Functional Status of Stroke Patients at Neurologic Outpatient Clinic Dr. Hasan Sadikin General Hospital

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Abstract

Background: Functional status refers to the ability of an individual to perform normal daily activity required to meet basic needs, fulfill usual roles, and maintain health and well-being. The objective of this study was to evaluate the level of disability and independency of stroke patients who had undergone rehabilitation therapy as the routine activity using Instrumental Activity of Daily Living (IADLs) and basic Activity of Daily Living (BADLs).
Methods: This descriptive study carried out from September to October 2014 at Neurologic outpatient clinic Dr. Hasan Sadikin General Hospital Bandung with a total 33 subjects. Barthel index and IADLs questionnaire was used as an instrumental tool. Barthel index was used to measure the level of disability and IADLs was used to measure the level of independency of an individual.
Results: From the 33 patients, 20 patients completed their rehabilitation therapy; 5 patients showed a moderate disability and 15 patients showed a mild disability at the Barthel Index of ADLs. The result of IADLs showed that 7 patients who completed the therapy had moderate level of independency, and 3 patients were at the category of high level of independency.
Conclusions: Most of the stroke patients have moderate disability in Barthel Index and had low level of independency in IADLs. **[AMJ.2016;3(1):126–31]**

Keywords: Barthel Index, disability, functional status, independent instrumental activity of daily living

Introduction

Stroke is defined as rapidly developing signs of focal disturbances of cerebral functions, leading to death or disability, lasting longer than 24 hours, with no apparent cause other than vascular. Globally, it is the second most common cause of death with total 5.7 million deaths around the world.[1] Stroke is no longer a disease in developed country. About 85% of all stroke deaths are caused by low and middle income worldwide. Stroke in terms of disability-adjusted life years, calculated worldwide in 72 million per year, accounts for 87% of total lost.[2]

The basic Activity of Daily Living (ADLs) of post stroke patients is measured by Barthel Index and Instrumental Activity of Daily Living (IADLs) to assess the functional abilities as in complex task. Barthel Index is an instrument to measure basic self-care of the individual. The IADLs are defined as activities which are necessary to accomplish to continue independent residence in a community. Those activities are household activities include answering telephone call, having responsibility to own medication, preparing meal, going shopping, washing clothes, and handling household finances.

Stroke recovery depends on many factors: the specific site of brain injury, the patients' condition. Stroke rehabilitation begins during the acute hospitalization, when the diagnosis is established and life-threatening events are under control. To prevent complications, early intervention is encouraged. Rehabilitation is to promote proper management of functional outcome, encourage resumption of self-care activities, and provide mental support to the patients and their family.[3]

Functional status refers to the ability of an individual to perform normal ADLs required

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to meet basic needs, fulfill usual roles, and maintain health and well-being.4 Disability is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society where he or she lives.[5] Functional is classified as IADLs and basic ADLs.[6] They use to evaluate the functional status and their disability after stroke in routine activity, and to measure the level of independency. Basic ADLs are self-maintenance abilities such as dressing, grooming, or bathing. Instrumental IADLs are more complex on everyday tasks, which are skills beyond basic self-care skills needed to function independently at home and in the community.[7] Effective rehabilitation interventions initiated early after stroke can enhance the recovery process and minimize functional disability.

The reviews above address have found some of the inconsistent findings in assessing the functional abilities of stroke patients. There is a lack from previous researches convincing evidence on the compliance of rehabilitation therapy improvement of the functional status of stroke patients.

The purpose of this study was to evaluate the level of disability and independency of stroke patients who had undergone rehabilitation therapy as the routine activity. This study was conducted in Dr. Hasan Sadikin General Hospital, one of national hospitals referred in Indonesia whose the rehabilitation department has useful equipment and physiotherapist to guide patients in rehabilitation therapy.

Methods

This was a descriptive study about the functional status of stroke outpatients carried out from September to October 2014 at Neurologic Outpatient Clinic Dr. Hasan Sadikin General Hospital Bandung. This study conducted under the ethical clearance issued by the Health Research Ethics Committee

Table 1 Demographic Characteristic

Demographic Characteristic	Total (N)	Percentage %
Age range (years old)		
< 30	3	9.09
30–39	1	3.03
40–49	9	27.27
50–59	8	24.24
> 60	12	36.36
Education level		
Elementary school	8	24.24
Junior high school	12	36.36
Senior high school	7	21.21
Diploma/Bachelor	7	21.21
Sex		
Male	14	42.42
Female	19	57.57
Marital status		
Married	30	90.90
Single	3	9.09
Address		
City town	22	66.66
Outskirts	11	33.33
Total	33	100

Table 2 Barthel Index of the Stroke Patients

Level of Disability	Total (N)
Very severe disability (0–4)	2
Severe disability (5–9)	0
Moderate disability (10–14)	8
Mild disability (15–20)	23
Total	33

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The participants in this study were stroke patients who came to the Neurologic Outpatient Clinic. Sampling method of this study was minimal total sampling which was minimal 30 patients. The inclusion criteria were the participants who signed the informed consent. However, the subjects with aphasia, severe heart disease, hemodialysis, severe pulmonary disease, and visual field defect were excluded. The study used Barthel Index of ADL and IADL questionnaire. The demographic characteristic, age, sex, educational level, marital status, and house address were recorded. The participants took part in interview after they agreed to sign the informed consent.

