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Effective time taken to administer activity limitation and participation restriction components of comprehensive ICF core set by novice raters in stroke subjects

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Abstract

Background of the study: ICF Core Set for Stroke is a practical tool that represents a selection of categories from the whole classification and can be used along with the ICF qualifier scale to describe patient's functioning and disability following stroke. There are problem with the ICF language itself and difficulties in understanding ICF terminology for patients with low levels of education or concrete cognitive styles. In addition it has been suggested that clinicians lack in –depth knowledge and experience in using the framework. So the study is conducted to see the effective Time taken to administer the ICF in activities and participation restriction to assess the stroke subject by novice raters and Assessing activity limitation and participation restriction component in stroke subject by using ICF.

Design: Observational study

Settings: HOSMAT Hospital, Bangalore

Subjects: A total of 25 stroke subjects with a mean (SD) age of 51.4±11.3871. 20 males and 5 females participated in the study.

Method: Stroke survivors were evaluated with 51 ICF categories of activity limitation and participation restriction from the comprehensive ICF corset.

Outcome measures: Qualifier scale of ICF corset.

Results: The median time taken by the researcher and the novice rater is 17 minutes and 20 minutes respectively.

Conclusion: There is difference in the time taken by the novice rater and the researcher.

Keywords: Stroke, comprehensive ICF corset

Introduction

Stroke is defined as an acute neurologic dysfunction of vascular origin with rapid onset of symptoms according to the affected regions of the brain [1]. The consequences of stroke on patient's functioning are usually complex and heterogeneous depending on etiology, localization and initial stroke severity [2]. Stroke is one of the leading causes of mortality, 40% to 77% of those affected are alive 1 year after the event. One third of the stroke survivors face long-term disability. Disability after stroke appears in the form of neurological dysfunctions (eg, motor, sensory, visual), limited ability to perform activities of daily living (ADL), and neuropsychological deficits (memory, attention, language) [3].

Following stroke, possibly affected areas according to ICF terms under Body functions are - mental functions, sensory functions and pain, voice and speech functions, functions of cardiovascular, hematological, immunological and respiratory systems, functions of digestive, metabolic and endocrine functions, genitourinary and reproductive functions, Neuro-musculoskeletal and movement related functions. Under activity limitation and participation restriction are- learning and applying knowledge, general tasks and demands, communication, mobility, self-care, domestic life, interpersonal interactions and relationships, major life areas ie, community, social and civic life [4]. These impairments and activity limitation leading to reduced quality of life in stroke subjects.

Rehabilitation after stroke requires an inter-professional team including physicians, psychologists, occupational therapists, nurses, social workers, and physical therapists.

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Physical therapists are described as one of the key components of the interdisciplinary team in stroke rehabilitation. Particularly, physical therapy aims at restoring motor control in locomotion, improving upper limb function, enhancing the ability of people with stroke to cope with existing deficits in ADL, and achieving the best possible participation in the community [3].

Physical therapists use different health measures like Stroke impact scale, Burden of stroke scale, Stroke and aphasia quality of life scale -39, stroke adapted sickness impact profile -30 [4], Nottingham questionnaire to quantify impairments and functional limitations in stroke subjects. But none of the above mentioned health measures provide a complete assessment for the stroke subjects as they are affected in variety of ways in activities of daily living and participation.

In recent years ICF is increasingly applied in physical therapy [5] and rehabilitation [6], especially in the field of neuro-rehabilitation [7], to facilitate interdisciplinary team communication, to structure the rehabilitation process [8], for goal setting and assessment, and for documentation and reporting. Briefly, the ICF is a bio-psychosocial model of health that focuses on the consequences of disease [9] and includes two parts, with each part containing separate components. The first part covers functioning and disability and includes the components of body structure and function, activities and participation [10]. The second part covers contextual factors and includes the component of Environmental Factors and Personal Factors [11].

