle tone	STG – 1	Elbow flexors – 2 Wrist flexors- 1+	2	Elbow Flexors- 1 Wrist Flexors – 1	1
b730- Muscle Power	STG-2	Abdominals – Fair	2	Abdominals – Good	0
b235 - Balance	STG-3	Berg Balance Score- 46/56	2	Berg Balance Score – 55/56	0
b430- Lifting and carrying objects	LTG-1	Wolf Motor Function test- 35/126	4	Wolf Motor Function test – 60/126	2
d450 - Walking	LTG- 2	Dynamic Gait Index -17/24	2	Dynamic Gait Index -21/24	1

VIII. DISCUSSION

ICF is a Multipurpose classification system and its aim is to provide a scientific basis for understanding health and health related systems and provide a coding scheme for health information systems. A uniform and generic Qualifier scale is provided to record the extent of the problem relation to impairment. Based on Short term goal there was improvement in muscle tone, voluntary control of the upper extremity, balance. As the patient had Obesity Reduction of BMI was not targeted as such but it still occurred as extra benefit.

The effects of stretching on spasticity explained by a change in the excitability of motoneurons supplying the spastic muscle and that application of stretch decreased motor neuron excitability and may be beneficial to decrease spasticity.^[9] Rajrupinder Kaur Rai et. al reported that Improvements in trunk control may be due to the fact that trunk exercises consisted of selective trunk movements which helped in strengthening of trunk muscles.^[8,10] Based on long term goal, the patients is able to grasp the object. Brunstorm recovery stage of hand is Stage 3. Patient now able to climb stairs with alternate feet and Gait is improved. Documenting the ICF Code for body functions on different dates can show a progression in the person's ability to produce changes in the first qualifier and further support the documentation of the goal achievement. The study concluded that ICF can provide a structural framework for the problem list oriented comprehensive evaluation in rehabilitation. ICF documentation would be helpful for the systematic and comprehensive evaluation and serve as a basis for adequate and realistic rehabilitation goal settings.

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