There were ten domains of function assess with Barthel Index. Besides, there were eight domains that corresponded to the patient's current functional ability for each task on IADLs. The writer interviewed patients witnessed by family members and medical staffs.

The Barthel Index of ADL is classified according to level of disability: very severe disability (0–4), severe disability(5–9), moderate disability (10–14), mild disability (15–20).[8] The IADL is classified according to level of independency: low (0–3), moderate (4–6), and high (7–8). [7]

The results were analyzed by categorized Barthel Index into very severe disability, severe disability, moderate disability, and mild disability. IADLs were categorized into high, moderate, and low level of independency.

Results

The total of 33 subjects, 12 stroke patients were above 60 years old which had the highest number of patients. Mostly patients completed their junior high school. Seven of the patients had a diploma or bachelor's degree. From the interview, male and female had the slight equal number of patients and the marital status mostly was married (Table 1).

The results of the interview using Barthel Index of ADL, 23 patients had moderate disability on basic self-care activities. Only 2 patients had very severe disability (Table 2).

The result from the IADL questionnaire, 13 patients had low level of independency in performing more complex daily tasks. However, 8 patients had low level of independency.

Most of the educated patients had mild disability on basic ADLs with a total 12 patients. The patients, who had highest number of mild disability, were 40–49 years old. Among the patients who completed the rehabilitation therapy, 15 patients had mild disability on basic self-care activity (Table 4).

The IADL presented by the patients who completed elementary school had low level of independency with a number of six patients. The patients at the age range 40–49 and 50–59 showed equal number of low level of independency.

Table 3 Instrumental Activities of Daily Living (IADL)

Level of Independency	Total (N)
Low (0–3)	13
Moderate (4–6)	12
High (7–8)	8
Total	33

Table 4 Characteristic of Barthel Index

Level of Disability	Very severe	Severe	Moderate	Mild
Education level				
Elementary school	2	0	0	6
Junior high school	0	0	5	6
Senior high school	0	0	2	5
Diploma/Bachelor	0	0	1	6
Age (years old)				
< 30	0	0	1	2
30–39	0	0	0	1
40–49	0	0	3	6
50–59	1	0	3	4
> 60	1	0	1	10
Complete therapy				
Yes	2	0	5	15
No	0	0	3	6
Not yet	0	0	0	2
Total	2	0	8	23

Discussion

Educational level is associated with a better functional outcome, measured by the ability to perform self-maintenance and mobility.[9] All the educated patients and thirty-one patients showed a moderate and mild disability on basic ADLs at this study. The remaining two patients only completed elementary school and showed a very severe disability in Barthel

Table 5 Instrumental Activity of Daily Living (IADL)

Level of Independency	Low	Moderate	High
Education level			
Elementary school	6	1	1
Junior high school	4	4	3
Senior high school	2	3	2
Diploma/Bachelor	1	4	2
Age (years old)			
< 30	1	1	1
30–39	0	0	1
40–49	5	2	2
50–59	5	0	3
> 60	2	9	1
Complete therapy			
Yes	10	7	3
No	3	4	4
Not yet	0	1	1

Index. However, the patients who had a diploma or bachelor's degree were presented with a better outcome compared to the others slight lower educational level patients. The stroke patients who had a higher education showed that they had a higher functional status compared to the poor educated patients.[2] From the IADLs, the patients who had completed elementary school had low level of independency. A study of examination of IADLs, a lower education is associated with a low level of functional status.[6]

Age is a non-modifiable risk factor for stroke; aging will slow down the motor function and strength of the elderly.[10] Thus, from table 1, twenty out of thirty-three patients who were at the age above sixty encountered stroke events in this study. Two elderly had severe disability at Barthel Index and two elderly had low level of independency. Based on study by Holloway et al.[3] there are more elderlies who have disability on IADLs to ADL. It does not correspond with this study.