However, the ICF as a whole is not feasible for use in routine clinical application [12], to facilitate the implementation of the ICF into clinical practice, brief and comprehensive [13] "ICF Core Sets" have been developed [14, 15].

Need of the study

Studies were not conducted to report the. Time taken for administering activity limitation and participation restriction component due to lack of awareness as practice of administering ICF.

Statement of the problem

Application of ICF corset may consume time of therapist. There are no studies to quantify the time taken in applying corsets of ICF.

Objectives of the study

- Assessing activity limitation and participation restriction component in stroke subject by using ICF.
- Effective time taken to administer the ICF corset in activities and participation restriction to assess the stroke subject by novice raters.

Clinical significance

The effective time taken shows that it is feasible to perform this corset in a clinical setting.

Methodology

Study design: Observational study.

Study setting: HOSMAT Hospital, Bangalore.

Inclusion criteria

- Subjects with first time stroke.
- Both male and female subjects.
- Subjects with age of 35-70yrs.

- Subjects who are modified independent in ADL (6 on FIM).
- Subjects who are community dwellers.

Exclusion criteria

- Subjects who are in acute stage of stroke.
- Subjects who are un-co-operative.
- Subjects who are cognitively impaired.
- Subjects who are not community dwellers.
- Subjects who are having auditory and visual deficits.

Sample selection

Sample selection for stroke subjects

- Retrospective & Prospective Purposive Sampling
- The population was stroke patients who had attended or reported to the Outpatient department of Neurosciences, HOSMAT Hospital.
- Stroke subjects who have already consulted the Consultant Neurologist at HOSMAT were identified from the Medical Records Department (MRD) and taken as potential candidates for the study. The subjects were invited to the study by calling the individual on telephone with the data obtained from the MRD. The subjects were scrutinized for inclusion – exclusion criteria & those who satisfied the criteria and were interested to participate in the study were included in the study sample.
- Stroke subjects who reported for consultation were screened for inclusion – exclusion criteria and considered as potential candidates for the study. Subjects who satisfied the criteria and were interested to participate were included in the study sample.

Sample size: Stroke subjects - 25

Materials

Activity limitation and participation restriction component of Comprehensive ICF core set.

Procedure

Phase 1

34 stroke subjects were invited to take part in the study from hosmat hospital, Bangalore. Patients were continuously recruited from January 2012 to January 2013. Subjects who were invited to the study (Retrospective & prospective) were scrutinized for inclusion exclusion criteria and were explained the procedure, aim of the study. 9 subjects were excluded because 7 patients were in acute stage of stroke, 1 was cognitively impaired and 1 with auditory deficit. Interested subjects were included with written informed consent. All the subjects were assessed with reference to Appendix-II. A video was recorded simultaneously, when the researcher was assessing or interviewing, by other therapist with digital camera and this video was saved for the purpose of training undergraduate students (novice). The Researcher noted down the time taken to administer the procedure. After the interview was completed, the researcher quantified the performance of activity limitation and participation restriction with qualifier scale.

Phase 2

The Researcher selected 7 under graduate (final year) students (novice raters) and trained the students by playing the video and also by instructions on the method of assessment on activity limitation and participation restriction component.

Once the students were trained, they assessed the activity and participation component on stroke subjects. The Researcher noted down the time taken by student to administer the activity and participation component of ICF.

Procedure for administering the ICF corset

All the subjects were explained about the questionnaire and ICF corset. The annexure ii was prepared from various scales. The various scales used are Tinitti assessment tool, Frenchay activities index, Katz index of activities of daily living, Berg balance scale, Functional independent measure, Functional assessment measure, Nottingham questionnaire etc. Questions were made for each category of the component activity limitation and participation restriction according to comprehensive ICF corset. The researcher and the subject were seated on a table and the interview or assessment was taken. The researcher starts the time when the first question is being asked and he stops time when the subject answers the last question. The researcher then quantified the performance of activity limitation and participation restriction with qualifier scale.

