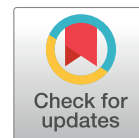**RESEARCH ARTICLE**   **Open Access**

The effect of aspirin therapy on the increasing of Barthel Index score in stroke patients

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Abstract: Stroke, a disorder of nervous system function, is caused by impaired blood circulation to the brain. Post-stroke patients often receive aspirin therapy, yet many still require assistance from others for daily activities. This study aimed to evaluate the impact of aspirin therapy on functional improvement in stroke patients at RSUD Dr. Soekardjo Tasikmalaya, using the Barthel Index score as a measure of patients' ability to perform activities of daily living. A retrospective, descriptive observational approach was employed, analyzing data from stroke patients who underwent aspirin therapy between February and May 2019. The study assessed patients' functional status before and after aspirin therapy, focusing on the level of dependence. Pre-test results indicated that 80.97% of patients fell within the mild dependence category, while 19.03% were classified as moderately dependent. After undergoing aspirin therapy, post-test results revealed a substantial improvement in patients' functional status. Only 4.76% of patients remained in the moderate dependence category, while a remarkable 95.24% transitioned to the independent range. These findings suggest that aspirin therapy may play a crucial role in enhancing the functional recovery of stroke patients, potentially promoting a higher level of independence and improved quality of life.

Keywords: aspirin therapy, *Barthel Index*, stroke

Introduction

Stroke is an acute neurological disorder characterized by either focal or global impairment of brain function due to obstruction of blood flow, resulting from bleeding or blockage. Depending on the severity and location of the brain damage, stroke outcomes can range from complete recovery to disability or death [1]. There has been an increase in stroke cases in Indonesia, and the mortality rate tends to increase with age: 15.9% at 45-55 years, 26.8% at 55-64 years, and 23.3% at >65 years [2].

Common stroke symptoms include sudden numbness or paralysis in the limbs and face, confusion, difficulty speaking or understanding speech, impaired vision, difficulty walking, dizziness, loss of balance or coordination, severe headaches, weakness, and even unconsciousness. The effects of a stroke are contingent upon the location and severity of brain damage, with extremely severe cases potentially leading to sudden death [3].

Antiplatelet drugs, which inhibit platelet aggregation and thrombus formation, play a crucial role in the treatment of acute ischemic stroke. They are indicated for patients with their first transient ischemic attack (TIA) or ischemic stroke to reduce the risk of further

events and decrease the incidence of recurrent stroke [4]. Antiplatelet therapy has been shown to reduce the relative risk of stroke, myocardial infarction, and death by 22%, and decrease the incidence of recurrent stroke from 68% to 24% [5].

The Barthel Index (BI) activities of daily living (ADL) is an established assessment tool for measuring functional ability in terms of self-care and mobility. As an ordinal scale, it evaluates performance in ten daily activities, accounting for the time and physical assistance needed for each task. Adaptations made to a patient's environment can influence the BI score, and should be documented in detail for accurate interpretation [6].

Despite the known benefits of antiplatelet therapy in stroke patients, there remains a gap in understanding its specific effects on functional recovery, as assessed by the Barthel Index. Therefore, this study aims to examine the effect of aspirin therapy on the functional improvement of stroke patients at RSUD Dr. Soekardjo Tasikmalaya. By evaluating patients's ability to perform activities of daily living, this study aims to contribute to the development of more effective therapeutic strategies for stroke recovery and enhance the quality of life for stroke patients.

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Table 1. Subject characteristic

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No.	Characteristics	n	Percentage (%)
1	**Gender**		
	Men	12	57.1
	Women	9	42.9
2	**Age (years)**		
	26-65	14	66.6
	> 65	7	33.3
3	**Education**		
	Low (no school, elementary, junior high school)	13	61.9
	Secondary (senior high school)	7	33.3
	Higher (D3, S1, S2)	1	4.7
4	**Jobs**		
	Self-employed	9	42.8
	Labor	5	23.8
	Civil servant	1	4.7
	Farmer	1	4.7
	Housewife	5	23.8
5	**Payment**		
	BPJS (public insurance)	12	57.1
	Self-payment	6	28,6
	Jamkeskinda (local public insurance)	3	14.3

Methods

Study design

This research employed a descriptive observational study design with retrospective data collection. The sample included all stroke patients who underwent aspirin therapy and were hospitalized at RSUD Dr. Soekardjo in Tasikmalaya City during February-May 2019 and who met the inclusion criteria. Inclusion criteria comprised patients with a history of stroke and those diagnosed with stroke who were treated with aspirin and hospitalized at RSUD Dr. Soekardjo, Tasikmalaya City. Exclusion criteria involved patients with a history of stroke and those diagnosed with stroke who did not receive aspirin treatment.

Barthel index assessment tool

The Barthel index was utilized to evaluate the functional ability of individuals with impaired mobility balance. This index comprises 10 indicators: eating, bathing, self-care, dressing, urination, defecation, toilet use, transfer, mobility, and ascending and descending stairs [6]. Data were gathered from patient medical records and through patient interviews. Interview was performed twice: first examination (pretest) and 30 days after aspirin therapy (posttest).

Data analysis

Data were analyzed using SPSS, with a paired sample t-test conducted to examine the impact of aspirin therapy on functional ability. Additional supporting literature, including the Drug Information Handbook (DIH), American Heart Association/American Stroke Association (AHA/ASA) guidelines, and MIMS Indonesia, were also consulted to provide context for the study.

Results

Subject characteristic

The study included 21 participants, comprising 12 men and 9 women. The data revealed that the highest incidence of stroke occurred in adults aged 26-65 years, accounting for 66.6% of cases. Regarding education, most stroke patients were elementary school graduates, followed by high school graduates. The data also indicated that self-employed individuals experienced most strokes. The predominant payment method for stroke patients at RSUD Dr. Soekardjo Tasikmalaya City was BPJS, representing 57.1% of cases (Table 1).