Rehabilitation is a strategy to enhance functional independence in patients with stroke.[11] Based on study by Holloway et al.[3] rehabilitation that is started earlier and completed will reduce the complication and have a good compliance with a better outcome. In this study, the fifteen stroke patients who completed rehabilitation had mild disability on basic ADLs. Mild disability indicates an individual has mild dysfunctional on performing basic self-care daily activity.6 Eight out of 33 patients with moderate disability in this study are comparable to 40% of stroke patients with moderate disability in a similar study at Barthel Index.[6]

This study established that the stage of recovery of various impairments provides significant prognostic indicators for outcomes. The outcomes considered were ADLs, recovery of the arm, leg, and postural control and gross motor function and gait.[1] According to this study, full recovery of motor function after stroke was incomplete. However, stimulation can facilitate on the motor function of a human and thus facilitate the motor performance.[12] The functional status of the stroke patients depends on the frequency of rehabilitation and compliance of rehabilitation.

The IADLs are skills beyond basic self-care skills needed to function independently at home and in the community. Patients who were staying alone, are required to evaluate IADLs.[13] From table 5, patients completed the rehabilitation; three patients had high level of independency. This indicated the ability of the patients to perform complex tasks such as prepare a meal, use safety precaution, take medicines, and get emergency aid when it is necessary.

There are some limitations of this study; the questionnaire for Barthel Index and IADLs were written in English, whereas, interviewer had to interview in Bahasa Indonesia. The study will observe along the patients on the ADLs to obtain the accuracy of data. The recomendation for future study is starting a study using Bahasa version of instrumental activity.

In conclusion, rehabilitation therapy shows improvement from the functional status of stroke patients and a transition from dependent to independent on their daily living. The patients should be educated about the benefits of therapy and being encouraged to obtain good compliance of therapy. Therefore, increasing the awareness and understanding of stroke patients and family members on rehabilitation therapy improves the functional status of stroke patients. Prevention of stroke are made by detection of early disease, identification of risk factors, a combination of pharmacological and psychosocial interventions, and a long term follow up with regular monitoring and promotion of adherence to treatment.[14]

References

1. Canning CG, Ada L, Adams R, O'Dwyer NJ. Loss of strength contributes more to physical disability after stroke than loss of dexterity. Clin Rehabil. 2004;18(3):300–8.
2. Di Carlo A. Human and economic burden of stroke. Age Ageing. 2009;38(1):4–5.
3. Holloway R, Arnold R, Creutzfeldt C, Lewis E, Lutz B, Macann R, et al. Pallitative and end of life care in stroke. Am Heart J. 2014;45(6):1887-916.
4. Davenport R, Manson J, De'Ath H, Platton S, Coates A, Allard S, et al. Functional definition and characterisation of acute traumatic coagulopathy. Crit care med. 2011;39(12):2652–8.
5. Kwon S, Hartzema AG, Duncan PW, Min-Lai S. Disability measures in stroke relationship among the Barthel Index, the functional independence measure, and the modified Rankin Scale. Stroke.2004;35(4):918–23.
6. Gold AD. An examination of instrumental activities of daily living assessment in older adults and mild cognitive impairment. J Clin Exp Neuropsychol. 2012;34(1):11–34.
7. Graf C. The Lawton instrumental activities of daily living scale. AJN. 2008;108(4):52–

62.
8. Sangha H, Lipson D, Foley N, Salter K, Bhogal S, Pohani G, et al. A comparison of the Barthel Index and the functional independence measure as outcome measures in stroke rehabilitation: patterns of disability scale usage in clinical trials. Int J Rehabil Res. 2005;28(2):135–9.
9. Kusuma Y, Venketasubramanian N, Kiemas L, Misbach J. Burden of stroke in Indonesia. Int J Stroke. 2009;4(5):379–80.
10. Ferri CP, Acosta D, Guerra M, Huang Y, Llibre-Rodriguez JJ, Salas A, et al. Socioeconomic factors and all cause and cause-specific mortality among older people in Latin America, India, and China: a population-based cohort study. PLoS Med. 2012;9(2):e1001179.
11. Dobkin BH. Rehabilitation after stroke. N Eng J Med. 2005;352(16):1677–84.
12. Hummel F,Celnik P,Giraux P, Floel A,Wan Hsun W, Gerloff C, et al. Effects of non-invasive cortical stimulation on skilled motor function in chronic stroke. Brain J Neurol. 2005;128(3):490–9.
13. Duncan PW, Zorowitz R, Bates B, Choi JY, Glasberg JJ, Graham GD, et al. Management of adult stroke rehabilitation care a clinical practice guideline. Am Heart J. 2005;36(9):100–43.
14. Beaglehole R, Epping Jordan J, Patel V, Chopra M, Ebrahim S, Kidd M, et al. Improving the prevention and management of chronic disease in low-income and middle-income countries: a priority for primary health care. Lancet. 2008;372(9642):940–9.