Data analysis

- Descriptive statistics (median and average) -

Demographic data and the time taken to administer the ICF.

- Frequency distribution- For the activity limitation and participation restriction component.

Results

A total of 25 stroke subjects with a mean (SD) age of 51.4±11.3871. 20 males and 5 females participated in the study. The descriptive of demographic data is tabulated in table 1. The descriptive of the frequency distribution of the categories of the component activity limitation and participation restriction is shown in table 2.

Table 1: Demographic data and time taken by novice and researcher

Subject parameters	Characteristics
Age (mean ± SD)	51.4±11.3871
Sex (male/fe-male)	20/5
Side of stroke (Rt / Lt)	14/11
Time taken (novice/researcher)	20/17

Table no 1: Showing demographic data, side affected and the time taken to administer activity limitation and participation restriction component of ICF, N=25

Table 2: Frequency distribution for activity limitation and participation component of comprehensive ICF corset.

ICF codes	0	0.1	0.2	0.3	0.4	0.8	0.9
d115	5	19	1	0	0	0	0
d155	0	1	7	14	3	0	0
d160	0	1	5	17	2	0	0
d166	2	3	1	2	2	0	15
d170	0	1	2	2	16	0	4
d175	0	3	13	9	0	0	0
d210	0	1	16	5	3	0	0
d220	0	0	4	19	2	0	0
d230	0	7	7	10	1	0	0
d310	0	5	16	4	0	0	0
d330	0	2	10	13	0	0	0
d345	1	0	0	0	23	0	1
d350	0	2	5	16	2	0	0
d360	0	2	5	16	2	0	0
d410	0	2	1	18	4	0	0
d415	2	2	0	18	3	0	0
d420	2	0	0	21	2	0	0
d430	0	0	2	10	12	0	0
d440	2	2	3	9	6	0	3
d445	1	2	3	7	8	0	4
d450	1	2	7	14	1	0	0
d455	0	4	1	17	3	0	0
d460	2	4	2	15	2	0	0
d465	0	3	2	15	5	0	0
d470	0	2	1	13	9	0	0
d475	0	0	0	0	21	0	4
d510	2	3	4	16	0	0	0
d520	0	1	4	17	3	0	0
d530	2	3	4	15	0	0	1
d540	0	6	0	18	1	0	0
d550	1	8	10	5	1	0	0
d570	0	3	3	19	0	0	0
d620	0	0	2	15	5	0	3
d630	0	0	0	0	4	2	19
d640	0	0	0	3	13	5	4
d710	0	2	2	15	6	0	0
d760	0	0	1	17	7	0	0
d770	0	4	0	7	12	0	2
d845	0	1	1	2	16	0	5
d850	0	0	0	1	20	0	4

d855	0	0	0	0	3	8	14
d860	0	1	0	12	11	0	1
d870	2	0	0	9	12	0	2
d910	10	1	5	6	3	0	0
d920	0	0	0	9	16	0	0

Discussion

The primary aim of the study was to examine the effective time taken to administer activity limitation and participation restriction components of comprehensive ICF core set by novice rater in comparison to seasoned rater in stroke subjects [16]. A novice was defined as a rater with no prior experience in administering ICF components [17] (operational definition) and the researcher here is a rater who has completed at least 10 prior questionnaires. On analysis of the data it was seen that a novice rater took an average time of 19.57 minutes to administer the core set which was prepared and the researcher took 17 minutes to administer the same core set. (SD 0.5345: 0.5773) The median time taken was 20 minutes and 17 minutes respectively (Table 1). The time taken by the novice is greater than the time taken by the researcher because the novice is not familiar with the questionnaire and lack in – depth knowledge and experience in using the framework [18].