Table 2 demonstrates that ischemic stroke was the most common stroke among the study participants. Various disorders can contribute to ischemic stroke,
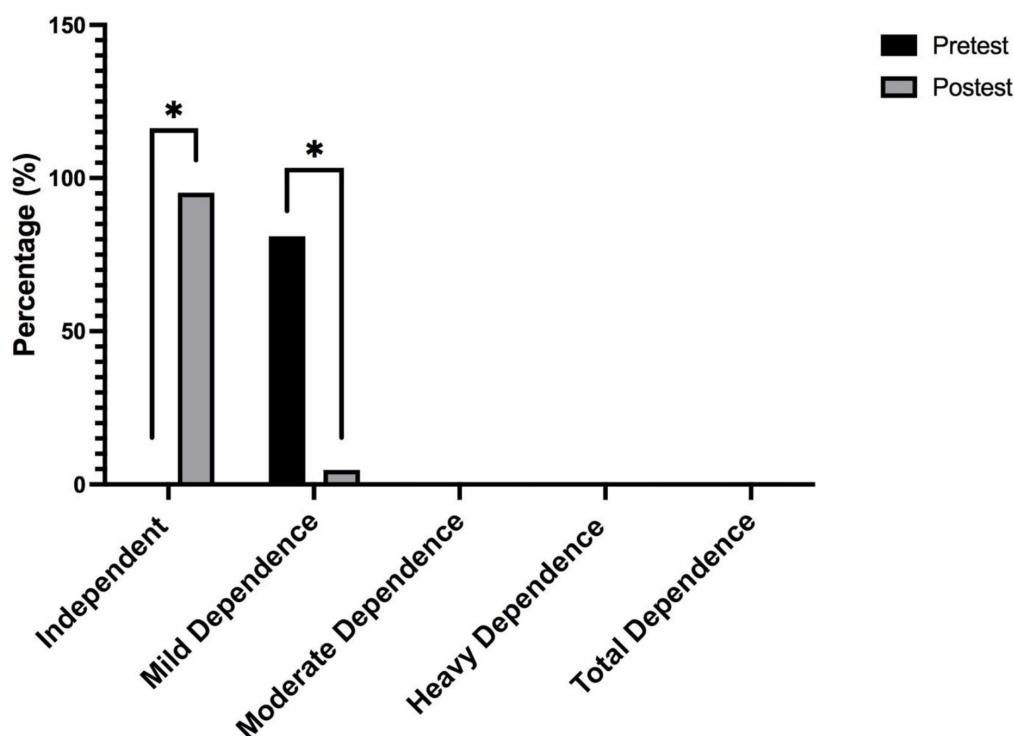
Figure 1. Effect of aspirin therapy on stroke patient progression. *p < 0.05

Table 2. Patient distribution by diagnosis status

Type of stroke	Men	Women
Ischemic	10	7
Hemorrhagic	2	0
Others	0	2

with atherosclerosis being the leading cause in older adults.

Effect of aspirin on Barthel index results

The normality test yielded a value of 0.748 (>0.05), indicating a normal data distribution suitable for conducting the paired sample T-test. The pretest Barthel Index results revealed that 80.97% of respondents had mild dependence, and 19.03% had moderate dependence. In contrast, the posttest results showed 95.24% of patients in the independent range and 4.76% with moderate dependence (Figure 1).

The paired sample T-test analysis of pretest and posttest results produced a Sig (2-tailed) value of 0.000 (<0.05), suggesting a significant influence of aspirin treatment on patients' functional abilities. The pretest assessment of all Barthel Index indicators demonstrated

that most patients required assistance performing daily activities, although some could independently execute tasks such as eating, dressing, and transferring from bed to chair. Following 30 days of aspirin use, the posttest interview revealed an improved score, with nearly all patients able to perform their daily activities independently.

Discussion

The main objective of this study was to evaluate effect of aspirin therapy on the functional improvement of stroke patients at RSUD Dr. Soekardjo Tasikmalaya. The results indicated a higher incidence of stroke in men compared to women. Various factors contribute to the increased risk in men, including smoking, alcohol consumption, hypertension, and hypertriglyceridemia. Another factor is the presence of the hormone testosterone, which can elevate blood LDL levels. Elevated LDL levels can lead to increased cholesterol levels in the blood, consequently raising the risk of degenerative diseases [7]. In women, the incidence of stroke rises at postmenopausal age. Before menopause, estrogen plays a crucial role in preventing atherosclerosis [8].

A stroke occurs more frequently in individuals over 55 than children and young adults. Advancing

age tends to increase blood pressure and the risk of stroke. Moreover, atherosclerosis is prevalent in almost all individuals over 40 [9]. Irregular work could cause a stroke. Unemployed patients may experience stress searching for a job, while employed patients can also endure stress due to work-related pressures [10].

The pretest results of all indicators on the Barthel Index revealed that most patients required assistance performing daily activities. However, some patients could independently complete tasks such as eating, dressing, and transferring from bed to chair. After 30 days of aspirin use, the posttest interview demonstrated an improved score, with nearly all patients capable of performing their daily activities independently.

Conclusion

In conclusion, this study demonstrated a significant positive impact of aspirin therapy on the independence levels of stroke patients, as measured by the Barthel Index.

Acknowledgment

None.

Declaration of conflict interest

None.

Author contributons

HFK: investigation, data curation, writing – original draft; AI: conceptualization, resources, data curation, visualization, formal analysis, writing-reviewing editing, supervision. YPS: methodology, supervision.

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