The secondary aim of this study was to study the frequency distribution of the activity limitation and participation restriction [19] components of comprehensive ICF core set. The frequency distribution table (table 2) demonstrates that in chapter 1: “Learning and applying knowledge” 19 subjects had mild impairment on the component of listening. The patients were able to point appropriately to pictures as a response after specific questions were asked. The fact that patients did reasonably well on this assessment suggests that patients are able to process auditory commands and then come up with appropriate answers. We have included the subjects who are not cognitively impaired. This has not been adversely affected by the stroke in this particular study group. On the component focusing attention, 17 subjects had fallen into category of severe impairment based on the answers that they had self-assessed themselves on the questionnaire. This could also be due to the fact that stroke patients in this study group have given themselves less credit in this category as opposed to how they were able to perform in the listening task which also has focus and attention as part of it [20, 21].

In chapter 2: “General task and demand [22, 23]” 19 subjects had severe impairment with undertaking multiple tasks, and 16 subjects had moderate impairment with undertaking a single task. This shows that the stroke has affected the ability of the patient to perform even simple tasks but the difficulty also increases as they have to perform multiple tasks simultaneously. Multitasking involves not only the motor ability to do task but also a component of focus and divided attention.

Chapter 3: “Communication” shows that the patients had the most amount of difficulty with written communication, having complete impairment. In our study 14 of the 25 patients were affected by the stroke on their dominant side contributing to the complete impairment of writing. Correspondingly it was also seen that these patients have difficulties in making conversation with a group of people. This could be attributed to that most of the subjects had right side stroke, motor aphasia which could have influenced the fluency of speech [23].

Chapter 4: “Mobility [24]” 21 subjects had severe impairment on

the component transferring oneself. All the components of mobility especially bed to chair is severely affected, showing that balance, coordination and mobility components are affected in this group of patients. 18 subjects are severely impaired on the components changing basic body position and maintaining a body position. These components require motor and balance component. Most of the subjects are affected on the dominant side and this could be the reason for the difficulty for the subjects to perform this activity.

Chapter 5: “Self-care [25]” the components of self-care are severely impaired, 19 subjects had severe impairment in the category looking after ones health and 18 subjects had severe impairment in the category dressing, which is again a combination of difficulty in motor performance and difficulty in looking after oneself. The categories are looking after ones health and dressing. The subject’s standard of living has changed as a result of stroke and it is difficult for them to perform the tasks of self-care, the weakness of one side of the body and lack of balance would be contributory.

Chapter 6: “Domestic life [26]” the maximum number of subjects (19 subjects) scored not applicable for the component preparing meals since the sample size containing majority of male patients and culturally in this area food is usually prepared in their houses by female relatives. 15 subjects have severe impairment with acquisition of goods and services. This is a social component involving cognition, balance and motor components. The patient might be having difficulty with the above mentioned components.

In Chapter 7 “Interpersonal interactions and relationships”, the study showed that the subjects had most difficulty with family relationships, as it requires a motor component of visiting the family, a speaking component of talking to them on the phone and a writing component to write letters to them. The study subjects had impairment with basic interpersonal interactions, most likely since the subjects may be affected with behavioral changes like depression.

In the items under Chapter 8: “Economic self-sufficiency [27]” the subjects had severe impairment with remunerative employment since it requires the components like motor, cognition, speech, and mobility. Most of the subjects are male and were working to support the family and they might be facing severe difficulty with their employment, since they are not able to work as before. The stroke and the loss of mobility and function prevent them from doing so [28, 29].

Chapter9: “community, social and civic life [23, 30]” 16 subjects showed complete impairment with the component recreation and leisure since the stroke stops them from taking part in any kind of recreational activities. Most of their previous recreational activities involved mainly motor tasks as well as tasks which involved balance coordination and planning components.

Conclusion

There is difference in the time taken by the novice rater and the researcher. For ICF administration more practice and experience is needed. Subjects had complete impairment with the categories of d345 writing, d850 remunerative employment and d920 recreation and leisure.

Table 3: Master sheet of stroke subjects

ICF code	d115	d155	d160	d166	d170	d175	d210	d220	d230	d310	d330	d345	d350	d360	d410
ICF category title	Listening	acquiring	focusing a	Reading	Writing	solving pr	undertakin	undertakin	carrying o	communic	Speaking	writing me	Conversa	using com	changing l
mr.guruprasad	0.1	0.3	0.3	0.8	0.2	0.2	0.2	0.3	0.1	0.1	0.2	0.4	0.2	0.2	0.1
mr.stany	0	0.2	0.2	0.1	0.3	0.2	0.1	0.2	0.1	0.1	0.3	0.4	0.1	0.2	0.3
mr.nir	0	0.4	0.4	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0	0.2	0.1	0.2
mr.fayaz	0.1	0.3	0.3	0.8	0.4	0.2	0.2	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.3
mrs.leela	0.1	0.3	0.3	0.8	0.4	0.2	0.2	0.4	0.3	0.2	0.3	0.4	0.3	0.3	0.4
mr.arun	0	0.2	0.2	0	0.2	0.3	0.3	0.3	0.3	0.1	0.2	0.4	0.3	0.3	0.3
mr.akbar	0.1	0.3	0.3	0.8	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.3
mr.sivananda	0.1	0.2	0.3	0.8	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.3
mr.vijish	0.1	0.3	0.3	0.8	0.4	0.3	0.4	0.4	0.3	0.2	0.1	0.4	0.3	0.3	0.3
mr.tippanna	0.1	0.3	0.4	0.8	0.8	0.2	0.4	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.4
mrs.usha	0	0.2	0.2	0.3	0.4	0.1	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.4
mr.naresh	0.1	0.2	0.2	0.1	0.4	0.2	0.2	0.3	0.1	0.2	0.3	0.4	0.4	0.2	0.3
mr.senthil	0	0.2	0.2	0	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.4	0.1	0.1	0.1
mrs.rekha	0.1	0.2	0.3	0.8	0.4	0.1	0.2	0.3	0.3	0.1	0.3	0.4	0.3	0.3	0.3
mr.maheshwarappa	0.1	0.3	0.3	0.8	0.4	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.3
mr.venkatappa	0.1	0.3	0.3	0.4	0.4	0.2	0.2	0.3	0.2	0.1	0.3	0.4	0.3	0.3	0.3
mr.murthi	0.1	0.3	0.3	0.1	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.4	0.3	0.3	0.3
mr.nanjundappa	0.1	0.3	0.3	0.8	0.4	0.2	0.2	0.3	0.2	0.3	0.2	0.4	0.3	0.3	0.3
mr.jyotivel	0.1	0.3	0.3	0.8	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.3	0.2	0.3
mr.debjyothi	0.1	0.3	0.3	0.3	0.4	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.3
mr.dasta	0.1	0.3	0.3	0.2	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.4	0.2	0.3	0.3
mr.badal	0.1	0.1	0.1	0.8	0.8	0.1	0.2	0.3	0.1	0.2	0.3	0.4	0.2	0.4	0.3
mrs.gowramma	0.1	0.4	0.3	0.8	0.8	0.3	0.2	0.3	0.4	0.2	0.3	0.4	0.4	0.4	0.4
mr.bedi	0.1	0.4	0.3	0.8	0.4	0.3	0.3	0.3	0.1	0.2	0.3	0.4	0.3	0.3	0.3
mrs mira	0.2	0.3	0.3	0.8	0.8	0.2	0.2	0.3	0.1	0.2	0.2	0.8	0.2	0.2	0.3

Limitations of the study

- Small sample size
- Language barrier
- 7 novice raters only participated in the study.

Clinical implication

As there is time difference the clinicians require in depth knowledge and experience in using the ICF.

Further recommendation

- Further studies to have larger sample size.
- Further studies include all the components of ICF.

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